Preventing obesity using a 'whole system' approach at local and community level: PDG1

Identifying the key elements and interactions of a whole system approach to obesity prevention

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About the Peninsula Technology Assessment Group (PenTAG)

The Peninsula Technology Assessment Group is part of the Institute of Health Service Research at the Peninsula Medical School. PenTAG was established in 2000 and carries out independent Health Technology Assessments for the UK HTA Programme, systematic reviews and economic analyses for NICE (Technology Appraisal and Centre for Public Health Excellence) and systematic reviews as part of the Cochrane Collaboration Heart Group, as well as for other local and national decision-makers. The group is multi-disciplinary and draws on individuals' backgrounds in public health, health services research, computing and decision analysis, systematic reviewing, statistics and health economics. The Peninsula Medical School is a school within the Universities of Plymouth and Exeter. The Institute of Health Research is made up of discrete but methodologically related research groups, among which Health Technology Assessment and Evidence Synthesis are strong and recurring themes. Projects to date include:

- Preventing unintentional injuries among under-15s: Outdoor play and leisure: Systematic review of effectiveness of educational interventions (2010)

- Preventing unintentional injuries in children: Systematic review to provide an overview of published economic evaluations of relevant legislation, regulations, standards, and/or their enforcement and promotion by mass media (2009)

- Preventing unintentional injury in children: Strategic and regulatory frameworks for guiding, enforcing or promoting activities to prevent unintentional injury in children and young people in the home environment (2009)

- Preventing unintentional injuries among under-15s in the home: systematic review of effectiveness and cost-effectiveness of home safety equipment and risk assessment schemes (2009)

- Interventions to prevent unintentional injury in children on the road: Systematic reviews of effectiveness and cost-effectiveness of road and street design-based interventions aimed at reducing unintentional injuries in children (2009)

- A systematic review of risk factors for unintentional injuries among children and young people aged under 15 years: Quantitative correlates review of unintentional injury in children (2009)

- Providing public information to prevent skin cancer. Barriers to and facilitators to conveying information to prevent first occurrence of skin cancer: a systematic review of qualitative research (2009)

- Population and community programmes addressing multiple risk factors to prevent cardiovascular disease: a qualitative study into how and why some programmes are more successful than others (2009)

- Barriers to and facilitators for the effectiveness of multiple risk factor programmes aimed at reducing cardiovascular disease within a given population: a systematic review of qualitative research (2009)

- Bevacizumab, sorafenib tosylate, sunitinib and temsirolimus for renal cell carcinoma: A systematic review and economic model (2008)

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Declaration of authors' competing interests

The authors have no competing interests.

List of abbreviations

ANGELO	Analysis Grid for Elements Linked to Obesity
ASSIA	Applied Social Sciences Index and Abstracts
BAEW	Be Active, Eat Well
CAS	Complex Adaptive System
CINAHL	Cumulative Index to Nursing and Allied Health Literature
CPHE	Centre for Public Health Excellence (National Institute for Health and Clinical Excellence)
DEFRA	Department for Environment, Food and Rural Affairs (UK)
EPODE	Ensemble, Prévenons L'Obésitié Des Enfants (France)
EPPI	Evidence for Policy and Practice Information
FSA	Food Standards Agency (UK)
GP	General Practitioner
HAZ	Health Action Zone
HC	Healthy Cities
HFA	Health For All
HMIC	Health Management Information Consortium database
INTUTE	Gateway to subject catalogues for study and research
MEDLINE	National Library of Medicine's bibliographic database
NHS	National Health Service
NW	North West (of England)
OPIC	Obesity Prevention in Pacific Communities
PCT	Primary Care Trust
PDG	Programme Development Group
PenTAG	Peninsula Technology Assessment Group
PH	Public Health
PSFPI	Public Sector Food Procurement Initiative
ScHARR	School of Health and Related Research, University of Sheffield
WHO	World Health Organisation
WSA	Whole System Approach

Glossary of terms

Attenuogenic	Environment or conditions conducive to losing weight
Bottom-up	Where activity in a system or organisation is initiated from grassroots rather than imposed from senior levels.
Boundary	Separation between the parts of a system; can be porous to allow flow of information, or impermeable to block transmission
Community based	Centred on or rooted within the community
Complex adaptive system	Theoretical model based on systems theory and drawing on ecological models, where individual elements within a system exist independently but are interdependent on the system in which they operate for preservation and survival. This produces a complex interaction of interdependencies which constantly, and – often unpredictably - evolve as part of the wider system.
Complexity theory	A theoretical construct where a critical network of components self-organize to create structures with the potential to evolve and demonstrate emergent system properties
Conducive conditions	A set of circumstances which facilitate or impede a whole system approach
Cross-level effects	The way individuals/communities effect higher levels (bottom-up), national or regional influences effect lower levels (top-down) or several levels experience interactive effects simultaneously (interactive effects).
Domain consensus	The degree of agreement surrounding the appropriate role and scope of each agency within a system
Ecological	The relationship of organisms to one another and their physical surroundings
Equifinality	Concept proposing that different but equally valid paths can be taken which lead to the same end point
Feedback loop	In a changing system, information about that change is fed back into the system (feedback). With positive feedback loops, this magnifies the effect further, while negative feedback loops further decrease the impact.
Generative relationship	Interactions within parts of a complex system which result in new beneficial capacity not present in the individual parts
Health Action Zones	Launched in the UK in 1997, a national seven-year pilot scheme of 26 zones aimed to improve health outcomes and reduce health inequalities through local working.
Ideological consensus	The degree of consensus about the nature of tasks faced and the most appropriate way to tackle them
Isomorphism	The relationship between impact at more than one level of influence
Lay members	Members of the public who are not professional specialists in a subject area
Levels	Operating context, e.g. individual, neighbourhood, community, town, city, regional, or national.
Mandated partnerships	Imposed partnership formed through necessity; not voluntary in nature
Multi faceted	Having many aspects
Multi level	Operating on a number of levels
Natural attractor patterns	Innate simple patterns of individual behaviour within group settings, such as flocks of birds in flight
Obesogenic	Environment or conditions conducive to obesity
Organisation	An organised body of people with a particular purpose, e.g. a business
Open system	A system which interacts constantly with its environment
Partnership working	Operating in a collaborative manner with a range of different associates

Parsimonious	Sparing, economical; (conceptually) discrete, not repeated
Positive evaluation	The ways in which members of an organisation regard each other
Salutogenic	Environment or conditions conducive to health
Settings	Patterns of behaviour restricted within time and space, either location-bound (e.g. schools) or activity-bound (e.g. sports activities)
Informal/"shadow" networks	Informal set of connections within a system, e.g discussion round the work water-cooler
Social ecological/socio-ecological model	A conceptual framework, based in sociological theory, designed to examine multiple effects and relationships within an environment at multiple levels from the individual to the societal
Spheres of influence	A concept of the social ecological model where levels of influence are based around the individual, family, neighbourhood and community
Synergy	Interaction of two or more agents to produce a combined effect greater than the sum of their separate effects
Tacit knowledge	As opposed to formal knowledge; that which is known informally by individuals or organisations, based on their experience and not present in formal written materials and so less easy to be accessed by others
"Tame" issues	Clearly framed and solvable problems with solutions than can be right or wrong, such as heart surgery
Theory Y assumptions about management	Theory of human motivation where the underlying assumption is that people have an inherent motivation to work, generating their own creative problem-solving, self-motivation and work ethics, and only need the opportunity to realise their potential.
Top-down	Where activity in a system or organisation is initiated from senior levels to the frontline (ie through a hierarchy)
"Wicked" issues	Ostensibly awkward or insoluble problems with no definitive formulation or solution, such as the AIDS epidemic or international drugs trafficking
Work coordination	The alignment of working patterns and culture

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1. Summary

1.1.   Introduction

This report is the first review in a series of pieces of work to inform the development of CPHE NICE programme guidance about the prevention of obesity using a whole system approach. Unlike traditional systematic reviews, the primary purpose of this review was to build a preliminary working definition of what is meant by a "whole system approach" to a public health problem, in particular for obesity prevention, which would help to inform the rest of this programme of work.

1.2.   Aim

The review aim was to locate, review and synthesise studies about what a whole system approach to preventing obesity might mean:

- In theory

- In practice.

The review questions were:

• What in theory comprises a whole system approach to achieving public health goals?

According to descriptive accounts of actual initiatives, what in reality comprises a 'whole system approach' to achieving public health goals at a local level:

- In relation to preventing obesity?

- In relation to preventing another public health problem (smoking)

A secondary aim of the review, which was an aspect of data collection but not a driver of the search strategy or inclusion decisions, was to answer the question:

• What factors are reported to facilitate or inhibit the success of a whole system approach to obesity prevention at a local level?

In reality, we looked at whole system approaches in theory across a broad range of health issues and organisations, but did not look for this in practical examples.

1.3.   Methods

An iterative search strategy, building on the scoping searches conducted by NICE Information Scientists, was used to identify potentially includable sources from electronic databases and websites. Reference lists were searched and key authors in the field of whole system approaches contacted in order to identify additional sources.

Source inclusion decisions were made according to a pre-defined checklist. The complexity of the source material meant that these decisions frequently required discussion between the three reviewers (RG, MP and HH) in order to reach a consensus. These discussions were also central for the development of the conception of whole system approaches based on the source material.

The nature of the sources required an approach to quality appraisal and synthesis that focused on the contribution that the source could make to the developing synthesis of what comprised a whole system approach. Greater use was therefore made of sources that had more conceptual depth.

1.4.   Findings

Summary statement 1: What are the key features of complex adaptive systems?
Ten sources informed the definition of the key features of complex adaptive systems (Attwood et al. 2003; Hawe et al. 2009; Hudson 2004; Hudson 2004b; Information Policy Unit NHS Executive 2000; Plamping et al. 1998; Plsek 2001; Pratt et al. 2005; Rowe et al. 2005; Stacey 1996).   **Complex adaptive systems thinking about how organisations act and interact suggests that:**   • systems are complex networks of interdependent entities   • systems and interactions are not fixed, but continually evolve in response to stimuli

- self-regulation occurs within systems, and intense bureaucratic efforts to contain them may be counterproductive

- complex, rather than linear, outcomes can arise, with magnifying (positive feedback) and diminishing (negative feedback) impacts possible

- while some uncertainty may be inevitable, nevertheless, ordered patterns of outcomes may be seen

- formal and informal relationships make up systems and these are central to stimulating change

- interactions among system components can produce new capabilities that are not inherent in the individual components (synergy)

- where systems are allowed to self regulate, creativity and novelty may flourish.

The term "whole system approach" is sometimes used simply to describe management approaches in organisational environments where co-ordination and teamwork across multiple agencies is required. However, this approach may reflect a designed rather than the complex adaptive systems reviewed here. Designed systems use traditional mechanisms of management, organisation, regulation and evaluation, whereas complex adaptive systems demonstrate complexity, self-regulation, synergy, and unpredictable evolution.

Summary statement 2: What are the implications of complex adaptive systems thinking for ways of working?

Eight sources informed the analysis of the implications of complex adaptive systems thinking for ways of working (Attwood et al. 2003; Bauld & Mackenzie 2007; Hawe et al. 2009; Hudson 2004; Plsek 2001; Pratt et al. 2005; Stacey 1996; Senge 1993).

The implications of complex adaptive systems thinking for ways of working in organisations or communities are that goals are best achieved through:

- Creating more flexible organisational structures by facilitating new (trusting and productive) relationships in the network

- Understanding how positive and negative feedback loops within a system operate - this can give fresh insights into how the properties of a system can be harnessed to

increase or sustain positive outcomes

• Genuine engagement and discussion about the issues to be addressed before moving on to 'problem-solving'. This discussion, which is about developing shared meaning and purpose, has to include a diverse range of actors and therefore needs to involve people at all organisational levels, as well as community members

• Actors understanding the system in which they operate (and their role within it) at the system-level, so that they can contribute to producing new solutions in the context of the whole system

Working with complex adaptive systems requires:

• An understanding of the system– this requires the use of both formal and tacit knowledge of people at a range of organisational levels, as well as community members

• An understanding that whilst strict hierarchical divisions arenot a key feature of complex adaptive systems, this must not stop individuals from leading when appropriate

Traditional understandings of organisations as designed systems may lead to the development of complex targets and plans. However, in complex adaptive systems, the approach is to increase opportunities for natural adaptation that can stimulate creativity in developing solutions at all levels. National policy can foster or stifle conditions for a complex adaptive systems approach to be implemented.

Two sources identified further implications of complex adaptive systems thinking for ways of working in organisations or communities:

• Individuals participate in their own capacity rather than as a representative of an organisation, community or profession – this means that people can only agree to do that which is in their power to do (Pratt et al. 2005)

• Communication can be facilitated by holding meetings at a round table and limiting the size of groups. This holds both within and across organisations (Pratt et al. 2005)

• The personal qualities of individuals working within a complex adaptive system may impact on the success or otherwise of programmes. Qualities which may impact on success include an individual's level of optimism, empathy, humility, tenacity and courage - (Attwood et al. 2003)

• A willingness to take the 'long view' rather than go for the 'quick fix' is essential for complex adaptive systems approach to be effective (Attwood et al. 2003)

Summary statement 3: Implications of a complex adaptive system approach for evaluation

Six sources informed the analysis of the implications of a complex adaptive systems approach for evaluation (Attwood et al. 2003; Bauld & Mackenzie 2007; Dooris 2006; Hawe et al. 2009; Pratt 2005; Rowe et al. 2005).

The implications of a complex adaptive systems for the evaluation of programmes designed to address health or social problems are:

• Evaluation, learning and subsequent adaptation are central features of a complex adaptive systems approach

• A number of methods of designing and evaluating the impact of interventions, including theories of change, intervention mapping and theory based interventions, use designed systems thinking and, as such, alternative methods may be required to fully understand the implications of complex adaptive systems.

• As interrelationships, interactions and synergies form such a significant part of a complex adaptive systems approach, traditional evaluation outcomes focus on individual elements may fail to capture the full range of benefits

• Traditional emphasis on the success of individual project elements is replaced with a focus for evaluation on the health of the system as a whole, valued in terms of aspects such as robustness, creativity and sustainability

• Evaluative questions such as "how does it work" are as important as "what works?", as they may help to uncover the interaction between activity and context

• The *function* of a whole system intervention is of more interest than the *form* of the intervention – this allows for adaptation to different conditions without compromising intervention fidelity

Summary statement 4: Potential difficulties with working with complex adaptive systems

Three sources identified potential challenges inworking within complex adaptive systems (Attwood et al. 2003; Rowe et al. 2005; Stacey, 1996).

The potential difficulties of working within complex adaptive systems are:

• Challenging long-held beliefs and ways of working can be destabilising , leading to feelings of discomfort, insecurity and provoking emotional responses

• When an organisation is viewed as machine, as in a designed systems approach, it is easy to imagine an illusory sense of control, solidity and purpose which aligns with the task-dominated culture.   Conversely, complex adaptive systems lead organisations to be seen as organic and synergistic, and as such requiring a degree of flexibility which can create uncertainty and insecurity.

Summary statement 5: Implications for defining a whole system approach

This summary is based on the analysis of the report authors.

The implications for defining a whole system approach are:

• A whole system can be defined in both theory and in practice

• Competing discourses see organisations and societies as designed systems or as complex adaptive systems with different implications for management, organisation, regulation and evaluation.   Considering whole systems approaches in terms of complex adaptive systems may be appropriate for complex public health issues such as obesity. However, there may also be a role for using a designed systems approach when thinking about discrete local factors contributing to obesity which might be addressed with simple, specific actions.

• Discourse has moved from defining the actors and organisations that the intervention should operate within a system and, towards understanding how to foster the conditions which allow people in a locality greater opportunities to work together more effectively to address obesity.

Summary statement 6: What, in practice, comprises a whole system approach to preventing obesity at the local level?

Thirteen sources informed the analysis of what comprises a whole system approach to preventing obesity at the local level (Anon. 2005; Anon. 2008; Anon. 2008; Anon. 2009; Chomitz et al. 2010; Directorate of Public Health NHS Westminster 2010; Economos et al. 2007; Heywood et al. 2008; NHS North West et al. 2008; Sanigorski et al. 2008; de Silva-Sanigorski et al. 2010; Simmons et al. 2009; Twiss et al. 2000):

● The nature of reporting about community-wide obesity prevention programmes limited the extent to which an assessment of 'the whole system approach' could be made. Further investigation of community-wide programmes where such details are lacking is warranted.

● Management, development and design of obesity prevention programmes with the label of 'whole town/city approach' may differ considerably, ranging from a predominately bottom-up, community development (e.g. Healthy Town (Middlesbrough)) to a more top-down, hierarchical structure(e.g. EPODE).

● None of the obesity prevention programmes overtly used complex adaptive systems thinking to inform their whole system approach, although two (California Healthy City & Communities and Pacific OPICS) mirrored a number of the features of whole system approaches(such as capacity building, fostering local creativity and relationships, and community engagement).

● Whilst the majority of obesity prevention programmes make some use of mass media or social marketing techniques, none report that they make use of informal communication networks in communities to communicate about obesity prevention.

Summary statement 7: What factors facilitate or inhibit a whole system approach to obesity prevention at the local level?

One source, comparing London and New York City, informed the analysis of factors that facilitate or inhibit a whole system approach to obesity prevention at the local

level (Libman et al. 2010):

Factors that can facilitate a whole system approach to obesity prevention are:

- municipal control of the transport system

- strong support (at both senior and intermediate levels) for public health initiatives

- public support for obesity prevention work

- stable funding

Factors that can act as barrier to a whole system approach to obesity prevention are:

- competing public sector priorities

- political influence of powerful bodies such as food and retail industries

- tendency towards incremental rather than radical policy change

- placement of high value on individual action rather than system change.

2. Aims and Background

Health is created and lived by people within the settings of their everyday life; where they learn, work, play and love. (Ottawa Charter for Health Promotion 1986)

2.1. Objectives and Rationale

The aim of this report is to produce a working definition of what is meant by a whole system approach to obesity prevention. It is the first in a series to inform the Programme Development Group in their recommendations and it is hoped that will its findings will help to inform the subsequent pieces of work within this programme.

2.2. Background

There is broad agreement that causes of obesity are complicated, and exist at multiple levels and in multiple settings. Given this, it is also broadly accepted that efforts to prevent obesity must focus on multiple projects, at multiple levels, in multiple settings and for many groups of people and, importantly, that programmes which expect individual behaviour change to be achieved by solely by focusing interventions targeting those individuals, are unlikely to be successful. Rather, it is argued, what is required is a recognition of, and response to, the multiple and multi-level socio-cultural, economic and environmental determinants of ill health.

Rather than seeing the human body as perfect until under attack by some pathogen, this paradigm assumes that the human body is inherently flawed, as it is vulnerable, and subject to inevitable decline and death (Antonovsky 1996). This view may be extended to recognise, as the Foresight report does, that the human body is further compromised in the contemporary Western environment, which operates to minimise energy expenditure and ingest a high number of calories, whilst the body is designed to conserve energy in an environment it wrongly anticipates will demand the reverse (Butland et al. 2007).

The terminology of "a whole system approach" or "whole system working" is becoming increasingly visible in health care literature, particularly in circumstances where

causes and potential solutions to a problem are seen as multiple, interrelated, complex and operating at many different levels, as is the case for many public health problems. Obesity is a prime example. The Foresight report identified a complex map of interconnecting factors, which it called the obesity systems map, representing an increasingly obesogenic environment which facilitates weight gain (Butland et al. 2007). The scope for the development of NICE guidance on a systems approach to obesity drew heavily on the findings of the Foresight report, which suggests that any efforts to prevent obesity or reduce obesity rates need to address the complex and interconnected system of influences which, together, cause it.

However, it is clear that these notions of complexity and systems carry a range of different meanings for different authors and organisations, so the purpose of this piece of work is to try and develop a provisional working definition of the whole system approach that can inform the rest of the evidence reviews informing this programme of work.

In and of itself, the term "system" contains many possible definitions, some of which are contradictory. A dictionary definition suggests "system" may mean:

1. A group of interacting, interrelated, or interdependent elements forming a complex whole.

2. A functionally related group of elements, especially:

- The human body regarded as a functional physiological unit.

- An organism as a whole, especially with regard to its vital processes or functions.

- A group of physiologically or anatomically complementary organs or parts: the nervous system; the skeletal system.

- A group of interacting mechanical or electrical components.

- A network of structures and channels, as for communication, travel, or distribution.

- A network of related computer software, hardware, and data transmission devices.

3. An organized set of interrelated ideas or principles.

4. A social, economic, or political organizational form.

5. A naturally occurring group of objects or phenomena: the solar system.

6. A set of objects or phenomena grouped together for classification or analysis.

7. A condition of harmonious, orderly interaction.

8. An organized and coordinated method; a procedure.

9. The prevailing social order; the establishment.

(http://www.thefreedictionary.com/system)

These various definitions illustrate some of the difficulty there may be in pinning down what can be meant by the language of "systems" and how any set of authors apply it. From the definition above, systems may therefore be: naturally occurring or artificially constructed; stable or developing. This has been noted by other authors, describing a system as:

> *Abstract or concrete; elementary or composite; linear or non-linear; simple or complicated; complex or chaotic (Rickles et al. 2007).*

Recognition that complex and interacting systems result in the obesogenic environment is only the start and *does not necessarily lead to* the adoption of whole system approaches to address this public health problem. We therefore had to consider review methods which allowed us to distinguish between the terminology of "whole system" when used simply as a phrase rather than "whole system" relating to an underlying theoretical concept. In doing so we were aware that the language of systems could simply be used as new nomenclature for an old idea rather than truly

relating to a new way of conceptualising effective working. The following was noted over a decade ago:

> *Over the years the trumpet has sounded for joint working, interagency working, and multi-sector working; for collaboration and alliance; and most recently "partnerships" – between private and public sectors, professionals and lay people (whether "patients" or "the public"). Although the words have changed over the past 20 years, the rhetoric remains the same. (Popay & Williams 1998)*

In contrast, others have perceived whole system as "a radical new way of thinking about change in complex situations – a combination of theory and practical methods of working across boundaries" (Pratt et al. 2005b).

Given that:

> *it is in the realm of theory where there may be most to learn and gain from past failures of community interventions in the field of public health (Hawe et al. 2009).*

it is important that we try to establish a coherent idea about what the terminology "whole system approach" means, as well as where it perhaps has been wrongly co-opted. This is important partly to create a shared understanding of terminology, but, crucially, because the different conceptual understandings will have practical implications for what we consider the opportunities for a whole system approach to obesity may be, and the implications for expressing recommendations and evaluating such approaches. More pragmatically, a clear understanding of what whole system approaches should or can mean is an essential pre-requisite for allowing the remaining evidence reviews to search for, include and synthesise appropriate evidence, with a clear understanding of the rationale for considering them to be a coherent body of such evidence.

Further, within a health care context, systems exist in multiple, interacting ways, including organisational (relating to the administrative or managerial systems with given functions), relating to structures of service delivery (primary care systems or hospital systems), topic based clusters of healthcare need (systems aimed at delivering children's services or diabetes services) or the way in which such activities

are driven (through local area agreements, for example, or strategic documents). Another way of thinking about possible systems relates to particular types of intervention which require coordination across a number of organisations and sectors (for example, efforts to limit the number of fast food takeaways and increase the availability of fresh fruit and vegetables in an area may need support from local councils, schools and retailers).

A final note is to distinguish between systems concepts being used as *explanatory* models (to describe how a phenomenon or problem arises), and the use of a whole system approach to *address* those problems, as we are trying to do in this programme of work.   There are numerous papers which describe how the current obesity epidemic has arisen, with the Foresight report being perhaps the most comprehensive of these. Such explanations use complexity theory and/or concepts about complex adaptive systems to explain how many, often small, factors (such as increasing use of cars for short distances; rise in the availability of sedentary, rather than manual, jobs; increasing use of ready made meals etc.) may interact in order to create the current problematic environment. The shift away from explanations of obesity which focus on individual behaviours towards evident social determinants of health is increasingly uncontroversial and we do not intend to revisit those arguments here. However, it is important to note that the creation of an environment which is less obesogenic, or even attenuogenic, will rely on many small shifts in the environment which will in turn interact in new ways and ultimately create a different, more healthy environment.

The Foresight Report demonstrated how an obesogenic environment has been created through the interaction of numerous elements at many levels. Rather than using this system map as a schematic on which to hang interventions by "looking down" the linkages and trying to stop these identified negative elements occurring, the shift needs to occur at ground level, shifting sideways to create new possibilities which, together, create an alternative "salutogenic" (health creating) environment (Antonovsky 1996).

To illustrate,

Figure 1 shows the obesogenic environment, where many elements, some large and some, in themselves, seemingly minor, reinforce each other and create an environment which facilitates weight gain. The dots at the bottom of the tornado

represent just a few of the factors that may contribute to this, as described by the Foresight report, and which interact to magnify the problem. This is a highly simplified schematic which shows just a few of the factors identified by the Foresight report as interacting contributors to the current obesogenic environment.

Figure 1 The obesogenic environment

Obesogenic environment

Decreased occupational activity

Side effects of medication

Perceived danger in environment   Increased portion size

Dominance of motorised transport

Nutritional quality of food
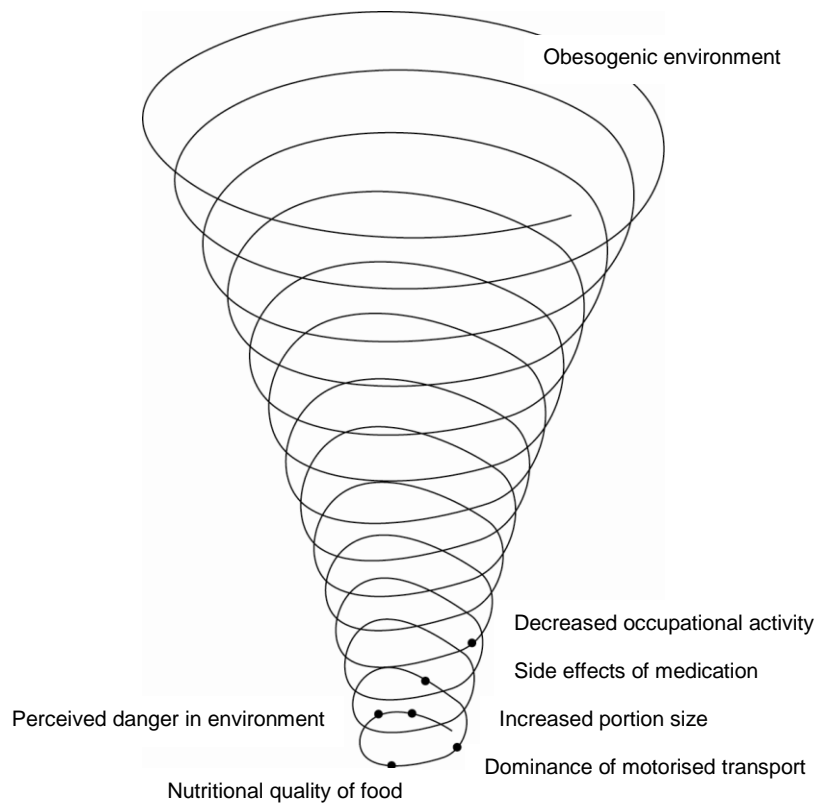
Locally, there may be specific variations which contribute to this environment, perhaps like those shown, again in a highly simplified way, in Figure 2 below.

Figure 2 Local level obesogenic environment

Local obesogenic environment

Lots of local people employed in call centres

Side effects of medication

Local parks vandalised   Increased portion sizes

Dominance of motorised transport

Poor nutritional quality school meals
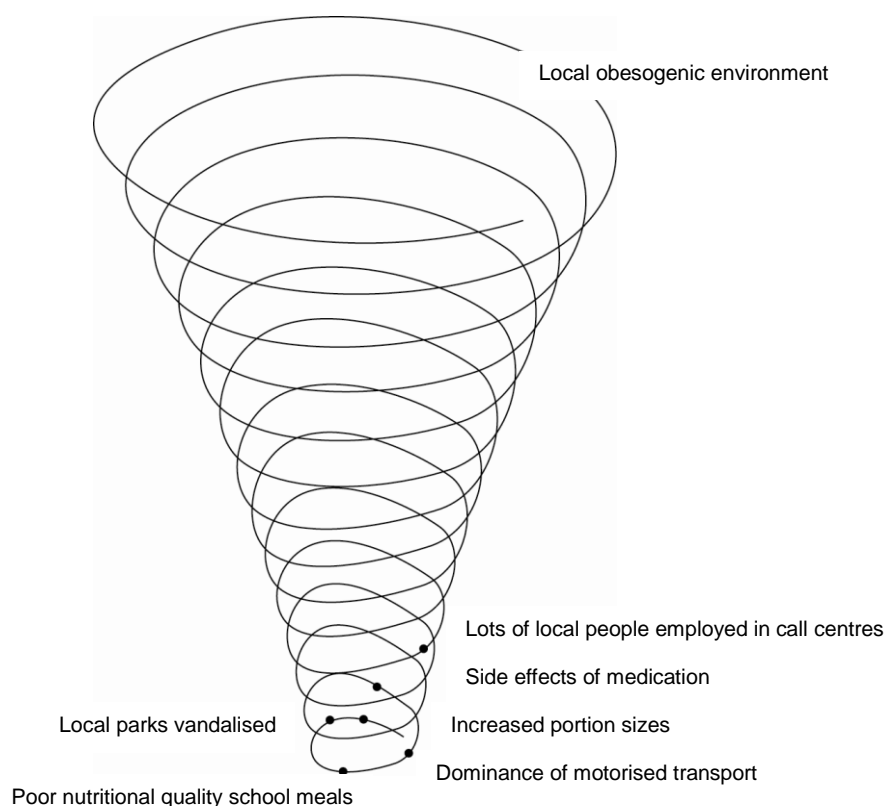
In order to address these issues, local changes could be instigated based on locally understood problems and through the action of enthusiastic and able local actors. Some problems will remain, others may be addressed indirectly or through multiple changes. Some interventions, such as the introduction of a school vegetable garden, may act in several ways – through increasing understanding about food sources and providing more opportunities to consume fresh and healthy food, increasing opportunities for physical activity, providing focus for changes to canteen provision and so on. With these changes, in response to locally identified needs, there is the possibility that that the environment "changes shape", developing new interacting factors which combine to reinforce each other in producing a healthier context in which people find it easier to maintain a healthy weight. Figure 3 illustrates this, with some of the problems of the obesogenic environment remaining (shaded grey), but with combined momentum from changes in the new environment altering the outcomes (shown in black below). Obviously these schematics only provide a few

possible examples of the types of factors that could influence the system to simplify their presentation.

Figure 3 Shift to a local salutogenic environment

Obesogenic environment

Salutogenic environment

Increased portion sizes

Exercise spaces provided by local workplaces

Exercise on prescription for depression

School veg. gardens

Dominance of motorised transport

Increased value and support for outside play spaces
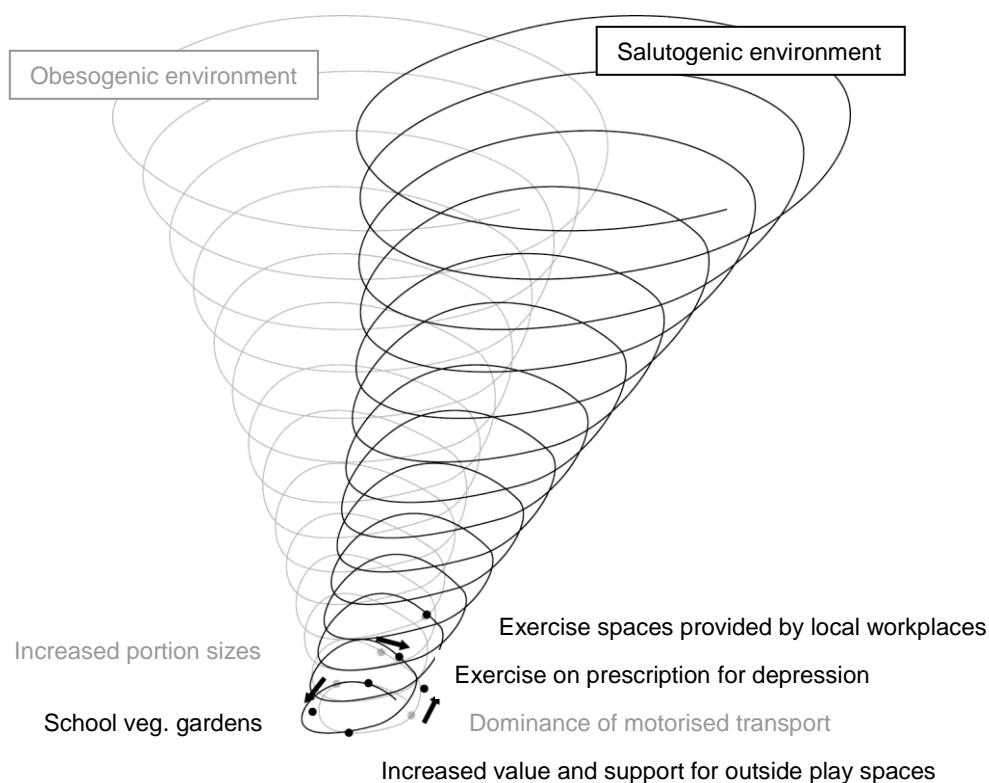
Having recognised that systems create and, importantly, *are* the environment itself, the question becomes how to harness these systems to produce more positive results.

> *When we work in a whole system way, the purpose of our interventions is to release the potential for finding creative solutions which already exist within the system. This contrasts with the model of expert solutions being imported from outside. We use words like "uncovering" and "inquiry" rather than "intervention" and "design". This is a different way of describing how systems solve problems and retain adaptive capacities (Plamping et al. 1998).*

We therefore hope in this report to outline suggested ways in which understandings of a whole system may be used to facilitate sustainable local responses and strategies

to change the local socio-economic and physical environment in order to shift it towards the desired, healthier outcomes. Recognition at a local level of the key interacting elements in the systems contributing to obesity may be the basis for fostering concerted policy and action to achieve change.

3.   Methods

3.1.   Review questions

The aim of the review is to develop a working definition of what comprises a whole system approach to obesity prevention.

The primary research questions for this piece of work are:

Question 1: What, in theory, comprises a whole system approach to achieving public health goals?

Question 2: According to descriptive accounts of actual initiatives, what in reality comprises a 'whole system approach' to achieving public health goals at a local level:

- In relation to preventing obesity?

- In relation to preventing another public health problem (smoking)

The following secondary aim was also considered.   It did not inform the search strategy or inclusion criteria, but was an aspect of data collection:

What factors are reported to facilitate or inhibit the success of a whole system approach to obesity prevention at a local level?

3.2.   Process for review

Given that the aim of this review is to develop an initial definition of a whole system approach to obesity which will inform rest of this programme of work, it was clear form the start that our approach to searches and study inclusion would need to proceed iteratively, with our working definition being continually developed and refined to determine which is the most pertinent literature to consider.   Our protocol (shown in Appendix 1, p.127) had been clear that, if we found an unworkable volume of information to sensibly and informatively meet the aims of this review in the timeframe, we would, with the CPHE team, develop priorities within this potentially vast literature.   Another departure from the conventional methods used for a typical systematic review of effectiveness studies was a recognition that we may not treat all

included studies in the same depth (in relation to, for example, the amount of information extracted from a paper or coverage within the write-up). Also, the likely lack of relevance for such an approach to attempt to exhaustively identify all potentially pertinent material meant that our approach was more pragmatic. Our approach aimed to identify, include and data extract information that would be useful in developing our understanding of a whole system approach.

3.2.1. Adaptations of the protocol

Given the highly iterative and developmental nature of this review, our protocol noted that the procedures outlined there were subject to possible changes in response to the emerging nature and volume of information identified. In particular, we developed a grid of possible areas of investigation which would be subject to the results of this emerging definition, the volume of material identified and the informative nature of the material. This is reproduced in Table 1.

Table 1 Matrix of potential relevant studies for this review

	In Theory	**In practice,** **Where called "whole system approach" (WSA) or "systems approach"**	**In practice,** **Where the initiative exhibits many of the features of a whole system approach**
Public Health problems	**1.** Reports/documents describing what a whole system approach (to tackling public health or other social problems) should comprise	**3.** Reports/documents about actual initiatives which claim to have used a WSA to prevent other selected public health problems e.g. smoking cessation/prevention	**5.** Reports/documents about actual initiatives which claim to have used a other-named approaches which exhibit many features of WSA to prevent other public health problems e.g. smoking cessation/prevention
Obesity	**2.** Reports/documents describing what a whole system approach to tackling obesity should comprise	**4.** Reports/documents about actual initiatives which claim to have used a WSA to prevent obesity	**6.** Reports/documents about actual initiatives which have used other-named approaches but which exhibit many features of WSA e.g. described as a "community wide initiative".

We did not identify any papers falling within cell 2, cell 3, or cell 4 related to a whole system approach to obesity in theory, or relating to obesity or smoking prevention programmes which also demonstrated awareness of working with a whole system approach and named as such.   However, to address Question 1, in addition to understanding the key importance of *processes* rather than the details of *what* was done, we expanded this to look at a very broad range of health and other public sector examples as long as they demonstrated a whole system approach (cell 1).

To address question 2 we also looked at cell 6, identifying what, in practice, had been done in terms of population/community level approaches to obesity prevention, using multi-partners and focussing at multiple levels. We did not pursue reports about other public health problems which were not explicitly referred to as whole system approaches (cell 5). This was because our revised definition of such an approach precluded important overlaps between those approaches defining themselves as whole system approaches, as those which did not. The resultant evidence review therefore distinguishes between theories about a whole system approach at its best and most functional, and named projects in which the PDG might have an interest because they represent large or current population level approaches to obesity prevention.

3.3.   Identification of evidence

3.3.1.   Searches

Two sets of searches were undertaken for this review (see search strategy in Appendix 2, p.136).   The first, addressing the question of what a whole system approach means in theory, used restricted terminology about a whole system approach, but without any restricted to a particular health area. The second, looking to see what a whole system approach has meant in practice, used restricted terms around the specific topic of obesity, but broad language to identify the types of community-based interventions undertaken.

A number of searches had already been undertaken by the information scientists at CPHE during the scoping phase of this project and the findings from these, in terms of fruitful and non-fruitful searching terms and web based sources, informed the PenTAG

searches (and are also likely to inform subsequent reviews undertaken as part of this programme).

Question 1 searches: What, in theory, comprising a whole system approach to achieving public health goals?

This sought to identify reports, books and papers that explicitly describe the whole system approach to any public health topic and so only used intervention terms (see Table 2). Initial exploratory searches done by PenTAG using "system*" terminology produced very large numbers of hits with low specificity, so we looked instead for more specific terms.

The following databases were searched; ASSIA, CINAHL, MEDLINE, HMIC, EPPI Centre Databases (Bibliomap, DoPHER, TRoPHI, Obesity and Sedentary behaviour studies database, INTUTE, Social Science Citation Index. All bibliographic searches used filters to limit publication years from 1990 to date of search.

Table 2 Database search terms for Question 1

Topic /PHASE	Population Terms	Intervention Terms
All public health	None	"system* approach*" or "system* work*"

We also searched within the hits returned by the search for Question 2 (outlined below) by using "system*" within the RefMan database into which they were uploaded in order to ensure we picked up any obesity related article using more general "systems" language.

Any source obtained as full text was subject to citation searching to identify related papers that would contribute to our understanding of a whole system approach to public health problems. We also used the "cited articles" feature to track similar papers.

We also contacted five authors of key texts identified through these initial methods to ask them to supply references to any text about whole system approaches.

We also added an additional search term ("ecologic*") through looking at key terms of already included texts, but this was not fruitful.

Question 2 searches: What, in practice, comprises a whole system approach to obesity prevention?

These searches built on scoping work undertaken by CPHE in order to identify key terms both for the subject of obesity, and the intervention terms, which intended to identify any multi-faceted, multi-level or community based interventions aimed at preventing obesity (see Table 3), in studies published after 1990.

Table 3 Database search terms for Question 2

Topic /PHASE	Population Terms	Intervention Terms
Obesity Prevention:	Thesaurus terms for: (OBESITY OR WEIGHT GAIN OR WEIGHT LOSS) OR text word terms (obes*) or ((health* or over*) ADJ2 (weight*)) or ((weight*) ADJ2 (gain* or change* or retention* or loss*)) or (health*) ADJ2 (eat* or choice* or adiposity))	Text words: "((community ADJ wide) OR (community-wide) OR (community-based) OR (community ADJ based))"

During reading any full text sources that were identified through Question 1 searches, we were mindful of any emerging terminology that we thought would help to identify further key texts. In the event, only one addition term was identified: "ecological" and this was combined with obesity terms as a supplement to Question 2.

The following databases were searched; ASSIA, CINAHL, MEDLINE, HMIC, EPPI Centre Databases (Bibliomap, DoPHER, TRoPHI, Obesity and Sedentary behaviour studies database), INTUTE, and Social Science Citation Index.

Searching for sources to answer Question 2 was also informed by scoping searches undertaken by CPHE and other named programmes identified through other sources

(such as those suggested by stakeholders through the Call for Evidence, and programmes referred to in sources obtained in full text form).

Web searches for Questions 1 and 2:

A number of strategies were used online to identify programmes and reports relevant to a whole system approach to obesity prevention. Web searches were undertaken and screened by MP and HH.

Potentially useful websites were identified by CPHE scoping searches and PenTAG during protocol development. These websites were searched using individual website's search engines (or Google, using 'site:domain name' if there was no website search engine).

Where websites were not obesity specific, they were searched using the terms "community" AND "obesity". Where websites were obesity specific, searches looked for "community". We also searched for "systems" and "policy" (except in websites that had been previously searched by the CPHE scoping searches). "Community" AND "smoking" were initially searched, but this was discontinued due to the very large number of irrelevant results obtained.

Key websites were also browsed to identify potentially includable material and relevant links to follow-up. However, there were very large numbers of links so we only recorded and followed these if it was clear that they were directly linked to the prevention of obesity or smoking in the context of community or systems approaches.

The publication sections of websites were searched for material citing 'systems', using the website's publication search facility (where available) or, where it was not, using the browser's 'find' function.

Where searches produced lists of material numbering more than 100 items, the first 100 items were assessed for relevance. A judgement was then made following discussion between two reviewers (MP and HH) as to whether it was reasonable or not, given the available resources, to continue assessing beyond these first 100 items.

3.3.2.   Inclusion of relevant evidence

Three people, RG, HH, MP, were responsible for both the initial screening of titles and abstracts, and the detailed screening of requested full text papers, reports and books. The team met every day to discuss what they had read, and to discuss why they thought a paper should be included or excluded. If there was any doubt, a second person read the article and it was discussed again. These meetings were crucial to the process of developing a shared understanding about the developing concept of a whole system approach and the ways in which different types of publications could contribute to our understanding.

3.3.2.1.   Inclusion criteria: Question 1

For Question 1 (what, in theory, comprises a whole system approach to achieving public health goals?) we came, whilst reading a number papers and books in the course of this review, to understand that there were some key limiting elements in our original conceptual framework that we thought would inform this review (Figure 4). Our protocol (reproduced in Appendix 1) stated:

"our provisional understanding is that whole system approaches to tackling public health issues tend to be characterised by:

the interaction of collections of organisations or partners (such as PCTs, food retailers, schools, local authorities and so on).

the linked involvement of specific groups of actors (such as GPs, health visitors, parents, town planners) to drive and sustain activities. These groups may or may not belong to or be aligned with particular organisations.

these organisations and/or groups of actors work together to deliver packages of coordinated initiatives or interventions at the local level (such as walking buses, cycle paths, healthy school dinners, free swimming lessons).

these initiatives and interventions usually aim to tackle the public health problem at a number of levels simultaneously. Most particularly, the problem is not tackled solely at the level of individuals and individual behaviour change. For example, in specific relation to obesity prevention, it might be expected that the initiatives and

interventions would target a number of different parts of the Foresight Obesity System Map of the problem's causes.

they will therefore usually also involve the coordination, development and funding of these packages of initiatives by integrated or complementary local policies (such as Local Area Agreements, active travel plans supported by School Travel Plans and Safe Routes to School policies)."

Figure 4 Initial conceptual framework informing the protocol

National initiatives e.g. legislation, regulation, national polices

Whole systems approach

Packages of local activities/interventions

Aimed at, for e.g., increasing levels of physical activity, assisting appetite control, addressing psychological ambivalence to adopting healthier lifestyles etc.

Collections of organisations/partners

e.g. PCTs, schools, local authorities

Levels of concern & of action:
•Community
•Neighbourhood
•Family
•Individual

Local policies

Groups of actors

e.g. parents, GPs, town planners, health visitors

+/- conducive conditions

e.g. environment, communication, respect, aligned goals

However, it became clear to us that the nature of a "whole system" approach in the more theoretical literature has a core and conceptually distinct meaning. This view of the nature of a whole system approach relates primarily to principles of working, particularly about how to develop and extend relationships and networks among individuals, how to allow processes to become adaptive and self-regulating so that change can be managed productively, through interactions based on mutual understanding rather than hierarchies and, crucially, this approach *includes understanding itself as operating within system(s).*   This meant that, unless the language of systems was consciously used by authors, it was not included in this review to answer question 1.

This profoundly challenged our preliminary understanding of the whole system approach and informed choices about the types of sources to search for and include. In developing the protocol we had adhered to the notion that many obesity prevention programmes were probably doing "elements of" a whole system approach.   We thought that some authors may not have used systems terminology (adopting the preceding nomenclature fashions such as "community wide", "partnership", "joint working" etc.) but which may, once we developed a working definition, prove to contain many of the key features of a whole system approach. As a result of our new understandings however - about the centrality of *ways* of doing things, rather than *what* was done - we realised that the protocol, and our initial conceptual framework, had been based on a more basic conceptualisation of a whole system approach. It was becoming clear that the details about what packages of local activity, which collections of partners or groups of actors were involved were much less relevant to these understandings, whilst the modes of working and recognition of being in a broader system, are central. This means that what we had designated "conducive conditions" on the original conceptual framework (Figure 4) now seem fore-grounded and the other details recede.   Or, at least, they become more like extensions of creating necessary ways of interacting that we originally envisaged to be "conducive conditions", and not lists of key organisations or activities required to achieve local change.

These understandings of what might comprise a whole system approach was further complicated by the realisation that, even among those definitions which *did* refer to themselves as using a whole system approach or whole system ways of working,

some were not clearly describing what we had come to think of as an "authentic" system approach.

This definitional distinction is previewed here because it impacted on our inclusion criteria for Question 1 and will be discussed in greater detail in section 5.

3.3.2.2.   Inclusion criteria: Question 2

As mentioned above, our refined conceptualisation of the whole system approach led us to adapt our inclusion criteria based on the evidence of our review so far. Following the formulation of inclusion criteria for review question 1, we then identified aspects of a whole system approach *in practice*, based on fundamental elements identified in whole system approach texts.

In conversation with CPHE regarding our revised and refined view of an "authentic" whole system approach, we were encouraged to continue with searches to identify "community-based" schemes for obesity prevention in order that the PDG were presented with a range of processes, which would include *both* "authentic" whole system approaches *and* community-based programmes.

These community approaches emerged during our searches as interventions with theory commonly grounded in the social ecological model, a framework designed to examine multiple effects and relationships in an environment, emerging from sociological research of the 1950s onwards (Bronfenbrenner 1979).

This model shares many common features of a whole system approach, but in our view lacks some key elements as described above. Instead, the community-based approaches we identified often used social ecological modelling terminology, referring to concepts such as "spheres of influence", "isomorphism" and "cross-level effects". Spheres of influence emerged as a central theme for many of these community-based approaches, where levels of influence were delineated as based around the individual, family, neighbourhood and community. The focus of these interventions tended to be wider than at the level of the individual, with interactive effects highlighted between levels of influence. However, there was rarely – if any – acknowledgement of the importance of relationships, and a lack of self-awareness

which we considered central to others' understanding of an "authentic" whole system approach.

3.3.2.3. Screening

Potentially includable journal papers, books, or grey literature that were identified through the searches were uploaded into a Reference Manager™ (ResearchSoft, San Francisco, CA) database. All titles and abstracts (where available) were screened by one of three reviewers (RG, MP, or HH). Time limitations precluded formal second reviewer screening of a percentage of these titles and abstracts, but the review team remained in close contact, frequently discussed screening decisions taken, and reviewed these decisions where appropriate. A predefined checklist (see Appendix 3, p.146) was used to assess whether or not sources met the inclusion criteria. If the abstract provided insufficient information to assess for inclusion, or if no abstract was available and the report was not clearly excludable on the basis of the title alone, then the full text of the report was obtained. Excluded reports and the reason for their exclusion at the full-text stage are listed in Appendix 7 (p.303).

The screening process was also used to identify review papers that could be used as a source of further includable citations, and reports of obesity prevention programmes that are potentially of relevance to the planned quantitative, qualitative, and cost-effectiveness reviews or economic modelling to be conducted in the course of the PDG's guidance development process.

3.4.   Methods of analysis/synthesis

3.4.1. Source assessment

This review aims to answer two distinct questions about the theory and practical implementation of whole system approaches to the prevention of obesity. This meant that the sources included were similarly distinct. Accordingly, two different approaches to quality assessment were used.

3.4.1.1.   Report assessment for Question 1: What, in theory, comprises a whole system approach to obesity?

Quality appraisal checklists for quantitative and qualitative studies (NICE 2009) were not appropriate for assessing the quality of included sources that described a whole system approach in theory. These checklists, whilst providing a structured approach to appraising the internal and external validity of quantitative studies, and the trustworthiness and analytical richness of qualitative studies, do not provide a useful framework for the assessment of what are often lengthier, discursive papers or books describing theory. Most of the sources included in this review had no identifiable empirical study design and therefore came under the latter category. Rather than assessment of particular aspects of quantitative or qualitative study design, it was necessary for quality assessment of these sources to adopt a broader approach that highlighted the clarity and richness of the theory described. Ritzer's *Meta-theorising in Sociology* (Ritzer 1991) was used as a basis for quality assessing the included sources, focusing on two key questions:

- Does the theory contain unambiguous concepts?

- Are the relationships between and among concepts clearly articulated?

These two questions were summarised in the quality assessment tool as, 'Is the source a coherent account?', and covered the following aspects:

- Were 'concepts' sufficiently developed and clearly defined, or did they rely on the reader's experience of an area of practice to make sense of the concepts?

- Were the concepts grounded strongly in a cited body of literature, or was there provenance unclear?

- Were concepts parsimonious, or was there overlap and repetition in their presentation?

- Was the theory presented in sufficient depth to be useful, or was there a greater emphasis on simply describing the implementation of a programme using a particular approach?

Also, as our approach to assessment was focused on the contribution which sources could make to our understanding of a whole system approach (rather than attempting to assess the validity of the theories described against an external 'gold standard'), two further questions were added to the assessment tool. These questions allowed us to record our judgements about the contribution which sources could make to the synthesis, and enabled us to highlight those sources which could make a particularly strong contribution:

- Do case examples (if any) illuminate the description of ways of working?

- Does it contribute to understanding the nature of whole system approaches?

We considered awarding a quality rating to each study, as would be standard practice in a conventional systematic review. Using the structure provided in the NICE Methods Manual (NICE 2009), where a distinction is drawn between none ('poor'), some ('acceptable'), and all or most ('good') of quality checklist criteria being fulfilled, was not considered appropriate for this review. This was due to the relatively small number of 'criteria' on which we were appraising sources, but most importantly because we were endeavouring to appraise the quality of the sources *as a whole in terms of what they could contribute to the synthesis*.

The standard systematic review practice of 'checking' quality assessments by a second reviewer was also not considered appropriate, in the form in which it is usually implemented. Instead, we 'checked' all quality assessments through a process of discussion between review team members (RG, MP, HH). The length of many of the included sources meant that this checking did not take the form of all review team members reading each source in full, but by the first reviewer highlighting key sections which others would read and then discuss with regard to the quality assessment. This quality assessment process was less about 'checking' and more about developing our understanding of what would make a strong contribution to understanding whole system approaches.

3.4.1.2. Quality assessment for Question 2: What, in practice, comprises a whole system approach to obesity?

In providing an overview of the practice of a whole system approach to obesity prevention, we found it necessary to adopt an exploratory (rather than summative) approach. This approach is intended to help the PDG to sharpen the focus of forthcoming reviews and case studies that will inform the development of the programme guidance. As such, the quality of reporting, such as the depth in which programme elements were described or the clarity with which an approach was articulated, was simply evident in the information which it was possible to extract. That is, a study which enabled us to extract more and clearer information about this approach was deemed to be, by definition, more useful (or better 'quality' for the purposes of this review). We judged that attempting to further 'quality assess' this information would not have been a useful or informative process.

3.4.2. Information extraction

Included sources were read by one of three reviewers (RG, MP, or HH) and information extracted into evidence tables appropriate to Question 1 (see Appendix 5, p.157) or Question 2 (see Appendix 6, p.238). For similar reasons to those covered in the assessment sections above, the standard evidence tables for quantitative and qualitative studies (NICE 2009) were not suitable for this review. We therefore designed evidence tables suitable for extracting information for each question. For the Question 1 evidence table, it was possible to specify some categories in advance, such as the authors' discipline, the focus of the paper or book, and whether or not it provided real examples. However, given the diversity in presentation of information (e.g. books, journal papers, policy papers), the largest section of the evidence table was reserved for free text extraction that addressed the question 'What comprises a whole system approach?'. It was possible to specify a greater number of categories in advance for the Question 2 evidence table, such as the theoretical background to the programme design, the context in which the programme arose and was delivered, its key components, and the extent to which it fulfilled the criteria of a whole system approach (both as stated in our original review protocol and in our developing understanding based on the synthesis for Question 1). The categories under which information was extracted from included sources are shown in Table 4.

As with the process of discussion described in the quality assessment sections above, information extraction was not 'checked' in the conventional systematic review sense. Instead, information extraction from all included sources was discussed by the three reviewers (RG, MP, HH) at frequent review team meetings (conducted daily during the quality assessment and information extraction phase) in order to attain consistency in what was extracted.

Table 4 Categories under which information was extracted from included sources

Review question 1 (WSA in theory)	Review question 2 (WSA in practice)
Location of authors	Aim of study
Discipline/organisation of authors	Programme name
Focus/aim	Study design
In theory only or using examples?	Source of funding
Are metaphors used?	Location (town, area, country)
Have the authors had practical experience of a WSA approach to a public health issue? [brief description if yes]	Setting (e.g. school, community, etc.)
Do the authors provide case examples from previous experience? [brief description if yes]	Year/ timescale over which implemented
Abstract	Participants (age, gender, socio-economic status, other relevant characteristics)
What comprises a WSA? [extract key summary/ text]	Was local knowledge used in the design and/or delivery of the programme? [If so, describe]
Levels of concerns & action (community/ neighbourhood/ family/ individual)	Policy context (or other key contextual details) in which programme was delivered
Do the authors identify any barriers to success?	Barriers and facilitators to programme delivery
Additional notes	'Lessons' for the evaluation of obesity prevention programmes
-	Stated aim of programme
-	Explicit theoretical model used?
-	Describe delivery of the programme
-	Does the programme meet the criteria (interaction, co-ordination, multiple levels targeted simultaneously) of a WSA as proposed in the review protocol? [Describe, including original language used]
-	Does the programme meet the criteria of an authentic WSA? [Describe, including original language used]
-	Additional programme elements [Describe]

Note: Where quotes used Americanised spellings, these have been reproduced verbatim.

3.4.3.   Deriving theoretical perspectives about the whole system approach

Our understanding about a whole system approach developed progressively through reading identified texts and discussing them in numerous conversations between members of the research team. Once we had finalised the texts to be included and had extracted the salient content, RG drafted the section about what comprises a whole system approach in theory. MP, HH and RA read and commented on a draft of this, and MP and HH provided further suggestions from the included literature that added to, expanded or refuted information contained in the first draft which were incorporated into the next draft.   Given that the purpose of this section was to discuss a theoretical definition, the section took shape through trying to articulate the ideas presented in a comprehensive way that was relevant to the prevention of obesity. Not all texts were treated equally. Those which were found by us to articulate the theory of the whole system approach most informatively provided the bulk of the information, structure and conceptual weight in the section, while others provided supporting ideas and were given less prominence in the write up. The result is a narrative which aims to articulate understanding of what comprises a whole system approach as articulated through a systematically identified set of sources.

3.4.4.   Synthesising information about the whole system approach in practice

Differences in the way that obesity prevention programmes were implemented meant that synthesising information about these programmes was not straightforward. Moreover, we were aware that it would be inappropriate to report these programmes without preserving the context in which they were implemented. In order to best aid understanding of the individual characteristics of these programmes, whilst also allowing commonalities between them (where they existed) to be identified, we reported whole system approaches in obesity prevention programmes as follows:

1) A contextualised description of the programme, highlighting key characteristics and their relationship to whole system approaches

2) Tabulation of the *form* (programme elements such as "Safe routes to schools") and the *function* (the way in which programmes were implemented) of the programmes

3) Identification of the common elements between programmes with regard to a whole system approach.

4.   Summary of included studies

4.1.   Identified studies

Figure 5 Review flowchart

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┌─────────────────────────────────────────────────────┐
│ Total reports identified: 8984                       │
│                                                      │
│ NICE scoping searches: 208                           │
│ Bibliographic database searches: 8522                │
│ Targeted database and linked articles searches: 94   │
│ Reference list searches: 68                          │
│ PenTAG website searches: 19                          │
│ NICE call for evidence: 72                           │
│ Expert suggestion: 1                                 │
└─────────────────────────────────────────────────────┘
           │
           │       ┌──────────────────────────────────────────────────┐
           ├───────│ Reports excluded based on title and abstract: 8334 │
           │       └──────────────────────────────────────────────────┘
           │
┌─────────────────────────────────────────────────────┐
│ Reports ordered (full text) for detailed review: 650 │
└─────────────────────────────────────────────────────┘
           │
           │       ┌──────────────────────────────────────┐
           ├───────│ Reports excluded at full text stage: 608 │
           │       └──────────────────────────────────────┘
           │
┌──────────────────────────┐        ┌──────────────────────────────────────────────┐
│ Identified studies: 42   │────────│ Papers unobtainable within review timeframe: 10 │
│ Question 1: 27           │        │ Question 1: 9 (on order)                        │
│ Question 2: 15           │        │ Question 2: 1 (on order)                        │
└──────────────────────────┘        └──────────────────────────────────────────────┘
           │
     ┌─────┴────────────────────────┐
┌──────────────────────────┐   ┌──────────────────────────┐
│ Included sources Q1: 18  │   │ Included sources Q2: 14  │
└──────────────────────────┘   └──────────────────────────┘
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5. Findings, Question 1: What, in theory, comprises a whole system approach to obesity?

We identified 18 papers that informed our understanding of a whole system approach in theory. These are summarised in Table 5, which shows the title and focus of each source, whether or not practical examples informed the discussion, or whether it was purely theoretical. Table 5 also shows the results of our assessment regarding the depth of contribution that each source could make towards articulating the theory of a whole system approach (see Section 3.4.3) and therefore of how influential each source was in writing this section.

In this section, we firstly outline what this identified literature describes as some of the key features of a whole system and then go on to consider what the implications are for this way of understanding organisations and their activities for changing practice, design and delivering interventions aimed at preventing obesity. We consider the implications of the definition of whole systems for evaluating such approaches. Finally, we outline some of the difficulties that authors in this area have identified with whole system working.

Table 5 Summary of sources that informed our understanding of adopting a whole system approach (Question 1)

Author(s) and location	Title Type of document	Focus/aim of paper	In theory only?	Case examples used	Contribution understanding of WSA
Attwood et al (2003) UK	Leading change: a guide to whole system working. Book	To make the case for 'whole system development' and to improve ways of working in the public, voluntary and community sectors (including partnership working and neighbourhood governance) – and to explore 'How organisations fit to housing the human spirit can be created and sustained such that they meet the needs of communities and society at large?'	No	A number of public sector (health and community) examples from the authors' experiences of consultancy work are provided, but none relate specifically to Public Health.	High
Bauld and Mackenzie (2007) UK	Health Action Zones: multi-agency partnerships to improve health Book chapter	Outlines the key elements for the development of Health Action Zones (HAZs) and insight into the change processes undertaken, specifically what factors influenced whether HAZs were able to contribute to a whole system change to influencing the social determinants of health.	No	Some HAZs	High
Benington & Hartley (2009) UK	"Whole systems go!" Improving leadership across the whole public service system Report	To produce propositions to stimulate discussion and reform. The report was commissioned by the National School of Government and the Public Service Leaders Alliance; part of a wider group of studies into the public service leadership academies by the Cabinet Office	No	Every Child Matters agenda, Leaders in Partnership initiatives.	Low

Author(s) and location	Title Type of document	Focus/aim of paper	In theory only?	Case examples used	Contribution understanding of WSA
Berkeley and Springett (2006) UK	From rhetoric to reality: a systematic approach to understanding the constraints faced by Health For All initiatives in England Journal article	Drawing on experience of local Health For All (HFA) initiatives, European Healthy City (HC) projects and English Health Action Zones (HAZ), the authors develop a dynamic conceptual model showing how the national, governmental policy, interorganisational, organisational, and initiative environments relate with each other and their cumulative effects on initiatives.	No	Using case examples from European Healthy City projects and English Health Action Zones	Low
Dooris (2006) UK	Healthy settings: challenges to generating evidence of effectiveness Journal article	To outline the perceived benefits of a settings approach to promoting public health and consider way there remains poorly developed evidence base for effectiveness. An ecological perspective, understands settings as dynamic open systems focussing on whole system organization development and change.	Yes	Brief mentions of healthy Cities, workplace interventions, Health Promotion hospitals, and schools	Low
Edgren (2008) Sweden	The meaning of integrated care; a systems approach Journal article	To describe a systems approach in relation health care.	Yes	No	Low

Author(s) and location	Title Type of document	Focus/aim of paper	In theory only?	Case examples used	Contribution understanding of WSA
Hawe et al (2009) Canada & Australia	Theorising interventions as events in systems Journal article	To describe the context into which theorising about community interventions has been recently re-energised but still falls short of what we think is required. To examine how the adoption of a dynamic, ecological, complex-systems approach could influence research and development in community interventions.	Yes	Minor examples given – not clear if these are based on actual experiences	High
Hudson (2004b) UK	Analysing network partnerships: Benson revisited Journal article	To look at the context that has given rise to the growing popularity of networks, the rationale for a network mode of governance and the key dimensions. It suggests that a useful framework is Benson's neglected model of inter-organizational network (Benson 1975, 1982). Advantages of the model are identified and it is seen as an important way of contributing to the fashionable emphasis on "whole system working".	Yes	None	Moderate
Hudson (2004a) UK	Integrated care network – care services improvement partnership Report	To investigate taking a WSA in an integrated health and social care setting	No	Some examples around hospital admissions and discharge	Moderate

Author(s) and location	Title Type of document	Focus/aim of paper	In theory only?	Case examples used	Contribution understanding of WSA
IDeA (2007) UK	Working as a whole system: improving the quality of life for older people. The older people's shared priority Report	To describe the ways in which a whole system operates and to give examples in the context of improving older people's quality of life.	No	Older peoples services in various English City and County Councils (Southampton, Thurrock, Kent, Lancashire, Manchester)	Moderate
Iles & Sutherland (2001) UK	Organisational Change: A review for health care managers, professionals and researchers Report	To provide a resource and reference tool for the literature on change management and consider the evidence available about different approaches to change	Yes	None	Low
Information Policy Unit NHS exec (2000) UK	Working in partnership: developing a whole systems approach Report	To provide supporting advice guidance and good practice examples when adopting whole system approaches for the planning, implementation and operation of information systems and services across a health community.	No	Good practice examples given but with minor detail provided.	Low
Plsek (2001) UK	Why won't the NHS do as its told - and what might we do about it? Report	To examine the problems with perceiving the organisation of the NHS as a machine.	No	None	Moderate

Author(s) and location	Title Type of document	Focus/aim of paper	In theory only?	Case examples used	Contribution understanding of WSA
Pratt et al (2005b)/ Plamping et al (Plamping et al. 1998) UK	Working whole systems: putting theory into practice in organisations/ Action zones and large numbers: why working with lots of people makes sense Book/ Report	To offer a radical way of thinking about organisations as living systems and practical methods of engaging with complex social and organisational issues	No	The London Health Partnership (est. 1994) later Urban Health Partnership. Focus was improving primary care services for older people. Parallel programmes were started in Newcastle and North Tyneside and in Liverpool	High
Rowe & Hogarth (2005) UK	Use of complex adaptive systems metaphor to achieve professional and organisational change Journal article	To explore the issues of professional and organisational change (brought about through use of a Complex Adaptive Systems approach) in health care organisations.	No	Primary Care Trust where a pilot site to explore and implement new roles for School Nurses and Health Visitors had been established. This involved a 'comprehensive change programme', based on a CAS model of change.	Moderate
Senge (1993) USA	The Fifth Discipline: The Art and Practice of the learning organisation Book chapters	Focussed on building learning organisations that can truly learn how to tap into their people's commitment and capacity to learn at every level of the organisation.	No	Mostly business examples	Low
Stacey (1996) UK	Complexity and creativity in organisations Book	To explore how the science of complexity might provide us with more useful frameworks for making sense of life in organisations than the approaches that currently dominate our thinking and therefore our acting.	No	Examples from computer modelling but also organisational examples	Moderate

Author(s) and location	Title Type of document	Focus/aim of paper	In theory only?	Case examples used	Contribution understanding of WSA
Zimmerman et al (1998) Canada	"Tales" Book chapter	A resource book for complexity science.	Yes	Examples from US private medical centres, physician groups and (non-healthcare) industry.	Low

5.1. What are the key features of a whole system?

Key points:

- **a whole system approach shares conceptual underpinnings with complexity science and complex adaptive systems**
- **systems continually evolve, with complex outcomes arising from a few simple rules of interaction**
- **systems include formal and informal relationships or networks; these relationships are of great importance**
- **systems can exist in single or multi-sector organisations**
- **a whole system is best understood as organic rather than as mechanised**
- **authors may interpret what is meant by a whole system in different ways**

This subsection draws on the work of Butland, 2007; Hawe et al., 2009; Plamping et al., 1998; Plsek, 2001; Pratt, 2005; and Rowe et al., 2005.

A whole system approach draws on understandings of complexity science and of complex adaptive systems. These explain the ways in which key factors and relationships interact and create particular sets of outcomes. They can be used to explain current circumstances (such as how social, economic and physical changes have resulted in an obesogenic environment as described in Section 2.2 (Butland et al. 2007)) or, as we focus here, describe ways in which people and organisations, and the relationships within and between them, can be conceived.

In complex adaptive systems, while individual elements have their own identity, they are also dependent on others within the system for its maintenance and, ultimately, for their own survival, leading to complex networks of interdependent entities (Rowe & Hogarth 2005). The systems and interactions are not fixed, but continually grow, adapt, repair and evolve in response to stimuli within and outside the system. These responses may not be entirely predictable, but the system is self-regulating and follows simple rules from which ordered patterns of behaviour emerge.

Metaphors are one of the key ways of describing and understanding different models of organisational structure (Pratt et al. 2005b). In the past, organisations have often been conceived in terms of mechanical systems. This envisages the ways in which organisations behave in terms of hierarchies and linear, predictable chains of cause and effect (for example, where analysis, planning, action and review feed into subsequent cycles of activity (Pratt et al. 2005b)).   Parts (people and/or organisations) of the machine have fixed roles, where they respond to, rather than initiate, action. Consequently the ways in which such systems are controlled typically rely on top-down management systems and associated bureaucratic approaches to monitoring and control. While it is recognised that such structures may be effective at achieving goals in some circumstances, they are less effective when systems become more complex.   Such mechanistic concepts, and the resultant approaches to management, have been criticised by a number of those thinking about implementing strategies, management practice, change management and evaluation particularly when thinking about public health problems and possible methods for addressing them (Pratt et al. 2005b).

Systems thinking uses natural rather than mechanistic metaphors when trying to understand how organisations function and best ways to enhance them. Looking at an organisation or collection of organisations through this lens brings the focus, not to the formal layers of organisation, but to the informal networks or relationships within it.

> *In a living system each element is responsible for playing a part in the creation of other elements and of the systems as a whole….the ability of an element to influence the system derives from the richness and strength of its connections. (Pratt et al. 2005b) p.9*

In complex systems, very complex outcomes can arise from a few simple rules of interaction.   Table 6 shows how this and other features are considered key characteristics of a complex adaptive system. Imposing complex targets and plans for an organisation or intervention may stifle the system's adaptive ability and creativity in finding solutions (Plsek 2001).   Further, changes and effects are not necessarily linear. There may be magnifying effects from positive feedback loops, while negative feedback loops may drag the effect further away from the desired end. Effects may

be unpredictable or undesirable. Events may interact with each other in unexpected ways which may be positive or negative. Small changes can have big effects and vice versa (Plsek 2001). Importantly, recognising this can lead to new ways of trying to work with, and enhance, the properties of a system to increase positive effects.

> *A sort of positive adaptability that can occur in complex human systems is the so called "generative relationship", where interactions among parts of a complex system produce valuable, new and unpredictable capabilities that are not inherent in the parts alone. (Plsek 2001)*

Table 6 Key features of complex adaptive systems

Complex adaptive systems will be self-organising and new elements will emerge at various points. These changes may be incremental or dramatic as they adapt to reactions between subsystems and with other systems.

Uncertainty is inevitable in an evolving system, rendering top-down control impossible. The views and experiences of those at a variety of points in an organisation are necessary to gain an understanding of it.

Spontaneous change occurs more readily where there are a range of different behaviours (micro-diversity).

Agents of an organisation act according to their own internal rules or mental models. Attractor patterns within the system will "frame" or limit change.

Simple rules or guiding principles can lead to innovative emergent changes.

Change can be stimulated by the encouragement of new generative relationships. These can produce new insights and solutions to complex problems.

There will be simultaneous stability at the edge of chaos, this being a requirement for the emergence of novelty.

Source: (Rowe & Hogarth 2005)

Systems might also exist within single organisations. Systems might relate to multi-sector organisations and actors coming together to undertake a single intervention, or describe multi-sector organisations coming together to produce a programme of different interventions organised under a common purpose. Each of these systems may exist concurrently and interact with each other. Different authors may use the terminology in quite specific ways:

When we use the word "system" we do not use it in the sense of a fixed organisational structure such as a benefits system or hospital. Rather, we use it to mean something that assembles itself around a shared sense of purpose.(Plamping et al. 1998)

Despite this, there are some common features which we believe contribute to an understanding of what it means to work *with* whole system theory when considering how complex public health problems might be addressed (see section 5.2).

In considering groups and systems rather than individuals, Hawe *et al* (2009) suggest that "more is different," and draw comparisons with the different ways that physics and chemistry understand the world. While physics is concerned with classifying and understanding the behaviour of particles, at the atomic scale, chemistry is a whole different discipline because understanding the behaviour of groups of atoms as compounds requires different approaches. They contend that a similar:

fundamental shift in thinking is required in the field of change processes in human populations. (Hawe et al. 2009)

This is another area where different interpretations can lead to confusion, or simply understandings at cross purposes.

This section has outlined what the literature relates about the nature of complex systems and what this means for understanding how organisations function within themselves and with each other. The next section considers the implications of this understanding for ways of working.

Summary statement 1: What are the key features of complex adaptive systems?

Ten sources informed the definition of the key features of complex adaptive systems (Attwood et al. 2003; Hawe et al. 2009; Hudson 2004; Hudson 2004b; Information Policy Unit NHS Executive 2000; Plamping et al. 1998; Plsek 2001; Pratt et al. 2005; Rowe et al. 2005; Stacey 1996).

Complex adaptive systems thinking about how organisations act and interact suggests that:

- systems are complex networks of interdependent entities

- systems and interactions are not fixed, but continually evolve in response to stimuli

- self-regulation occurs within systems, and intense bureaucratic efforts to contain them may be counterproductive

- complex, rather than linear, outcomes can arise, with magnifying (positive feedback) and diminishing (negative feedback) impacts possible

- while some uncertainty may be inevitable, nevertheless, ordered patterns of outcomes may be seen

- formal and informal relationships make up systems and these are central to stimulating change

- interactions among system components can produce new capabilities that are not inherent in the individual components (synergy)

- where systems are allowed to self regulate, creativity and novelty may flourish.

The term "whole system approach" is sometimes used simply to describe management approaches in organisational environments where co-ordination and teamwork across multiple agencies is required. However, this approach may reflect a designed rather than the complex adaptive systems reviewed here. Designed systems use traditional mechanisms of management, organisation, regulation and evaluation.   whereas complex adaptive systems demonstrate complexity, self-regulation, synergy, and unpredictable evolution.

5.2. **What are the implications of whole system thinking for ways of working?**

Key points:

- **The implications for whole system working need to be viewed in combination in order to fully appreciate the nature of the approach**
- **A multi-level partnership approach has long been recognised as central to tackling complex public health issues – a whole system approach goes beyond this**
- **Some interventions are titled 'whole system' but do not contain the core elements of a whole system approach**
- **Whole system working requires a change in focus and an appreciation of the importance of relationships**

This subsection draws on the work of Attwood et al., 2003; Benington & Hartley, 2009; Dooris 2006; Hawe et al., 2009; Hudson, 2004; Hudson, 2004b; Information Policy Unit NHS Executive, 2000; Plsek, 2001; Rowe et al., 2005; Senge, 1993; and Stacey, 1996.

In this section we describe what the literature has to say about working with whole system thinking. We first describe how such management differs from traditional models of organisational and project management. We then outline some of the key features of this new approach: the importance of relationships within and between organisations and working with these networks of relationships; the importance of local solutions to complex problems and how national policy may usefully support these local solutions; and the nature of a "healthy" system. Within this, we also consider in some detail one source's understanding of the practicalities of enhancing healthy systems through innovative establishment of constructive working relationships that may lead to constructive local action being developed. Finally, we outline some of the implications for a whole system approach for evaluation.

5.2.1. Managing a whole system

Once complex adaptive systems inform the explanatory models for the ways in which various outcomes come about, there are implications about how to maximise ways of working within them. Indeed, working with a whole system creates a new set of priorities, away from target driven goals, and those focused on individual, short term interventions and towards a more holistic approach:

> *to develop propositions, tools and practices that aim to engage all the people in the system in designing and implementing change…..sustainable change, in contrast to that which is temporary and superficial, is only brought about by involving all those who are part of the problem in creating and implementing solutions (Attwood et al. 2003).*

Organisations conceived in terms of hierarchical mechanisms (as described in Section 5.1), require a "system controller" to set goals, lead implementation and to monitor progress. The emphasis is on top down approaches, increasing inspection and control (Attwood et al. 2003). It is noted that this can be particularly inappropriate in situations where collective goals are less well defined, the time frame is long and the behaviour required to produce solutions is less knowable (Hudson 2004b). For example, we would suggest that while the ultimate methods to prevent and reduce obesity are apparently simple at the individual level (expend more energy, consume less energy), the actual ways of facilitating this at the social level are potentially myriad and, as yet, largely unknown. Time frames for change are also likely to be lengthy, especially for the impact of interventions for children and where structural changes are made.

Organisations conceived as systems demand facilitative leadership that encourages creativity, and which relies on the coordination of strategies from actors with different goals and preferences around a particular problem (in this case obesity) within existing networks of organisational relations (Hudson 2004b;IDeA 2007). Change is provoked by attempting to increase the possibilities for the system to adapt, and facilitating the development of multiple new relationships within and between systems, rather than by developing detailed plans and instructions for action (Rowe & Hogarth 2005). Leadership is based on recognising the inherent effort, ability, creativity and work-ethic of people working in an organisation (what Attwood (2003) refers to as

"theory Y assumptions") and facilitating their achievements.   In particular, this encourages engagement and involvement between different people in the systems, rather than dominance (Attwood et al. 2003).   This also involves encouraging full exploration of problems and existing approaches before developing possible solutions (Benington & Hartley 2009).

Attwood *et al* go as far as to call traditional ways of managing organisations as exhibiting "mad management virus", (the antithesis to a whole system approach) which operate under the belief that top-down targets and inspection are the 'big' solution to ensure the effective delivery of services. These exhibit:

> *… the promise of a simple way to control delivery outcomes from the centre …. Its ability to worm its way into the operating system damages the genuine efforts of organisations, communities and individuals to improve the way services work on the ground.* (Attwood et al. 2003)

As well as operating in the belief that such top-down controls are effective, and that more inspection and control will ensure even better outcomes, such a view is seen by Attwood et al as denying that there are ever unintended negative consequences, or that such approaches can have an negative effect on staff moral and levels of trust.

Plsek uses a metaphorical example to illuminate this conflict for those planning to launch interventions into a complex adaptive system.   Health systems and the interventions within them, he suggests, are like throwing a bird, rather than throwing a rock. While launching a rock will result in predictable trajectory and landing point, no matter how much analysis is done in developing the launch plan for the bird, it will ultimately follow the path it chooses and land where it wants. It does not follow from this that we should attempt to make the bird more rock-like.   "Natural attractor patterns" exist in complex systems and much apparently complex bird behaviour revolves around a few simple natural patterns of action. If this is understood about the system, we can attempt to link natural patterns (such as the bird's desire to be in a birdbath) to the advocated changes (Plsek 2001).

Using a different, but parallel analogy, Attwood et al think about leadership in a whole system approach in terms of a jazz band, where an emergent direction, rather than a fixed score, directs play. Members of the band may operate both as a collective, but

also take the lead when circumstances demand. Difference and diversity are valued in different performers within the overall identity of the group and individuals are flexible enough to work together while retaining these separate identified. With this also comes the possibility of discord, as well as harmony. Players are responsive to other band members or external influence (like the audience). The result is that "from diversity and autonomy, within the bounds of a shared mission, come creativity and effective performance in pursuit of common aims." (Attwood et al. 2003)

Several authors seem to suggest that particular problems arise where the movement towards systems thinking has been partial (Dooris et al. 2007;Hawe et al. 2009;Hudson 2004b).

> *What is noticeable about the whole system debate in the UK is the complete absence of any theoretical underpinning…[it] tends to be treated as conceptually self-evident and readily available for operational use…..and can end up with ideas about "the system" being no different to traditional approaches to joint-working (Hudson 2006).*

As previously noted, the need for partnership working between and across sectors and organisations to address complex issues is far from a new idea. The importance of addressing "wicked" issues (see glossary) such as obesity through the involvement of many different partners from across statutory, voluntary and commercial sectors is widely recognised. In addition, partnership working and extensive collaboration is viewed as an essential part of this process. It has been noted that policy makers are often impatient with the time genuine partnerships can take to emerge, and have sometimes reverted to top down processes through compelling the formation of "mandated partnerships" which then need to be managed through increasing bureaucracy and hierarchy (Hudson 2004b). Arguably, these are not genuine partnerships at all, but groupings enforced by traditional top down hierarchies. Systems working would change this;

> *partnership through hierarchy, to partnership through network (Hudson 2004b)*

Such mandatory participation runs the risk of lip service being paid to participation by the organisers and lip service to the propositions by the proposed participants. There can be

Tyranny…in the assertion or creation of consensus. (Green et al 2000, quoted in (Dooris et al. 2007))

Organisations have also sometimes embraced complexity as an *explanatory* concept, but failed to take on board the implications for necessary *responses* to these complex problems, and so have not begun to try and work consciously with the systems of which they are a part, in order to address such problems.   An intervention with "multiple strategies directed at multiple levels e.g. child + family + school or possibly, worker + workplace + community" comes to be seen as taking a systems approach, while little theory is put forward about *how* these levels impact on the intervention itself, the way it unfolds or its outcomes" (Hawe et al. 2009).   Instead, with an organisational or public health systems response which recognises the need to work with the prevailing systems:

Change would be provoked, not by detailed plans and instructions, but by attempts to increase the possibilities for natural adaptation. This is encouraged by use of appropriate stimuli to increase creativity at all levels of the organisation and the creation of more flexible organisational arrangements. (Rowe & Hogarth 2005)

Where the nature of the system is not acknowledged from the beginning, the fact that the system will tend towards self-organisation may work to negate the efforts of organisations to control them (Hawe et al. 2009).   Target setting in one part of a system, for example, can have negative knock on effects in another part of the system.   Contradictory and potentially self-defeating approaches may emerge (Plsek 2001).   It has been suggested that recent moves towards decentralisation have magnified these tensions:

[T]he attachment of politicians and policy makers to the rational top-down implementation model has been unrealistic at the best of times, but there is now a new context which makes it even more elusive…..the shift "from government to governance" – the replacement of a strong unitary state with a strong executive, but the hollowing out of the state, in which government has reduced capacity to steer.   The new agenda requires what is generically termed "partnership working" between a wide range of participants in the statutory, private, voluntary and informal sectors in order to address the long term and ostensibly intractable

problems confronting modern societies. In the UK, politicians and policy makers have grown impatient with the slowness of addressing such issues, and have – in line with the top-down perspective – taken the view that "mandated partnerships" are necessary. Hence in a range of policy areas, a stream of legislation, guidance and regulation has been directed towards the idea that the centre can compel the creation of partnerships at local level – the creation of partnership by hierarchy.(Hudson 2004b) (p.76)

Similarly, there are some approaches which are labelled as "whole system working" but which would not be considered to be "authentic" whole system approaches, because they reproduce precisely these hierarchical, bureaucratic, highly contained and monitored mechanisms.

An example of this can be seen in the 2000 publication from the Information Policy Unit in the NHS *Working in partnership: developing whole systems approach* (Information Policy Unit NHS Executive 2000). This sees systems working primarily in terms of "big picture" thinking, trying to work across complex organisational environments and assessing the links and relationships between them. However, recommendations for such joint working remain entrenched in systems of management and control. Thus partnerships can be mandated and organisations are not allowed to opt out, alliances are formalised and performance management is key. Although some key aspects, such as the need for cross organisational respect, do align with other descriptions of whole system working, there are no proposed mechanisms for facilitating these, and indeed the existence of bureaucratic methods of controlling these partnerships may work against them (Information Policy Unit NHS Executive 2000).

As discussed in Section 3.3.2.1, this was also our initial miscomprehension, with our original conceptual framework assuming that by extensively listing "key" partners and activities we would be able to map what the whole system to prevent obesity would be. However, the reviewed literature suggested that key changes in *how* things were done, rather than *what* was done, are more important to understanding a whole system approach.

But what does this all mean for the actual practice? The following sections illustrate the change in focus that whole system working requires.

5.2.2. The importance of relationships

A central concern of systems working is to harness and facilitate the power of individual and organisational relationships between those working within a system and this was supported by many of the texts read for this review (Attwood et al. 2003;Hawe et al. 2009;Plsek 2001;Pratt et al. 2005a;Pratt et al. 2005b;Stacey 1996). While a traditional understanding of organisations tends to legitimise only the formal networks of relationships within organisations, whole system thinking also focuses on the informal, "shadow" networks (Stacey 1996) (further implications about thinking about networks and network theory in relation to systems are considered in more detail in Section 5.2.3).

> *Most knowledge is highly localized within a system, especially tacit knowledge, and improvements in efficiency and effectiveness require this localized knowledge to be joined up between and within organisations. (Hudson 2004b) (p.79)*

Moreover, no one person has all the answers, with solutions developing through access to as much tacit and formal knowledge as possible through relationships within and between organisations, and a recognition that answers are always subject to alteration and improvement (IDeA 2007;Senge 1993).

Social relations themselves make up the systems and Hawe et al suggest that interventions can be seen as

> *ways to create new roles, to elevate particular symbols, to bridge structural holes within and between networks and to increase the opportunities for interaction and exchange. (Hawe et al. 2009)*

New roles may be created through adopting new responsibilities, for example, in order to communicate health promotion information. Through this, new relationships may be formed and with them, new meanings are created (Hawe et al. 2009).

Within such relationships, the "entangling strings" (Stacey 1996) of reputation, trust, friendship, inter-dependence and altruism become an integral part (Hudson 2004b;Stacey 1996). Authors have also considered the development of "cooperation, altruism, loyalty and solidarity" as key (Hudson 2004b). It has been noted that

difficulties can arise where there are territorial or "tribal" claims of a phenomenon by particular groups or organisations and methods such as those proposed by Pratt et al need to find ways of alleviating these as well as the impacts of sex, gender, race, class *etc.* on interpersonal relations (Hudson 2004b).

> *Partnerships are relationships, and relationships are inevitably about power and control, but they are also to do with dialogue, negotiation, and the development of shared perspectives.(Popay & Williams 1998)*

Peer led interventions and peer-education can be seen in this context as a way to increase the credibility of those involved in the eyes of the citizens with whom they are working (Hawe et al. 2009).

While Pratt et al concentrate on ways of bringing together people in the system to explore problems and produce local solutions, Hawe et al also suggest that other "settings" may be created, including interventions, which can be harnessed through systems thinking. "Settings" are "time and space bounded patterns of behaviour" which are either location bound (schools, workplaces etc.) or activity focused (sports games, meetings etc.). Dooris (2006) also focuses on the relationships between systems thinking and settings, by which he means interventions which are aimed at enhancing the healthiness of the specific places of people's everyday life – schools, workplaces, neighbourhoods and so on. These are themselves complex systems, which also function as part of a larger whole "an open system with synergistic exchange with the wider environment" and with other settings within this (Dooris 2006). It is noted however, that interventions which introduce a single focus into a particular setting (such as smoking prevention in schools) are often just perpetuating individually targeted risk reduction strategies in a particular setting (Dooris 2006). If obesity prevention were to adopt a settings approach, we suggest this may involve using systems understanding to take a holistic view to creating healthier opportunities and environments in settings such as schools or workplaces which focus on an holistic view of health promotion:

> *integrating a commitment to health within structures, processes and routine life of organizational and other settings. (Dooris 2006)*

Increasing opportunities for healthy eating and active travel, for example, could be part of a broader emphasis, which could also wish to tackle stress reduction or smoking cessation or other issues of concern in the particular location, such as a workplace.

With such potentially nebulous and personal characteristics occupying a central role on the creation of healthy systems, there needs to be a focus on *how* to facilitate the development and maintenance of such relationships (Hudson 2004b).

A key text for us was the book about *Working Whole Systems* by Pratt et al (2005) which, although strongly theoretically grounded in complex adaptive systems theory, focuses on practical ways of enhancing people's understanding of being part of a wider system in order to facilitate local solutions to shared concerns. While other texts about systems working share a concern with enhancing networks of people, developing trusting, productive relationships between individuals and organisations, and so on, few offer as much detail about the processes that might be used to achieve this in practice. The book particularly considers ways of bringing people together, often in large meetings, to produce shared understandings which are crucial for effective systems working. They refer to these as "events" in the system but have echoes of "settings" as used by Hawe et al. For Pratt et al, meetings are settings which build new connections, relationships and possibilities that enable creative development of new approaches. We reproduce the ideas from this book in some detail below in order to show the interconnected way which the authors consider key characteristics of whole system working to behave. It also gives a clear illustration of the fundamental way in which thinking about working within a whole system differs from traditional ways of thinking about delivering multiple, complex interventions across multiple sectors.

Pratt *et al*'s nine key characteristics of whole system working are:

- Meaning

- Many perspectives

- Here and now

- Passion

- System that knows itself

- Trusting local resourcefulness

- Meaning

- Participation

- Patterns of order

- Web of connections and communication (Pratt et al. 2005b)

Although these are described sequentially, they are diagrammatically presented by the book in a wheel "to allow us to pay attention to one aspect at a time while keeping awareness of the whole" (Pratt et al. 2005b). We describe these aspects in some detail here as they need to be considered together, as interacting and holistic approaches, and because we found this book particularly useful for envisaging how whole system theory could be used in working practice.

The authors largely base their understanding of the practicalities of whole system working on a drive to improve older people's services that was undertaken by the Urban Health Partnership in various English locations in the mid 1990s. The programme recognised at the outset that 'quick fixes' to address key issues (such as mental health services, overnight care, and care for vulnerable older people) were highly unlikely. It was acknowledged that innovation, not just novelty, would be important for implementing sustainable changes that addressed these issues. The work involved health agencies and local partners in housing, local government, transport, the police, the independent sector and local people. The following section outlines Pratt et al's proposed way of working with a whole system.

Meaning

Human systems come together around shared purpose and meaning.

Whole systems working brings to the surface and makes available shared purpose and meaning. (Pratt et al. 2005b) p.18

Pratt et al use the word "system" to describe the people and organisations who come together around a shared purpose. In this programme of work it would describe the systems consisting of, and created by, a desire to prevent and reduce obesity. Meaning is built from understanding shared purpose ("what?") and meaning ("why?"). Unlike top down processes where such meaning may be captured in a mission statement which people are encouraged to sign up to, there is no "top" in a network, requiring meaning to be revealed in other ways. This requires working in ways that allow everyone to participate in finding common ground. In particular, the authors suggest opening dialogue to explore assumptions and uncover new views, in particular through sharing stories of experiences which allows all to participate on an equal footing. They particularly note that there is a temptation to jump too quickly to problem-solving, and urge that as much time as possible is spent exploring purpose and possibilities and avoiding moving to quickly to provide "solutions" based on an *assumed* concurrence about what the problems actually are (p.19). Discovering areas of shared purpose may mitigate against the tendency for those from different organisational cultures or professions to privilege their own viewpoint. Moreover, developing a sense of purpose helps people to (re)connect with their passion for working in the area.

System that knows itself

> *If human systems know something of themselves as a whole within their environment they have new opportunities.*

> *Whole systems working is an approach that enables people to recognise something of the human systems to which they belong by virtue of their commitment to a shared purpose. (Pratt et al. 2005b) p.22*

Pratt et al note that people are members of lots of human systems, though may not recognise that they are. When this recognition occurs, together with a sense of the system's purpose and boundaries, and the repeated interplay of intentions and actions, change becomes possible and new possible actions emerge. This taps into the way in which systems continually reorganise themselves.

> *Human systems are about behaviour, the dynamic, circular, repeated patterns of connections and communication that allow us to adapt and evolve. What matters*

is how the people who are parts of the system connect, act, behave and contribute to purpose. The system is best described by its behaviour, rather than its people. (Pratt et al. 2005b) p.22

Recognising that they are part of the systems that they create, potentially unlocks the ability to adopt new ways of relating to and working with other members of that system.

Many perspectives

Living systems contain elements each with their own identity which contribute to the identity of the whole. These separate identities provide the variety and overlapping capacity necessary for adaptation, giving more choice, and less risk of failure for the systems. So in human systems, many perspectives provide an essential resource facilitating adaptation. Whole system working practices seek to find approaches which exploit such a variety of perspectives, through facilitating the sharing of diverse experiences. In particular, they encourage active participation of lay members and work to defuse any existing bad feeling between organisations and groups of people through sharing perceptions and working towards "a shared experience of listening and being listened to" (ibid. p.26).

The authors describe finding constructive ways of working with diversity as "one of the most significant aspects of whole system working." (ibid. p.29). In obesity prevention, we suggest that careful consideration needs to be given about who these "lay members" might be.

Once it is clear that there is a system-wide issue (i.e. not a problem that would be better dealt with by an individual professional or one agency) and that the system wants to tackle it (i.e. not just one particular profession or one agency), then the language which is used to describe the issue becomes critical, because that is the way people recognise whether….. they are part of the system.(ibid. p.29)

In the context of this programme of work on obesity, we think that there may be particular issues around how the groups are "badged", since obesity prevention has many cross over points with those interested in promoting healthy living through

increased physical activity and healthy eating, but which people may come at from many different places – including increasing fitness through physical activity, preventing heart disease, cancer or diabetes, encouraging outdoor play in children, increasing active travel options and so on. Those citizens who might be constructive "lay members" to be involved might be similarly varied; for example, those with an interest in improving cycle lane provision, parents of school children, those with an interest in local food, allotments or community gardens, amongst many others who might all be potential "lay members". Further, these people need to be found in the local area (system) itself, rather than prescribed.

Finding the right people to join in is critical, and there needs to be a sufficient mix to support new connections, combination and possibilities (ibid. p.29). The authors suggest that, whether groupings are small are large, diversity is key, as it allows those in the system to discover new assets and perspectives. They suggest the following will always be required: different levels within and across organisations (frontline staff, directors of strategy, clients, board members middle managers); people who know "how to connect", and are interested in doing things differently – those whose support makes it more likely that others will follow as well as those with formal power; lay people or clients (a suggested 20% of those involved should fall into this category); people with continuing relationships and repeated interactions who are committed to future interaction. (p.29)

Participation

Each person and organisation in a system plays their part, and needs to do so directly. Interestingly, Pratt *et al* suggest that everyone should be asked to participate in events as an individual, rather than as a representative of an organisation, community or profession. The purpose of this is two-fold. Firstly it allows people to hear criticisms of their organisation or profession without feeling that past behaviour of that organisation needs to be justified. Secondly, it requires people's commitment to any actions to be personal, not institutional. They can only agree to what it is in their power to deliver. If something is needed, they can only take requests back to the relevant people or parts of their organisation, but cannot commit to delivering something not in their power. This taps into informal/"shadow" networks rather than formal ones and allows people to recognise how they are in interdependent

relationships within the system, acting as co-producers of new solutions to local concerns. If someone who is needed to take action is not there, they can be seen as crucial part of the system and efforts can be made to engage them for future events.

Web of connections and communication

In human systems, in common with living systems, parts are responsible for contributing to the function of other elements as well as fulfilling their own function. Whole system working "reveals and supports networks of connections and the communications that sustain them." (ibid. p.35)   Building networks of personal connections is an essential part of the job in whole system working. Communication needs to circulate, like feedback loops, as the capacity to get things done is widely distributed.   Positive connections and relationships can grow from repeated opportunities to share experiences and explore collective meaning. In practice this gives people a better sense of who is in the system and with who they could contact about particular needs or concerns. Pratt et al believe that small considerations, such as ensuring that groups of people meet each other at round tables and limiting the size of groups, can make a real difference to generating a sense of being part of "all being in this together" (p.36) across different levels of same organisation as well as across different organisations. It also allows people to see how they can contribute to the functioning of other parts of the system.

Trusting local resourcefulness

As described in section 5.1, the living systems metaphor has implications for the way in which activities are developed and undertaken. As living systems have the capacity to adapt within their environment, so human systems too have the capacity to adapt and change and do not depend on external design and control (as envisaged by a mechanistic understanding of organisations).   Whole system working uses this ability, and trusts that local people, groups and organisations can be sufficiently resourceful to adapt appropriately without the need for external design. The system will order itself around shared meaning and purpose produced within the system itself.

Enhancing connections and communications between people helps the system to recognise the capacities available within the system and to plan how they can be used. It is suggested that this also helps to develop the capacity of people to manage

their own activities. In addition, involving users may allow the small differences that could make a big difference to individuals' experiences to be heard and responded to. This allows the easy problems to be solved, rather than only focussing on the big, and difficult things.

Allowing people to come together in the ways described above is thought to enhance their ability to recognise the collective knowledge and expertise within the system. However, these new activities also need the active support and encouragement from those with financial, managerial and organisational power if they are to continue.

Passion

Systems require energy to sustain themselves, and more if they are to change. Working with whole system is an approach that aims to release "energy" in the form of people's passion and enthusiasm:

> *It is energising when people are able to work on something they care about, and when they find others care too. (ibid p.46)*

This means that bringing people together must rely on their own interest and that they can self-select to take part in things they care about.

In contrast to many meetings of formal networks which deem only certain kinds of evidence as legitimate (such as quantitative data, analyses and abstractions) these meetings of informal networks seek out stories and anecdotes from those involved. In addition, complex problems can be explored without rushing to offer solutions, which many find liberating.

Here and now

Pratt et al suggests that systems operate "in the here and now", with many interactions and processes taking place simultaneously. This can look messy compared to planned, sequential processes but working in the here and now gives people enough time and space to establish shared purpose and meaning and become aware of themselves as part of a system. This allows them to subsequently act together, or alone, in ways that support this discovered shared purpose. The authors contrast this function with many formal meetings, noting that

in inter-agency working in particular, the number of meetings to coordinate activity can develop into a vicious spiral and the accompanying busyness makes it harder to arrange meetings and essential to keep them as short as possible (ibid. p.49).

By contrast, groups of people coming together within the whole system approach use meetings as the places where important work takes place – relationships are forged, understandings are shared and, ultimately, innovative possibilities for action can be developed.

Patterns of order

Living systems are highly complex, yet stable patterns of order do emerge, without recourse to external design and control. They emerge from repeated application of a few rules (ibid p.50.)

Pratt et al suggest that a few principles that guide human behaviour create coherent patterns of order, and that people can choose to change these principles in the ways that have been previously described. The authors draw a distinction between "control" and "order", with order being about pattern, rather than detail, and representing the system when everything is in its proper place performing its proper function.

We have reproduced the ideas from Pratt et al in some detail because they give a flavour of the way in which working practices might respond to trying to work with a whole system approach. This clearly illustrates the concerns that drive such an approach. There are other ways of thinking about these key features and, indeed, Pratt et al supply a related, but different list of "significant features" which are reproduced in Table 7.

Table 7 Significant features of whole system working

Feature	Explanation
Expertise	Everyone's expertise is used and people participate as individuals not as reprsentatives
Diversity	We work with multiple perspectives as an asset, a resource to the systems
Lay people	Significant number of lay people are involved at every stage and their voice helps professionals hang on to a sense of "the whole"
Personal experience	Meaning and purpose are hard to get at when the process starts in discussion of abstractions, so meetings that get at meaning use stories and personal experience
Recognise the system	Work in ways which enable a local system to "know itself"
Time	Sufficient time to explore purpose is required
Asset based	Start from capacities and possibilities rather than deficiencies and trouble shooting
Logistics	Pay attention to detail
Conversation	Make constructive use of conversation and dialogue rather than formal speeches and presentations
Public listening and recording	These matter when people are trying to share meaning and experience so we pay attention to microphones, acoustics, wall space etc.

Source Pratt et al 2005.

Other authors construct similar lists of core values for whole system working that largely overlap with this approach. For example, the ten "key principles" listed by Attwood et al (2003) are shown below (Table 8).

Table 8 'Key principles' of a whole system approach

Priniciple	Explanation
Optimism	People and organisations have the capacity to learn and the commitment to tackle dilemmas and intractable 'problems'
Empathy and humility	In the face of the tough challenges faced by those who are charged with, or voluntarily take on, a whole system development agenda.
Tenacity and courage	To question assumptions and current ways of working
Learning	Putting learning at the heart of what we do and a recognition that it is as important to honour what is and what works as it is to encourage new ways of thinking and acting
Relationships	Relationships that are founded on the pursuit of mutual understanding and preparedness to negotiate, share learning and experience from elsewhere and working through problems.
Whole system perspective	Resisting fragmented and 'one size fits all' approaches and seeing organisational and community issues within the wider environmental context.
Local knowledge for local solutions	A bias towards the use of local knowledge, held by individuals, communities and organisations, to create locally invented solutions.
Building social capital	An active appreciation of the personal qualities and experiences of the people with whom we work and a determination to involve them in designing processes that will strengthen learning and build capacity and social capital.
Celebrating small steps	A welcoming of the small improvements that demonstrate the practical possibilities and potential for learning in whole system development.
The long view	Being there for the long haul rather than the quick fix.Meaning and purpose are hard to get at when the process starts in discussion of abstractions, so meetings that get at meaning use stories and personal experience

Source: Attwood et al 2003

We note that there are many overlapping understandings and approaches in this article which echo the approaches described by Pratt and can be seen in the data extraction tables in Appendix 5 (p.157).

5.2.3. Working with local networks

The relationships between those working in an area as considered above, form networks of influence and engagement within the system. One of our sources notes that

> *The role of local networks in implementing national policies remains little understood or researched. (Hudson 2004b)*

He uses Benson's model of inter-organisational networks to understand key network relationships and attitudes which may be used to understand the "health" of networks. This model responds to the holistic and dynamic nature of system thinking itself:

> *Parts mesh together to form a holistic framework rather than a mere checklist of ingredients…..It avoids simple "do and don't" scenarios in which services are seen as acceptable or unacceptable…..offers a health check on the state of inter-organisational network relationships. It is a dynamic framework, capable of capturing change, and one that makes no assumptions about a network "cycle" or "journey." (Hudson 2004b)*

Hudson describes four domains among which equilibrium is required in healthy networks and systems at the local (provider) level:

- Domain consensus,

- Ideological consensus,

- Positive evaluation, and

- Work coordination.

Domain consensus, refers to the degree of agreement about the appropriate role and scope for each agency in the system.   This is enhanced where members of the network have a sense of themselves as a whole, inter-dependent system without

which collaborative problem solving makes less sense (Hudson, 2004). This chimes with Pratt et al who also highlight the importance of self awareness within systems (Pratt et al. 2005b).

Ideological consensus, refers to the degree of consensus about the nature of the tasks faced, and the most appropriate way to approach these tasks. Hudson suggests that expectations can become convergent through processes of socialisation between network members. Pratt et al offer some ways of thinking about how this might be achieved in practice. As members become more familiar with others, the opportunities for shared values and understandings increase, as do the social constraints associated with increased feelings of familiarity, trust and respect (Hudson, 2004). Again, this echoes the understandings described by Pratt et al, about creating shared meaning through developing understandings of each others' role, perspective and expectations.

Hudson also identified structural embeddedness, in terms of the ways in which an issue is accommodated and prioritised within the system, as crucial in this development of ideological consensus, a key consideration in most of the literature about how to think about successful systems. However it is noted that the time frame for developing such embeddedness may be measured in years rather than weeks.

Positive evaluation. This refers to the ways in which members of one organisation regard each other. Positive, trusting evaluations of others are vital. These may be enhanced through "regular personal contacts across organizational boundaries". Again, this finds resonance with thinking about the development of positive relationships encountered in other writing, with Pratt et al offering possible mechanisms to achieve them.

Work coordination, refers to the alignment of working patterns and culture. This is noted as particularly important with the increasing complexity of tasks which requires simultaneous, rather than sequential activity (as will be the case with multiple activities in local obesity prevention strategies). Hudson notes that it is often a challenge for professionals to be managed by other parts of the system, and may be unwilling to subordinate their views to those others, and this is echoed in other papers, again, Pratt *et al* offer some suggestions for addressing these concerns.

In the context of Health Action Zones (HAZ), Bauld and Mackenzie also consider local factors which helped to support the whole system HAZ activity in a book chapter (Bauld & Mackenzie 2007). Although the HAZs varied in the focus they took and their willingness and ability to work with whole system approaches, the key role of the initiative was to embed public health and inequalities agenda within health and local authority planning and reduce inequalities in health through "developing collaborative capacity within partnerships and communities [to] create momentum for sustainable whole system change" (p.133). This focus on capacity building, partnership and sustainability of systems accords with whole system thinking, and the analysis by Bauld and Mackenzie uses this lens to inform their assessment of more and less successful HAZ approaches.

Local factors impacting on the success of HAZs were considered in the three key areas of strategic development, approaches to evaluation and learning and mainstreaming. They noted that some local level factors help to sustain local strategic development even where the national picture was changing, these included strong local leadership, purposeful efforts to develop local collaborative capacity (including, in some cases, investing in this process in its own right), strategic approaches to investment, and a strategic commissioning approach rather than funding a myriad of projects through bidding processes (Bauld & Mackenzie 2007).

As stated above, whole system working, learning and evaluation become centrally important as ways in which the system regulates itself and adjusts to changing contexts. The authors found that, locally, there were varied commitments given to learning as a process in the system and that this expressed itself in the different approaches taken. Some relied primarily on monitoring procedures, but others, more fully adopting the whole system understanding, made efforts to build in learning at a project level or even developed strategic frameworks at the beginning of and initiative that allowed them to integrate learning generated at different levels (Bauld & Mackenzie 2007).

Finally, there were different approaches to trying to mainstream initiatives to enhance sustainability. While some HAZs planned for this from the beginning, others only responded reactively when it became clear that national funding streams would not continue indefinitely. In addition, some strived for policies and practices to be

sustained (indicating healthy systems), as well as individual projects, and generally, these HAZs reported greater success. Finally, some HAZs took a dynamic view of partnerships and so expected and planned for organisations to always be in a state of flux, and that renegotiating approaches was "an integral part of systems change." These organisations and partnerships were able to respond more creatively to the challenges of changes such as new governance arrangements than those that saw such change as threatening existing approaches. This analysis by Bauld & Mackenzie suggests that those HAZs which used a WSA, prioritising learning and adaptation, working with the system, capacity building, and planning and mainstreaming, were more successful overall.

In addition to those network factors at the local level where actions, services and interventions are delivered, Hudson suggests that policy networks also interact in complex and dynamic ways. Policy networks are conceived as "a cluster or complex of organisations connected to each other by resource dependencies, and distinguished from other clusters or complexes by breaks in the structures of resource dependencies."(Hudson 2004b) Again, four key policy network areas are described which are crucial to the successful development of whole system approaches;

Fulfilment of programme requirements Agencies are likely to be reluctant to undertake tasks that interfere with the fulfilment of present programmes, the threat to which may either be top-down pressure, to deliver targets and priorities identified by local policy network partnership or where objectives of parent agencies are at odds with the understandings of partnership.

Clear domain of high importance this refers to the policy network's needs to ensure that the agenda of partnership carries public legitimacy and support.

Reliable patterns of resource flow (although possible that if this becomes a prime goal, those not in control of large budgets become devalued)

Application/ defence of the organisation's paradigm the extent to which individuals view themselves as working for the network rather than as a representative of a constituent organisation

5.2.4.   Local solutions to complex problems

Whole system working focuses on the ability of local action to find creative solutions for local problems. Broad areas for required activity of focus can be agreed, but the local way of approaching these relies on local networks, organisations and individuals to creatively address those issues. Attwood et al suggest that systems approaches aim for "equifinality", where different, but equally valid, paths can be taken which lead to the same place. The suggestions for enhancing relationships in Section 5.2.2 have this at their heart, since enhancing relationships is a central tenent of encouraging creative local solutions.

5.2.5.   Relationships between national policy and local action

Complex systems and networks are considered to be largely self-regulating. As such the role of national bodies recedes to a certain extent.

> *The state can steer them by a variety of incentives and sanctions but cannot totally control them. (Hudson 2004b)*

On the other hand:

> *Without shared (global) meaning individuals would not be able to organise their (local) work in a way that is both flexible and in tune with the system as a whole. (Pratt et al. 2005b)*

So there need to be ways of national conditions facilitating self-ordering responses at a local level, without over bureaucratisation. Over specification and detailed plans may actually stifle creativity towards meeting the overarching goal while complex outcomes may emerge from minimum specification that aligns values and meaning for those working towards solutions (Plsek 2001;Rowe & Hogarth 2005).

As well as the local conditions outlined above, in the context of Health Action Zones (HAZ), Bauld and Mackenzie (2007) noted a number of ways in which the factors at the national level could support local activities. Again, Bauld and Mackenzie identify three areas central to the whole system approach: strategy development, approaches to evaluation and learning and mainstreaming. In terms of strategy development,

three factors at the national level affected the ability to develop and implement local strategies:

The extent to which the national policy was conducive with approaches that HAZs wished to adopt.

Whether there was stability of intent in relation to the HAZ initiative.

Whether political leadership remained focused on the goal of tackling health inequalities.

In practice for the HAZs, these were disrupted by a change in ministerial leadership for health and the subsequent shift to modernisation agenda which moved away from seeking bottom up, innovative solutions to local problems and towards achieving national targets (Bauld & Mackenzie 2007). This was seen as stifling innovative agendas, as well as stimulating local scepticism that the resultant monitoring goals, performance indicators and outcomes were useful in understanding programme intent or progress locally. This suggests that the whole system thinking which informed initial purpose and processes for the HAZs was compromised by a return to mechanistic methods of managing them.

while good planning is important and support for planners required…there is something about the inherent complexity of multi agency solutions to problems that is inimical to detailed specification of programmes at the micro level. (Bauld & Mackenzie 2007)

National level commitment to evaluation and learning within and between the HAZ was seen as supporting this function, facilitating collaboration between national and local level evaluation through sharing tools and approaches and funding a web based system to promote such learning as well as funding local research (Bauld & Mackenzie 2007).

Bauld and Mackenzie also consider how national level factors affected the HAZs' ability to become sustainably mainstreamed. Firstly, gaining support from local partners was compromised by the message that national funding would not continue as originally planned and by the development of new policies which absorbing government energies away from the HAZ. In addition, organisational developments

across both local authorities and primary care (two of the key partners in the system) threatened to marginalise HAZs. Finally, since decisions about future funding were taken prior to completion of the national evaluation, commitment to mainstream policy learning was questioned (Bauld & Mackenzie 2007). These illustrations from the HAZ suggest ways that national policy, whilst maintaining their focus on a broad remit, can help to support local activities.

5.2.6. Healthy systems

The shift to systems thinking places the emphasis on the robustness and sustainability of the system itself, rather than focusing on individual actions or interventions. Hawe et al (2009) consider the impact of adopting a complex systems approach on the way in which projects or interventions within that system are conceived.

> *Conventional thinking about preventive interventions focuses over simplistically on the "package" of activities and/or their educational messages. An alternative is to focus on the dynamic properties of the context into which the intervention is introduced. (Hawe et al. 2009)*

Other authors agree that working with systems means going beyond looking at:

> *a series of project based interventions. Working at the systems level means that existing systems and interactions are permitted to develop, change, grow over time (Pratt et al. 2005b)*

Further, Hawe *et al* go on to suggest that some methods for trying to manage and evaluate the impact of interventions, including theories of change, intervention mapping and theory based interventions, only partially move towards understanding the implications of complex systems. Whilst they may enhance the precision and detail about what happened as part of an intervention,

> *it could be argued that all that has been achieved is more meticulous ways of doing the same thing….what Henry Thoreau has described as "improved means to unimproved ends" (Hawe et al. 2009).*

They argue that a far more fundamental shift is required, based on interrogating the theory; in their case, what they describe as taking an "ecological systems view". In this approach, organisations *are* environments; they are settings in which actions occur. Significantly, though slippage in the language may lead multi-level/ multi-factor/cross-sector interventions to be described as "complex":

the most significant aspect of the complexity possibly lies not in the intervention per se (multi-faceted as it might be) but in the context or setting into which the intervention is introduced and with which the intervention interacts. (Hawe et al. 2009)

Pratt et al similarly note in relation to the examples they suggest about enhancing ways of working through whole system thinking:

None of the examples in this book describes single massive impacts....they describe details, particular meetings and specific action. But each of these is a part of a discernable pattern of:

- Changing connections and access to relationships

- Generating new flows of information

- Explicit working with shared meaning and a sense of "why we do things around here"

The overall effect is substantial....It seems that the most significant impact of whole system working is on the "health of the system." (Pratt et al. 2005b).

Such ideas place less value on the outcomes of any particular activity. Rather they value enhanced system robustness, creativity and sustainability. Attention is shifted away from the short term results of discrete interventions, or even combinations of activities and instead, they value the ability of local people and organisations to work together in the long term to try and find ways to enhance the local environment into the future. This means that specific interventions can produce uncertain results, or even fail in the short to medium term, but this is less important than the ability of the local system to respond to this changed environment, and produce new approaches.

We propose that a useful new heuristic in intervention research is to think of interventions as events in systems that will either leave a lasting footprint or wash out depending on how well the dynamic properties of the systems are harnessed. (Hawe et al. 2009)

Ultimately, there are a myriad of instances occurring at different levels in local communities that help to produce an obesogenic environment, encouraging high energy intake and low energy expenditure. Similarly, a myriad of small changes in people's local environment, the places where they live, work and study, can be brought together to produce a different, potentially healthier environment.

Summary statement 2: What are the implications of complex adaptive systems thinking for ways of working?

Eight sources informed the analysis of the implications of complex adaptive systems thinking for ways of working (Attwood et al. 2003; Bauld & Mackenzie 2007; Hawe et al. 2009; Hudson 2004; Plsek 2001; Pratt et al. 2005; Stacey 1996; Senge 1993).

The implications of complex adaptive systems thinking for ways of working in organisations or communities are that goals are best achieved through:

• Creating more flexible organisational structures by facilitating new (trusting and productive) relationships in the network

• Understanding how positive and negative feedback loops within a system operate - this can give fresh insights into how the properties of a system can be harnessed to increase or sustain positive outcomes

• Genuine engagement and discussion about the issues to be addressed before moving on to 'problem-solving'. This discussion, which is about developing shared meaning and purpose, has to include a diverse range of actors and therefore needs to involve people at all organisational levels, as well as community members

• Actors understanding the system in which they operate (and their role within it) at the system-level, so that they can contribute to producing new solutions in the context of the whole system

Working with complex adaptive systems requires:

• An understanding of the system– this requires the use of both formal and tacit knowledge of people at a range of organisational levels, as well as community

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members

• An understanding that whilst strict hierarchical divisions arenot a key feature of complex adaptive systems, this must not stop individuals from leading when appropriate

Traditional understandings of organisations as designed systems may lead to the development of complex targets and plans. However, in complex adaptive systems, the approach is to increase opportunities for natural adaptation that can stimulate creativity in developing solutions at all levels. National policy can foster or stifle conditions for a complex adaptive systems approach to be implemented.

Two sources identified further implications of complex adaptive systems thinking for ways of working in organisations or communities:

• Individuals participate in their own capacity rather than as a representative of an organisation, community or profession – this means that people can only agree to do that which is in their power to do (Pratt et al. 2005)

• Communication can be facilitated by holding meetings at a round table and limiting the size of groups. This holds both within and across organisations (Pratt et al. 2005)

• The personal qualities of individuals working within a complex adaptive system may impact on the success or otherwise of programmes. Qualities which may impact on success include an individual's level of optimism, empathy, humility, tenacity and courage - (Attwood et al. 2003)

• A willingness to take the 'long view' rather than go for the 'quick fix' is essential for complex adaptive systems approach to be effective (Attwood et al. 2003)

5.3. **Implications of a whole system approach for evaluation**

Key points

- In a whole system approach, it is the *function* rather than the *form* which is standardised

- The change in behaviour of individuals working within the system is central

- Non-linear systems changes may take longer to evaluate, and require different techniques for evaluation

This subsection draws on the work of Attwood et al., 2003; Bauld & Mackenzie 2007; Dooris, 2006; Hawe et al., 2009; Pratt, 2005; Rowe et al., 2005.

There are a number of implications of whole system thinking for evaluation activities, which must be able to demonstrate that it is worth supporting those activities driven by these concepts. Traditional targets and outcomes may fail to capture change and benefits:

> *for evaluation to capture the "added value" of whole system working and help generate evidence of effectiveness for healthy settings, it must do more than focus separately on each intervention or programme operating within the context of a settings initiative. Instead it must look at the whole and attempt to map and understand the interrelationships, interactions and synergies within and between settings – with regard to different groups of population, components of the system and health issues. (Dooris 2006)*

For the whole system approach, knowing about how organisations operate is more important that "what works" in terms of the interventions they operate (Attwood et al. 2003). For example, traditionally, programme fidelity - understanding the concurrence of the planned intervention and that actually delivered - has been recognised as important where assessed interventions are delivered across multi-

sites or by multiple people. In whole system working, however, it is the *function* of the intervention, rather than the *form* that is standardised.

> *[W]hen a health promotion intervention is a conventional program package, intervention fidelity requires that it adopt a standardized recognisable form that looks essentially the same in every site. By contrast, when an intervention is conceived dynamically, as an event (or series of events) in a system, then the process and sequence of change would look the same in all sites, performing the same purpose or function, but the form might be different. The intervention would adapt to different initial conditions in each site. This need not compromise intervention fidelity provided the intervention still adhered to its theory. (Hawe et al. 2009)*

Interventions can seen as part of a change process which changes the environments, organisational as well as community, which create them. As such, learning and evaluation can be seen as central to the systems approach, and may be the mechanisms through which systems adapts and regulates itself to constantly changing contexts (Bauld & Mackenzie 2007). Action research might be one such strategy.

A critical issue is the effectiveness of the entire network of service providers, not whether some do a better job than others at providing some component (Hudson 2004b) or whether a particular intervention component "works". Hawe et al suggest that concepts such as embeddedness, institutionalisation and sustainability become key to establishing the success of a programme. In evaluations, this might be explored through

> *the extensiveness of the programme across the system....and the intensiveness of its integration into routine practice. (Hawe et al. 2009)*

This focuses on the ways in which the interventions interact with the context, in other words, on the interactions of these systems.

Because whole system working focuses on behaviour changes between those working within it, such as developing relationships, improving networks and communication and developing a shared sense of purpose, these things are difficult to measure,

posing evaluators with problems (Pratt et al. 2005b). It has been suggested that network analysis could be used to track structural relationships over time. As well as tracing formal networks changes, such as changes in the strategic position of key people (Hawe et al. 2009), this might map informal/"shadow" networks, through identifying how many contacts people in and across organisations have (network density), and whether these networks become denser and more robust, maximising the number of people linking across professions, disciplines and organisations, or whether links become lost, or reliant on just a few individuals (Hawe et al. 2009). Increasing the network density may positively affect the sustainability of obesity prevention activities.

By viewing interventions dynamically, positive effects such as capacity building, whereby individuals in the system are enabled to act in new ways through adopting new roles and building new relationships, can be captured. People can to be helped to understand their "mental models" about how they work, and the nature of the role that they have taken on in order to harness their interests and beliefs to create modified roles that reflect their central concerns (Rowe & Hogarth 2005). The introduction of new events and activity settings allow new affiliations between actors to be created, and individuals link more comprehensively to others in the network. Hawe *et al* suggest that network analysis can be used to quantify such changes.

> *Many more people have power in the sense that their new positions, created by new relationships, given them better access to social resources (e.g. information, practical aid, attitudes, skills, affirmations, language, ways of framing ideas, reasoning processes.) (Hawe et al. 2009)*

Prospectively tracking such changes could inform the future strategic direction of interventions, attempting to harness positive feedback and counteract negative feedback loops (Hawe et al. 2009).

Another important consideration is that systems changes, and non-linear changes (such as large rapid changes after longer periods of apparent failure to make any impact) may require longer time frames for evaluations (Hawe et al. 2009).

Different techniques, including qualitative research, may also be required (Hawe et al. 2009). For example, using whole system thinking as a framework for assessing the

differences in HAZ approaches, Bauld and Mackenzie used qualitative research with key stakeholders to uncover what were seen as key HAZ achievements. Findings included those relating to changes in attitudes (including towards new cultures of working), encouraging closer relationships between organisations, stimulating citizen involvement, facilitating shared learning, and creating structures that supported this kind of working; mirroring the aims of whole system working. In addition, routinely collected statistics on a range of indicators were used for localities, but inconsistent results were seen.

A final specific suggestion by Hawe *et al*, is that, while traditional assessments of interventions focus on new activity, and attributes any impact to this, it may also be that displaced activities (those which stopped when the intervention began) account for any changes in outcomes, and should be considered.

Summary statement 3: Implications of a complex adaptive system approach for evaluation

Six sources informed the analysis of the implications of a complex adaptive systems approach for evaluation (Attwood et al. 2003; Bauld & Mackenzie 2007; Dooris 2006; Hawe et al. 2009; Pratt 2005; Rowe et al. 2005).

The implications of a complex adaptive systems for the evaluation of programmes designed to address health or social problems are:

• Evaluation, learning and subsequent adaptation are central features of a complex adaptive systems approach

• A number of methods of designing and evaluating the impact of interventions, including theories of change, intervention mapping and theory based interventions, use designed systems thinking and, as such, alternative methods may be required to fully understand the implications of complex adaptive systems.

• As interrelationships, interactions and synergies form such a significant part of a complex adaptive systems approach, traditional evaluation outcomes focus on individual elements may fail to capture the full range of benefits

• Traditional emphasis on the success of individual project elements is replaced with a focus for evaluation on the health of the system as a whole, valued in terms of aspects such as robustness, creativity and sustainability

• Evaluative questions such as "how does it work" are as important as "what

works?", as they may help to uncover the interaction between activity and context

• The *function* of a whole system intervention is of more interest than the *form* of the intervention – this allows for adaptation to different conditions without compromising intervention fidelity

5.4. Potential difficulties with whole system working

Key points

- Challenging long-standing assumptions can be uncomfortable

- Traditional organizational structures are culturally embedded and change may appear chaotic

This subsection draws on the work of Attwood et al., 2003; Rowe et al., 2005; Stacey, 1996.

Rowe and Hogarth describe using a complex adaptive systems approach to develop alternative ways of doing things within a health visitor service. Whilst this approach allowed long standing assumptions about change and service delivery to be challenged, they also note that

> *The consequent destabilising of organizational and professional norms resulted in considerable emotional impacts for practitioners, an area which was found to be underplayed within the complex adaptive systems literature. (Rowe & Hogarth 2005)*

Others also note that whole system working can be seen as uncomfortable, especially for those used to traditional management practices:

> *The notion of organisation as machine gives a superficial, and illusory, sense of control and action that fits with our task-fixated culture of performance targets and indicators. Equally, organisation development approaches have implicitly emphasised the notion of single organisations with clear territory and well-*

defended walls. [WSA] are more uncertain, being composed of phenomena that cannot be reduced to simple cause and effect. [They require] a capability to work with paradox and a tolerance of ambiguity. Magic bullets or quick fixes will not deliver change. (Attwood et al. 2003)

The process of letting go of old patterns of work, in order to try and facilitate new ways of working together to produce new solutions, is challenging and some may find it alarming (Stacey 1996).

Summary statement 4: Potential difficulties with working with complex adaptive systems

Three sources identified potential challenges inworking within complex adaptive systems (Attwood et al. 2003; Rowe et al. 2005; Stacey, 1996).

The potential difficulties of working within complex adaptive systems are:

• Challenging long-held beliefs and ways of working can be destabilising , leading to feelings of discomfort, insecurity and provoking emotional responses

• When an organisation is viewed as machine, as in a designed systems approach, it is easy to imagine an illusory sense of control, solidity and purpose which aligns with the task-dominated culture. Conversely, complex adaptive systems lead organisations to be seen as organic and synergistic, and as such requiring a degree of flexibility which can create uncertainty and insecurity.

5.5. Implications for defining a whole system approach

- A whole system approach can be characterised in theory and in practice

- The emphasis has moved from classical framing of interventions through people, organisations and interventions

- The conditions within which people operate are key to the whole system approach

This section has tried to define some key features of a whole system approach in theory to addressing complex health and social care problems. In summary, these are:

- an holistic approach to intervention, with issues addressed 'in the round' and not in isolation;

- an emphasis on the relationships *between* levels;

- the use of lay knowledge and the expertise of non-specialists;

- the use of systems language;

- the system being self-aware;

- a focus on the manner in which individuals and groups engendered progress in their area;

- deliberate efforts to build capacity

- a focus on process rather than outcomes

- the system as a self-supporting body; and

- continual, and unpredictable, evolution.

Interlinked systems may be the cause of complex health and social care problems, but may also be the means by which they can be addressed. This has had a dramatic impact on the conceptual model that we developed at the protocol stage. The emphasis has shifted away from defining which people and organisations should be engaged in which packages of activities, which we originally believed were key, and towards the conditions (environment) which allow people in communities (both professionals and lay people) to work creatively together in order to develop locally appropriate approaches to change that environment. Using Hawe et al's terminology, our understanding of a whole system approach developed from one focusing on *form* to one that focuses on *function*. We have attempted to capture some of this change in a revised conceptual framework. The original conceptual framework is shown in Figure 6, and the revised version 2 in Figure 7.

In Version 2, the ovals and their text have faded in colour to indicate their reduced importance. Meanwhile, the whole system approach has changed shape, from an oval to a rectangle, to mirror our shifted understanding of its relation to "conducive conditions" rather than the components shown in the original ovals.

We identified a number of discrete constituent features which were elemental to our view of an "authentic" whole systems approach:

Summary statement 5: Implications for defining a whole system approach
This summary is based on the analysis of the report authors. **The implications for defining a whole system approach are:** • A whole system can be defined in both theory and in practice • Competing discourses see organisations and societies as designed systems or as complex adaptive systems with different implications for management, organisation, regulation and evaluation. Considering whole systems approaches in terms of complex adaptive systems may be appropriate for complex public health issues such as obesity. However, there may also be a role for using a designed systems approach when thinking about discrete local factors contributing to obesity which might be addressed with simple, specific actions. • Discourse has moved from defining the actors and organisations that the intervention should operate within a system and, towards understanding how to foster the conditions which allow people in a locality greater opportunities to work together more effectively to address obesity.

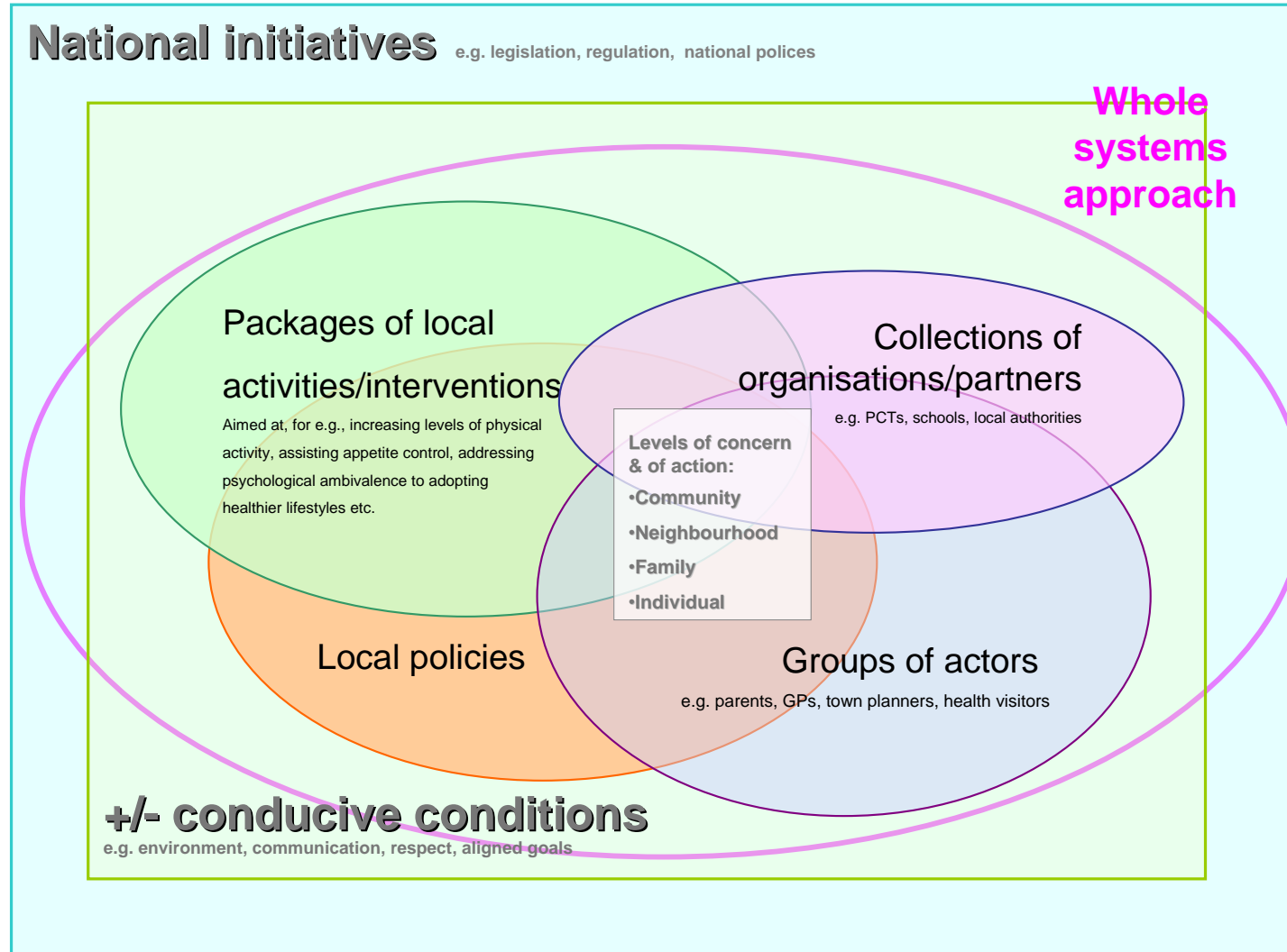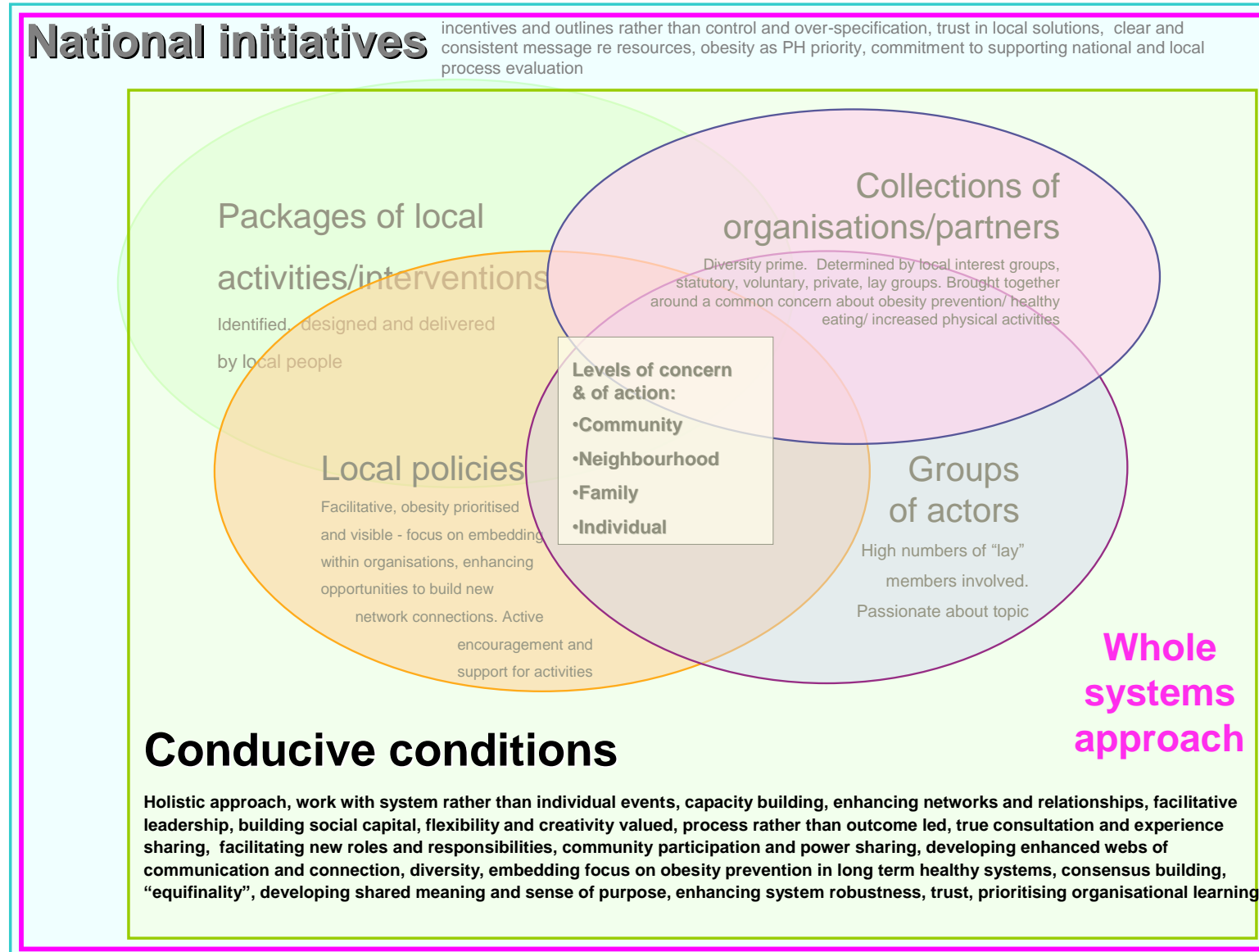**Figure 6 Original conceptual framework 1 informing the protocol**

Figure 7 Revised conceptual framework 2 based on this review of a whole system approach in theory

National initiatives incentives and outlines rather than control and over-specification, trust in local solutions, clear and consistent message re resources, obesity as PH priority, commitment to supporting national and local process evaluation

Packages of local

activities/interventions

Identified, designed and delivered

by local people

Collections of
organisations/partners

Diversity prime. Determined by local interest groups, statutory, voluntary, private, lay groups. Brought together around a common concern about obesity prevention/ healthy eating/ increased physical activities

Levels of concern & of action:
•**Community**
•**Neighbourhood**
•**Family**
•**Individual**

Local policies

Facilitative, obesity prioritised

and visible - focus on embedding

within organisations, enhancing

opportunities to build new

network connections. Active

encouragement and

support for activities

Groups
of actors

High numbers of "lay"

members involved.

Passionate about topic

**Whole
systems
approach**

Conducive conditions

Holistic approach, work with system rather than individual events, capacity building, enhancing networks and relationships, facilitative leadership, building social capital, flexibility and creativity valued, process rather than outcome led, true consultation and experience sharing, facilitating new roles and responsibilities, community participation and power sharing, developing enhanced webs of communication and connection, diversity, embedding focus on obesity prevention in long term healthy systems, consensus building, "equifinality", developing shared meaning and sense of purpose, enhancing system robustness, trust, prioritising organisational learning.

6. Findings, Question 2: What, in practice, comprises a whole system approach to preventing obesity at the local level?

This section provides an overview of sub-national area-based programmes which do not focus solely on individual behaviour change that have been implemented in an effort to prevent obesity. Our search identified no obesity prevention programmes that met the criteria for an "authentic" whole system approach, as detailed in Section 5 (see summary in Section 5.5). This "authentic" approach comprises *all* of the key WSA elements; systems language, system self-awareness, a focus on the development of local solutions and the relationships between actors in the system, and unpredictable evolution. It was therefore necessary to widen the definition of a 'whole system approach' to include those programmes which were designed to work at multiple levels among multiple agencies in a locality. This meant that, in addition to focusing at a wider level than individual behaviour change, these programmes also had to include elements such as capacity building, the fostering of local innovation, and/or the development of relationships and communication between individuals and/or organisations.

Information about the programmes that fulfilled the above criteria was sourced from a range of document types (Table 9). It should be noted that gaining a full understanding of how programmes were implemented from *all* of these document types was problematic. For example, journal papers where the primary focus was programme evaluation tended to provide limited details about the approach taken, whilst the focus of strategy documents was inevitably at a broad level that did not include details about precisely how programmes were to be implemented. We have taken a critical approach in reporting our understanding of these programmes; this means in certain cases, because of the limitations in reporting by authors, we may not have given a programme credit for pursuing an approach that in reality it did. Further investigation of specific programmes will be required in order to understand the approach adopted in-depth.

Table 9 Included sources for Question 2

Programme name/ Reference	Location, Country	When implemented	Source
EPODE (Anon. 2005;Westley 2007)	Ten towns in different regions of France	2004-2009	Press release/ Journal article
California Healthy Cities and Communities (Twiss et al. 2000)	California, USA	1987 onwards	Journal paper (programme description)
North West framework (NHS North West et al. 2008)	UK	2008-ongoing	Strategy document
Be Active Eat Well (Sanigorski et al. 2008)	Colac, Victoria, Australia	2003-2006	Journal paper (evaluation)
Healthy City (Sheffield) (Anon. 2008b)	Sheffield, UK	2009-2013	Strategy document
Healthy Living Cambridge Kids (Chomitz et al. 2010)	Cambridge, Massachusetts, USA	2004-2007	Journal paper (evaluation)
Healthy Town (Middlesbrough) (Heywood et al. 2008)	Middlesbrough, UK	2008-ongoing	Project proposal
Healthy Weight, Healthy Lives (Ealing) (Anon. 2009)	Ealing, London, UK	2009-2012	Strategy document
Healthy Weight, Healthy Lives (Tower Hamlets) (Anon. 2008a)	Tower Hamlets, London, UK	2008-2012	Strategy document
Pacific OPIC Project (Obesity Prevention in Communities) (Simmons et al. 2009)	Fiji, Tonga, New Zealand, Australia	2002-2008	Journal paper (programme description)
Romp & Chomp (de Silva-Sanigorski et al. 2010)	Geelong, Australia	2004-2008	Journal paper (evaluation)
Shape Up Somerville: Eat Smart, Play Hard (Economos et al. 2007)	Somerville, USA	2002-2005	Journal paper (evaluation)
Westminster City Council (Directorate of Public Health NHS Westminster 2010)	London, UK	2009-2013	Consultation response
Programme name not applicable (Libman et al. 2010)	Comparison of London, UK and New York City, USA	Not applicable	Report

Following Hawe et al's (Hawe et al. 2009) distinction between the *form* and the *function* of a programme designed to address a Public Health issue, obesity

prevention programmes are summarised in two tables – the first (Table 10) summarises the *form* that the programmes took, for example the various components of the programme, such as healthy snack promotion and school 'walking buses'. The second (Table 11) summarises the *function* that the programmes were proposed to attain, for example building community capacity so that sustainable approaches to obesity prevention could become embedded. Whilst the form that programmes took warrants attention, a broadly conceived "whole system approach" demands a focus on the programme's function as the primary way of understanding *how* a programme was implemented and the effects it had on the obesogenic environment. Following Table 10 (p.101), a description of the key contextual details and distinctive characteristics of each programme are provided.

Table 10 The *Form* of Obesity prevention programmes

Programme name	Education	Food & drink	Physical activity	Environment/ Setting	Media
NATIONAL					
EPODE (Ensemble, Prévenons L'Obésité Des Enfants) Ten towns in different regions of France (Vitre, Evreux, Roubaix, Beauvais, Asnieres sur Seine, Meyzieu, Thiers, Beziers, Saint-Jean, Royan)	- healthy eating lessons - anthropometric testing - feedback to parents - discussion with parents - staff obesity training - town-hospital network	- breakfast programme - canteen taste tests - community taste tests - open days and promotions	- exercise sessions - 'Nutrition and Exercise week' - use of school health staff - secure 'walk to school' routes	-	- healthy eating info. leaflets
REGIONAL					
California Healthy Cities and Communities California, USA	- 'social entrepreneurs'/ community champions - community presentations - information sharing - municipal-level policies - community education programmes - Healthy Cities promotion - latest reference materials	- garden-based curriculum - farm voucher reimbursement - school yard gardens - healthy canned food drive - summer lunch programmes	-	- strategic siting of HQ - community gardens - reduced city water fees - Adopt-a-Lot Program	- annual meeting and regional workshops, hosted by participating communities with minimal registration fees and low-cost meals; - 'Connections' state-wide newsletter - 'Highlights' – biannual bulletin of funding opportunities - shared best practices, innovative community-building strategies and websites

Programme name	Education	Food & drink	Physical activity	Environment/ Setting	Media
North West framework to achieve healthy weight in children and families North West England	- multi-setting interventions - wellbeing policy	- work with the food industry - profile food signpost labelling - highlight product reformulation - work with DEFRA on PSFPI*[1] - food supply chains - engaging industry /Food NW - NW Food and Drink strategy - raise healthier food demand - develop consumer insight - influence public attitudes - access for disadvantaged - increase availability - catering and hospitality - promotion & audit of *CHCHG*[2] - promotion of FSA guidelines	- increase access for children - strategic regional planning - audit access to sport facilities - sharing practice via NW Health & Physical Activity Forum; - delivery of Play England's objectives for increased opportunities - engage all enviro. org.s - scope active travel and transport - joined-up sector briefing paper - action plan - active travel guidance promotion - regional seminar	- Healthy Workplace policies - Sustainable Development Plans - Natural England collab. - *Forestry Framework Action Plan* - green equal opportunities - regional partners strategy - built environment impact paper - implement outcomes from NW Health & Physical Activity Forum conference - regional environmental approach - safe streets - 'Fit Cities'	- healthy eating communications framework - social marketing to influence behaviour change
CITY OR TOWN					

Programme name	Education	Food & drink	Physical activity	Environment/ Setting	Media

Be Active Eat Well
 	
Colac, Victoria (Australia)
	- Happy healthy families
	- parent tips sheets
	- lunchbox tip sheets
	- TV power down week
	- social marketing training
	- obesity prevention training
		- breakfast programme
		- canteen taste tests
		- Fresh taste programme
		- Choice chips programme
		- fruit shop displays
		- school dietician
		- school nutrition policies
		- canteen staff training
		- canteen menu changes
		- staff development
		- dietician-led classes
			- sports coach training
			- sports equipment
			- pedometers
			- 'Be Active' arts activity
			- after-school agenda
			- Walk to school days
			- 'Walking' buses
				- community garden	- glossy newsletters
					- teacher fliers (linked)
					- promotional materials
					- sponsors Colac Kana festival 2004
					- sponsors kids day out 2003
					- media coverage - 4 yrs
					- incorporation of BAEW strategies into
					  - Municipal Early Years Plan,
					  - Integrated Health Promotion Plan &
					  - Municipal Public Health Plan

Programme name	Education	Food & drink	Physical activity	Environment/ Setting	Media
Healthy City Sheffield (UK)	-	- healthy eating lessons - focus branded food activity - community food educators - 'cook and eat' clubs - school nutrition policies - canteen staff training - canteen improvements - staff development - extend the National School Fruit and Vegetable scheme - partnership with School Food Trust - breastfeeding friendly city initiative - neighbourhood food co-ops - local business food promotion	- reinforce Peak District links - enhance parks / open spaces - Living Streets audit - free swimming - raise physical activity profile - private sector liaison - community health champions - *Healthy Schools* programme - link city Partnership Boards to private and voluntary sector - walking strategy - dance strategy - active travel prog.s - safe travel routes	- city planning for health - strategic planning for health	- media campaign to support healthy food choices

Programme name	Education	Food & drink	Physical activity	Environment/ Setting	Media
Healthy Living Cambridge Kids Cambridge, Massachusetts, USA	- after-school agenda training - feedback to parents - discussion with parents - family weight management counselling	- community policy support - local food preference policy - community advocacy - food service policies - canteen taste tests - new menu development - canteen menu changes - restricted items for sale - restricted menu options - school nutrition policies - food substitution bad for good - 5-2-1 ethos promotion - school yard gardens	- improved PE policies - annual BMI/ fitness tests - paediatric specialist referral - "Fit Together" family event - youth sports commission	- school 'wellness' policy	- raise awareness through: - poster campaign - newsletters - 5-2-1 mini-grants - directories of physical activities distributed to all schoolchildren
Healthy Town Middlesbrough (UK)	- junior health trainer programme - youth engagement - community engagement - sustainable infrastructure	- community urban farming - leisure farm - horticultural training - food co-ops & policy council - annual town meal	- healthy lifestyle trail - enhancing play & recreation - "integrated work programme - natural play - cycling for health - home zones - countryside walking - cycling centre - cycling road circuit" - addressing other barriers - active travel	-	- marketing & communications informed by social marketing research - incorporating social norms, approaches and theories

Programme name	Education	Food & drink	Physical activity	Environment/ Setting	Media
Healthy Weight, Healthy Lives (Ealing) London (UK)	- increase awareness of breastfeeding benefits - increase awareness of the importance of activity - increase awareness o f healthy food choices - understand the causes of weight management issues - increase awareness of links between obesity and health status	- Increase family sign-up for the Healthy Start scheme - reduce children's consumption of high fat, sugar and salt foods - increase fruit & vegetable consumption - more healthy options in convenience stores, canteens, vending machines and till points	- understand current activity levels - develop responsive physical activity services - support local services to empower physical activity staff - develop engaging and innovative physical activity programmes - increase awareness of current activity opportunities - identify funding sources - assist funding bids to widen access	- build capacity between local services - promote active travel	-

Programme name	Education	Food & drink	Physical activity	Environment/ Setting	Media
Healthy Weight, Healthy Lives (Tower Hamlets) London (UK)	- Health Through Education Team Plan - health trainers involved in local networking/community events	- Baby Friendly Initiative to improve breastfeeding support - Public Health Dietician for Children employed - Healthy Snack policies and child feeding guidelines for all Children's Centres - drop-in sessions on infant nutrition - cook and eat programme - school dining facility improvements - school breakfast clubs - healthy packed lunch sessions - monthly recipe corner in "East End Life" magazine - joint Nutrition/ Physiotherapy service for childhood obesity	- Children's Centres promote active play - 'Sportsearch' interactive programme - Play Strategy to create safe play spaces - School Sports Partnerships - Active Lunchtimes' - 'Fit in 5!' Green/sustainable travel plans - range of exercise groups provided through voluntary sector, e.g. 'Healthy Moves', Ramblers	- Early Years strategy, engagement and monitoring - Maternity services health strategy - Children's centres as focus of engagement - Family Nurse Partnership pilot - annual child measurement programme - breastfeeding initiation monitoring - Play Strategy encourages safe but challenging play environment - multidisciplinary weekly obesity clinic at Royal London Hospital - community-based support programmes such as BEST & MEND - PCT/borough council working on health impact of road design, cycle lane provision and cycle parking - Children & Young People's Plan to tackle obesity and promote physical activity	- social marketing pilot - website with tips, games and advice (www.myschoollunch.co.uk) - annual Active People survey informs participation levels - People's Plan, Local Area Agreement promoting physical activity, sport and healthy eating as priorities - Olympic Education Strategy with Tower Hamlets Music and Arts Service; Communities, Localities and Culture; and East London Business Alliance to promote participation in sporting and cultural activities - Expert Patient Programme - physical activity pathway piloted by GPs - LAP3 weight management programme - community dietician making home visits

Programme name	Education	Food & drink	Physical activity	Environment/ Setting	Media
Pacific OPIC Project (Obesity Prevention in Communities) Nasinu (Fiji); Houma & Kolonga (Tonga); Mangere (New Zealand); East Geelong/ Bellarine Peninsula (Australia)	- community awareness health programme - education for students in time management - targeted mother-and-daughter interventions - education through the school curriculum and professional development for staff	- students promoting breakfast during parent interview days - school canteens opening early to sell breakfast before school - strategic installation of new water fountains - implementation of a school water policy - increasing the number of water dispensers in schools and the community	- promoting weekly village walking groups - aerobics for youth	- Action Plan workshops - Local Steering Committees formed for project development and implementation - Healthy Youth Healthy Communities project - individual Schools Implementation Committees run implementation at school level - 'keeping the village clean' programme	- social marketing via pamphlets to parents and students - social marketing campaign developed by students - distribution of water bottles to students and staff - social marketing through water bottles, screen savers and posters

Programme name	Education	Food & drink	Physical activity	Environment/ Setting	Media
Romp & Chomp Geelong (Australia)	- resource folders for children and parents - food safety regulations identified and supported - awareness-raising activities with parents, health professionals, and early-childhood workers. - development of professional training packages	- nutrition activity resources for parents and early-childhood service staff from reputable and compatible sources - water bottles for children - lunch bags for children - sweet-drink demonstration resources - energy-dense foods display - use of benchmarks to inform policy - integration of policies, early-childhood nutrition and active play into local government and health-service strategic and public health plans	- physical activity resources for parents and early-childhood service staff from reputable and compatible sources - Structured Active Play Program developed - settings staff trained in fundamental movement skills - active play demonstrations - active play newsletter	- development and adoption of an overarching health and well-being policy for the Geelong Kindergarten Association - collaboration with Dental Health Services Victoria, - collaboration with Kids—Go For Your Life program - presence at school and community festivals - community consultation. - presentations at community forums	- communication plan and social marketing plan - series of posters, postcards, and brochures promoting overarching campaign and key messages - nutrition and drinks media release - Ppomotional materials (eg, balloons, stickers, posters, postcards) produced and distributed - active play newsletter - e-mail, phone, or site visit access - active-play media release - development and distribution of posters and postcards to decrease TV watching - postcards for distribution
Shape Up Somerville: Eat Smart, Play Hard Somerville, Boston (USA)	- curriculum lessons - health report card - parent outreach - parent nutrition forums - city employee campaign - city health events - resource guides	- breakfast programme - cooking lessons - healthy snack promo. - farm visits - 'Farmer's market' initiative - school food service - staff development - 'approved' restaurants	- pedestrian training - walkability /bikeability - walking campaign - 'Family Fitness Fair' - family events - 10 mins daily exercise - 'enhanced recess' - after-school agenda - school health office - walk to school days	- school 'wellness' policy	- local media placement - *Somerville Journal* slot

Programme name	Education	Food & drink	Physical activity	Environment/ Setting	Media
Westminster City Council London (UK)	- PCT awareness raising - obesity education for members of the public, schoolchildren and those with mental health problems	- improving school meals - increased access to healthy food and school meals, meals on wheels etc. for local suppliers - "Kickstart" healthy lifestyle club for obese children - "Fit for Life" – free weight loss programme for overweight and obese adults - "Drop-in to Weigh-in" for adults in the community	- improving access to leisure centres	-	- City Council promotion of health messages & lobbying for local health policies - promoting Westminster Healthy Schools scheme - promoting healthy living through local media - *NHS Westminster Strategic Plan 2008-2013*l-base health campaign planned

6.1.   The *function* of obesity prevention programmes

- The key elements are highlighted which are to be found in initiatives demonstrating whole system working

- Table 11 shows these elements in table form, highlighting the key features found within each initiative identified by the searches

Table 11 gives an overview of the proposed *function* of the obesity prevention programmes identified by our search. The table lists the programme's stated aim, the levels of action (from individual to local policy) at which the programme was proposed to operate, the sectors involved in programme delivery (voluntary, public, and private), and an assessment of the extent to which the programme demonstrated key characteristics of a whole system approach:

• whether or not the principles of whole system working explicitly informed the design and implementation of the programme

• the extent to which capacity building within communities and organisations was an explicit goal

• the extent to which local creativity and/or innovation was encouraged

• a description of the methods used to develop working relationships between individuals or individuals and organisations

• a description of the methods for engaging community members in programme development and delivery

• methods for enhancing communication between actors in the system

All of the above elements are shown in the table as appropriate: programme element not mentioned; programme element mentioned, but means of attaining not described; and means of attaining programme element explicitly described, or clearly stated as a goal (see table key). We have tried to understand these approaches in terms of their proposed function in order to show how there may be synergy with an "authentic"

whole system approach. We caution, however, that detailed accounts of how aspects of the programmes were implemented, such as community engagement or capacity building, were often not available in the identified sources. It should also be noted that a number of the programmes are relatively young, meaning that it may be unrealistic to expect them to be fully developed in respect to a whole system approach.

Table 11 can be used to gain a sense of the extent to which different programmes used approaches which mirror a "whole system approach", and of how these programmes differed in their approach. Programme elements where insufficient information (marked '○') was provided to judge if a programme really did, in practice, make use of a component may be of particular interest. The PDG may wish to further investigate these programmes, for example through case studies, in order to gain a fuller understanding of how they were really implemented.

Table 11 The *Function* of Obesity prevention programmes

Programme name (Ref.) Aim and Key characteristics	Levels of action	Sectors involved	Whole system working	Capacity building	Local creativity	Relation ships	Engage ment	Commu nication
NATIONAL								
EPODE (Ensemble, Prévenons L'Obésité Des Enfants) (Anon. 2005/ Westley 2007) To prevent the spread of childhood obesity through communicating simple and easy-to-use guidelines, avoiding stigmatisation, and encouraging families to pass on their food culture to the next generation. Towns apply to take part in the programme – successful applicants make a financial contribution to the programme (which is matched by private sector partners) and agree to abide by a charter.	Individual Family School Comm.	Public Private	-	○	-	○	-	-
REGIONAL								
California Healthy Cities & Communities (Twiss et al. 2000) Based on the WHO 'Healthy Cities' model, to provide technical assistance in setting up community-based health programmes, co-ordination of these, fostering a 'social movement' for health, and promoting organisational and policy change to address the determinants of health. Emphasis was on communities developing their own locally appropriate projects rather than implementing 'template' programme components. Also focused on development of local relationships (e.g. addressing 'turf wars') as the bedrock for improving unhealthy environments.	Individual Family School Comm. PH policy	Voluntary Public Private	-	●	●	●	●	●
North West framework to achieve healthy weight in children and families (NHS North West et al. 2008) To define and progress the contribution regional organisations can make to achieve the Public Service Agreement to improve the health and wellbeing of children and young people. Structured around three 'alliances' (children's healthy weight, physical activity, and food & nutrition) that were overseen by a programme board. Interventions aimed both at stages of demand (e.g. for unhealthy food) and supply (e.g. food suppliers' promotion and distributionof unhealthy food).	Individual Family School Comm.	Public Private	-	-	-	○	-	○

Programme name (Ref.) / Aim and Key characteristics	Levels of action	Sectors involved	Whole system working	Capacity building	Local creativity	Relation ships	Engage ment	Commu nication
Pacific OPIC Project (Obesity Prevention in Communities) (Simmons et al. 2009) Explicit aim not reported, although programmes aimed (using the ANGELO framework, see Appendix 8) to integrate 'technical assessments' (published research, local evidence and experience) with 'due process' (engagement with stakeholders, joint and transparent decision-making) so that agreed priorities were achieved.	Individual Family School Comm.	Voluntary Public	-	-	○	○	●	-
CITY OR TOWN								
Be Active Eat Well (Sanigorski et al. 2008) "To build the community's capacity to create its own solutions to [preventing obesity through] enhancing skills, reorienting organisational priorities, creating partnerships and structures, building leadership and community ownership, and finding the resources to promote healthy eating and physical activity in a sustainable way." (p.1061). Community members were encouraged and facilitated to develop skills not specifically related to obesity prevention, but which would help promote change through the development of local Public Health policy.	Individual Family School Comm. PH policy	Public Private	-	●	●	●	●	○
Healthy City (Sheffield) (Anon. 2008) To address the causes of overweight and obesity using a 'whole city' approach, using the (already established) *Sheffield First Partnership* to co-ordinate the obesity prevention work. Health Partnership Network envisaged as being able to facilitate engagement with voluntary sector, whilst private sector partnerships will be pursued through a business broker.	Individual School Comm.	Voluntary Public Private	-	○	○	-	-	-
Healthy Living Cambridge Kids (Chomitz et al. 2010) "To illustrate how a community can harness and increase grassroots capacity to mobilize interventions and evaluate their outcomes" (p.S46). A *community-based participatory research* approach was used to engage community members in the implementation and evaluation of the programme.	Individual Family School Comm. PH policy	Public	-	○	○	-	-	-

Programme name (Ref.) Aim and Key characteristics	Levels of action	Sectors involved	Whole system working	Capacity building	Local creativity	Relation ships	Engage ment	Commu nication
Healthy Town (Middlesbrough) (Heywood et al. 2008) To "develop a sustainable, collaborative and multi-faceted town-wide approach to increase physical activity and healthy eating, focusing on the needs… of the local people and communities in some of the most disadvantaged parts of the town" (p.2) Programme has five objectives: 1) social marketing programme (aiming with synergy with the *Change4Life* programme) 2) engage communities in a town-wide programme of urban farming (through community development approaches) 3) enhance the physical environment to increase the number of public places for recreation, play, walking and cycling 4) work with employers and schools to address cultural, institutional, and sociological barriers that discourage physical activity and active travel 5) support the development of a junior health trainer programme	Individual Family School Comm. PH policy	Public Private	-	○	○	●	●	○
Healthy Weight, Healthy Lives (Ealing) (Anon. 2009) To "empower everyone living, working or studying in Ealing to maintain a healthy weight by eating healthily and taking physical exercise." (p.1). Overseen by a steering group that aims to assure that programme delivery is "equitable, inclusive, and empowers communities".	Individual Family	Public	-	○	-	-	○	-
Healthy Weight, Healthy Lives (Tower Hamlets) (Anon. 2008) Through a 'system-wide' approach, aims to "address the wider social, economic and environmental drivers of obersity" and to "promote self-esteem, empower and produce sustainable lifestyle changes" (p.21). Engagement with senior members of organisations within the borough is envisaged as a driver of changes to local Public Health policy.	Individual Family School Comm. PH policy	Public	-	○	○	-	○	○

Programme name (Ref.) Aim and Key characteristics	Levels of action	Sectors involved	Whole system working	Capacity building	Local creativity	Relation ships	Engage ment	Commu nication
Romp & Chomp (de Silva-Sanigorski et al. 2010) Through a "strong focus on community capacity building and [development of] sustainable change in areas of policy, sociocultural and physical environments", to "increase the capacity of the City of Greater Geelong and the Borough of Queenscliffe to promote healthy eating and active play and to achieve health weight in children aged <5 yrs" (p.2)	Individual School Comm. PH policy	Public	-	○	-	-	○	○
Shape up Somerville: Eat Smart, Play Hard (Economos et al. 2007) To use a *community-based participatory research* approach, using "systematic inquiry, participation, and action to address urban health problems" (p.1326)	Individual Family School Comm.	Voluntary Public Private	-	●	●	-	●	○
Westminster City Council (Directorate of Public Health 2010) Obesity prevention programme would be part of a 'major health campaign' which envisages: "A Westminster where residents enjoy optimal health and wellbeing, free from the negative impacts of ill-health associated with obesity, smoking, and alcohol, and where individuals are not disproportionately affected as a result of where they live, the type of accommodation they live in, their income levels, ethnicity, age, gender, existing health issues, disability, sexual orientation or faith." (p.6)	Individual School Comm. PH policy	Voluntary Public Private	-	-	-	-	●	-

Key:
●   - means of attaining programme element explicitly described, or clearly stated as a goal
○   - programme element mentioned, but means of attaining not described
-      - programme element not mentioned
Comm.   - community
PH policy- local Public Health policy

6.2. Summary of obesity prevention programmes

All of the programmes were implemented at the level of a town or city, with specific programme components implemented in schools. The majority were implemented in just one town or city, although initiatives such as *California Healthy Cities & Communities* and the *EPODE* programme were implemented in a number of towns and cities across the state or country, respectively. The *North West framework* was not a specific programme, but a framework for addressing obesogenic environments in the north-west of England. As would be expected in programmes adopting a whole system approach, almost all were designed to act at the individual, family, school, and community level. Seven of the programmes (*California Healthy Cities & Communities*, *Be Active Eat Well*, *Healthy Living Cambridge Kids*, and *Healthy Town (Middlesbrough)*, *Healthy Weight Healthy Lives (Tower Hamlets)*, *Romp & Chomp*, and *Westminster City Council*) endeavoured to impact on the wider system through changing policy to foster a more salutogenic environment.

The majority of programmes drew on a range of 'community' approaches to the design and implementation of Public Health initiatives, including community-based participatory research, community capacity, and 'whole city' approaches derived from the original World Health Organisation definition. Some programmes (e.g. *Healthy Town (Middlesbrough)* and *Healthy Weight Healthy Lives (Tower Hamlets)*) do not state an explicit approach, but nonetheless clearly have a strong basis in community approaches of this type where the involvement and development of the community are an integral part of the programme. There were a number of exceptions to this pattern. The documentation that we identified about programmes such as the *North-West framework* and *Healthy Weight Healthy Lives (Ealing)* make no reference to how community involvement would take place, thereby significantly calling into question the extent to which this 'whole system approach' worked from 'bottom-up'. The *EPODE* programme was notable for its implementation of a clear hierarchical framework that, despite the possibility that local knowledge was used in the tailoring of programme elements in each town, suggests that a more 'top-down' approach was taken. The aims of the *EPODE* programme also suggest that a more linear 'health education' approach was used to communicate healthy eating guidelines through

established health professional channels, despite the involvement of actors from outside of the health professions.

Most of the other programmes report that an attempt was made to elicit and use local knowledge in an effort to foster the genuine involvement of communities, but the means by which this consultation with communities took place was often vague. However, there were exceptions. For example, the **Shape up Somerville** programme, used meetings, focus groups and interviews with key informants as a means of developing the prior relationship which the research team had with the community prior to the design and delivery of the obesity prevention programme. The **Pacific OPIC** also had a detailed and structured approach to community engagement involving socio-cultural interviews, focus groups, and the use of the ANGELO framework in community workshops (see Appendix 8).

The intensity and richness of the working relationships between actors proved difficult to assess in the included programmes. Most programmes made some statement about the structure of the network and how communication between actors took place, but there was typically little detail about the 'real world' nature of these relationships. For example, there may be a formal line of communication between a community representative and a health agency, but there is a significant 'real world' difference between a yearly progress report and an ongoing reciprocal working relationship. The **California Healthy Cities & Communities** programme was different in this respect; the programme had specific provision for fostering relationships within communities so that nominal cultural boundaries could be crossed, as well as through providing emotional and spiritual support to help overcome the inevitable obstacles that would face the community. Furthermore, the **California Healthy Cities & Communities** programme made provision for the involvement of key city government officials, managers and departmental heads as spokespeople for the 'Healthy Cities' movement, thereby keeping the topic of healthy communities on the agenda and providing a key route for influencing the formation of local policy that impacted on the obesogenic environment.

The sustainability of programmes, as indicated by the extent to which the programme was embedded into the community and the capacity of the community to obtain funding for future health initiatives, was frequently left unaddressed by the obesity

prevention programmes. For a programme such as **EPODE**, where a more 'top-down' approach was adopted, this deficit is less surprising as there appeared to be far less expectation that communities would 'own' the obesity prevention programme and continue it independently. However, it is also the case that in some programmes where there is far greater emphasis on the community development and involvement approach (e.g. **Healthy Town (Middlesbrough)**) there is a similar lack of consideration about how to make provision for sustainability. Solid examples of making provision for sustainability are, however, provided by the **California Healthy Cities & Communities** programme and **Shape up Somerville**; both of these programmes emphasise the importance of building lasting relationships between communities and public and private sector agencies, and of helping community members to attain the skills required to obtain funding that could enable salutogenic community programmes to continue.

None of the identified obesity prevention programmes explicitly used whole system approaches. However, it is notable that **California Healthy Cities & Communities** and the **Pacific OPIC** programmes mirrored a substantial number of whole system approach elements despite their genesis pre-dating the development of "authentic" whole system approaches. The majority of programmes only explicitly mentioned one of the key functions of whole system approaches, although as previously noted, this may reflect limitations in the reporting rather than the reality of how programmes were implemented. For this reason, it may be highly relevant to further investigate the unreported elements of these programmes' implementation to better understand how the development of obesity prevention guidance can be informed by it.

6.3.   What factors facilitate or inhibit a whole system approach to obesity prevention at the local level?

One included source compared the approaches to obesity prevention in London (UK) and New York City (USA) (Libman et al. 2010). Both cities are a mix of municipal bodies that can strongly influence local policy and decentralised organisations that operate with negligible concern for public health. For example, there is strong municipal control of the transport system in London (enabling the introduction of a congestion charge in 2003), whilst in New York City a similar proposal was rejected in

2008. Collaboration with the private sector is more developed in New York City, which has implemented a range of financial incentives (linked to the provision of fresh foods) to promote the construction of supermarkets in deprived areas, whilst in London it is reported that there is greater use of public sector guidelines to shape healthy environments (for example, every London borough is required to have a Children & Young People's Plan; there are national standards for the provision of school food, but "considerable variation" (p.18) in school's response to these). However, guidelines are also used in New York City; for example, the Active Design Guidelines released in 2009 are proposed to "provide planner and architects with a manual of strategies for promoting physical activity through the design of neighbourhoods, streets, buildings and work places" (p.21). Table 12 summarises the factors that facilitate or inhibit a whole system approach to obesity prevention in London and New York City.

Table 12 Factors facilitating and blocking municipal action to reduce childhood obesity

	Factors facilitating and blocking municipal action to reduce childhood obesity	
	London	**New York City**
Factors facilitating municipal action	• Strong municipal control of transportation system • Explicit commitment to reducing inequities in health • National health care system that provides coverage to all • Relatively stable national funding for health care and education • Some business support for healthier eating options • National Child Measurement Program and Healthy Weight, Healthy Lives childhood obesity targets and program funding • Stated commitment to social determinants of health approach by Mayor and Regional Director of Public Health • London Health Observatory, an independent monitor of health trends • Olympics and commitment to health legacy	• Strong Mayor who supports vigorous municipal public health role • Strong health department with forceful leadership that supports vigorous role for public health • Health Code that enables action outside political process • Active and energetic non profit sector with interests in a variety of food and obesity issues • Public support for action to reduce obesity • Central school system with decision-making concentrated in Mayor's office • Many public officials with strong positions on obesity, food and health • City Council President, Mayor, Governor and President who have said health and food are priorities
Factors blocking municipal action	• Economic crisis that distracts public and policy maker attention • Food and retail industries with deep pockets to influence political process and modest incentive to change	• Food and retail industries with deep pockets to influence political process and modest incentive to change • Economic crisis that distracts

<table>
<tr><td>

- Limited municipal involvement in public health
- Decentralized/borough level authority over food and education
- Competing priorities at different levels

</td><td>

public and policy maker attention
- Complex, often anarchic system of government that makes implementation of change difficult
- Federal control of school food policy
- Strong commitment to incrementalism
- High value on individual responsibility as solution to social problems and corporate and political promotion of these values
- Competing priorities at different levels
- Food and retail industries with deep pockets to influence political process and modest incentive to change

</td></tr>
</table>

Source: (Libman et al. 2010)

Summary statement 6: What, in practice, comprises a whole system approach to preventing obesity at the local level?

Thirteen sources informed the analysis of what comprises a whole system approach to preventing obesity at the local level (Anon. 2005; Anon. 2008; Anon. 2008; Anon. 2009; Chomitz et al. 2010; Directorate of Public Health NHS Westminster 2010; Economos et al. 2007; Heywood et al. 2008; NHS North West et al. 2008; Sanigorski et al. 2008; de Silva-Sanigorski et al. 2010; Simmons et al. 2009; Twiss et al. 2000):

• The nature of reporting about community-wide obesity prevention programmes limited the extent to which an assessment of 'the whole system approach' could be made. Further investigation of community-wide programmes where such details are lacking is warranted.

• Management, development and design of obesity prevention programmes with the label of 'whole town/city approach' may differ considerably, ranging from a predominately bottom-up, community development (e.g. Healthy Town (Middlesbrough)) to a more top-down, hierarchical structure(e.g. EPODE).

• None of the obesity prevention programmes overtly used complex adaptive systems thinking to inform their whole system approach, although two (California Healthy City & Communities and Pacific OPICS) mirrored a number of the features of whole system approaches(such as capacity building, fostering local creativity and

relationships, and community engagement).

- Whilst the majority of obesity prevention programmes make some use of mass media or social marketing techniques, none report that they make use of informal communication networks in communities to communicate about obesity prevention.

Summary statement 7: What factors facilitate or inhibit a whole system approach to obesity prevention at the local level?

One source, comparing London and New York City, informed the analysis of factors that facilitate or inhibit a whole system approach to obesity prevention at the local level (Libman et al. 2010):

Factors that can facilitate a whole system approach to obesity prevention are:
- municipal control of the transport system
- strong support (at both senior and intermediate levels) for public health initiatives
- public support for obesity prevention work
- stable funding

Factors that can act as barrier to a whole system approach to obesity prevention are:
-
- competing public sector priorities
- political influence of powerful bodies such as food and retail industries
- tendency towards incremental rather than radical policy change
- placement of a high value on individual action rather than system change

7. Discussion

7.1.   Statement of principal findings

There is a clear division in the way in which the language of a "whole system approach" is used in the literature. On the one hand, it represents theory driven approaches informed by theory about complex systems and which propose radical new ways of organising, managing and evaluating local activities aimed at improving public health which are potentially pertinent to obesity prevention. On the other hand, it has been taken as the latest terminology in a long line of approaches which refer to cross-disciplinary, multi-agency, multi-level community activities aimed at addressing health concerns affected by complex socio-economic conditions and which, by this very nature, pose particular challenges. We have spent some time in this report documenting these two approaches because it is clear a programme which is named *Preventing Obesity: A Whole System Approach* may be open to legitimate criticism if these fundamental theoretical differences are not taken into account.

We didn't identify any papers which showed what we understand as an "authentic" whole system approach to the problem of obesity. However, given the nature of the approach, with its emphasis on enhancing capacity, improving relationships and creating space for innovative practices, we are also aware that this kind of information may not be visible in traditional write ups or evaluations of interventions. We remain cautious about this though, due to our perception of the centrality that comprehension of working within a whole system appears to occupy within a whole system approach.

Working with an "authentic" whole system approach has profound implications for the way in which recommendations are made, interventions are designed, partnerships are encouraged and the impacts measured. However, we note that there is disparity amongst sources on the use of 'system' and 'systems' within the term "whole system approach". Some use the words interchangeably, and it is recognised that there are other perspectives on the use of this phrase. The use of the term 'whole' in front of system may arguably be redundant, as - whether dysfunctional or effective - a system is always whole by nature (Dina Berkeley, personal communication). However, consistent with the scope for this programme of work, "whole system" is used in order

to reflect the approach as referring to a discrete 'system' construct, as opposed to an approach referring to nebulous multiple systems.

An "authentic" whole system approach also has implications for the direction of the rest of the "Preventing obesity: a whole-system approach" programme. Creating lists of the components of multi-agency, multiple approach strategies for obesity prevention may allow a map of possibilities or innovative practice to be documented but, through the lens of a whole system approach, this cannot meaningfully provide a blueprint for action.   One possible direction would be to use the review of effectiveness of obesity prevention programmes to do a traditional systematic review of multi-component multi-sector examples of obesity prevention work, though with the proviso that effectiveness may be hard to measure. The planned case studies could then try to understand programmes where an "authentic" whole system approach has been used. These are unlikely to be about obesity but since the concepts are about ways of doing things, rather than the things done, this could still provide valuable, transferable information that could be applied to obesity prevention work.

7.2.   Transferability of a whole system approach theory to obesity prevention

The sources that informed our definition of a whole system approach are predominantly based on organisational management analyses, in both the public and private sector. We did not locate any sources that provided an analysis specific to Public Health organisations, but 12 of the 18 included sources (for Question 1) were based in analyses in the wider field of health or social care. Nevertheless, the extent to which theoretical whole system approaches are transferable to obesity prevention is unproven and open to debate. Whilst we would not want to make unwarranted claims for the transferability of the theory to obesity prevention, Pratt et al. (2005) identify three features of a system that, if they are present, give strong grounds for the transferability of whole systems theory across sectors and types of organisation. These features are:

- the presence in a network of a dense field of relationships

- the organisational need to respond and adapt

- the desire to organise in a manner that is 'fit for purpose', rather than simply on the basis of habit or historical precedent

It may be that the insights of committee members into the system in which obesity prevention programmes take place will allow a more informed judgement about the transferability of a whole system approach theory.

7.3. Limitations

The identification and inclusion of sources in order to define a concept poses particular difficulties. Due to time limitations, we screened titles and abstracts only once, and were unable to return to this as the definition that we were building developed. We hope that this will not have adversely affected our selection, which is likely due to the increasing precision of our understanding through the process, but we cannot be certain.

Identification of all the important literature to inform a topic is always more difficult when seeking sources other than clinical trials. We used relatively limited topic language in our searches to define a whole system approach in theory, largely to ensure that the balance of specificity and sensitivity was reasonable in a time limited project. We have tried to mitigate missing key texts through using other strategies, including web searching, contacting key authors and citation searching. However, we are aware that we may have missed important texts and that this may be especially true for accounts in books and grey literature.

We are aware that the literature which we have identified for this report is less clear about how local, regional and national strategic thinking can help to support innovative whole system practice, than about the nature of relationships within the local systems. This could inform future reviews if this were thought important by the committee.

We note that a number of potentially important sources became available too late to be included in this review; for example, the White House report on obesity (White House Task Force on Childhood Obesity 2010) and the launch of the European Obesity Forum website (http://www.obesityforum.eu/).

We are not experts in complexity theory, management theory, change theory or the whole system approach, all of them complex theoretical areas, which we have tried to comprehend and critique within a short period of time. The possibility for missing differences between the different accounts, perhaps based on historical or theoretical schools of which we are unaware, or of focussing inappropriately on particular areas to the marginalisation of others, remains. Equally however, this review has been produced through a rigorous, intensive and documented process by a close-knit team of researchers who had few preconceived notions about the nature and meaning of a whole system approach.

Some sources using terminology around "wicked issues" may have been useful, but we did not have the time to identify these. Similarly, management and change theory may have given more useful theoretical information than we had time to explore. We acknowledge that our use of the term "authentic" to describe a particular whole system approach may be contested, on the grounds that the term implies an authority to adjudicate between different whole system approaches (Dina Berkeley, personal communication). Nevertheless, we trust that the presentation of the findings in this report will be used to inform debate about these "authentic" (and other) whole system approaches that will inform the committee's work throughout the course of the programme.

Appendix 1   Review Protocol

Review questions

Primary research questions (i.e. which will determine search strategy and document inclusion decisions)

What in theory comprises a whole system approach to achieving public health goals?

According to descriptive accounts of actual initiatives, what in reality comprises a 'whole system approach' to achieving public health goals at a local level:

In relation to preventing obesity?

In relation to preventing another public health problem (smoking)

Secondary aims (an aspect of data collection, but will not drive search strategy or inclusion decisions):

What factors are reported to facilitate or inhibit the success of a whole system approach to obesity prevention at a local level?

If relevant information is reported in the papers identified that address the two primary review aims, we will document any described factors that are believed to facilitate or inhibit the success of a whole system approach to obesity prevention at a local level. However, this question will considered more fully in future reports produced for this programme of work, and this secondary review aim will not explicitly inform either the search strategy or paper/report inclusion decisions.

Whilst addressing the above aims, we will also start to consider the implications of these identified features and factors for the monitoring and evaluation of whole system approaches.

Background and conceptual framework

Understandings of the elements of the whole system approach will be informed by the our initial conceptual model (see Figure 1), which has been developed from the definition within the Scope of this NICE guidance. However, the main aim of this review is to help to further develop this conceptual framework or definition.

From the scope for this NICE guidance, and other sources on whole system approaches in the field of public health, our provisional understanding is that whole system approaches to tackling public health issues tend to be characterised by:

- the **interaction of collections of organisations or partners** (such as PCTs, food retailers, schools, local authorities and so on).

- the linked **involvement of specific groups of actors** (such as GPs, health visitors, parents, town planners) to drive and sustain activities. These groups may or may not belong to or be aligned with particular organisations.

- these organisations and/or groups of actors work together to **deliver packages of coordinated initiatives or interventions** at the local level (such as walking buses, cycle paths, healthy school dinners, free swimming lessons).

- these initiatives and interventions usually aim to **tackle the public health problem at a number of levels simultaneously**. Most particularly, the problem is not tackled solely at the level of individuals and individual behaviour change. For example, in specific relation to obesity prevention, it might be expected that the initiatives and interventions would target a number of different parts of the Foresight Obesity System Map of the problem's causes.

- they will therefore usually also involve the coordination, development and funding of these packages of initiatives by **integrated or complementary local policies** (such as Local Area Agreements, active travel plans supported by School Travel Plans and Safe Routes to School policies).

These factors are currently shown as overlapping ellipses in Figure 1 which feed into and support each other in a whole system approach. Multiple organisations, actors, policies and activities will overlay this diagram, and will need to act at different levels, individual, family, neighbourhood and community, in order to address the conditions and mechanisms which can cause obesity. Conditions may or may not be conducive to the successful functioning of this WSA (this is shown as the "ground" in which these ellipses operate in Figure 1).   Such conditions may be structural (for example, relating to the transport infrastructure, the built environment, or proximity to national parks), organisational (such as the establishment of shared agendas or goal setting) or may be relational and cultural (such as the development of respectful relationships between parents and teachers in working to reduce obesity in school children). Finally, national initiatives, in the form of policies or legislation (such as Change4Life, or compulsory food labelling) may support, precipitate or frame these local activities (shown in Figure 1 as the external rectangle in which the rest of the diagram is grounded).

This review will attempt to develop and clarify the detail of this provisional framework, by identifying key elements and relationships for a whole system approach in each of the areas shown in Figure 1. These will be ultimately be considered in terms of locally set public health goals about obesity prevention. However, we also intend to explore whole system approach to smoking cessation, as this issue has greater maturity in terms of being tackled in this manner to provide cogent lessons which may be transferable to obesity prevention.

Audience

The audience for this review will be the Programme Development Group (PDG) members convened for this CPHE programme topic.

Methods

A systematic review of published and unpublished papers, reports, web pages or other relevant documents. The review will be systematic primarily in the sense that the methods used to search for, select, and summarise/synthesise relevant documents/sources will be fully described and potentially replicable.

Given that the main aim of the review is to arrive at a clearer definition of a core concept, what such obesity prevention strategies comprise in practice, and that this core definition may itself evolve during the Programme Development Group meetings, the conventional assumptions about what normally comprises a systematic review (such as exhaustiveness, and treating all included studies in similar depth) may need to be relaxed. We will, however, ensure that procedures followed and the rationale for any alterations made are recorded in our report.

Also, any divergences from the agreed protocol or standard NICE methods guidance for public health guidance development will be discussed and agreed between CPHE and PenTAG. Instances where the methods guidance is considered not to be relevant, our agreed methods will as far as possible reflect the implied standards of rigour and relevance that are expressed in the NICE methods guidance.

The matrix of potentially relevant documents for this review is shown below in Table 1. Essentially, there may be papers/reports which describe, in theory, the way in which whole system approaches can be used to tackle public health problems in general (cell 1 in the matrix below), or obesity in particular (cell 2). In addition, there will be descriptive and evaluative accounts of initiatives which have been implemented and which aim to tackle such public health challenges, which can also

either obesity specific (cells 4 & 6) or related to other public health problems (cells 3 & 5). These may be given the label "whole system approach" (cells 3 & 4), or which may be called something different, such as a "community wide initiatives", but which contain many or all or the same elements and approaches as what we wish to call, a whole system approach (cells 5 & 6).

Table 1: Matrix of potential relevant studies for this review.

	In Theory	In practice, Where called "whole system approaches" (WSA) or "systems approach"	In practice, Where the initiative exhibits many of the features of a whole system approach
Public Health problems	**1.** Reports/documents describing what a whole system approach (to tackling public health or other social problems) should comprise	**3.** Reports/documents about actual initiatives which claim to have used a WSA to prevent other selected public health problems e.g. smoking cessation/prevention	**5.** Reports/documents about actual initiatives which claim to have used a other-named approaches which exhibit many features of WSA to prevent other public health problems e.g. smoking cessation/prevention
Obesity	**2.** Reports/documents describing what a whole system approach to tackling obesity should comprise	**4.** Reports/documents about actual initiatives which claim to have used a WSA to prevent obesity	**6.** Reports/documents about actual initiatives which have used other-named approaches but which exhibit many features of WSA e.g. described as a "community wide initiative".

Given that the aim of this review as a whole is to develop an initial definition of whole system approaches to obesity which will inform rest of this programme of work, it is clear that our approach to searches and study inclusion will need to proceed iteratively, with our working definition being continually developed and refined to determine which is the most pertinent literature to consider. If we find that there is an unworkable volume of information to sensibly and informatively meet the aims of this review in the timeframe, we will work with the CPHE team to develop priorities in terms of the focus of these reports (shown in the different cells of the matrix), or to find other mutually agreeable limitations which will be recorded in the report.

The kinds of reports or evidence being sought

It is envisaged that we will look for four types and levels of evidence:

PenTAG

- Printed texts/reports or web resources which give prescriptive accounts what a whole system approach to tackling public health problems should comprise. These may not relate to actual examples of where the approach has been implemented, and may emphasise the theoretical rationale for adopting whole system approaches (cells 1 & 2).

- Printed texts/reports or web resources which give descriptive accounts of programmes to prevent obesity at a local level, and where it is claimed that a "whole system approach" or "systems approach" (or other closely related systems-based approach) has been used (cell 4).

- Printed texts/reports or web resources which give descriptive accounts of tackling another public health problem – such as smoking - at a local level, and where it is claimed that a "whole system approach" or "systems approach" (or other closely related systems-based approach) has been used (cell 3).

- Printed texts/reports or web resources which give descriptive accounts of programmes to prevent obesity at a local level, and where the approach used closely resembles the use of a whole system approach, even though the label for the approach used may be different (e.g. "community-wide" or "partnership working") (cell 6).

In summary, the first level of evidence should provide a comprehensive picture of what whole system approaches to tackling public health problems should comprise in theory (i.e. the ideal). The second and third levels of evidence (i.e. points 2 and 3 above) should show what typically comprises whole system approaches to tackling obesity (and e.g. smoking) in practice. After or during these stages we will form an initial view, in close discussion with CPHE, of what defining features may characterise a whole system approach for the rest of this project (i.e. for the purposes of searching for and identifying examples of whole system approaches which may not be labelled as such – the fourth level of evidence (i.e. point 4 above)). The iterative approach being taken for this review will be key since not all examples of initiatives which carry the label "whole system approach" may comprise all the key elements that are needed to represent this approach and, conversely, some initiatives not labelled as whole system approaches may in fact be considered as good examples of the approach when examined in more detail.

Key reported information

For level of evidence 1 (to describe the theoretical ideal of what a whole system approach should comprise) we will examine a variety of key texts/books, web sites, bibliographic databases and other sources where researchers, policy makers or

others define, describe or propose the use of whole system approaches to achieving public health goals.

For levels of evidence 2, 3 and 4 (described above) included studies will need to describe such things as:

Key features (e.g. specific elements or interactions) in an WSA, and/or

Collections of organisations/partners in a WSA, and/or

Groups of actors in an WSA, and/or

Local or national policies supporting or hindering their WSA, and/or

Conditions which are conducive to, or inhibiting of the implementation of a WSA.

Note that the type of documents of interest will not necessarily be evaluation studies, or even research-related, but may comprise reviews, opinion pieces, book chapters, or programme and policy descriptions obtained from websites.

Only sources written in English will be considered.

Time period to be covered

Published since 1990.

Search strategies

The search strategies will build upon the searches already conducted by the CPHE team, by conducting systematic searches of bibliographic databases, but also:

Iterative searching of relevant websites

Citation searching

Contact with authors and experts in the field

Key search terms will initially include the main concept of interest – whole system approach(es) or systems approach – and various terms for public health and the major public health problems. These may need to be restricted by other terms specific to particular public health problems where it is known that systems approaches have been previously used.

Due to the iterative nature of the work, and the need for the searches developed for this review to feed into subsequent reviews, detailed records will be kept of all work related to searching (including any internal deliberations or discussions with NICE). Also, an information specialist will be on hand to advise and undertake any required searches throughout the duration of this review.

Quality of included studies and information extraction

We believe it is unlikely that the included papers for this review will be appropriately addressed by study quality assessment checklists found in the CPHE Methods Guidance 2009 documentation. We may adopt a pragmatic approach which prioritises a paper's utility in terms of the extent to which documents provide information relevant to the review questions. Any approach, as well as data extraction templates used will be discussed in advance with the team at CPHE.

Key information about nature of the project/programme/initiative, target population and locality, key actors involved, organisations involved and potential barriers and facilitators will be extracted together with methods and findings from any empirical evidence that may be available.
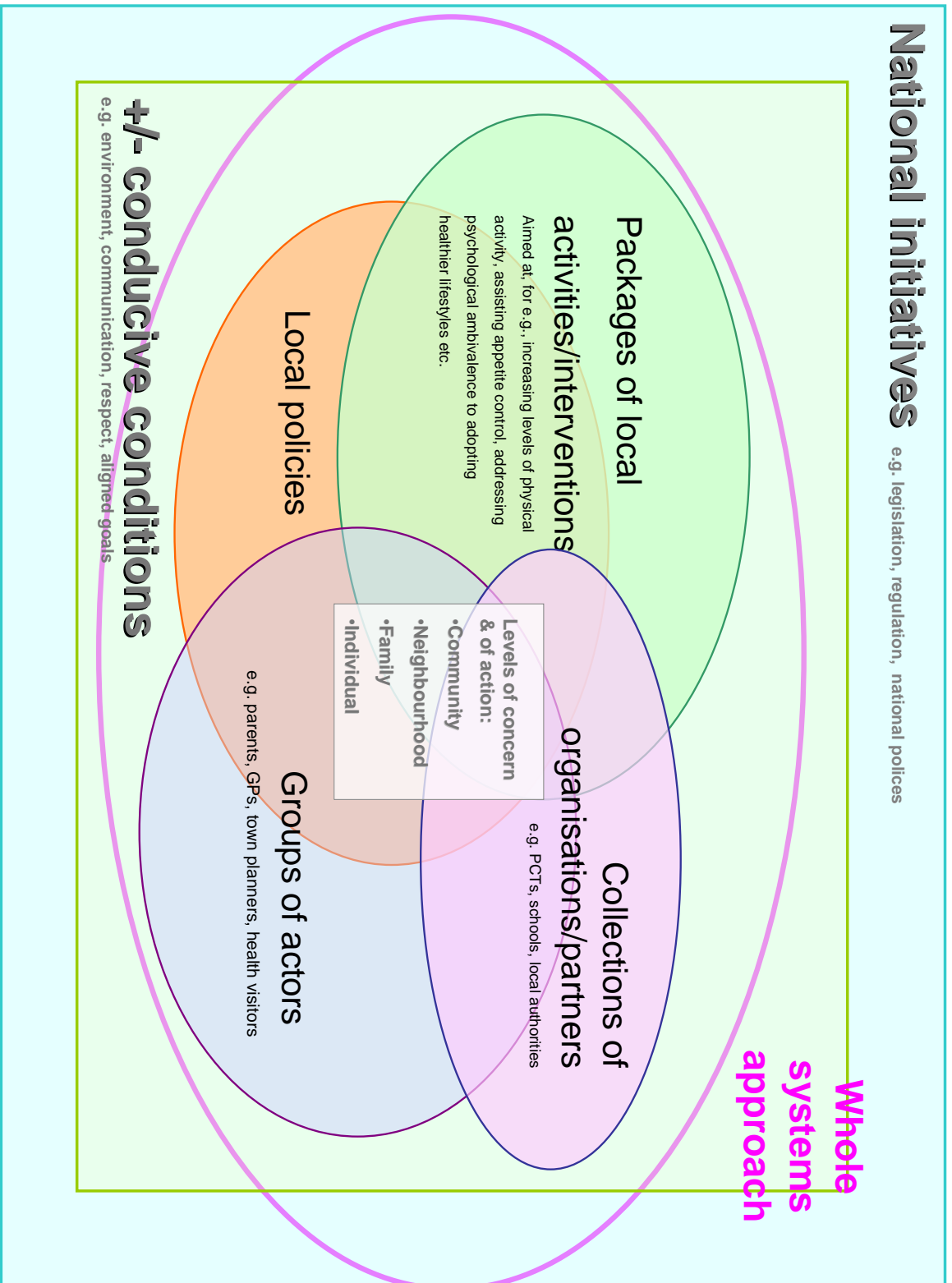
Information extraction will be undertaken by a single reviewer and at least 10% checked by a second reviewer. Any disagreements or uncertainty will be resolved through discussion with a third reviewer.

Information synthesis and presentation

Information from the included studies will be analysed and synthesised, and evidence statements will be produced. We anticipate that narrative synthesis methods, and the use of a conceptual framework(s) will be used. Key outputs of this review will include:

An initial detailed working definition of the key features (elements, interactions and factors) which should comprise a whole system approach in relation to tackling public health problems (with particular reference to addressing national or local public health goals). This definition will distinguish what are believed to be key features for an ideal whole system approach (i.e. what features a whole system approach should, in theory, possess) from the key features of whole system approaches where they are claimed to have been implemented to achieve of other selected public health goals (i.e. the key features in practice)

The further specification of the general conceptual model to include key organisations, groups of actors, and packages of local activities which can be considered to comprise a whole system approach for obesity prevention, especially when implemented at a local level.

National initiatives e.g. legislation, regulation, national polices

Whole systems approach

+/- conducive conditions e.g. environment, communication, respect, aligned goals

Packages of local activities/interventions

Aimed at, for e.g., increasing levels of physical activity, assisting appetite control, addressing psychological ambivalence to adopting healthier lifestyles etc.

Local policies

Levels of concern & of action:
- Community
- Neighbourhood
- Family
- Individual

Collections of organisations/partners

e.g. PCTs, schools, local authorities

Groups of actors

e.g. parents, GPs, town planners, health visitors

Appendix 2   Search strategy

Preventing obesity using a whole-system approach – Review 1: Identifying the key elements and interactions of whole system approaches to obesity prevention: Search Protocol

This document outlines the process, search methodology, and initial searches that have been undertaken and that will be performed in order to identify information relevant to defining a "whole system approach" to obesity prevention.   Following agreement of this document, the contents will be placed as an appendix to the study protocol.

Aims of Review 1

The aim of the review is to establish the nature of available evidence and inform the development of the following review questions:

What in theory comprises a whole system approach to achieving public health goals?

According to descriptive accounts of actual initiatives, what in reality comprises a 'whole system approach' to achieving public health goals at a local level:

In relation to preventing obesity?

In relation to preventing another public health problem (smoking)

Secondary aims (an aspect of data collection, but will not drive search strategy or inclusion decisions):

What factors are reported to facilitate or inhibit the success of a whole system approach to obesity prevention at a local level?

Proposal for Systematic Review searches

Given the specific aim of this review to develop a definition of whole system working, searches will not be restricted to the usual database searches. An extensive scoping exercise was conducted by an information specialist at CPHE. As a result of this some key terminologies, web-sites, and programmes that may be appropriate to the

review were identified. It was however also identified that due to the aim of this review being to define a concept which does not yet have a well developed and accepted terminology attached to it, that it would be necessary to iteratively search for additional concepts.   As a result it is expected that databases and websites may be referred to several times throughout the process. As a result an iterative and emergent process will be done in collaboration with the NICE Information Specialist and NICE technical team as the project progresses.   This approach is less predetermined and more iterative than would usually be the case in a traditional systematic review - inevitably, given that the purpose of this review is to develop a definition. There will be a need to remain flexible, and to respond to initial findings throughout the process.

The scoping work done by CPHE will form the base for the next stage of searching for material to be included in this review. This work includes database and grey literature sources particularly websites, and some key terminologies that may potential define whole system approaches.

Searches related to Question 1

This will use restricted language to describe the intervention, but little restriction about topic – this will allow literature specifically describing what WSA is in theory to be identified (whether or not it is about obesity). The primary concepts for searching for review question 1 are:

Population : no restriction in health-related databases; in non-health related bibliographic databases or sources, use terms to restrict to public health or health care

Intervention: Whole System Approaches

Searches related to Question 2

The literature found for Question 1 will be used and the terms expanded based on information from this literature for Question 2. These searches will restrict the topic area to obesity (Question 2a) or smoking (Question 2b) but will use an expanded language for the intervention approach (community based etc). This latter may be refined in response to findings for Question 1 since this will be starting point to

preliminarily define what comprises a whole system approach. The way in which existing initiatives, known to be of interest, describe their approach will also provide alternative terms.

Question 2a

The primary concepts for searching for material for this review will be:

Population: Obesity prevention

Intervention: Additional terminology that assists in defining Whole System Approaches

Question 2b

In consultation with the PDG it has been decided that smoking cessation and prevention should be used as an alternative public health concern, as it is a mature example of prevention approaches which can be thought of as reflecting a WSA as far as we currently understand it (i.e. involving many organisations, multi-approaches, at multiple levels operating across different public, private and commercial sectors).

For this section the concepts will be as follows:

Population: Smoking (prevention and cessation)

Intervention: Additional terminology that assists in defining Whole System Approaches

Whole System Approaches

The scoping work found that thesaurus headings for the concept of "whole system approaches" are not available and therefore text words will be used in databases to identify the intervention. The population will include thesaurus and text words when searching in databases. In all cases, precision and sensitivity will need to be balanced to ensure appropriate literature is identified within the projects timelines.

Initial search strategies

Question 1 will be considered first, in order to understand how the language of "whole system approaches" is being used in the public health and healthcare field. This will allow us to develop some preliminary understandings that will inform the inclusion of studies to address Question 2.

Question 2 will be considered using terminology for obesity and a developing set of terms related to community based/multi-agency working which we believe to represent WSA by another name. Again, this may require some reassessment of terms and inclusion criteria in response to initial findings. Equivalent searches for Question 2 will also be conducted in relation to smoking prevention.

Searches specific to obesity will be done in phases building on previous terms with any subsequent terms found as a result of the prior phase. The second two phases below are based on terms developed at scoping stage. As new terminology is found terms will initially be scoped to determine if they will be included in the final search strategies and utilised across databases and websites. Searches related to the secondary topic of smoking prevention and cessation will be limited to the Phase 1 search below unless it is determined that there is insufficient evidence in this limitation to fully inform the review.

All searches will be limited to English language publications and a date range of 1990-current (April 2010).

Initial Search Strategies: Question 1:

Question 1 looks at papers that explicitly describe the whole system approach to any public health topic. For this search, only intervention terms will be used.

Topic /PHASE	Population Terms	Intervention Terms
All public health	None	"system* approach*" or "system* work*"

Initial Search Strategies: Question 2

Question 2 looks at obesity (or smoking) prevention initiatives which, though using alternative nomenclature, use what we believe to be a whole system approach (based on emerging definitions from Question1). The format for these searches will be: (Population terms) AND (Intervention Terms).

Question 2a: Obesity prevention

Topic /PHASE	Population Terms	Intervention Terms
Obesity Prevention Phase 1:	Thesaurus terms for: (OBESITY OR WEIGHT GAIN OR WEIGHT LOSS) OR text word terms (obes*) or ((health* or over*) ADJ2 (weight*)) or ((weight*) ADJ2 (gain* or change* or retention* or loss*)) or (health*) ADJ2 (eat* or choice* or adiposity))	Text words: "((community ADJ wide) OR (community-wide) OR (community-based) OR (community ADJ based))"
	Thesaurus terms: exercise/ or Exp Diet/ or food habits/ Or text word terms: exercise*.ti. or physical*.ti. or active* or diet*.tw.	Text words: "((community ADJ wide) OR (community-wide) OR (community-based) OR (community ADJ based))"
Obesity Prevention Phase 2:	Thesaurus terms for: (OBESITY OR WEIGHT GAIN OR WEIGHT LOSS) OR text word terms (obes*) or ((health* or over*) ADJ2 (weight*)) or ((weight*) ADJ2 (gain* or change* or retention* or loss*)) or (health*) ADJ2 (eat* or choice* or adiposity))	Text words: NOTE: where there are hyphens and US/UK spellings all variations will be utilised. "multi-faceted approach" "multi-agency" (partnerships) "inter-organisational" (working) "public health systems" "multi-factorial" "multi-intervention" "population wide" "population-based" "cross-sectoral" Thesaurus heading in HMIC only: Partnership/

Topic /PHASE	Population Terms	Intervention Terms
	Thesaurus terms: exercise/ or Exp Diet/ or food habits/ Or text word terms: exercise*.ti. or physical*.ti. or active* or diet*.tw.	Text words: NOTE: where there are hyphens all variations will be utilised. "multifaceted approach" "multi-agency" (partnerships) "inter-organisational" (working) "public health systems" "multi-factorial" "multi-intervention" "population wide" "population based" "cross-sectoral" Thesaurus heading in HMIC only: Partnership/
Obesity Prevention Phase 3:	(OBESITY OR WEIGHT GAIN OR WEIGHT LOSS) OR text word terms (obes*) or ((health* or over*) ADJ2 (weight*)) or ((weight*) ADJ2 (gain* or change* or retention* or loss*)) or (health*) ADJ2 (eat* or choice* or adiposity))	Emergent terms

Question 2b: Smoking cessation and prevention

For all searches the format will be: (Population terms) AND (Intervention Terms)

Topic /PHASE	Population (outcome) Terms	Intervention Terms
Smoking Prevention/Cessation Phase 1:	Thesaurus terms for: SMOKING CESSATION/ OR SMOKING CESSATION PROGRAMS/ OR SMOKING/ Text words: smoke* or tobacco* or cigarette* or nicotine	Text words: "((community ADJ wide) OR (community-wide) OR (community-based) OR (community ADJ based))
Smoking Prevention/Cessation Phase 2:	Thesaurus terms for: SMOKING CESSATION/ OR SMOKING CESSATION PROGRAMS/ OR SMOKING/ Text words: smoke* or tobacco.tw. or cigarette*	To be determined IF insufficient material isn't found in PHASE 1

DATABASES TO BE UTILISED:

ASSIA: via CSA

CINAHL: NHS Evidence Platform

MEDLINE: via OVID online

HMIC: via NHS Evidence Platform

EPPI Centre Databases – Bibliomap, DoPHER, TRoPHI, The database on Obesity and Sedentary behaviour studies (http://eppi.ioe.ac.uk/cms/)

INTUTE (intute.ac.uk)

Social Science Citation Index: via WOS

Cochrane,

NHSCRD's: DARE and EED

Targeted web-site searches

The scoping review found that browsing/searching web-sites were the most fruitful method of finding information in this area. As part of this scoping search several sites and reports were found to be of potential interest. All of these will be reviewed by the review team for potential inclusion and to determine if there are potentially additional sources of information to be found from them.

An extensive list of websites has already been searched by the NICE   Information Specialist using the following methods:

- browsing each site's publication list and links section

- using 2 key terms: systems and policy

The results of potentially includable material will be utilised but the same search will not be used. Instead web sites will be browsed with the additional key words being utilised in the database searches. Web-sites will also be utilised to "link out" to additional sites that may be of use.

General Websites:

The whole system partnership: http://www.thewholesystem.co.uk/

Department of Health: http://www.dh.gov.uk/en

European Public Health Alliance: http://www.epha.org/a/3149

Health EU Thepublic health portal of the European Union http://ec.europa.eu/health-eu/health_in_the_eu/prevention_and_promotion/index_en.htm

National Institute for health services research: http://www.sdo.nihr.ac.uk/

Improvement   and   Development   Agency: http://www.idea.gov.uk/idk/core/page.do?pageId=1

Programme specific:

EPODE:http://www.epode.fr/

Improvement   and   Development   Agency: http://www.idea.gov.uk/idk/core/page.do?pageId=9410646

Queensland government Eat Health Programme http://www.your30.qld.gov.au/

Change4Life – Eat Well, Move More, Live Longer:

http://www.dh.gov.uk/en/News/Currentcampaigns/Change4Life/DH_092080

WHI (Walking for Health Initiative) (now called Walking for Health (WfH)) Case studies

http://www.whi.org.uk/details.asp?back=true&key=2335|0|3518495058248|R|849|2260142962006490371631&parentkey=2335|0|3518495058248|p|849|0

Topic Specific:

Be active, be healthy: a plan for getting the nation moving

http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_094359.pdf

International Association for the Study of Obesity/ International Obesity Task Force

http://www.iotf.org/

European Association for the Study of Obesity http://www.easo.org/

World Health Organisation (WHO) collaborating centre for obesity: http://www.deakin.edu.au/hmnbs/who-obesity/research/ssop/index.php

National Obesity Observatory http://www.noo.org.uk/

OECD http://www.oecd.org/

World Health Organization (Europe**)** http://www.euro.who.int/obesity

Health and Social Care Information Centre (2009) Statistics on physical activity, obesity and diet: England, February 2009 http://www.ic.nhs.uk/statistics-and-data-collections/health-and-lifestyles/obesity/statistics-on-obesity-physical-activity-and-diet:-england-february-2009

The Obesity Society (American Obesity Association) http://www.obesity.org/

State Government of Victoria, Australia http://www.health.vic.gov.au/doh

Australian 10,000 Steps http://www.10000steps.org.au/

Additional searches predominantly Grey literature:

Scrutiny committee reports (to be searched via an internet search engine)

ZeTOC

Web searches:

A search will be performed in via an internet search engine (Google.co.uk) for any named programmes considered includable.

Additional techniques

 Due to the ongoing iterative nature of the searching needed to answer the review questions a series of techniques will be used:

a) Use of "related articles" features. Where a database or website has this feature, key publications will be followed up using this facility.

b) Reference Searching: reference lists of includable reports and background reading will be used to identify additional potential useful material

c) As websites are being searched any additional site found or journals indexed by these tools will be followed-up

d) If needed, we will refine terms used to address question 2 as the definition of WSA develops.

e) Where key authors are identified through their publications, or suggestions from CPHE or the PDG, author searches may also be undertaken.

f) The PDG will be asked for recommendations of articles, books, reports etc. which meet the scope of the systematic review, although a deadline for their receipt by PenTAG in order to be included in this review may need to be agreed.

The aim of this review is to develop a working definition for whole system working and, as such, we anticipate that it will proceed incrementally, with provisional definitions leading to additional papers being sought or rejected, further refinements being made to the definition, further data sought, and so on. Any changes or additions made to the search approach as a result will be recorded in a WORD document to be included in the final report. All searches will be fully documented in respect to databases used, terms used, and dates of searches. All websites will be recorded included link outs to useful resources.

Appendix 3   Exclusion criteria used for screening

Title/abstract criteria	
0	Retrieve
1	Not called (whole) systems approach/ working or does not operate at multiple levels across multiple agencies
2	Not relevant to public health (i.e. about business, computing, biomedical, natural etc. models)
3	Not in English
4	Published pre-1990
5	Potentially relevant for effectiveness review
6	Potentially relevant for qualitative review
7	Potentially relevant for cost-effectiveness review/ economic modelling
8	Duplicate
9	Potentially useful for case studies
Additional criteria at full text stage	
0	Include
1	Doesn't describe a) in theory, key elements & relationships of a WSA OR b) WSA in practice, in relation to obesity or smoking prevention
2	Not applicable to local level
3	Insufficient description of the key elements & relationships to be useful for building a definition of WSA or for understanding its implementation in practice
4	Potentially relevant for effectiveness review
5	Potentially relevant for qualitative review
6	Potentially relevant for cost-effectiveness review/ economic modelling
7	Abstract only
8	Publication withdrawn
9	Review paper – reviewed for references
10	Unobtainable
11	Programme, but not WSA
12	Not in English

Appendix 4   Quality assessment of included sources (Question 1)

Authors (year) [Ref ID]	Attwood et al. (2003) [1741]
Quality criteria	**Comments**
Is it a coherent account?	The account is structured in such a way that concepts are introduced in a piecemeal way – whilst it is clear that describing concepts in relation to complex events means that the account is unlikely to be straightforward or short, the structure of the account can be difficult to follow. Grasping the key concepts (middle-ground frameworks, circles of inclusivity, etc.) in the midst of the wide-ranging descriptions can be difficult, and this makes understanding the relationships between concepts difficult too.
	There is a tendency in the text to assert the strengths of WSA (and the posited weaknesses of top-down approaches) without reference to specific examples or evaluations. Whilst the authors may be warranted in making these assertions (based on their experience), further evidence in support of them would have been very useful.
Do case examples (if any) illuminate the description of ways of working?	Yes, but they do not relate to public health
Does it contribute to understanding the nature of WSA?	Whilst the authors make reference to a background literature on complex adaptive systems, arguably this is not engaged with in sufficient depth to enable rich theory about the application of WSA to change management to be developed. However, it should be acknowledged that this is probably not what the authors were aiming to do, as their focus was more on describing how to implement (with reflective examples) a WSA to change management.

Authors (year) [Ref ID]	Bauld & Mackenzie 2007
Quality criteria	**Comments**
Is it a coherent account?	In some places the expectations of what actually comprises a true WSA are implicit rather than explicit, although taking a WSA was a key underlying principles for the HAZs.
Do case examples (if any) illuminate the description of ways of working?	Yes – HAZ

Does it contribute to understanding the nature of WSA?	Yes, in particular it is extremely useful in outlining how and why WSA were stymied by national and local factors foer some HAZs and in outlining how evaluation of WSA might be considered.

Authors (year) [Ref ID]	**Benington, J. & Hartley, J. (2009) [1837]**
Quality criteria	**Comments**
Is it a coherent account?	Yes – written from a leadership development perspective, as a result of a wider enquiry by the Cabinet Office into public service leadership academies.
	Explanation of the main concepts is unambiguous – e.g (p.1) "The new paradigms include thinking about government and public services as 'complex adaptive systems' and organisms, rather than as machines or physical structures (e.g. 'levers' or 'silos')."
	Relationships between/across concepts are also fairly wel8
	l laid out and operationalised – e.g.
	"Proposition 1, The need for new paradigms of governance as
	a complex adaptive system, and more effective
	political, managerial and civic leadership across the
	whole public service system" –
	• First, a recognition of the problems as part of a **complex**, **polycentric**, **multi-causal**, **dynamic**, **interactive** and **adaptive system**, rather than as a simple, structured, uni-causal, mechanical chain of cause and effect *(for example, Stacey, 1996; Waldrop, 1992; Wheatley, 1992)*.
	• Second, a commitment by government at all levels to work across the boundaries and silos which traditionally separate policies and programmes
	• Third, a requirement for a qualitatively different kind of 'joined up' thinking and action by public…managers…a capacity to work across many different boundaries…
	• The profound restructuring of the ecological, political, economic, social and technological context reinforces the need for the whole public service system to work in a more coherent and co-coordinated way."
Do case examples (if any) illuminate the description of ways of working?	Yes, although clearly still hierarchy-focused – see p.12 & 13, "National College for School Leadership MATD" and Leadership in Partnership in Leicestershire".

Does it contribute to understanding the nature of WSA?	Yes – how the National School of Government and Sunningdale Institute envisages the WSA driving public sector leadership development in a systematic manner.

Authors (year) [Ref ID]	**Berkeley, D. & Springett, J. (2006) [891]**
Quality criteria	**Comments**
Is it a coherent account?	No real definition given of the WSA – this is as far as it goes:
	"HFA initiatives are **complex systems** but their complexity does not arise solely from what they have to do 'on the ground' and the complex set of **interrelations** they have to operate within, as is often proposed. They 'live' within a complex set of environments, each comprised of a **number of agents/systems** (and their interactions), all subjected to prevailing cultural and political barriers (Berkeley & Springett, 2006), and all with the potential to constrain the initiative." – p.2880
Do case examples (if any) illuminate the description of ways of working?	An analysis is made of the constraints faced by both Health Action Zones (HAZ) and Health City (HC) projects
Does it contribute to understanding the nature of WSA?	Yes – in the sense of broader government policies and their historical successes/failures.

Authors (year) [Ref ID]	**Dooris 2006**
Quality criteria	**Comments**
Is it a coherent account?	Confirmatory rather than very detailed.
Do case examples (if any) illuminate the description of ways of working?	Brief mentions of types of settings approaches such as in Healthy Cities, hospital, schools, etc

Does it contribute to understanding the nature of WSA?	Yes in the sense that it shows the links between systems thinking and the complexity of working within specific settings (such as trying to create healthy schools) which illuminate the nature of systems working within them

Authors (year) [Ref ID]	Edgren (2008) [1609]
Quality criteria	**Comments**
Is it a coherent account?	Clearly structured and written.
	Terms that are used within the theory, such as 'agents' and 'local', are not sufficiently well developed or defined to be considered as concepts. The use of these terms appears to be consistent, but there is considerable potential for different interpretation of the terms' meaning.
	The relationships between 'actors in the system' is outlined, but relies upon the reader's experience of the health system to understand the relationships in any depth.
Do case examples (if any) illuminate the description of ways of working?	None.
Does it contribute to understanding the nature of WSA?	The paper provides a useful description of a systems approach to integrated care that enables the reader to focus on the generic elements of the approach. Although the paper sometimes errs towards simply promoting the concept of 'Complex Adaptive Systems', there is sufficient detail (written in straightforward language) about the nature of WSA to further understanding.

Authors (year) [Ref ID]	Hawe et al 2009
Quality criteria	**Comments**
Is it a coherent account?	Yes, well articulated and argued. Going beyond what systems thinking is and providing ways of thinking about its implications in organisations
Do case examples (if any)	Not clear if the few examples given are in theory or based on actual occurrences.

illuminate the description of ways of working?	
Does it contribute to understanding the nature of WSA?	Yes. In particular how to think on interventions in a systems approach and implications for evaluation.

Authors (year) [Ref ID]	**Hudson B 2004**
Quality criteria	**Comments**
Is it a coherent account?	Yes.
Do case examples (if any) illuminate the description of ways of working?	No
Does it contribute to understanding the nature of WSA?	This is a slightly tangential focus, as it focuses on understanding network partnerships as a specific feature of whole system working, and uses a framework from Benson to understand features which enhance or inhibit effective network partnerships. But key WSA perspective accords with others, and the framework gives a way of thinking about how key WSA may be facilitated. It also provides a useful summary of management approaches within "traditional" and WS.

Authors (year) [Ref ID]	**Hudson (2006)**
Quality criteria	**Comments**
Is it a coherent account?	Yes – the theory and main concepts are presented in a clear and unambiguous way, focused on health care working but not to the exclusion of other areas/applications.
Do case examples (if any) illuminate the description of ways of working?	To a degree – more a paper on the theoretics, with discussion of B&F, and a couple of brief examples of how it could work in practice.
Does it contribute to	Yes, and a 'whole system performance measure' is mooted towards the end.

understanding the nature of WSA?

Authors (year) [Ref ID]	IDeA (2005) [1842]
Quality criteria	**Comments**
Is it a coherent account?	Yes, descriptive rather than analytical – account of how introducing the WSA into older people's service provision would impact on improving their quality of life.
Do case examples (if any) illuminate the description of ways of working?	Case examples are selective in the details they contain – a number of examples given from various county councils, city councils and partnerships, but the extent to which they clearly articulate the concepts is varied.
Does it contribute to understanding the nature of WSA?	Useful from the perspective of practical application in a health & social services context, but little additional value.

Authors (year) [Ref ID]	Iles & Sutherland (2001) [1843]
Quality criteria	**Comments**
Is it a coherent account?	The protocol for conducting the literature review is clearly stated and the summaries given are concise, clear, and address the issues raised in the protocol.
Do case examples (if any) illuminate the description of ways of working?	Yes, but they do not relate to public health
Does it contribute to understanding the nature of WSA?	Although concise, the summaries would perhaps be more useful for the purposes of understanding WSA if they were given in more detail. Whilst the summaries provide a useful guide to *implementing* a WSA (soft systems methodology), the limited detail on concepts and the relationships between them means that it can only contribute in a more limited sense to developing an understanding of WSA.

Authors (year) [Ref ID]	**Information Policy Unit NHS Executive 2000**
Quality criteria	**Comments**
Is it a coherent account?	Not entirely, much is assumed and it is difficult to see how the approach, which they refer to as WSA, differs from other forms of joint working.
Do case examples (if any) illuminate the description of ways of working?	Some examples of good practice but details about how these came about is not provided.
Does it contribute to understanding the nature of WSA?	Useful in the sense that these provides and example of "partial" WS thinking, while using traditional methods of monitoring, control, mandated partnership and management.

Authors (year) [Ref ID]	**Plsek (2001) [1768]**
Quality criteria	**Comments**
Is it a coherent account?	Although individual concepts are not explicitly defined, the use of an example and metaphors allows their meaning to be adequately understood and the relationships between these concepts to be comprehended.
Do case examples (if any) illuminate the description of ways of working?	Example clearly illustrates the application of Complex Adaptive Systems concepts and provides a useful example for thinking through the bird/rock metaphors as a way of understanding how a health system functions.
Does it contribute to understanding the nature of WSA?	The paper provides a clear and succinct summary of Complex Adaptive System approaches to a health system.

Authors (year) [Ref ID]	**Pratt et al 2005**
Quality criteria	**Comments**
Is it a coherent account?	Yes. This has a strong theoretical base but also articulates how, in practice, such ideas can inform ways of working within systems in order. These examples are often related to turning broad theoretical concepts like

	"participation" into realties thorough trying to change the way that people, meet, talk and create opportunities for new thinking and planning.
Do case examples (if any) illuminate the description of ways of working?	Yes. Many practical examples are given about how to develop WSA, there are both general principles for working and numerous case examples that shows how these might work.
Does it contribute to understanding the nature of WSA?	Yes. It moves the thinking on from the abstract to the concrete.

Authors (year) [Ref ID]	**Rowe & Hogarth (2005) [1376]**
Quality criteria	**Comments**
Is it a coherent account?	Clearly structured and written.
	Strongly grounded in the Complex Adaptive Systems literature, with clear articulation of concepts and the way in which they inter-relate. Understanding of the concepts is considerably increased by the extensive discussion based on the case study.
Do case examples (if any) illuminate the description of ways of working?	Yes, there is extensive discussion based on the case study.
Does it contribute to understanding the nature of WSA?	Although the paper arguably does not further develop the Complex Adaptive Systems approach as such, it does provide a very clear and detailed example of implementing the approach in a NHS Primary Care Trust – as such, it contributes substantively to the increasing understanding of WSA.

Authors (year) [Ref ID]	Senge, P.M. (1990) [1777]
Quality criteria	**Comments**
Is it a coherent account?	Yes – written as a management/leadership guide on the importance of developing a 'learning organisation'
Do case examples (if any) illuminate the description of ways of working?	Yes – in a fairly narrowly business-focussed way (e.g. Detroit and Japanese car manufacturers p.18). Little discussion of wider issues, no discussion of public health issues.
Does it contribute to understanding the nature of WSA?	Yes – focussed on business communication and management.

Authors (year) [Ref ID]	Stacey (1996) [1778]
Quality criteria	**Comments**
Is it a coherent account?	Not parsimonious – concepts are re-stated from different perspectives (e.g. complex adaptive systems from organisational, psychological, and modelling perspectives) without these adding substantively to understanding of WSA.
	Although it is clear that systems are complex and that rigid boundaries between concepts may are not tenable, there is often an overlap in the presentation of concepts under different categories (e.g. feedback is defined and explained under two different categories), which suggests a lack of clarity in conceptualisation.
	There is a danger that through the author seeking to represent complexity (where systems are both ordered and disordered, stable and unstable, fluctuating and equilibrial, etc.) that the theory is attempting to 'have it both ways'.
Do case examples (if any) illuminate the description of ways of working?	The computer modelling examples from the biological sciences (and the private sector organisational examples) aid understanding of complex adaptive systems in a general sense.
Does it contribute to understanding the nature of WSA?	Yes, although the presentation and terminology means that it can be a frustrating account to grasp – the essence of the approach could probably have been presented in a far more digestible (and shorter) form.
	Interestingly, the author also identifies the implications of a complex adaptive systems approach for evaluation.

Authors (year) [Ref ID]	Zimmerman, B., Lindberg, C. & Plsek, P. (1998) [1807]
Quality criteria	**Comments**
Is it a coherent account?	Yes – clear definition given of a "Complex Adaptive System" which appears to share many of the key features of a WSA. There are a large number of "new" concepts (e.g. the **lens of complexity**, a **good-enough vision**, **clockware** and **swarmware**, **tune to the edge**) which are defined and then revisited regularly, as well as highlighted in case examples.
Do case examples (if any) illuminate the description of ways of working?	Yes – 10 examples given which illuminate (to varying degrees) the practical application of these concepts, both from an explanatory perspective, and an intervention/post intervention viewpoint.
Does it contribute to understanding the nature of WSA?	Yes – focussed on business communication and management.

Appendix 5   Evidence tables: Question 1

Authors (year) [Ref ID]	Attwood et al. (2003) [1741]	**Focus/aim**	To make the case for 'whole system development' and to improve ways of working in the public, voluntary and community sectors (including partnership working and neighbourhood governance) – and to explore 'How organisations fit to housing the human spirit can be created and sustained such that they meet the needs of communities and society at large?'
Paper title	Leading Change: A guide to whole systems working	**In theory only or using examples?**	Examples given, but not related to Public Health
Location of authors	UK	**Are metaphors used?**	Broad 'living system' metaphors are referred to, but are not used significantly in explaining the WSA. 'Jazz band' metaphor developed in some depth.
Discipline/organisation of authors	Organisational and community development	**Have the authors had practical experience of a WSA approach to a public health issue? [brief description if yes]**	No
		Do the authors provide case examples from previous experience? [brief description if yes]	A number of public sector (health and community) examples from the authors' experiences of consultancy work are provided, but none relate specifically to Public Health.
Abstract	None		
What comprises a WSA? **[extract key summary/text]**	(p.xiv) - WSA are not "comfortable territory" for people versed in top-down management practices – "The notion of organisation as machine gives a superficial, and illusory, sense of control and action that fits with our task-fixated culture of performance targets and indicators. Equally, organisation development approaches have implicitly emphasised the notion of single organisations with clear territory and well-defended walls. [WSA] are more uncertain, being composed of phenomena that cannot be reduced to simple cause and effect. [They require] a capability to work with paradox and a tolerance of ambiguity. Magic bullets or quick fixes will not deliver change." (p.xvi)		

Ten core values in whole systems development *(verbatim)*:

1) Optimism – that people and organisations have the capacity to learn and the commitment to tackle dilemmas and intractable 'problems'

2) Empathy and humility – in the face of the tough challenges faced by those who are charged with, or voluntarily take on, a whole systems development agenda

3) Tenacity and courage – to question assumptions and current ways of working

4) Learning – putting learning at the heart of what we do and a recognition that it is as important to honour what is and what works as it is to encourage new ways of thinking and acting

5) Relationships – that are founded on the pursuit of mutual understanding and preparedness to negotiate, share learning and experience from elsewhere and working through problems

6) Whole system perspective – resisting fragmented and 'one size fits all' approaches and seeing organisational and community issues within the wider environmental context

7) Local knowledge for local solutions – a bias towards the use of local knowledge, held by individuals, communities and organisations, to create locally invented solutions

8) Buidling social capital – an active appreciation of the personal qualities and experiences of the people with whom we work and a determination to involve them in designing processes that will strengthen learning and build capacity and social capital

9) Celebrating small steps – a welcoming of the small improvements that demonstrate the practical possibilities and potential for learning in whole systems development

10) The long view – being there for the long haul rather than the quick fix

- "… service improvements are 'constructed' and delivered through organisational frameworks and practices that have not themselves been subject to evidence-based enquiry", i.e. knowledge of 'what works' is of limited use if there is little understanding of the organisations through which programmes are delivered (p.1)

- "Whole systems approaches start from *rethinking* organisational change issues; how we *act* in relation to them, and crucially, how we *involve both ourselves and others* in their diagnosis and treatment." (emphasis in original) (p.2)

- The 'mad management virus' (the belief that top-down targets and inspection are the 'big' solution to ensure the effective delivery of services) – "… the promise of a simple way to control delivery outcomes from the centre and thus fulfil ambitious election promises. Its ability to worm its way into the operating system damages the genuine efforts of organisations, communities and individuals to improve the way services work on the ground." The key components of this 'virus' (which is the antithesis of WSA) are *(verbatim)*:

1) Programmatic top-down approaches always work

2) The more inspection and control, the better the outcome

3) Setting top-down targets produces specified results; there are no unintended consequences

4) These methods have no harmful effects on levels of trust, staff morale, absenteeism or turnover

5) This 'Management' 'alchemy' has an abstract language of its own, can be parachuted onto the top of any kind of organisation, and operates a system of carrots, sticks and levers by remote control, disconnected from the concrete world of doing and implementing. It is about Management, not managing.

6) It uses 'hard' engineering systems approaches with negative feedback control systems. Effectively, it treats people as though they are central heating systems, and is inherently dehumanising.

7) It prevents the fundamental ideas of quality systems and philosophies by running them into top-down bureaucratic control exercises.

8) It is what happens in the private sector and 'private sector disciplines' always produce better results.

- "In considering any attempt at change, it is vital to clarify the key dimensions of what might be called 'the implementation landscape'. *Engagement* and *implementation* are the key words; they are far more important than the elegance of the organisational change *intervention*. Greater clarity of the implementation landscape helps to shape the processes of engagement and involvement with organisational systems and networks." (p.6) (emphasis in original)

See Table 1 (underneath data extraction table): Differences between consumerist and citizen-based approaches to improvement

- Leadership in a WSA "… takes courage and commitment to two value-based proposition:
1) Leading as if people really matter – reinventing change management from positive Theory Y assumptions about people and their capabilities, understandings and possibilities
2) Meeting differently – changing the ways in which we meet and engage with each other" (p.16)
"The new leadership 'game' is engagement and involvement, not hierarchical domination, and effective leadership involves the many rather than the few." (p.17)

- "Whole systems development is a set of propositions, tools and practices that aims to engage all the people in the system in designing and implementing change… Sustainable change, in contrast to that which is temporary and superficial, is only brought about by involving all those who are part of the problem in creating and implementing the solutions." (p.19)

- A deterministic world view (where the world is viewed as operating like a machine obeying causal laws) "… has taken root to such an extent that to question its validity or 'truth' is to ask people to question their long-held, taken-for-granted assumptions that have been embedded into the social context over centuries… In the world of management and organisations, the notion of the organisation as machine, which can be 're-engineered' or 'levered' or managed by objectives to produce change, where departments 'fit together like cogs', and in which people understand, behave rationally and fit in with the part they play, is deeply embedded in our thinking." (p.21)

- Development of WSA analogous to developments in the physical sciences – "The development of quantum physics in which the patterns of relationships and the 'spaces between' objects, or field theory, became the rich arena for inquiry enables us to move away from the Newtonian world view – focused on separate and discrete objects – to a relational world view, where the energy is located in the space between." (p.22)

- Assumptions underlying whole systems development are congruent with complexity science:
a) acknowledge the complex and paradoxical nature of life in organisations
b) valuing of diversity, including competing value perspectives, "is seen as central to success"
c) 'either-or thinking' insufficient – "People must be encouraged to face the, often tough, realities and conflicts of the world" (p.23)

- Equifinality (different but equal paths to the same place) is key to WSA – "… open, or 'soft', systems theory presents

different and far more pragmatic possibilities in keeping with [Attwood et al.'s] grounded, practice-based approach to the developments of leading change and guiding whole systems development, as well as to the act of managing in general." (p.25)

Differentiating whole systems working from more traditional approaches to change management:
1) service task should be the focus of learning and change – "attitudes and culture change flow from the behaviours needed to address the new agendas", rather than focusing on the individual. Action learning (situated in the group or community as well as the individual) is necessary, rather than training.
2) based on organic and living system metaphors, "which emphasise the interconnectedness of parts and the necessity of system-wide learning. Individuals are able to be self-reliant because they have knowledge of the bigger picture, which they have had a hand in creating. While some top-down direction and review is needed to check that understanding is being translated into practice, lateral organisational links and interorganisational networks are crucial in providing opportunities for education, for developing commitment and energy, for marrying top-down and bottom-up concerns, and for trust-making, bargaining and deal-making." (p.26)
3) the 'change equation' is "taken seriously… all change involves pain, and because we all want to avoid pain… the motivational factors have to be very strong to succeed." (p.27)
The change equation: $D \times V \times M$ must be $>P$,
where:
D= the current level of dissatisfaction with the status quo
V= more attractive ideas or vision of a better future
M= method or some practical first steps towards this future
P= the pain and cost of change for those concerned

Engagement and implementation, not intervention:
- "Particularly important in whole systems development is the linking of many varieties of professional knowledge with the local knowledge of people on the ground" (p.28)

- Core principles of leadership in whole systems development, based on authors' reflections on the process of introducing resident self-governance at the neighbourhood level:
1) Middle-ground framework – "linking big picture, top-down initiatives with bottom-up [local level] advice", ".. [to realise] the potential both for organisational direction to be translated into sensible local action, and for learning from local action to influence policy and direction". A middle-ground framework "… allows for mutual exchange and public learning to take place, which then serves to guide action, both of the strategic direction and of the local tasks required". Note that, "Simple, hierarchical models of leadership are inappropriate in these settings. Here, leadership is more of a relational concept, a culture characterised by positive and proactive relationships between people and groups. This sort of leadership often requires considerable development work if it does not already exist." (p.51)

2) Widening circles of inclusivity – effectively leading and getting all of the relevant people together in order to discuss and develop ideas is not possible until the following questions have been answered: What is the whole system? Who is included? Who else should be here? Where are the boundaries?

Holding frameworks:
- "Top-down attempts to change, often through a mixture of pronouncements, restructurings and training packages,

usually fail because they limit other people's contributions and therefore their sense of ownership. From a whole systems perspective, leadership is about creating situations ['holding frameworks'] where people themselves start to form the new meanings… [These holding frameworks are] environments that accelerate organisational and system-wide learning [by] creating receptive conditions for change, rather than prescribing the detail of its content. In this way, leaders can contain people's very natural anxieties about the impact of change *and* create the space for them to work on new ways to tackle previously intractable problems." (p.32) (emphasis in original)

- "… those engaged in implementation need to see their own contribution to the whole as both builders and architects. This learning is as much sited in the workplace community as in the individual… through [reflecting and acting together] people can create the local knowledge that constitutes local cultures supportive of sustainable change." (p.37)
(compare with top-down approaches, where programmes are 'driven-through' independently of one another)

- "Consistent top management attention is required to hold the change process, with its long-term focus on implementation and concern to promote public and community learning across boundaries, in the context of the bigger picture." (p.37)

- Rather than control and co-ordination, "Implementation requires that anyone who knows about or has a role to play in solving a problem and/or creating a new way of doing things is involved and has the necessary tools. It is about engaging the intelligence of everyone on a self-organising basis." (p.38)

Using the metaphor of a jazz band to understand how leadership is implemented in a WSA *(verbatim)*:
1) a valuing of difference and diversity – the capabilities of the different performers – within the overall identity and style of the group
2) the recognition that at times the music will sound discordant – that conflict or apparent conflict is inevitable
3) encouragement of emergent direction rather than a fixed score from which to play
4) receptiveness to external influences – requests from the audience or even a welcoming of another performer's desire to join in
5) the idea of being sufficiently flexible, or even chameleon-like, to be able to work together while maintaining separate identities
6) the apparent contradiction of being leaderless as a collective, while taking the lead when circumstances demand
7) the idea that from diversity and autonomy, within the bounds of a shared sense of mission, come creativity and effective performance in pursuit of common aims (p.74)

- The 'public learning' (in particular on the part of leaders) can best be enabled by a WSA by leaders *(verbatim)*:
1) demonstrating their intent to involve the 'whole system' to develop a shared understanding of current realities and to create a collective vision of the future
2) developing key questions about the ways in which the gaps between current and desired future state can be bridged so that stakeholders can work together in public to agree on the best ways forward
3) developing a climate within their own organisations, or parts of the system over which they have influence, which fosters commitment and combats coercion
4) challenging gaps between a rhetoric of collaboration and partnership, and a reality that supports competition as the prime driver of organisational relationships
5) developing human resource management processes (e.g. for appraisal and performance management) that place a

	high value on learning with and from peers, bosses and subordinates 6) establishing an ethos within the team in which learning and development is actively valued and action-fixated behaviour discouraged 7) adopting pay and reward systems for senior people that reinforce learning and discourage unhelpful competition or short-term target setting (p.94)
Levels of concern & of action (community/neighbourhood/family/individual)	From individual up to community
Do the authors identify any barriers to success?	No
Additional notes	None

Table 1 (p.12): Some differences between consumerist and citizen-based approaches to improvements

The consumerist agenda	The citizen/community agenda
Emphasis is on better services for individuals at the point of delivery; hospitals, schools and so on. The focus is on what individual hospitals, schools and agencies of delivery do to work on a person's needs/problems as they are currently manifested.	The emphasis is more on building stronger, safer communities as a basis for improving employment, education, environment and health. Improving schools and health provision, especially primary care, is supported by this changing context and in turn helps to support community building.
• works with needs and problems as they exist. Accepts demand levels and increases in them, as given	• works on a preventative agenda, dealing with issues upstream in order to decrease problems and change needs
• tends to focus on improvements within individual services, but also accepts the need for maximising one-stop shops and online services	• works for the improvement of joined-up services and their re-engineering at the neighbourhood level around community agendas
• leaves the traditional relationship between provider and user much as it is, but puts greater emphasis on better customer access, information and service . • many service users might prefer this agenda, especially where services are accessible and improving, and they are confident, able to articulate demands and feel heard	• seeks a shift in the relationship and power balance between users/citizens and service providers. (Professionals on 'tap' rather than on top.) This aids sustainability by increasing the capacity for individuals to articulate their needs, and via the regeneration of communities and environments
• tends to lessen the emphasis on personal responsibility. Can lead to escalating and unrealistic expectations, for example, expecting a world-class	• the move towards prevention places a greater responsibility on individuals, communities and providers to work together to take responsibility for the analysis of problems, their solutions and

service to provide aspirin in the middle of the night	implementation
• some joining up necessary to provide better services within the existing paradigm. High alignment with the assumptions underpinning Best Value and audit/inspection regimes	• joining up and sustainable service improvement initiatives essential for long-term improvement. Likelihood of major difficulties with 'silo-based' Best Value and current performance management/audit/inspection regimes
• consultation – rather than involvement or participation – Is carried out from the perspective of the needs and questions as perceived by the service professionals, rather than starting with the users' agendas. However, the terms consultation, involvement and participation may be used interchangeably	• focus is on genuine involvement and community participation through capacity building to develop neighbourhood and/or community interest needs and agendas. Definitely not 'citizens in committee'. Community agendas are the basis for service, redesign and integration

Authors (year) [Ref ID]	Bauld & Mackenzie 2007 [1765]	**Focus/aim**	Outlines the key elements for the development of HAZ's and provides and insight into the change processes undertaken, specifically what factors influenced whether HAZs were able to contribute to a whole systems change to influencing the social determinants of health.
Paper title	Health Action Zones: multi-agency partnerships to improve health	**In theory only or using examples?**	Examples
Location of authors	UK		
Discipline/organisation of authors	Public Health Policy Evaluation of complex interventions	**Are metaphors used?**	No
		Have the authors had practical experience of a WSA approach to a public health issue? [brief description if yes]	Some HAZs and activities
		Do the authors provide case examples from previous experience? [brief description if yes]	No
Abstract	None		
What comprises a WSA? **[extract key summary/text]**	Health Action Zones (HAZs) were multi-agency partnerships located in some of the most deprived areas of England used asocial model fo health, and aimed to reduce health inequalities by engaging in programmes and projects to address determinants of health as well as improving local health services. Initial HAZs set up in 1997, were asked to adopt 7 underlying principles: ▪ Achieving equity ▪ Engaging communities ▪ Working in partnership ▪ Engaging front line staff ▪ Taking an evidence based perspective ▪ Developing a person centred approach to service delivery ▪ Taking a whole system approach.		

HAZ's chose to address a wide range of factors that can influence health, including areas such as poor housing, unemployment, education and promoting opportunities to engage in healthy lifestyles. Almost a third of projects aimed to address such non-traditional, social determinants of health

Evaluations needed to assess processes as well and impact and "to take a development role in the establishment of HAZs as learning organisations." (p.133)
Thought that "through developing collaborative capacity within partnerships and communities local areas would create the momentum for sustainable whole systems change that would lead, in the longer term, to improved population wellbeing and reduced health equalities."

Sustainable inroads into tackling social determinants of ill health meant HAZs "needed to embed public health agenda within health and local authority planning structures."

Three key areas to WS approach:

Strategy development
Three factors at a **national level** that affected the ability the develop and implement effective strategies:
- The extent to which the national policy was conducive with approaches that HAZs wished to adopt.
- Whether there was stability of intent in relation to the HAZ initiative.
- Whether political leadership remained focused on the goal of tackling health inequalities.

These were disrupted by a change in ministerial leadership for health and a shift to modernisation agenda which shifted away form bottom up innovative solutions to local problems and over to achieving national targets

Factors at **a local level** which buffered HAZ strategies form changing directives included:
- Strong local leadership
- Purposeful efforts to develop local collaborative capacity (including in some cases seeing this as a process requiring investment in its own right)
- Strategic approaches to investment.
- Strategic commissioning approach (rather than funding a myriad of projects through a bidding process).

Approaches to evaluation and learning
"Within a whole systems model reflection, learning and evaluation are the ways in which the system regulates itself and adjusts to its changing context" (p.135).
Three factors at a **national level** that helped learning to contribute to these processes:
- Genuine commitment to national and local evaluation and to collaboration between the two (such as sharing tools and approaches, funding a web based system to promote learning between and within HAZs, funding for practitioners to conduct research in local areas).

In addition, new labour rhetoric around evidence based policy supported learning, although locally "what works" was seen as potentially leading to disinvestment and also "as a means of stifling HAZs' innovation agenda"

(p.136)performance monitoring systems were also contentious – the required statement of "goals, activities, anticipated outputs, performance indicators and outcomes" was not found felt to be a useful way of representing strategic intent or progress and many were sceptical about how and if data were used at a policy level other than to provide summary judgements.

"while good planning is important and support for planners required…there is something about the inherently complexity of multi agency solutions to problems that is inimical to detailed specification of programmes at the micro level." (p.136)

At a local level, additional factors impacted on HAZ's capacity to learn:
- Variation in commitment given to learning as a process, and
- In focus for this (ie monitoring data vs building capacity for learning at a project level, a few even developed strategic evaluation frameworks at the beginning of the initiative that allowed them to integrate learning generated at different levels.)

Mainstreaming
HAZs time limited, therefore resources and commitments at a local level need to be secured to ensure sustainability.

National level factors that perceived to impact on the ability the mainstream locally:
- Gaining support from local partners compromised by national message that funding would not continue as originally planned, and development of new policies absorbing govt. energies.
- Organisational developments across LAs and Primary care (2 key elements of the systems) threatened to marginalise HAZs.
- Since decisions about future funding were taken prior to completion of the national evaluation, commitment to mainstream policy learning was questioned.

Locally
- Different approaches to mainstreaming – some planned for this from the beginning, others only reactively when it became clear that funding would not continue indefinitely. "sustainability is a process that should be explicit at the strategy development stage". (p.137)
- "those that took a broad view of mainstreaming, to include the sustaining of practice and policies, as well as individual projects reported greater success."
- HAZs varied in their attitude towards fledgling governance arrangements, some saw these as a threat "those that did not tended to take a dynamic view of partnership that assumed that organizations would always be in a degree of flux and that renegotiating approaches is an integral part of systems change." (p.137)

"In summary, a whole systems change model was a helpful way of conceptualizing differences between HAZ in terms of their ability to progress the broad public health agenda and to plan for health improvement…. The HAZ most effective in impacting on the whole system were those that maintained a clear focus on their strategic approach, set up frameworks for learning from their activities and built mainstreaming processes into their ways of working."

	(see Table 12.1 below)
	Impact As no specific data set was required of the HAZs, impact was measured using routinely collected statistics (e.g. Compendium of clinical and health indicators), but difficult to interpret and not consistent across areas. Interviews with key stakeholders in the HAZs suggest the achievements for HAZ were: 1. Introducing non medical perspectives to health 2. Getting important health related issues onto local agendas 3. Encouraging closer working relationships between health and social services 4. Creating infrastructure for sustainable partnership working 5. Precipitating a culture/attitude shift via the "HAZ way of working" 6. Facilitating change to/ introduction to mainstream services 7. Stimulating the involvement of the public as citizens and users 8. Facilitating shared learning 9. Enabling experimentation (further detail available but not extracted here).
List the key elements relating to WSA described in this paper ▪ **Packages of local activities/ interventions**	Model of whole system working for HAZs droved from Stewert et al 1999 (re area based regeneration across transport LA etc) "all stages of the change process, from initial consultation and capacity building through to evaluation, are highly interrelated and that successful area based programme development, implementation and sustainability rely on coherent approaches at both national and local levels." (p.134-5). Three key areas were focused on: strategy development, approaches to evaluation and learning, purposeful efforts to mainstream change (described in more detail below.).
Levels of concern & of action (community/neighbourhood/family/individual)	
Do the authors identify any barriers to success?	
Additional notes	

Table   Factors impacting on the change process

Stage of process	National level factors	Local factors
Strategy development	▪ Conducive policy context ▪ Clarity of purpose and sustained focus on aims of programme at a national level ▪ Political leadership	▪ Clarity of purpose ▪ Leadership ▪ Capacity for collaboration ▪ Approaches to strategy implementation
Evaluation and learning	▪ Commitment to national and local evaluation ▪ Capacity building ▪ Fostering networks ▪ "what works" and innovation ▪ Monitoring systems	▪ Planning and monitoring ▪ Commitment to local evaluation ▪ Capacity building ▪ Learning across the organisation
Sustainability	▪ Maintained commitment to programme ▪ Joined up governance ▪ Structures for policy learning	▪ Focus on the mainstream ▪ Dynamic partnerships

Authors (year) [Ref ID]	Benington, J. & Hartley, J. (2009) **[1837]**	Focus/aim	Propositions to stimulate discussion and reform – report commissioned by the National School of Government and the Public Service Leaders Alliance; part of a wider group of studies into the public service leadership academies by the Cabinet Office
Paper title	"Whole systems go!" Improving leadership across the whole public service system	In theory only or using examples?	Examples – p.12, Every Child Matters agenda; p.13, Leaders in Partnership in Leicestershire
Location of authors	UK	Are metaphors used?	No
Discipline/organisation of authors	Sunningdale Institute – National School of Government	Have the authors had practical experience of a WSA approach to a public health issue? [brief description if yes]	No
		Do the authors provide case examples from previous experience? [brief description if yes]	Yes
What comprises a WSA? [extract key summary/text]	"Whole systems thinking and action includes the capacity to analyse and understand the interconnections, inter-dependencies and inter-actions between complex issues, across multiple boundaries – between different sectors, services, and levels of government." (p.1) *Holistic - emphasis on relationships – lay knowledge – systems language – self-aware - multiple levels of influence – wider focus than the individual – theoretical framework - interactive effects* Proposition 1: The need for new paradigms of governance as a complex adaptive system and new practices of political, managerial and civic leadership across the whole public service system. *Emphasis on relationships – lay knowledge - focus on ways people come up with solutions – evolving – multiple levels of influence – wider focus than the individual - interactive effects* Proposition 2: The need for new patterns of 'adaptive leadership' to tackle tough, complex, cross-cutting problems in the community, where there may be no clear consensus about either the causes or the solutions to the problems.		

Holistic – emphasis on relationships – focus on ways people come up with solutions – evolving – multiple levels of influence – wider focus than the individual - interactive effects

Proposition 3:

Whole system thinking and action includes the capacity to analyse and understand the interconnections, inter-dependencies and inter-actions between complex issues, across multiple boundaries – between different sectors, services, and levels of government.

Holistic –evolving - multiple levels of influence – wider focus than the individual - interactive effects

Proposition 4:

Leadership development programmes need to join up to address whole system challenges, and Whitehall needs to support this with new organisational and financial architecture.

Holistic – emphasis on relationships –evolving - multiple levels of influence – wider focus than the individual - interactive effects

Proposition 5:

Leadership development programmes need to translate individual learning into organisational and inter-organisational action and improvement. This requires completely different starting points from traditional leadership development programmes.

Holistic – emphasis on relationships –evolving – self-sustaining - multiple levels of influence – wider focus than the individual - interactive effects

Proposition 6:

Strengthening leadership skills and capabilities for working across the whole public service system will require radical innovations in practice at three main levels (fast track graduate entry; mid-career movers and shakers; and corporate leadership top teams) and in two main arenas (multi-agency teams; and partnerships for local leadership of place) – plus a new requirement for all members of the Senior Civil Service to have spent at least three months working at the front-line.

Holistic – emphasis on relationships – self-aware – evolving – multiple levels of influence – interactive effects

Proposition 7:

The above commitments to action-oriented leadership development to encourage working across the whole public service system need to be counter-balanced by an equally strong commitment to critical analysis of the changing context, and rigorous reflection on the experience of leadership in practice (both success and failure).

Proposition 3, p.6

Whole system thinking and action requires the capacity to analyse and understand the **inter-connections**, **inter-dependencies** and **interactions** between complex issues, across multiple boundaries – between different sectors, services, and levels of government.

Whole system thinking and action includes the **capacity to analyse** and understand the inter-connections, interdependencies and inter-actions between complex issues, across multiple boundaries:

■■ between different sectors (public, private, voluntary and informal community)

■■ between different levels of government (local, regional, national, supranational)

■■ between different services (e.g. education, health, housing, policing; social security)

■■ between different professions involved in tackling a common problem (e.g. within the Academy for Sustainable Communities, or the Homes and Communities Agency)
■■ between political and managerial leaderships and processes
■■ between strategic management, operational management and front-line delivery
■■ Between producers and users of services (in new patterns of co-creation between producers, users and other stakeholders outside the governmental system. Leadership across the whole public service system will therefore require strengthened capabilities to think and to work along several different dimensions, often
simultaneously:
■■ horizontally, between different sectors, organisations, disciplines, professions stakeholders, and partners
■■ vertically, along all the links in the value chain, from policy design in Westminster and Whitehall right through to service 'delivery' or intervention at the front-line in local neighbourhood communities – with movement in both directions, from top to bottom, bottom to top, and middle up-down
■■ diagonally, across the decision-making networks, linking together political leaderships, strategic managers, operational managers, front-line delivery staff, users and communities. This requires a more sophisticated analysis of the changing external context – not just the policy context provided by central government but also the wider ecological, political, economic, technological, social and organisational context. It may also require a different approach to policy analysis and development, and the need to link policy to implementation in an **end to end process**, which delivers practical action on the ground, at the front-line with communities.

Holistic – emphasis on relationships – lay knowledge – focus on ways people come up with solutions – interactive effects

P. 23 - Leadership development for complex problems
There is increasing recognition that many of the issues which societies and governments are having to address are 'wicked' as opposed to 'tame' problems. **Wicked problems** are not exclusive to the Public Sector, but there are a substantial number which the public expect governments and public services to try to address. **Tame problems** are ones which have been encountered before, for which known solutions already exist and which can be addressed by a particular unit, profession or service. Tame problems may be complicated but they are resolvable through existing practices and organisational arrangements. Wicked, or cross-cutting, problems have no definitive formulation (different people may formulate the problem differently), are incomplete and have changing requirements. Solving a wicked problem may throw up other problems because the problems are **inter-related**. Often, large groups of people have to contribute to solving the problem, through changing their behaviours. An example of a tame (though complicated) problem is surgery. *An example of a wicked problem is tackling the health issues of childhood obesity*. Grint34 introduces a third type of problem – a critical problem where immediate and urgent action is needed (e.g. dealing with major road traffic injuries in the accident and emergency department; or stabilising and then controlling a major fire). These are different types of problems, which are likely to require different types of leadership (see Table 2).

If these are different types of leadership, then they may require different types of leadership development. For example, the leadership development bodies are well equipped to address the technical or tame problems, as they have the knowledge, the expertise and the accumulated history, culture and wisdom to address these (there may be room for improvement, but the overall parameters of the problems are broadly known). The work of Heifetz35 has become particularly relevant in the UK for thinking about the leadership of complex and difficult problems, where either the

	outcomes or the means are not clear or are not agreed upon.
	Adaptive problems require a type of leadership 'which rejects the pressure from followers to provide magical solutions to complex problems, and instead work with stakeholders to take responsibility for grappling with these problems and for the changes in one's own thinking and behaviour required.' (Benington and Turbitt36). It is the type of leadership which asks question rather than immediately proposing solutions, because one of the tasks is to get people to recognise that they may be contributing to the problem and that therefore addressing the problem requires changing thinking and behaviour (including one's own) in order to grapple with the difficult issues. The concept of adaptive challenges – or wicked problems – is widely talked about in public policy circles but leadership development approaches have only recently taken on board the ideas about adaptive leadership as a way to tackle these. For example, if the issues are complex and cross-cutting then it makes sense to develop leaders in programmes and situations where leaders from different services learn and develop alongside of each other. Yet, although partnership working is increasingly embedded in public service working, this has not affected leadership development to a similar extent. Much of the leadership development still takes place in the **service silos** and **colleges** rather than across those leaders who need to work together to explore and address the problem. In addition, wicked issues, requiring adaptive leadership, often requires working with and in communities, voluntary and community sector groups, informal and formal civic leaders and so on. This is complex territory to navigate yet helping leaders to develop the emotional and political skills as well as rational skills to address these issues is important. Leadership development for critical incidents is now fairly well established. It has become better resourced in the wake of the 9/11 terrorist bombings in the USA, and there is regular cross-service simulation training and critical incident events for the 'blue light' services (police, fire and rescue, and ambulance) along with the emergency planning service of the local authority. They are able to use sophisticated virtual simulations, as well as complex and varied physical 'rigs' to practice not only the operational techniques on the ground, but also the strategic challenges of **'gold command' leadership** concerned with communicating to and creating meaning for local communities, the media, the nation and central government.
Levels of concern & of action (community/neighbourhood/family/individual)	Government/local authority area/region//community/neighbourhood/individual
Do the authors identify any barriers to success?	
Additional notes	Report commissioned as a series of evaluations by the Cabinet Office in 2009 – re. thinking about government and public sector as adopting new paradigms of governance, thinking about integrated living organisms and moving away from machine-based 'silo' thinking

Tame, wicked and critical problems:

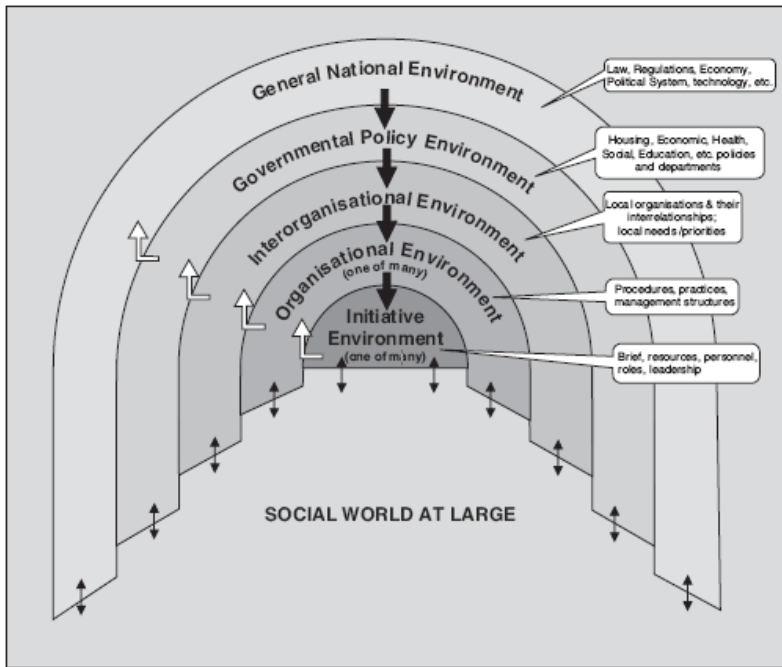| Type or problem	Form of authority
Tame problems: Complicated but resolvable Likely to have occurred before	**Manager**: Manager's role to provide the appropriate processes to solve the problem

Limited degree of uncertainty	
Wicked problems: Complex and often intractable Novel with no apparent solution Often generates more problems No right or wrong answer, just better or worse alternatives High level of uncertainty	**Leader**: Leader's role is to ask the right questions rather than provide the right answers as answers may not be self-evident and require collaborative process
Critical problems: A crisis situation Urgent response needed with little time for decision-making and action Uncertainty managed through clear decisions	**Commander**: Commander's role to decisively provide an answer to the problem

Authors (year) [Ref ID]	Berkeley, D. & Springett, J. (2006) **[891]**	Focus/aim	Drawing on experience of local Health For All (HFA) initiatives, European Healthy City (HC) projects and English Health Action Zones (HAZ), the authors develop a dynamic conceptual model showing how the national, governmental policy, interorganisational, organisational, and initiative environments relate with each other and their cumulative effects on initiatives.
Paper title	From rhetoric to reality: A systematic approach to understanding the constraints faced by Health For All initiatives in England	**In theory only or using examples?**	Using examples
Location of authors	UK		
Discipline/organisation of authors	Public Health directorate, East Riding of Yorkshire PCT	**Are metaphors used?**	No
		Have the authors had practical experience of a WSA approach to a public health issue? [brief description if yes]	Unclear
		Do the authors provide case examples from previous experience? [brief description if yes]	Yes – using examples of European Healthy City (HC) projects and English Health Action Zones (HAZ)
What comprises a WSA? **[extract key summary/text]**	No real definition provided; HCs and HAZs used as shorthand for the approach, with little explanation of what they are. ***Holistic – systems language – multiple levels of influence – interactive effects*** From p.2880: "HFA initiatives are complex systems…The '*live*' within a complex *set of environments*, each comprised of a number of agents/systems (and their interactions), all subjected to prevailing cultural and political barriers" P.2880 **- Environmental concept:** "The concept of *environment* employed here is useful in two ways. First, it enables us to borrow from the literal meaning of the word. According to the Oxford English Dictionary, the verb 'environ' means 'surround' and 'environment' means 'circumstances, influences'. In nature, environments are nested, each affecting all environments nested within them to varying degrees, and each environment has a certain degree of freedom to affect conditions imposed on it. (For example, a centrally heated house changes, for its inhabitants, the cold weather conditions imposed on it by its own environment.) The same situation, we argue, arises with		

	constraints imposed on a HFA initiative by the various environments within which it is nested.
	Secondly, the concept is useful in that it enables us to identify the results of the operations of more than one system at any one level of environment, as well as the interactions between all different systems represented on that level. This is particularly useful in portraying, for example, potentially contradictory demands placed by *different* systems operating in the *same* environment on the environment which is nested within it. (A good example here is when different sectors within the same lead organisation demand different actions/outputs from the same initiative.)"
Levels of concern & of action (community/neighbourhood/family/individual)	
Do the authors identify any barriers to success?	A number: cultural, political, lack of collaboration, fitting within an existing system, ownership; constraining environments discussed in detail from p. 2880 – 2883.
	Fitting new ideas into existing frameworks p.2887: "Over the last few decades, governmental healthrelated rhetoric has taken an apparent conceptual leap by incorporating the enhanced understanding of what factors affect health which has emerged. However, the actual implementation of this rhetoric has been debilitated by 'what has always been there'. Holistic concepts of health and an appreciation of the wider social determinants of health, have not, as yet, been matched with organizational structures which can mirror such an understanding. Instead, existing structures are expected to take on board the implications of such concepts. They, in turn, following their traditional practices, delegate the 'task' to one of their existing functions or make a new one specifically delegated with addressing such issues but which is still enshrined and institutionalised within the status quo of existing organisational and interorganisational relationships (Beer, 1975)."
	"This state of affairs essentially endorses the existing health care rather than health oriented paradigm. The existing structures which are set up to deliver services are presented as still being the appropriate organising principle of provided public services although new concepts, almost by definition, call for new organising principles (Beer, 1975). The only change we have witnessed so far is a change in the language used: that is, the prevailing (bio-medical) paradigm's language has been expanded to include new terms in its vocabulary (e.g., whole systems, social determinants), supposedly reflecting adoption of the new concepts. While this may be true at the rhetoric level (Nutley, Walter, & Davies, 2003), in practice, it represents neither a departure from the prevailing paradigm nor an arrival at a new paradigm. It simply 'dresses up' existing practices in new 'clothes'."
	Changing the system p.2887: "HFA initiatives have been charged with demonstrating innovative ideas. But innovation needs facilitating environments in order to flourish (Stacey, 1993). This will not be achieved by ad-hoc changes in the system. What is required is a transformation of the system, a second order change, with ''the creation of health, not an issue or problem, a disease or death, but health itself'' being the starting point of action (Ziglio, Hagard, & Griffiths, 2000, p. 145)."

	Modelling the system p.2887-2888
	"The model we presented in this paper (Fig. 1) has been used constructively in: (a) showing how current organisational configurations impose constraints on HFA initiatives (Fig. 2), and (b) showing how these constraints may be overcome by reorganizing these configurations (Fig. 3). These constraints are man-made as are the structures which create and maintain them. The cultural and political barriers we discussed in Berkeley and Springett (2006) are effectively a central reason for the emergence of these structures (which determine how health may be sustained and enhanced) and for their continuing existence. While these structures persist in more or less the same form, these barriers will be continuously perpetuated. If, instead, these structures change to reflect relevant developments and experiences over the last few decades…may witness the removal of most of these barriers and the emergence of a really facilitating general and organisational environment within which HFA initiatives can achieve real transformation and address the systemic nature of HFA principles and, indeed, all public health work"

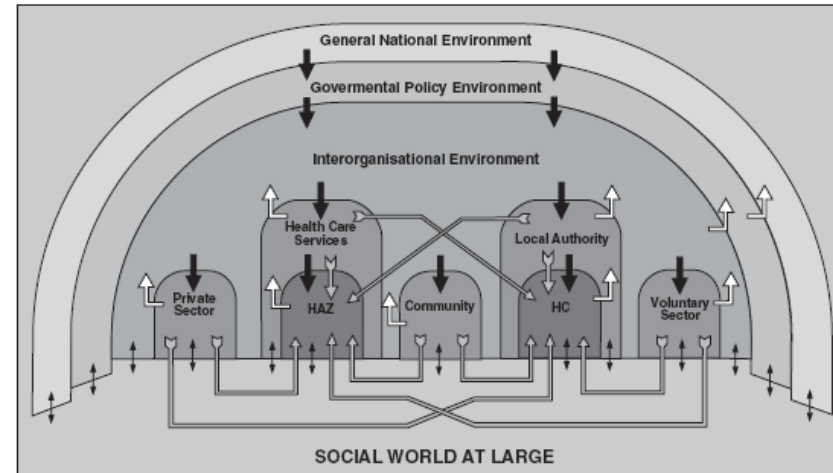Fig. 1. A generic model of nested environments.

Fig. 2. Nested environments imposing constraints on Healthy Cities and HAZs.

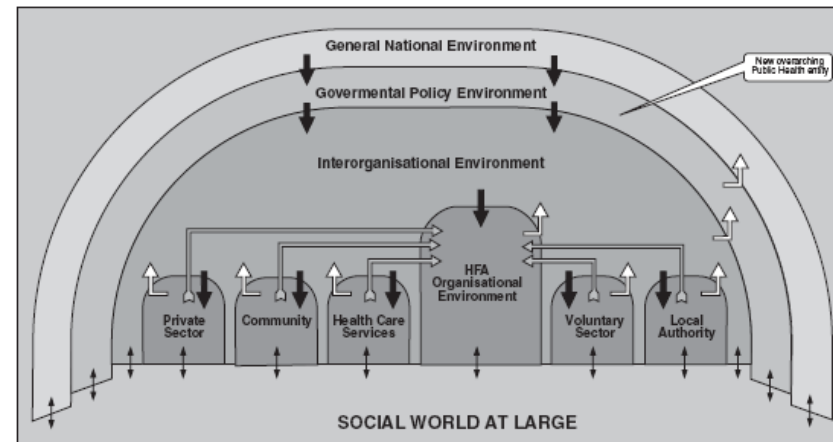Fig. 3. Alternative structural configuration of nested environments.

Authors (year) [Ref ID]	Dooris 2006	Focus/aim	To outline the perceived benefits of a settings approach to promoting public health and consider way there remains poorly developed evidence base for effectiveness.
Paper title	Healthy settings: challenges to generating evidence of effectiveness	In theory only or using examples?	Theory primarily, limited examples
Location of authors	University of Lancashire, UK	Are metaphors used?	Yes – some ecological metaphors. Conceives of "arrows rather than bubbles".
Discipline/organisation of authors	Public health Policy and Practice. Interest in Universities as "healthy settings"	Have the authors had practical experience of a WSA approach to a public health issue? [brief description if yes]	The authors has worked with universities as potential healthy settings
		Do the authors provide case examples from previous experience? [brief description if yes]	Briefly mentions Healthy Cities, workplace interventions, Health Promotion Hospitals, schools settings.
Abstract		This paper starts by briefly reviewing the history, theory and practice of the settings approach to promoting public health—highlighting its ecological perspective, its understanding of settings as dynamic open systems and its primary focus on whole system organization development and change. It goes on to outline perceived benefits and consider why, almost 20 years after the Ottawa Charter advocated the approach, there remains a relatively poorly developed evidence base of effectiveness. Identifying three key challenges—relating to the construction of the evidence base for health promotion, the diversity of conceptual understandings and real-life practice and the complexity of evaluating ecological whole system approaches—it suggests that these have resulted in an ongoing tendency to evaluate only discrete projects in settings, thus failing to capture the 'added value' of whole system working. It concludes by exploring the potential value of theory-based evaluation and identifying key issues that will need to be addressed in moving forward—funding evaluation within and across settings; ensuring links between evidence, policy and practice; and clarifying and articulating the theories that underpin the settings approach generically and inform the approach as applied within particular settings.	
What comprises a WSA? [extract key summary/text]		The settings approach to promoting public health has been advocated since the 1980s, building on the Ottowa charter (1986) "health is created and lived by people within the settings of their everyday live; where they learn, work, play and love."	

Key characteristics:

Ecological model of health promotion

"Understands health to be determined by a complex interplay of environmental, organizational and personal factors, largely determined outside of "health" services." (p.55) shift of focus away form illness to "salutogensis" from individuals to populations and from a "mechanistic and reductionist focus on single health problems, risk factors and linear causality – towards a more holistic view, concerned to develop supportive contexts within the places that people live their lives."(p.55-6)

Systems perspective

Views settings a dynamic complex systems. "with input, throughputs, outputs and impacts – characterized by integration, interconnectedness, interrelationships and interdependencies between different elements". Each setting is also functioning as part of a greater whole, an ""open system" in synergistic exchange with the wider environment" and other settings within this (p.56).

"Action at different levels is intrinsic to this outlook."

Whole system organization development and change focus

Primary focus is on introducing and managing change within the whole organisation. Various models for this have been suggested. Eg Dooris 2004 "the need to combine organization development with high visibility projects, top balance top down commitment with bottom up stakeholder engagement, and to ensure that initiatives are driven by both public health and "core business" agendas."

Paton (2005) Healthy Living and Working Model reiterates that "the distinctiveness of the approach lies in its prioritization of organization development and systems theory to plan, stimulate and implement appropriate change." (p.56)

Evaluation and evidence

Settings provides a comprehensive framework in which to work and "encourages multi-stakeholder ownership of health; it allows connections between people, environments and behaviours to be explored; it enables interrelationships between different groups of people within a setting to be addressed; it enables interactions between different health issues and initiatives to be recognized and taken account of…." (p.56 not fully extracted) However, the evidence base is poorly defined with little evidence of health impacts. Some of the problems are due to studies focussing on individual components rather than the an integrated, comprehensive strategy as a whole (in addition to known problems for PH to demonstrate causality, especially in RCTs.)

Challenges to evaluating the settings approach

Systematic reviews and guidance largely focus on single diseases and risk factors rather than comprehensive settings, and even where a settings approach is taken (eg schools) there is often interest in a single risk factor (such as smoking). There is continued focus in disease and behaviour based targets in health policy.

Another problems is the diversity of conceptual understanding and real life practice brought together under the banner of "healthy settings" – for example using a "settings approach" to mean simply "health promotion in settings" which in reality perpetuates individually focused intervention programmes with defined target groups.

Pragmatic considerations on real-life practice may constrain the adaptation of true systems thinking and organisational focus, leading to smaller scale project focussed work around particular issues being taken on.

Settings as diverse in size and type as cities, states, communities, schools and hospitals have been proposed for settings work and similarities and differences between them still need to be defined. Arguably easier to demonstrate change in a clearly defined smaller setting such as a school, than a multi-layered setting such as a city.

The settings approach is about "integrating a commitment to health within structures, processes and routine life of organizational and other settings" (p.59). It can be argued that the more success it is, the less easy it is to evaluate as language of "health" recedes and the effectiveness of organisational development becomes more apparent.

Systems thinking demands a focus not only in the parts of the whole – but on "the spaces in between" and the "arrows" rather than the "bubbles" (p.60). "This means that for evaluation to capture the "added value" of whole system working and help generate evidence of effectiveness for healthy settings, it must do more than focus separately on each intervention or programme operating within the context of a settings initiative. Instead it must look at the whole and attempt to map and understand the interrelationships, interactions and synergies within and between settings – with regard to different groups of population, components of the system and health issues." (p.60)

Theory based evaluation drawing on logic models and realist evaluation may be one way to approach more meaningful evaluation.

Authors (year) [Ref ID]	Edgren (2008) [1609]	Focus/aim	To describe a systems approach in relation health care
Paper title	The meaning of integrated care: a systems approach	**In theory only or using examples?**	Theory
Location of authors	Sweden	**Are metaphors used?**	Yes – 'machine model thinking'
Discipline/organisation of authors	Health management	**Have the authors had practical experience of a WSA approach to a public health issue? [brief description if yes]**	No
		Do the authors provide case examples from previous experience? [brief description if yes]	Short and generic examples only; unclear whether or not from first-hand experience
Abstract		**Introduction:** Organizations can be regarded as systems. The traditional model of systems views them as machines. This seems to be insufficient when it comes to understanding and organizing complex tasks. To better understand integrated care we should approach organizations as constantly changing living organisms, where many agents are interconnected in so-called Complex Adaptive Systems (CAS). **Theory and discussion:** The term "complex" emphasizes that the necessary competence to perform a task is not owned by any one part, but comes as a result of co-operation within the system. "Adaptive" means that system change occurs through successive adaptations. A CAS consists of several subsystems called agents, which act in dependence of one another. Examples would be the ant-hill, the human immune defence, the financial market and the surgical operating theatre team. Studying a CAS, the focus is on the interaction and communication between agents. Although these thoughts are not new, the CAS-approach has not yet been widely applied to the management of integrated care. This helps the management to understand why the traditional top down way of managing, following the machine model thinking, may meet with problems in interdependent organizations with complex tasks. **Conclusion:** When we perceive health and social services as CASs we should gain more insight into the processes that go on within and between organizations and how top management, for example within a hospital, in fact executes its steering function.	

What comprises a WSA? **[extract key summary/text]**	'Complex adaptive systems' (CAS) (p.3) *(verbatim)*: - 'complex' emphasises that the necessary competence to perform a task is not owned by any one part, but comes as a result of co-operation within the system - interdependency – sub-systems compete or co-operate according to their interests and what will bring them an advantage - self-organisation – creating order or increasing the regularity of the system without help from the outside - agents/ sub-systems create order out of many local interactions, without directions or guiding principles from above - identifying how different actors understand problems and goals so as to enable a common vision to be developed - each CAS is unique, shaped and influenced by its past, and shows a complicated web of relations between agents within and outside the system - focus is on the interaction and communication between agents - intensity of relations between human and non-human agents in the system determines its complexity and the constant change, adaptation and development of the system (which occurs in an unforeseeable, non-linear way) (p.4) *(verbatim)* - system is not governed by an exterior source – order, innovation and progress arise naturally from interactions within the system (they do not need to be prescribed from 'higher' levels or from the environment) - change cannot be forced from above – agents are intelligent, and as they experiment and gain experience they learn and change their behaviours accordingly - attempts from above to reduce the complexity of the system in order to gain control are often counterproductive - to address a community's health and social problems, the process is local; a) using multiple local sources to build up the knowledge base for action b) connecting all of the locally based agencies/institutions and individuals with the competence to act - CAS develop in interplay with the environment, resulting in co-development where each influences the other - boundaries exist between different agents in the system, and these boundaries of the part of the system that generates communication - individual agents can be part of several systems - feedback loops function as triggers for change, enhancing/amplifying (positive feedback) or buffering (negative feedback) changes that occur in a system - feedback loops are carriers of information, material and energy between the agents of the system, and facilitate the adaptability of the entire system - indirect leadership (through acting as a role model) is preferable in order to foster connectivity among diverse agents, and to effectively couple structures, ideas and innovations (without making them either too loose or too tightly interdependent) - CAS approach helps agents to see themselves as co-workers, part of an innovative team with great potential (which enables greater solidarity and a human need to be part of a greater whole) and which have control over their own work situation Criticisms of CAS approach (p.4) *(verbatim)*: - lack of recommendations as to how agents should behave - communication and co-ordination conflicts between agents

Levels of concern & of action (community/neighbourhood/family/individual)	Organisations/ community
Do the authors identify any barriers to success?	(p.4) *(verbatim)* - system inertia may develop over time, agents may feel insecurity and risk at a new approach to organisation - from a staff perspective, CAS may mean greater insecurity, greater responsibility, more decision-making and more elements of risk management - ethical concerns about decision-making that can neither be supported by science or objective criteria
Additional notes	None

Authors (year) [Ref ID]	Hawe, Shiell, Riley 2009 #1834	**Focus/aim**	To describe "the context into which theorising about community interventions has been recently re-energised but still falls short of hwat we think is required." To "examine how the adoption of a dynamic, ecological, complex-systems approach could influence research and development in community interventions"
Paper title	Theorising interventions as events in systems	**In theory only or using examples?**	Largely theoretical
Location of authors	Canada & Australia	**Are metaphors used?**	Yes. "more is different" (Anderson 1972), was used to describe the way in which physics had become preoccupied with classifying particles and their interactions, up to the scale of atoms. But groups of atoms behave quite differently – chemistry is a discipline of its own and not a branch of physics. A similar "fundamental shift in thinking is required in the field of change processes in human populations." (p.268)
Discipline/organisation of authors	Population Health Intervention Research Centre, Calgary Centre for Health & Society Melbourne	**Have the authors had practical experience of a WSA approach to a public health issue? [brief description if yes]**	Not clear – examples given about workplace stress, nurse provision of information for new mothers , guidelines for post-natal depression but unclear if these are based in actual activities.
		Do the authors provide case examples from previous experience? [brief description if yes]	See above.
Abstract	Conventional thinking about preventive interventions focuses over simplistically on the "package" of activities and/or their educational messages. An alternative is to focus on the dynamic properties of the context into which the intervention is introduced. Schools, communities and worksites can be thought of as complex ecological systems. They can be theorised on three dimensions: (1) their constituent activity settings (e.g., clubs, festivals, assemblies, classrooms); (2) the social networks that connect the people and the settings; and (3) time. An intervention may then be seen as a critical event in the history of a system, leading to the evolution of new structures of interaction and new shared meanings. Interventions impact on evolving networks of person-time-place interaction, changing relationships, displacing existing activities and redistributing and transforming resources. This alternative view has significant implications for how interventions should be evaluated and how they could be made more effective. We explore this idea, drawing on social network analysis and complex systems theory.		
What comprises a WSA?	"Weak prevention might be an inevitable consequence of programs that rely too heavily on individual level theorising " – "More is different" (see above) "Big name" interventions to prevent heart disease have demonstrated effects that were minimal or modest. US task		

[extract key summary/text]	force for on Community Prevention Services for all types of disease and disability has lamented that in half interventions reviewed, there was insufficient evidence to make practice recommendations. Explanations tend to suggest this is due to:
	inadequate methods for involving communities (though this has improved in recent programmes); faulty research methods (particularly about the appropriateness of RCTs for community settings) and impotent theory – "it is in the realm of theory where there may be the most to learn an gain form past failure of community interventions in the field of public health."
	New methods, such as theories of change, interventions mapping and theory based interventions, it is argued, while they may produce more precise descriptions of the nature of an interventions, "it could be argued that all has been achieved is more meticulous ways of doing the same thing….what Henry Thoreau has described as "improved means to unimproved ends." (p.298-9)
	Whilst an "ecological approach" situates the individual in the broader social context, many interventions claim in this term use it "to mean that the intervention has multiple strategies for directed at multiple levels e.g. child + family + school…….Other than the idea that "the more levels the better the effect", there is little theory put forward about how these levels impact the unfolding of the intervention or how they affect intervention outcomes".
	The community psychology model "dynamic ecological-systems stresses the importance, among other things, of linkages, relationships, feedback loops and interactions among the systems' parts". They also discuss the nature of "activity settings" – "time and space bounded patterns of behaviour" such as, in schools, a football game, P-T meetings, classes. Where the interaction of roles, people, symbols, time , funds and physical resources are key.
	In public health, whilst the specific needs of "complex interventions" and their evaluation are being considered "our sense is that this literature does not take the explanation and understanding of complexity far enough, because it still locates the intervention in its constituent parts. The discourse is also complicated by different uses of terminology in the field, with some investigators equating "multi-level" interventions with "complex interventions". (p.269)
	"the most significant aspect of the complexity possibly lies not in the intervention per se (multi-faceted as it might be) but in the context or setting into which the intervention is introduced and with which the intervention interacts." (p. 269)
	"if the properties of the system are not acknowledged from the beginning, then the system's tendency towards self-organisation will often work to negate one's best efforts…..We propose that a useful new heuristic in intervention research is to think of interventions as events in systems that will either leave a lasting footprint or wash out depending on how well the dynamic properties of the systems are harnessed." (p.270)
	Systems approach - In the community psychology model, understanding the nature and diversity of activity setting might be key, focussing on social relationships that make up the system and interventions might be conceived as "ways to create new roles, to elevate particular symbols, to bridge structural holes within and between networks and to increase the opportunities for interaction and exchange" through the "creation of settings".
	Four specific ways to capture system level change are suggested: Uncovering how the interventions couples with the context; tracking changes in relationships; focussing on the distribution and transformation of resources; assessing

activities displaced.

Uncovering how the interventions couples with the context;
Through assessing sustainability, institutionalisation and embeddedness. Can be explored through "the extensiveness of the programme across the system….and the intensiveness of it integration into routine practice." The way in which an intervention comes to seep into or saturate its context becomes a way to view the extent of implementation. Measures of this might be, for example, whether a topic exists on the organisations website, if it get mentioned in board minutes, staff meetings, if its discussed informally by staff (for example over lunch) if staff have its delivery as their job, is it part of the organisational mission, is it specifically funded, etc.

Tracking changes in relationships;
Network analysis can be used to track changes in structural relationships over time – such as whether it becomes more cohesive, or if there are changes in the strategic position of key people.
Notes that some PH initiatives (such as peer led, training etc) may focus on increasing the credibility of the information source.
In addition, it may be possible to trace the impact of an intervention on the "density of collaborative networks" which may, in turn, create greater sustainability (p.271)
In addition, actor network theory (for example, how new roles may be created through adopting new responsibilities to communicate information) may explain how new relationships and new meanings for people can be created.

Focussing on the distribution and transformation of resources;
"Resources are the "raw material" that processes for bettering the human condition draw upon" such as people and their skills and knowledge, events that connect people and places or settings which provide opportunities for behaviours and activities to be carried out.
"Interventions have the potential to transform people, event and places, changing the networks that link all three in the process". (p.271) This happens through creation of new roles and redistribution of resources.

Assessing activities displaced
Traditionally, assessment of interventions focus in new activity, and effects attributed to this. However, it may be that displaced activities, which stopped happening in the intervention locations, truly account for observed changes in outcomes.

Implications of viewing systems dynamically
Impacts on: how "fidelity" of an intervention is defined; a means to quantify and define capacity building over time; a means to use insights to potentially build or boost intervention strength; a reason to invest in longer time frames for tracking an intervention effect on desired outcomes and more context level assessment. These discussed below.

How "fidelity" of an intervention is defined;
"when a health promotion intervention is a conventional program package, intervention fidelity requires that it adopt a standardized recognisable form that looks essentially the same in every site. By contrast, when an intervention is conceived dynamically, as an event (or series of events) in a system, then the process and sequence of change would look the same in all sites, performing the same purpose or function, but the form might be different. The intervention would adapt to different initial conditions in each site. This need not compromise intervention fidelity provided the

intervention still adhered to its theory." (p.271) The *function* of the intervention, rather than the *form* is standardised.

A means to quantify and define capacity building over time;
Viewing interventions dynamically, allows its benefits (such as capacity building) to be captured. Success might be judged through enablement, improved structural position of the people and organisations that comprise the systems network, assuming that building competence or capability is part of the intervention objective. See p.272 for examples of how new events and activity settings can enhance the structure of a community network allowing new affiliations and new ties to link individually more comprehensively to others in the network. "Many more people have power in the sense that their new positions, created by new relationships, give them better access to more social resources (e.g. information, practical aid, attitudes, skills, affirmations, language, ways of framing ideas, reasoning processes). Network analysis techniques can quantify these changes.
New connections, activities and roles enables people to act in new ways – a form of enablement or capacity building. ""in this way the change process of the intervention has led to the emergence of a new structure that potentially embeds, rather than fades over time" (p.273)

A means to use insights to potentially build or boost intervention strength;
Systems thinking invites one to "harness complexity…we seek to amplify the effect of the intervention by tracking changes in relationships (networks) prospectively, and using the information generated to steer the intervention in strategic directions." to enhance positive feedback and counteract negative feedback loops.

A reason to invest in longer time frames for tracking an intervention effect on desired outcomes and more context level assessment.
Longer time framed may be needed to capture non-linear change – for example phase transition, which is a sudden large change after apparent little impact.
"we foresee a shift away from the techniques and dominance of "program evaluation" and a more towards a new science of "context evaluation". Perhaps "in-house ethnographers" who appraise and harness opportunities to use new technologies, opportunities and 9ideas to imporve system level capacity.(p.274)

"Interventions might be best thought of as a time limited series of events, new activity settings and technologies that have the potential to transform the system because of their interaction with the context and the capability created form this interaction" (p.274)

Levels of concern & of action (community/neighbourhood/family/individual)	
Do the authors identify any barriers to success?	
Additional notes	

Authors (year) [Ref ID]	Hudson B, 2004 [1583]	**Focus/aim**	To look at the context that has given rise to the growing popularity of networks, the rationale for a network mode of governance and the key dimensions. It suggests that a useful framework is Benson's neglected model of inter-organizational network (Benson 1975, 1982). Advantages of the model are identified and it is seen as an important way of contributing to the fashionable emphasis on "whole systems working".
Paper title	Analysing network partnerships: Benson revisited	**In theory only or using examples?**	
Location of authors	UK	**Are metaphors used?**	Minor reference to machine vs natural models to explain key features of networks, although this is implicit rather than explicit
Discipline/organisation of authors	Health Services management Centre, University of Birmingham	**Have the authors had practical experience of a WSA approach to a public health issue? [brief description if yes]**	
		Do the authors provide case examples from previous experience? [brief description if yes]	
Abstract	Support for the notion of networks is growing rapidly across Europe, especially in the public sector where faith in market and hierarchy is diminishing. However, the concept is still concept is still loosely interpreted and variably applied. This article unpacks the concepts of network and goes on to suggest that it is a useful model for application to a "whole systems" approach is Ken Benson's neglected framework of an "inter-organisational network". It urges the application of the framework to specific contexts and issues.		
What comprises a WSA? **[extract key summary/text]**	"the attachment of politicians and policy makers to the rational top-down implementation model has been unrealistic at the best of times, but there is now a new context which makes it even more elusive…..the shift "from government to governance " – the replacement of a strong unitary state with a strong executive, but the hollowing out of the state, in which government has reduced capacity to steer. The new agenda requires what is generically termed "partnership working" between a wide range of participants in the statutory, private, voluntary and informal sectors in order to address the long term and ostensibly intractable problems confronting modern societies. In the UK, politicians and policy makers have grown impatient with the slowness of addressing such issues, and have – in line with the top-down perspective – taken the view that "mandated partnerships" are necessary. Hence in a range of policy areas, a stream		

of legislation, guidance and regulation has been directed towards the idea that the centre can compel the creation of partnerships at local level – the creation of partnership by hierarchy." (p.76)

While this may be appropriate where goals are collective and behaviour necessary to produce them known and predictable, this may be appropriate, but less so where collective goals are less defined, time frame is long and behaviour required to produce solutions is less knowable, which may require a shift to partnership through networks.

The unit of analysis for networks, such as through social network analysis, is the relationships among individuals or organisations.

(note info p.78- 79 about the rationale for using networks as a mode of organising and governance – not extracted).

"Most knowledge is highly localized within a system, especially tacit knowledge, and improvements in efficiency and effectiveness require this localized knowledge to be joined up between and within organisations" (p.79) – the "entangling strings" of reputation, friendship, inter-dependence and altruism become an integral part of the relationship. Another key factor is the underpinning of a relationship with trust.

Key features of networks
Potentially so general, so terminology and concepts of networks is slippery.
Key features:
Underpinning values and modus operandi: trust, cooperation, altruism, loyalty and solidarity.
"coordination is achieved by less formal and more egalitarian means than in the cases of market and hierarchy and explicit attention is paid to the way co-operation and trust are formed and maintained." (p.80) order is based on social, rather than exchange controls.
Fluidity of membership networks are dynamic not static, as they rest of a series of relationships underpinned by a notion that they generate positive benefits. They are also task, rather than structure focussed.
One danger of social based membership is that some members may be marginalised, allowing insider and outsider groups to form.
Facilitative management
A different from of management is required for networks compared to hierarchical organizations. Whilst the latter may need a "system controller" – who sets goals, leads implementation and monitors progress (RG note - machine metaphor) a network requires the coordination of strategies of actors with different goals and preferences around a particular problems within existing networks of organisational relations.
Semi-autonomy
Networks are relatively autonomous and self-organizing "the state can steers them by a variety of incentives and sanctions but cannot totally control them. Governance strategies should build in such uncertainties.

Classical and network management compared

Perspectives: Dimensions	"Classical" Perspective	Network perspective
Organisational setting	Single authority structure	Divided authority structure
Goal structure	Activities are guided by clear goals and well defined problems	Various and changing definitions of problems and goals
Role of manager	System controller	Mediator, process manager, network builder

Management tasks	Planning and guiding organisational processes	Guiding interactions and providing opportunities
Management activities	Planning, designing, leading	Guiding interactions and providing opportunities

Source: Kickert et al 1997

Local network partnerships: a framework for analysis
"The role of local networks in implementing national policies remains little understood or researched." (p.82)
Benson's model of an inter-organizational network is "a mini political economy (a series of mutual resource dependencies) operating within a wider political economy." Effective partnership working depend on the degree of equilibrium across four dimensions (superstructure: operational relations):
▪ **domain consensus** (agreement about the appropriate role and scope for each agency)
"Affected by the extent to which network members have an understanding of their inter-dependence, for without this, collaborative problem solving efforts make no sense" p.85 Similar goals may lead to this, whilst similar functions may cause competition.

▪ **ideological consensus** (agreement about the nature of the tasks faced and the most appropriate ways to approach these tasks.)
Possibility to create convergence of expectations through socialization. Structural embeddedness is key – the more information each player has about other players in the network leading both to social constraints on behaviour, and also more widely shared values and role understandings. Impediments to "ideological consensus" include territorial/tribal claims of phenomenon by particular groups and privileging of certain types of knowledge (eg medical vs social knowledge).
"it can take many years to establish the shared understandings, routines and conventions for complex tasks" (p.86) conversely, over embeddedness can result in organisations that resist innovations.

▪ **positive evaluation** (by workers of one organisation of each other)
Importance of trust and fairness, and high reputations among others, which may be enhanced through "regular personal contacts across organizational boundaries". Jones and George (1998) offer processes that can lead to the development of trust:
Broad role definitions; communal relationships; high confidence in others; help-seeking behaviour; free exchange of knowledge and information (details of these not extracted). Threats to interpersonal relations may be impacted by age, sex, race, class etc. and inter-professional relations by differences in status and power (eg drs and nurses).

▪ **work co-ordination** (the alignment of working patterns and culture).
Especially with increasing complexity of tasks, requiring simultaneous activity rather than sequential.
Barriers are considerable: different organizations may make it logistically difficult to network, and restructuring can disturb them. Main threat is "disequilibrium" in other dimensions of the policy network that undermine efforts at work coordination (such as
reluctance of some parts of the system to be accountable and managed). "most professionals are reluctant to subordinate themselves to others, or to support goals that are not congruent with their special viewpoint"

All the above may be disturbed by internal or external factors (substructure: contextual influences):
- the fulfilment of programme requirement (key service delivery objectives)
- the maintenance of a clear domain of high social importance ensuring or (ensuring or enhancing public legitimacy and support for the service agenda)
- the maintenance of orderly reliable patterns of resource flow (ensuring adequate funding)
- application and defence of the organization's paradigm (the ideological commitment top certain ways of working)..

Thus the behaviour of members of the organizational community is determined by the need to also secure these external factors. Relationships between the sub- and super-structure are complex and dynamic, operate at all points. There is also interaction between elements within these two strata.

Policy networks
Provider networks will be influenced by policy networks – " a cluster or complex of organisations connected to each other by resource dependencies, and distinguished from other clusters or complexes by breaks in the structures of resource dependencies." There are four components:
Fulfilment of programme requirements
Key service delivery objectives.
Agencies likely to be reluctant to undertake tasks that interfere with the fulfilment of present programmes, threat to which may either be top-down pressure to deliver targets and priorities identified by local policy network partnership or where objectives of parent agencies are at odds with the understandings of partnership.
Clear domain of high importance the policy network needs to ensure that the agenda of partnership carries public legitimacy and support.
Reliable patterns of resource flow (although possible that if this becomes a prime goal, those not in control of large budgets become devalued)
Application/ defence of the organisation's paradigm

Conclusions:
Power can be found at both policy and provider levels, and the interaction between them can be complex. The critical issue is the effectiveness of the entire network of service providers, not whether some do a better job than others at providing some component.
It is important to distinguish between the levels of ties – institutional/policy level (organisational forms) and micro-analytic transactional level provider networks.

In Benson's model:
"Parts mesh together to form a holistic framework rather than a mere checklist of ingredients."
"It avoids simple "do and don't" scenarios in which services are seen as acceptable or unacceptable…..offers a health check on the state of inter-organisational network relationships"
"It is a dynamic framework, capable of capturing change, and one that makes no assumptions about a network "cycle" or journey."

Levels of concern & of action (community/neighbourhood/family/individual)	
Do the authors identify any barriers to success?	
Additional notes	

Authors (year) [Ref ID]	Hudson (2006) **[-]** xref - Hudson 2004 [1583]	Focus/aim	The investigation of taking the WSA in an integrated health and social care setting
Paper title	Whole System Working: A Guide and Discussion paper	**In theory only or using examples?**	Using examples
Location of authors	UK	**Are metaphors used?**	No
Discipline/organisation of authors	Integrated Care Network – Care Services Improvement Partnership	**Have the authors had practical experience of a WSA approach to a public health issue? [brief description if yes]**	Unclear
		Do the authors provide case examples from previous experience? [brief description if yes]	Yes – hospital admissions system (p.18), delayed hospital discharge (p.19)
What comprises a WSA? **[extract key summary/text]**	p.4 "The concept of whole system working is popular but elusive. It entered the mainstream of health and social care discourse in the late 1990s and has been used mainly in the worlds of management and service delivery. Broadly, it refers to the process of involving all stakeholders of a domain in discussion about service change – all parties are encouraged to think about the way the whole service delivery system works, rather than focusing only upon their own service. That said, the concept is still very much in its policy infancy, and this paper aims to develop the discussion as well as make some practical suggestions on whole system development…It is important at the outset to emphasise that a proper understanding of whole system working does not involve yet another management fad claiming to reveal the secret of imposing order and rationality on a complex and turbulent world. The reality is that this is not possible. Rather whole system working provides some ways of understanding disorder and apparent irrationality, while still managing to make some progress in addressing complex social problems. Whole system working is not therefore a quick fix; more a guide to the complexity and uncertainty that characterises policy formulation and implementation in the joining up of health and social care." P.6 "…many of the problems that public services now deal with are too complex to be addressed by one agency acting in isolation – they are **'wicked' problems**. …originally proposed by Rittel and Webber [1973] Conklin and Weil [1997] suggest that a wicked problem meets the following criteria: ⬜The problem is an evolving set of interlocking issues and constraints ⬜There are many stakeholders – getting the right answer may not be as important as having the stakeholders accept		

whatever solution emerges;
▯Constraints on the solution change over
time;
▯Since there is no definitive problem there is no definitive solution

'The Whole System is not simply a collection of organisations which need to work together, but a mix of different people, professions, services and buildings which have patients and users as their **unifying concern**, and deliver a range of services in a variety of settings to provide the right care, in the right place at the right time.'

p.7 – "a whole system approach – has been pictorially depicted by the 'onion' diagram [see additional notes below]… It is not, however, evident that the concept of a 'whole system' is agreed and understood".

p.8 – "Simply defined, a system is a **complex whole**, the functioning of which depends on its parts and the interaction between those parts…

What is noticeable about the whole system debate in the UK is the complete absence of any theoretical underpinning… tends to be treated as conceptually self-evident and readily available for operational use. … can end up with ideas about 'the system' being no different to traditional approaches to joint working."

p.9 – "In systems working, it is not always necessary to be aware of all throughput components since it is possible to look at total input and total output without worrying unduly about what goes on inside the box"

Wicked issues -
"the difficulty of establishing the **'facts'** of the situation – there will be valid different perspectives on problems…These different perspectives arise as a result of the different contexts, cultures, histories, aspirations and allegiances used by stakeholders to make sense of their worlds. …Rather than acknowledging legitimate difference there is a tendency to assume that purposes have already been agreed; alternatively the objectives of the most powerful decision makers may be dominant regardless of the views of less powerful stakeholders. Many partnerships have floundered on the rocks of such heroic assumptions. To talk about valid different perspectives is to also talk about individual behaviour, yet much of the good practice guidance on partnership working finds it hard to acknowledge the roles of individuals in determining the fate of partnerships. Emphasis tends to be placed upon wider issues such as governance, finance and legality".

"Wicked issues are unlikely to be resolved unless different perspectives on the problem are clear and the importance of individual behaviour acknowledged"

p. 10 – "Complexity theorists see inter-organisational networks as **'complex adaptive systems'** in which change is constant and stakeholders need to be adaptable and flexible"

Leverage points – p.11 "a relatively small but well-timed jolt to a system can throw the entire system into a state of chaos…Determining exactly which node is most likely to offer the best 'system leverage', and persuading key stakeholders to act upon this determination is what the management of whole system working is all about."

Boundary determination – p.11 "Where the boundary of a service is seen to be will depend on the **worldview** of the person observing the system…to include all important interacting components, with the assumption that all significant dynamic behaviour arises from the interactions of components inside the system boundary…One indicator could be communication channels".

Benson model – p.12 Benson (1975; 1983) 'inter-organisational network'. P.13 "The practical value of the approach lies in articulating the contours of a 'system', and in proposing that these are inter-related."

Accepting the unknowable – p.14 "Working…in a whole system manner is easy to say and hard to do….both reports (Audit Commission and CSIP Older People Team) acknowledged the difficulty of securing real change…strong focus on promoting independence and rooted in the views of older people remained, in most areas, an aspiration…
…for most places, a whole system approach is a statement of aspiration rather than a statement of achievement…

p.14 – "The literature on complexity theory consistently emphasises the limitations on our ability to predict, plan and control the behaviour of social systems. Long term planning and the rigid structures, precise task definitions and elaborate rules that often accompany it, may be positively dangerous, 'fixing' an organisation in pursuit of a particular vision when an uncertain world requires flexible responses…Perhaps the most important message is the need to accept that **the long term future** of the organisations that constitute the system **is inherently unknowable** ... But this still leaves three key areas where interventions can make a difference.
- dealing with resistance to change
- dealing with valid different perspectives
- dealing with performance management requirements"

Dealing with resistance to change – "implementation – rather than vision or strategy – that is the biggest challenge for leaders seeking to bring about change…leadership is about creating situations where people themselves start to form new meanings, rather than in top-down pronouncements and restructurings….**'holding frameworks'** - communicating the core purpose, desired identity and values of the organisation and the system of which it is a part, together with the key challenges requiring response….**'valid different perspectives'**…participants come to appreciate more fully alternative worldviews…**subjectivity** needs to be embraced rather than ignored by the systems approach"

"What techniques might be used to achieve this? Mason and Mitroff [1981] highlight four principles underpinning the methodology of what has become known as **'strategic assumption surfacing and testing'** [SAST]:
- **participative**: based on the belief that different stakeholders should be involved because the knowledge and resources required to resolve wicked problems and implement solutions will be spread among different parts and levels in an organisation, and different groups outside the organisation.
- **adversarial**: judgements about how to tackle such problems are best made after full consideration of opposing perspectives.

- **integrative**: different options thrown up by the participative and adversarial principles must eventually be brought together again in a higher order synthesis so that an action plan can be produced and implemented.
- **managerial** mind supporting: managers exposed to different assumptions that highlight the complex nature of wicked problems will gain a deeper insight into the difficulties facing an organisation and appropriate strategies that will enable it to move forward.

It may not be obvious that an approach can be both adversarial and integrative, but Jackson (2003) identifies four stages in a facilitative process:
- **Group Formation**: As wide a cross section of individuals as possible who have an interest in the problem or policy should be involved. They will be divided into mixed groups with the aim of maximising a divergence of perspectives. Each group should have or develop a preferred strategy or solution, and each group's viewpoint should be clearly challenged by at least one other group.
- **Assumption Surfacing**: The aim here is to help each group uncover and analyse the key assumptions on which its preferred strategy rests in a supportive environment with good facilitation.
- **Dialectical Debate**: Here the groups are brought together and encouraged to enter into a dialectical debate. A spokesperson for each group will present the best possible case for its preferred strategy, being careful to identify the key assumptions on which it is based. After each group has presented, the dialectical debate will be guided by the following questions:
  • how are the assumptions of the groups different?
  • which stakeholders feature most strongly in giving rise to the significant assumptions made by each group?
  • do groups rate assumptions differently in respect of their importance for the success of a strategy?
  • what assumptions of the other groups does each group find the most troubling with respect to its own proposals?
- **Synthesis**: The aim here is to achieve a compromise on assumptions from which a new, higher level of strategy can be derived. Assumptions continue to be negotiated and modified, and a list of agreed assumptions drawn up. If this list is sufficiently long an implied strategy can be worked out – in effect the 'holding framework' recommended by Attwood et al."

p. 16 – "narrow and fragmented ways in which separate agencies are performance managed, usually by central government, can inhibit joint approaches. … the pursuit of any single quantified target is likely to distort the operation of the system and thereby reduce its overall effectiveness"

p.17 – "proposes alignment of the planning and budgeting cycles for the NHS and local government starting in 2007/8. This is a welcome step in the right direction, but further measures will be needed if whole system working and performance management regimes are to be reconciled…policy output should be as non-prescriptive about means as possible – a minimalist specification that:
- establishes the direction of the change required;
- sets boundaries that may not be crossed by any implementation strategy;
- allocates resources but without specifying how they must be deployed, and for a sufficiently long period for a novel approach to be explored;

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- grants permissions – explicitly specifies the areas of discretion in which localities can exercise innovation and choice."

…improved health, improved quality of life, making a positive contribution, exercise of choice and control, freedom from discrimination or harassment, economic well-being and personal dignity"

Logically the need here is for a **'whole system' performance measure** – a measure of a system rather than several disparate measures of the organisations that comprise a system. In Scotland there is a 'whole system indicator' relating to services for older people– the Joint Performance Information and Assessment Framework Whole System Indicator (JPIAF 10) – in which local partnerships need to indicate how they are managing the 'balance of care' (Scottish Executive, 2003). Five sets of performance information are identified:

- the number of people receiving Single Shared Assessments – an upward trend is desirable;
- the number of delayed discharges – a downward trend is desirable;
- the number of individuals over 65 admitted to hospital as emergency admissions – a downward trend is desirable;
- the number of individuals being supported long term in accommodation other than in their own home – ideally a long term relative decrease;

the number of individuals being supported in their own homes through receiving 10+ hours home care per week – an upward trend is desirable."

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<td>**Levels of concern & of action (community/neighbourhood/family/individual)**</td>
<td>Governmental/community/neighbourhood/family/individual</td>
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<td>**Do the authors identify any barriers to success?**</td>
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p.14 –

the barriers to whole system working identified by the CSIP Older People Team give an indication of the scale and complexity of the task:

- users and potential users of services are stakeholders in the planning of services, but it is difficult to gather their views coherently and comprehensively across organisations;
- planning becomes very complex because of the different planning processes and timescales of the organisations involved;
- different parts of one organisation may be contributing to different whole systems – such as clinical networks and intermediate care services – which makes planning within an organisation extremely complex;
- while in principle organisations may subscribe to a whole systems approach, under the pressure of allocating limited budgets, they may revert to unilateral action;
- an organisation may not see itself as a partner within a whole system, which can lead to one essential part of the system failing to co-operate.

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Additional notes

Inter-Agency Governance
Integrated Strategy
Integrated Processes
Integrated Front-Line Delivery

Outcomes for children and young people
Parents
Families Community

Fig. 1

Authors (year) [Ref ID]	IDeA (2005) **[1842]**	Focus/aim	Whole system working is a wide-ranging, cross-cutting and holistic approach to improving older people's quality of life. It means looking beyond the provision of health and social care services and embracing the wider spectrum of issues that impact on people's quality of life. While priorities will differ from locality to locality, these may include housing and the home, neighbourhood, occupation, social networks, getting out and about, income, information, health and healthy living.
Paper title	Working as a whole system: improving the quality of life for older people. The older people's shared priority.	**In theory only or using examples?**	Using examples
Location of authors	IDeA	**Are metaphors used?**	No
Discipline/organisation of authors	Improvement and Development Agency – national government	**Have the authors had practical experience of a WSA approach to a public health issue? [brief description if yes]**	Not clear
		Do the authors provide case examples from previous experience? [brief description if yes]	Yes – Southampton Council (p.2), Thurrock Council (p.3), Lancashire County Council (p.4), Kent County Council (p.5) etc.
What comprises a WSA? **[extract key summary/text]**	(In the context of older people's services – p.1): "Whole systems working is a wide-ranging, cross-cutting and holistic approach to improving older people's quality of life. It means looking beyond the provision of health and social care services and embracing the wider spectrum of issues that impact on people's quality of life. While priorities will differ from locality to locality, these may include housing and the home, neighbourhood, occupation, social networks, getting out and about, income, information, health and healthy living. A whole system approach therefore involves Councils, older people and other local agencies from the statutory, voluntary and private sectors working together and placing older people's concerns at the very heart of the system. It means responding to older people as citizens, not merely service users. To achieve this, the system needs to engage actively with older people.		

Guide 2 in this series has examined the rationale behind this and considered ways of making it happen, while Guide 1 has highlighted national policies that supports this approach and can be used to help lever change. A transfer of power is intrinsic to whole system working: engaging with older people and giving them an active role in the system means devolving some power to them. This requires changing people's mind-sets, as much as changing ways of working. It is more about culture change than service change".

Community Leadership Model: stems from new ways of thinking about what local authorities are delivering to their older citizens, recognising that older people have wants and needs that go well beyond service use…new and different ways of whole system working that are driven by older citizens; it entails working beyond existing patterns of service provision and departmental structures.

See key principles in table below.

Holistic – emphasis on the relationships between levels – lay knowledge – systems language – self-aware – focus on the way people come up with solutions for their locality – ways of relating to one another based on equality and empowerment – self-sustaining – evolving – multiple levels of influence – wider focus than the individual – interactive effects

Seize local opportunities. It is important to be pragmatic and take opportunities when they come along.

go for quick wins to get others on side

Value the process itself.

Find issues that cut across the system

it is essential to develop a common understanding of the local population.

Share information with partners.
Real benefits can flow from sharing information across organisations.

Qualitative information has considerable value in fleshing out the picture and provides additional meaning

Use positive, not negative audits such as skills and contributory potential

While individual leaders play a vital role in developing a momentum for whole system working, clearly over time leadership needs to become embedded within the system. This requires a process of organizational change, not just in terms of structures but also a change of mindset.

A key approach is to establish aims and expectations around the needs of older citizens, rather than those of service providers.

	Value commitment. Commitment to shared goals and interests is more important than the status of an individual.
	Partners should not feel attendance at meetings is compulsory if a topic is not relevant or of value. Communication outside meetings should be encouraged and supported to help develop common agendas and to generate ideas and action.
	Balance risk across the whole system.
	With whole system work more emphasis needs to be given to holistic measures of quality of life and well-being for older people. Evaluating how older people feel rather than how they rate local services.
	Set holistic whole system targets.
	Involve older people.
	Identify and understand unexpected outcomes.
Do the authors identify any barriers to success?	**Barriers**: p.7. "There is a need to get older people's voices heard at the political level. This is problematic when there are no existing structural arrangements, but it can be supported through actively lobbying on behalf of older people's forums or enabling older people's representatives to directly engage in dialogue at the political level." p.33 "it is difficult to measure the impact of individual programmes because the impacts cannot be ring-fenced from those of other concurrent investment initiatives. The Department of Health recognises this problem, and is currently discussing with the Audit Commission and Commission for Social Care Inspection how to better link evaluations for which they are responsible." **Facilitators**: p.30 "The recent Department of Health white paper has proved a useful driver in facilitating better partnership work between social services and the Primary Care Trusts, linked to the realities of joint commissioning. The introduction of parallel meeting structures is also helping resolve some problems. It was recognized that difficult and detailed strategic discussions between social services and health were better held separately from broader business discussions with all other partner services and agencies."
Additional notes	

Fig. 1 – developing a strategic approach

Key principles of the Community Leadership Approach
• Strong local leadership at senior officer and political level with the vision and confidence to seize opportunities and take the risks needed to drive change.
• Embracing community leadership, positioning the local authority as the driving force behind older people's community well-being.

- Devolving power to older people so they are empowered to engage constructively and play an active role in the whole system.
- Advancing local approaches to ageing based on older people's needs.
- Support for building older people's capacity to enable their direct involvement in decision making, shaping policy and being an active resource.
- Helping generate social and information networks amongst older people.
- Adopting a holistic, wide-ranging strategic approach in terms of services and partner agencies encompassed.
- Prepared to work in partnership with all agencies and people that can make a contribution to older people's quality of life.
- Addressing the full range of issues that make a difference to older people's quality of life, not just health and social services.
- Communicating locally and nationally what is being done to improve older people's quality of life and how effective this is.
- Being concerned with evaluating how older people feel more than with rating service outcomes.
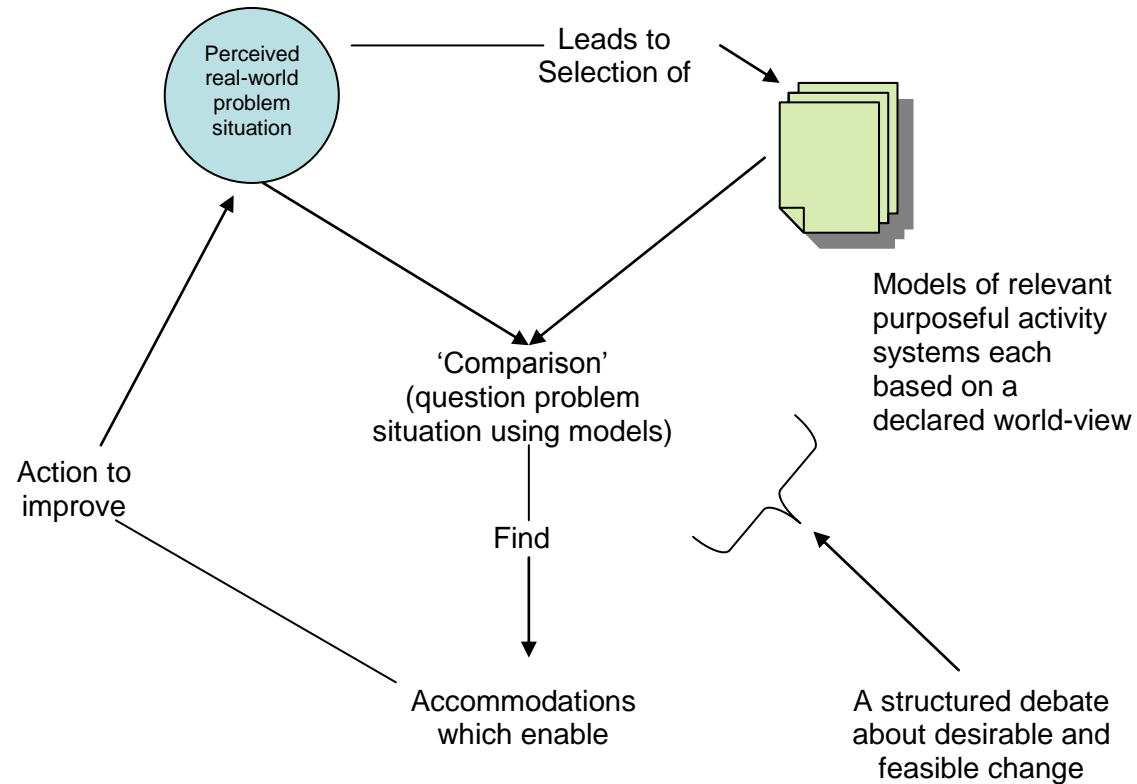
Authors (year) [Ref ID]	Iles & Sutherland (2001) [1843]	Focus/aim	To provide a resource and reference tool for the literature on change management and consider the evidence available about different approaches to change.
Paper title	Organisatonal Change: A review for health care managers, professionals and researchers	In theory only or using examples?	Examples are specific to e.g. hospitals and do not relate to public health
Location of authors	UK		
Discipline/organisation of authors	Management	Are metaphors used?	No
		Have the authors had practical experience of a WSA approach to a public health issue? [brief description if yes]	No, the report is a review
		Do the authors provide case examples from previous experience? [brief description if yes]	No, the report is a review
Abstract	None		
What comprises a WSA? [extract key summary/text]	(p.17) *(verbatim)* The term 'whole systems thinking' is routinely used by managers and clinicians within the NHS, reflecting an increase in: - awareness of the multifactorial issues involved in health care, which mean that complex health and social problems lie beyond the ability of any one practitioner, team or agency to 'fix' - interest in designing, planning and managing organisations as living, interdependent systems commited to providing 'seamless care' for patients - recognition of the need to develop shared values, purposes and practices within the organisation and between organisations - use of large group interventions to bring together the perspectives of a wide range of stakeholders across a wider system (p.34-35) Soft systems methodology: All the people involved in a system will perceive it differently and these differences need to be understood before changes can be designed. An application of systems thinking, Soft Systems Methodology (SSM) provides a means of		

	articulating complex social processes in a participatory way, allowing people's viewpoints and assumptions about the world to be brought to light, challenged and tested. SSM (see figure 6, below) comprises the following main stages, which can be undertaken sequentially or as an iterative process. *(verbatim)* 1. Finding out about a problem situation and its causes from stakeholder, cultural, and political perspectives, without attempting to impose a preconceived structure or over-simplify processes. 2. Articulating 'root definitions' of relevant systems – statements which encapsulate the main purpose, dynamics, inputs and outputs. 3. Debating the situation with those involved by: - depicting activities required to achieve the root definitions, for example, through process flow charts or influence diagrams - comparing models with reality by observation and discussion - defining possible changes: of structure, process, and/or attitude. 4. Taking action to implement the changes. "Proponents of SSM argue that the initial situation will be changed by the very use of this methodology. It differs from a hard systems approach in not having an external change agent whose role is to effect change. In SSM the role of any external agent is to facilitate the understanding of those players within the system so that they design and implement changes themselves."
Levels of concern & of action (community/neighbourhood/family/individual)	
Do the authors identify any barriers to success?	No
Additional notes	None

The inquiring/learning cycle of SSM

Principles

•real world: a complexity of relationships
•relationships explored via models of purposeful activity based on explicit world-views
•inquiry structured by questioning perceived situation using the models as a source of questions
•'action to improve' based on finding accommodations (versions of the situation which conflicting interests can live with)
•inquiry in principle never-ending; best conducted with wide range of interested parties; giving the process away to people in the situation

Perceived real-world problem situation

Leads to Selection of

Models of relevant purposeful activity systems each based on a declared world-view

'Comparison' (question problem situation using models)

Action to improve

Find

Accommodations which enable

A structured debate about desirable and feasible change

Authors (year) [Ref ID]	Information Policy Unit, NHS Executive 2000	**Focus/aim**	To provide supporting advice guidance and good practice examples when adopting whole systems approaches for the planning, implementation and operation of information systems and services across a health community.
Paper title	Working in partnership: developing a whole systems approach	**In theory only or using examples?**	Guide developed following a programme of visits to sites across the country to identify areas of good practice in joint working.
Location of authors	Public Services Productivity Panel	**Are metaphors used?**	
Discipline/organisation of authors	Dept of Health Executive UK wide	**Have the authors had practical experience of a WSA approach to a public health issue? [brief description if yes]**	Not clear
		Do the authors provide case examples from previous experience? [brief description if yes]	Good practice examples supplied throughout though details of the actual projects sparse.
Abstract	None		
What comprises a WSA? [extract key summary/text]	"Adopting a whole systems approach is concerned with looking at the "big picture" of issues across a range of different interest with complex organisational environments. It involves: Identifying the various components of the whole system – typically individual organisations and their functions – and then systematically assessing the nature of the links and relationships between each of those systems components (organisations) and considering the dynamic nature of those links. Recognising both the benefits that can be leveraged through whole systems working – for example the opportunities to share the costs of shared investments – and also the specific risks which arise adopting a whole systems approach.		

This guide was produced in the wake of the *New NHS: Modern , Dependable* which called for partnership working, and *Information for Health* which required joint approaches between organisations. Particularly aimed at assisting Local Implementation Strategies (LIS).

Experience has shown that "the development of joint approaches is not an easy task." With particular challenges in:

Agreeing a set of priorities which benefit the community as a whole

The development of joint working relationships with those previously seen as competitors

Difficulties establishing accountability arrangements across a number of organisations.

Legacy of separate systems and departments.

This self assessment tool was developed to try and help local health communities meet these challenges. It focuses around:

Policy and goal setting

Accountability

Networking and alliances

Culture and learning

Resources

Skills and competencies

Policy and goal setting

The way in which the local agenda is defined and shared.

Key principles:

Community needs are paramount (benefit the whole not any single organisation)

All partners need to agree to goals and objectives

No organisation can opt out

Practical goals and objectives should be set out which benefit all partners.

Accountability

Key factors:

An agreed performance management framework

Joint regular and transparent review of performance

A commitment to share the learning form performance reviews and agree appropriate actions.

LIS management to have clear lines of accountability to the local Chief Executives group, with each member of the group clear about roles and responsibilities. The work programme should include risk assessment and risk management arrangements, with regular progress monitoring built into the process. Ongoing support and maintenance arrangements need to be considered.

Networking and Alliances

Critical areas:

The implementation of an agreed communications strategy for the health community

Creation of formal alliances and partnerships to deliver specific community wide objectives

Involvement of all parties, especially the user community, in planning and prioritisation

Joint approaches to the assessment of local environment and potential changes and challenges

The adoption of formal conflict resolution and exit strategies.

Culture and learning

Refers to how the local community embraces joint working and learns from national and local initiatives

Important factors:

Open communications and mutual respect for capabilities of each organisation

Participative approach which encourages each party to contribute to the strategy formation and implementation and which is focussed on community wide outcomes and benefits.

An emphasis on the need to have appropriate relationships and processes in place to support and encourage joint working.

Organisational structures that encourage flexible approaches to problem solving and which reward innovation.

The development of a learning climate that scans local and national initiatives and is prepared to experiment

The establishment of mechanisms to review the success of local initiatives and ensure that the learning form these reviews is disseminated to all partners.

One challenge is the bringing together of staff form different organisations with different ways of working and cultures "you will never believe how different two organisations can be."

Measures to address this include:

The development of joint plans to support specific project areas. Successful experience on small project will encourage broader areas of cooperative activity.

Routine inclusion of clinicians and other users in priority setting for information systems and services

The creation of specific activities to review the potential fo changes in working processes and the re-engineering of service provision.

Resources

Community wide commitment of time and resource to ensure agreed outputs are delivered.

Community wide commitment to assignment of staff to whole systems projects.

Community wide commitment to joint investment where appropriate and the pooling of point income.

Skills and competencies

	Important factors include: A clear understanding of the skills and resources needed to implement the LIS Agreement on the skills and resources currently available across the community An agreed and resourced education, training and development strategy The right technical skills and infrastructure in place to deliver the agreed goals.
Levels of concern & of action (community/neighbourhood/family/individual)	
Do the authors identify any barriers to success?	

Authors (year) [Ref ID]	Plsek (2001) [1768]	Focus/aim	To examine the problems with perceiving the organisation of the NHS as a machine.
Paper title	Why won't the NHS do as it is told – and what might we do about it?	In theory only or using examples?	Example about target-setting and the delivery of thrombolytic therapy
Location of authors	UK	**Are metaphors used?**	Yes, broadly – in the sense of 'living systems' rather than organisations as 'machines', and of complex adaptive systems as 'birds' rather than 'rocks'
Discipline/organisation of authors	Health	**Have the authors had practical experience of a WSA approach to a public health issue? [brief description if yes]**	Unclear
		Do the authors provide case examples from previous experience? [brief description if yes]	No
Abstract	The NHS Confederation is producing a series of *Leading Edge* briefings to launch a debate on Rethinking Performance Management across the UK's health services. This is made especially relevant in England by the creation of strategic health authorities, and across the UK by ongoing discussions about the structure and management of the national health services. This *Leading Edge* is published together with *Aligning what we say and how we behave* and *Rethinking the system*. The current system appears to fail both the performance managers and those they manage; neither does it directly connect to front-line clinicians or their patients. The briefing examines some fundamental problems with perceiving the organisation of the NHS as a machine.		
What comprises a WSA? [extract key summary/text]	(p.2) *(verbatim)* Complex Adaptive Systems: - elements of the system can change themselves - change does not have to be imposed - in fact, imposing change may lead to further adaptations that can lead to unintended and unhappy consequences. - very complex outcomes can emerge from a few simple rules - complex targets and plans may actually stifle adaptive ability and creativity.		

- non-linearity - small changes can have big effects and large changes no effect at all.

- Complex systems thrive in tension and paradox. Healthy organisational systems exist on the edge of chaos, a region of only moderate certainty and agreement. Attempting to bring about unnatural 'stability' by resolving the seemingly paradoxical or upsetting aspects of our organisational life may cause more harm than good.

- Complex systems are embedded within larger complex systems, and are made up of smaller such systems. Leaders and policy makers cannot take up a post outside the system and shout directions at it – trying to do so can produce exactly the wrong results.

- Health systems are like throwing a bird rather than a rock – no matter how much analysis is done in developing a launch plan for a bird, it will follow the path it chooses and land where it wants. The lesson from this difference is not to make the bird more rock-like. In complex adaptive systems science there are 'natural attractor patterns' in the system and a lot of seemingly complex bird behaviour revolves around a few simple natural patterns of action. If one understands this about the system, one can attempt to link a natural pattern (such as the desire to be in a birdbath) to the change advocated.

(p.3)
"a sort of positive adaptability that can occur in complex human systems is the so-called 'generative relationship', where interactions among parts of a complex system produce valuable, new, and unpredictable capabilities that are not inherent in any of the parts alone."

(p.4)
"The idea that we must break down or eliminate boundaries within the system oversimplifies the issue and, based on an understanding of complex systems, will not work. In complex systems, it is not a question of whether there should boundaries between the parts – there must be boundaries. The question is about what is transmitted across the boundary. Cell walls in living organisms are permeable and allow flow in and out while maintaining a strong sense of the cell's identity. The analogy in organisational systems would involve paying careful attention to allowing more, and different, sorts of information to flow in and out of the separate parts of the system – while maintaining a sense of identity, and some distinction and separation."

(p.5)
- Target-setting - Delivery of thrombolytic therapy within a targeted time – "… it may not be helpful to take this overall goal relating to pain-to-needle time and allocate portions of it to individual parts of the healthcare system (e.g. a 60-minute call-to-needle time target for primary care, a 20-minute call-to-arrival-on-scene target for ambulance services, and a 30-minute door-to-needle time for acute trusts) - what if the patient delays 50 minutes before calling for help, hoping that the pain will go away? And what if the ambulance responds promptly and within its target response time, but then requires an additional 20 minutes to get the patient settled in the ambulance and work its way through traffic to the hospital? In this scenario, the acute care, primary care, and ambulance service trusts could indeed each be meeting their individual targets, but the patient may not be getting the full benefit envisioned in receiving the therapy within the 60 minutes timeframe."

	- "If the various parts of the system were encouraged towards thinking together in generative relationships for ways to meet the overall goal, they might come up with innovative ideas about symptom awareness campaigns in the local media so that victims called for help sooner, innovative ways to use paramedic support, or interventions involving the local authorities to reduce traffic jams or give emergency vehicles priority." (p.8) To manage and lead complex systems effectively *(verbatim)*: - look to complexity and living system metaphors, in addition to the traditional machine metaphor - recognise and work with natural attractors in the system, instead of always imagining that you must battle resistance to change using formal structures and sanctions - attend to the relationships among the parts of the systems, rather than focusing so intently on the parts alone - learn to see primarily the whole, rather than always dissecting systems up into parts for convenience of management - create conditions that tap the natural ability of complex systems to innovate, rather than always feeling the need to control things - work with the notion that complex outcomes can emerge from minimum specifications, instead of always trying to plan out and guide things in great detail.
Levels of concern & of action (community/neighbourhood/family/individual)	Health system
Do the authors identify any barriers to success?	Reluctance amongst managers and leaders to let go of traditional top-down, target-focused methods of health system management and planning.
Additional notes	None

Authors (year) [Ref ID]	Pratt, Gordon, Plamping (2005) [1541]	**Focus/aim**	
Paper title	Working whole systems. Putting theory into practice in organisations	**In theory only or using examples?**	Examples used throughout.
Location of authors	London		
Discipline/organisation of authors	At the time, based at the King's Fund, now at LSE. Pratt a former GP. Plamping leadership and organisational change background, chair of NHS Trust Board E London. Gordon service development and project management in health and social care, also no-exec on NHS trust.	**Are metaphors used?**	Yes – living systems vs. designed/mechanistic systems models of organisations
		Have the authors had practical experience of a WSA approach to a public health issue? [brief description if yes]	Approach based on the London Health Partnership - LHP (est. 1994) later Urban Health Partnership. Formed to "improve the basics in primary care" – joint funded by alliance of charitable foundations, govt,. and private sector initiatives, managed by the King's Fund. Focus was improving services for older people. Parallel programmes were started in Newcastle and North Tyneside and in Liverpool
		Do the authors provide case examples from previous experience? [brief description if yes]	Yes – older people's services
What comprises a WSA? **[extract key summary/text]**	*Whole systems working is a radical new way of thinking about change in complex situations – a combination of theory and practical methods of working across boundaries.* *At its simplest level, whole system working is an approach to the way people organise their work together. It is a about designing meetings to support conversations that help people to express their different experiences, to make new connections, to identify possibilities for action and to commit to change. At a more profound level, it is an approach to organisational development that views groups of people who come together around a shared purpose as living systems. It recognises the ways in which living systems adapt and evolve is determined by the way interconnected parts relate to each other, as well as by the way individual parts behave.* *Whole system working shifts the focus of attention from parts to "the whole" and offers a set of practical working methods to influence the way "the parts" connect and behave towards each other. (p.1)*		

The book focuses on "whole systems events", "high visibility" events that enable people to see that they are part of a wider system. In this case, these are mostly meetings conducted in particular ways designed to enhance WSW.

Nine key characteristics of whole system working are:

- Many perspectives
- Here and now
- Passion
- System that knows itself
- Trusting local resourcefulness
- Meaning
- Participation
- Patterns of order

Web of connections and communication (note that in the book these are shown in a wheel "ro allow us to pay attention to one aspect at a time while keeping awareness of the whole."

p.11 cf national policy
"without shared (global) meaning individuals would not be able to organise their (local) work in a way that is both flexible and in tune with the system as a whole".

Identity / system / purpose / participation

p.12 resourcefulness includes "keeping on the move" including in ways not desired.

Passion – energy with organisations that tap into participants' passion/.

p. 13 Repair and renew

p.14 "emergent property" that emerge at a certain level of complexity that do not exist at lower levels.

"Pattern of organisation"/ "Structure"   → relationships and connections

          → the way that pattern is embedded

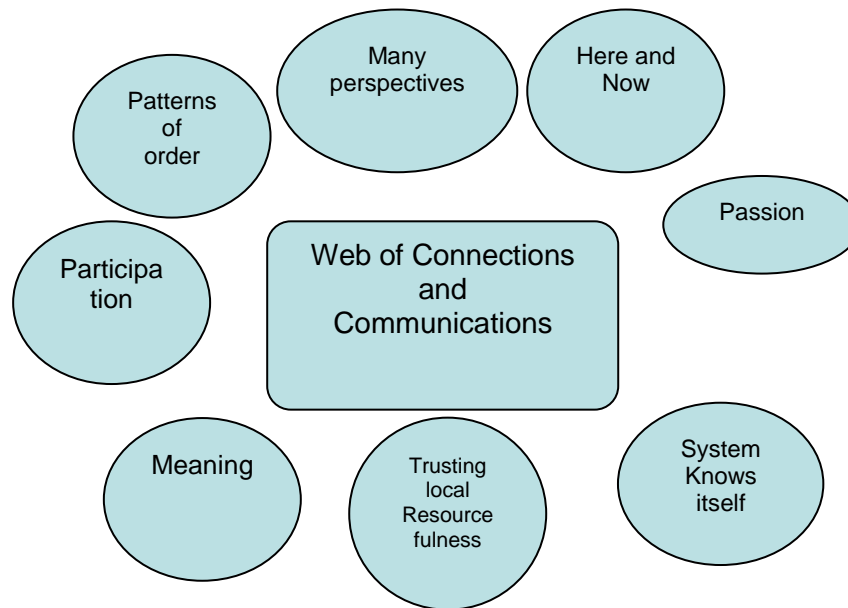*p.17

Figure 3.1 Characteristics of WSA (see below)

p.18

Whole System Events → highly visible moments in a much longer process that enable people to become aware of being part of a wider system (in this case usually meetings).

p. 18 Meaning

- All living systems exist to maintain their own identity
- In human systems, people are purposeful
- WSA brings to the surface, and makes available, shared purpose and meaning

p. 19
- Why   why   shared is a bonus
- Values   How/Why   }Mission statement or revealed through actions
- Purpose   What   }

Don't jump to solutions/actions too fast.   Sharing experience, possibilities and purpose first helps widen debate/understanding and helps to identify shared purpose.

p. 22 System that knows itself

- Living system knows itself in its environment and acts to preserve identity.
- Recognising as a whole in environment → new opportunities
- WSA allows people to recognise some of the human systems to which they belong by virtue of shared purpose.
- Dynamic, circular and repeated patterns of connection and communication   → adaptation evolution
- "a system is best described by its behaviour rather than its people"
- To get change, system must know itself and be consciously aware of   purpose and boundaries and the repeated interplay of its intentions and   actions.

Many perspectives p.24

- Living systems contain elements with their own identity → provide the variety and redundancy necessary for adaptation → more choice, less risk of failure.
- Many perspectives = essential resource, (one perspective as "correct"   reduces capacity to adapt).
- WSA seeks to find approaches that exploit variety of perspectives.

(Cf the blind men and the elephant for partial, individual views of the whole)

Cf p.26/27 box on sharing experiences, defusing bad feeling in order to progress to solutions.

→ Getting professionals to hear

Also about 'tidying up' people's words as a way of making them feel disconnected from them.
p. 30 Active participation of lay members.
Diversity

Participation p. 30

   Living system – each element fulfils its own function
   Human system – each person/organisation responsible for playing its own part.
   Direct participation of all involved.

Everyone asked to participate as an individual not a representative from an organisation → their own point of view, not responsible for structure/behaviour/official views of organisation.

p. 31 May chose to make a personal commitment to do something but not on behalf of organisation (can say they will ask someone for something if what is needed is not in their power) → informal networks not formal are used. Power structures.

p. 32 If the person needed to take the action required is not there, how to engage them to meeting.

p. 35 Web of connections and communications

•   Living systems – elements contribute to function of other elements as well   as own function → feedback loops.
•   Human system – similar
•   WSA reveals and supports networks of connections and communications   that sustain them.

Building networks of personal connections is a crucial part of the job.

Connections and relationships grow from opportunities to share experiences and explore what we mean and to do so repeatedly.

Round tables. Conversations from personal experience. Size of group critical.

Generating sense of "all being in this together" "what do we care about round here".

p. 36 re evaluation – hard to measure.

p. 37 Trusting local resourcefulness

       living system within environment – has capacity to adapt.

human system too – need not depend on external design and control.

WSA is an approach that trusts that local people, groups and organisations can be sufficiently resourceful to adapt appropriately without external design.

The pattern of organisation is produced within the system itself – responsive to environment, but cannot be directly changed from the outside.

Recognising capacities and exploring possibilities.

p. 46 Passion

Living systems require constant energy to maintain itself or to change

Human system too uses energy to stay same or change

WSA – releases energy. Passion (as well as money, time, communication) is a form of energy.

Do the job – systems use energy to stay same, engaging people's passions can energise change.

Encourage people to work on what they really care about.

p.47 allow stories and anecdotes as legitimate evidence (as well/instead of data, analyses, abstractions).

Liberating to be allowed to explore without finding solutions.

P 48 Here and Now

Here and now – many simultaneous interactions and processes – looks messy (not planned, sequentials)

Gives time and space to established shared meaning and purpose

Formal processes usually not designed for exploring possibilities.

Need time to establish shared meanings

p.50 Patterns of Order

Living systems complex – yet stable patterns of order emerge without recourse to external design and control
Repeated application of simple rules
"Coherent patterns of order arise from a few principals that guide behaviour. People can choose to change

guiding principle.

Order – about pattern, not detail.

p. 53 * List features of methods used

Figure 3.1 Characteristics of WSA

Levels of concern & of action (community/neighbourhood/family/individual)	
Do the authors identify any barriers to success?	
Additional notes	Other noteworthy elements: The authors note specifically that project work is unlikely to be productive in addressing complex problems: *Learning needs to be undertaken by the people engaged in the system: it is they and not the transient project worker or evaluator, who need to understand the systems in which they work, especially if they want to change*

Authors (year) [Ref ID]	Rowe & Hogarth (2005) [1376]	Focus/aim	To explore the issues of professional and organizational change (brought about through use of a Complex Adaptive Systems approach) in health care organizations.
Paper title	Use of complex adaptive systems metaphor to achieve professional and organisational change	In theory only or using examples?	Primary Care Trust where a pilot site to explore and implement new roles for School Nurses and Health Visitors had been established. This involved a 'comprehensive change programme', based on a CAS model of change, and which had a 'good enough' vision rather than a pre-ordained strategic plan.
Location of authors	UK		
Discipline/organisation of authors	Primary care/ Nursing/ Health Visiting	Are metaphors used?	Yes – living systems
		Have the authors had practical experience of a WSA approach to a public health issue? [brief description if yes]	Yes, through their involvement with the Primary Care Trust pilot site.
		Do the authors provide case examples from previous experience? [brief description if yes]	Yes, through their involvement with the Primary Care Trust pilot site.
Abstract			

Aim. This paper uses the experiences of a programme designed to bring about change in performance of public health nurses (health visitors and school nurses) in an inner city primary care trust, to explore the issues of professional and organizational change in health care organizations.

Background. The United Kingdom government has given increasing emphasis to programmes of modernization within the National Health Service. A central facet of this policy shift has been an expectation of behaviour and practice change by health care professionals.

Methods. Change was brought about through use of a Complex Adaptive Systems approach. This enabled change to be seen as an inclusive, evolving and unpredictable process rather one which is linear and mechanistic. The paper examines in detail how the use of concepts and metaphors associated with Complex Adaptive Systems influenced the development of the programme, its implementation and outcomes.

Findings. The programme resulted in extensive change in professional behaviour, service delivery and transformational

	change in the organizational structures and processes of the employing organization. This gave greater opportunities for experimentation and innovation, leading to new developments in service delivery, but also meant higher levels of uncertainty, responsibility, decision-making and risk management for practitioners.
	Conclusion. Using a Complex Adaptive Systems approach was helpful for developing alternative views of change and for understanding why and how some aspects of change were more successful than others. Its use encouraged the confrontation of some long-standing assumptions about change and service delivery patterns in the National Health Service, and the process exposed challenging tensions within the Service. The consequent destabilising of organizational and professional norms resulted in considerable emotional impacts for practitioners, an area which was found to be underplayed within the Complex Adaptive Systems literature. A Complex Adaptive Systems approach can support change, in particular a recognition and understanding of the emergence of unexpected structures, patterns and processes. The approach can support nurses to change their behaviour and innovate, but requires high levels of accountability, individual and professional creativity.
What comprises a WSA? **[extract key summary/text]**	**FEATURES OF CAS** (p.398) Organisations as complex living (or adaptive) systems: - organizations are characterized as living entities or organisms existing within a complex ecosystem – as in any ecosystem, individual organisms are independent and have their own identity, yet coexist and are dependent on each other for the maintenance of the whole system and therefore their survival. The living entities interact with the environment and are affected by it, creating a balance of interdependent elements - the complex set of relationships existing between these various elements of an ecosystem is often described as a web. These living systems are not fixed but rather change, grow, repair, adapt, reproduce and slowly evolve. - interactions within a complex system produce largely unpredictable outcomes, or 'emergent behaviours' - as a result of responses to simple rules within these systems, orderly patterns of behaviour emerge in a process of self-organization. - change is provoked by attempts to increase the possibilities for natural adaptation (rather than by detailed plans and instructions) through the use of appropriate stimuli to increase creativity at all levels of the organisation and the creation of more flexible organisational arrangements (p.399). (p.399) Key features of CAS (Table 1 - Adapted from Zimmerman et al. (1998), Olsen & Eoyang (2001), Stacey (2003)): - Complex adaptive systems will be self-organizing and new elements will emerge at various points. These changes may be incremental or dramatic as they adapt to reactions between subsystems and with other systems - Uncertainty is inevitable in an evolving system, rendering top-down control impossible. The views and experiences of those at a variety of points in an organization are necessary to gain an understanding of it

- Spontaneous change occurs more readily where there are a range of different behaviour patterns (microdiversity)

- agents within an organization act according to their own internal rules or mental models. Attractor patterns within the system will 'frame' and limit change

- Simple rules or guiding principles can lead to innovative emergent changes

- Change can be stimulated by the encouragement of new generative relationships. These can produce new insights and solutions into complex problems

- There will be simultaneous stability and instability at the edge of chaos, this being a requirement for the emergence of novelty

THE 'COMPREHENSIVE CHANGE PROGRAMME' IN A PCT – DEMONSTRATING A CAS APPROACH
Planning for unpredictability – analysis of experience of the 'comprehensive change programme' about School Nurse and Health Visitor work roles (p.399-400):
- the CAS framework is challenging because of the way that participants have to come to terms with the contradiction in planning for uncertainty and unpredictability

- the focus was not to 'engineer' change, but to create the conditions in which change could emerge – this entailed reflection, debate and challenge, encouraging development of multiple new relationships, an education programme tailored to needs following skill analysis and recognising and validating newly emerging organisational and professional structures and processes. Note also that the programme started with events designed to raise expectations of change and encourage the start of a learning, reflective and creative process – professionals and managers were brought together to envision the future and consider the ways in which they would like change to happen.

- practitioners were asked to consider potential challenges to their professional practice, evaluate their effectiveness and identify the strengths and weaknesses of current work patterns - a general vision for the future was debated and key elements agreed on (these were broad, allowing plenty of scope for diversity within the system).

- although the open process was largely productive, the levels of uncertainty during the process caused anxiety, sometimes expressed as hostility or distress.

- balancing the need for openness and time for debate and reflection with the need for some stability and order (in the context of practitioners' heavy workloads) was a major challenge. To function 'on the edge' rather than become immersed in chaos, it was necessary to recognise elements of self-organisation as they emerged and identify these as firm decisions at various points in the programme.

Mental models and attractor patterns (p.400-401):
- facilitating practitioners to gain insight into their mental models and enabling challenge to these models and their divergence was crucial to the change process

	- practitioners within the same nursing discipline had varied understandings of their professional roles and working practices, both current and anticipated for the future – this led to lively debates and exploration of paradox and tension as philosophical approaches and working practices were explored and challenged. While unsettling to practitioners, the debates raised differences of opinion that continued to produce productive insights and contributed to increasing awareness of the tensions followed by some modification of 'mental models' (tacit understandings that are 'in use' in practice) - a range of different attractors (values or behaviours that people are drawn towards) also motivated practitioners, e.g. some health visitors within the programme were pulled by the attractors of casework with individual clients, while for others work with whole communities was a powerful attractor. (p.401) - generative relationships – staff were encouraged to make new links with personnel in other agencies and sectors, to discuss their work with them and look for possibilities for joint work, The range of new relationships developed were (Table 3): - Peer relationships between practitioners working in newly established teams, sharing workloads and accountability for outputs. The majority of practitioners had previously been working in almost complete isolation, taking personal responsibility for a defined 'caseload' - Practitioners and Public Health specialists within the primary care trust. Prior to this programme these groups were largely unaware of the other's work - Clinicians and Managers, who are continuing to work on the balance of decision-making between frontline teams and the managerial level - Health visitors and other disciplines, including nursery nurses, midwives and clerical assistant staff who are now part of the teams - Health staff and local people, through a range of participatory techniques such as rapid appraisal of community health needs, resulting in a wide range of new and innovative services - Practitioners and workers from other agencies, through discussion and jointly established new initiatives (p.402) - Through the assertion that involvement, good relationships and multiple understandings of any given situation are key to achieving organizational success, CAS offers an alternative paradigm to that of strong and effective leaders 'managing' a passive or resistant workforce through change. In the case study, multiple and profound change both at the level of organizational structure and process and at the level of professional behaviour was attained.
Levels of concern & of action (community/neighbourhood/family/individual)	NHS Primary Care Trust

Do the authors identify any barriers to success?	Insecurity resulting from the uncertainties inherent in the CAS approach, and a desire on the part of practitioners to stay with what is known (i.e. linear models of change)
Additional notes	CAS provide a 'model' or 'framework' to aid analysis or construction of an approach, rather than a fully formed theory that can be tested (p.402)

Authors (year) [Ref ID]	Senge, P.M. (1990) [1777]	**Focus/aim**	Leadership/business focussed. Promoting a learning organisation – building organisations that can truly learn how to tap their people's commitment and capacity to learn at every level of the company.
Paper title	The Fifth Discipline: The Art and Practice of the Learning Organization – Ch.s 13, 14 & 15	**In theory only or using examples?**	Theory and examples
Location of authors	US		
Discipline/organisation of authors	Director of Systems Thinking and Organizational Learning Program The Sloan School of Management Massachusetts Institute of Technology	**Are metaphors used?**	Yes
		Have the authors had practical experience of a WSA approach to a public health issue? [brief description if yes]	Unsure
		Do the authors provide case examples from previous experience? [brief description if yes]	Yes – Detroit and Japanese car manufacturers p.18; Royal Dutch/Shell p.288;
What comprises a WSA? **[extract key summary/text]**	Holistic – relationship between levels – self-sustaining – evolving – multiple levels of influence – wider focus than the individual – interactive effects Analogy of systems thinking, p.6: "A cloud masses, the sky darkens, leaves twist upward, and we know it will rain. We also know that after a storm, the runoff will feed into groundwater miles away, and the sky will grow clear by tomorrow. All these events are distant in time and space, yet they are all connected within the same pattern….You can only understand the system of a rainstorm by contemplating the whole, not any individual part of the pattern". Lay knowledge – ways in which people come up with solutions – ways of relating to one another - evolving – multiple levels of influence – wider focus than the individual – interactive effects Ch.13 – 'Openness': A "political environment" is one in which "who" is more important than "what"…there are always "winners" and "losers"…power is concentrated and it is wielded arbitrarily… [this is] the essence of authoritarianism." Participative openness: freedom to speak one's mind (without learning taking place) Reflective openness: willingness to challenge your own thinking – "I may be wrong and the other person may be right" Openness and complexity: "nobody has the answers". Any 'answer' one comes up with is at best an approximation –		

<table>
<tr><td></td><td>always subject to improvement, never final.

The spirit of openness: a characteristic of relationships, not individuals.

Holistic – relationship between levels – self-sustaining – Lay knowledge – ways in which people come up with solutions – ways of relating to one another - evolving – multiple levels of influence – wider focus than the individual – interactive effects

Ch.14 – 'Localness': moving decisions down the organizational hierarchy; unleashing people's commitment by giving them the freedom to act, to try out their ideas and be responsible for the results;.

p. 288 - "Traditionally in an organisation, the top thinks and the local acts. In a learning organization, you have to merge thinking and acting in every individual".

p.293 - Organic control = the capacity to maintain internal balances critical to stability and to growth (e.g. in the human body, temperature is controlled, as is blood pressure, heart rate, physical balance etc. through a myriad of control processes).

See table 1 below. Demonstrates the term coined by Garrett Harding – "Tragedies of the Commons" – examples are over-grazing leading to desertification, over-fishing, destruction of rainforests; two conditions are met: 1) there exists a 'commons' – a resource shared among a group of people; and b) individual decision-makers achieve short-term gain by exploiting resource, and are often unaware of the cost of that exploitation except in the long-run. Can occur in business and organisations where 'localness' is valued, but inter-relatedness is not fully understood.</td></tr>
<tr><td>Levels   of   concern   &   of   action (community/neighbourhood/family/individual)</td><td>Organisation//community/neighbourhood/individual</td></tr>
<tr><td>Do the authors identify any barriers to success?</td><td>Lack of openness; self-interest; a 'political environment', where it's more about who than what – who had the idea, rather than what the idea was; corporate/organisational centralisation</td></tr>
<tr><td>Additional notes</td><td></td></tr>
</table>

Table 1.

Authors (year) [Ref ID]	Stacey (1996) [1778]	Focus/aim	"To explore how the science of complexity might provide us with more useful frameworks for making sense of life in organisations than the approaches that currently dominate our thinking and therefore our acting" (p.1)
Paper title	Complexity and creativity in organisations	In theory only or using examples?	Occasional examples, although not in-depth
Location of authors	UK	Are metaphors used?	Sparingly – and drawing on biological science terminology, e.g. 'dominant', 'recessive', 'competition for resources'
Discipline/organisation of authors	Management	Have the authors had practical experience of a WSA approach to a public health issue? [brief description if yes]	No
		Do the authors provide case examples from previous experience? [brief description if yes]	A number of computer modelling examples drawn from the biological sciences are provided. In addition, there are two (private sector) organisational examples
Abstract	None		
What comprises a WSA? **[extract key summary/text]**	**Complex adaptive systems:** - "… consist of a number of components, or agents, that interact with each other according to sets of rules that require them to examine and respond to each other's behaviour in order to improve their behaviour and therefore the behaviour of the system they comprise [i.e. they learn]… learning systems operate in environments that consist mainly of other learning systems… [meaning that] together they form a coevolving suprasystem that, in a sense, creates and learns its way into the future… Organisations interact to form a national, economic, societal, and political system, which interacts with natural systems to form an interconnected ecology." (p.10) - systems evolve order out of chaos, and this chaos is actually essential to the process ("through a process of spontaneous self-organisation that produces emergent outcomes") – "The system produces patterns in behaviour; it consists of a network of agents driven by iterative nonlinear feedback to produce unknowable outcomes that have pattern… in certain conditions, left to self-organise in what looks like a mess with no apparent order, agents interacting in a system can produce, not anarchy, but creative new outcomes that none of them ever dreamed of." (p.13)		

- "The creative process involves competition… [and, in human systems] is inevitably messy: it involves difference, conflict, fantasy, and emotion; it stirs up anger, envy, depression, and many other feelings. To remove the mess by inspiring us to follow some common vision, share the same culture, and pull together is to remove the mess that is the very raw material of creative activity." (p.15)

'Link between cause and effect disappear':
- "… the links between our next actions and their long-term outcomes disappear, so that no one can be in control… when a system is held at the edge of disintegration, the consequence is not necessarily randomness and anarchy, because the edge also has an inherent order brought about by redundancy and cooperation… [this is not] some prior intention of the most powerful. It is true empowerment, a bottom-up process in which agents follow their own best self-interest without waiting to be told that they may." (p.15)

Organisations as complex adaptive systems:
a) Networks:
All organisations have legitimate (formal) and shadow (informal) networks, both of which are "driven by nonlinear feedback to evolve adaptive behaviour" (p.24)
<u>Legitimate</u> – "intentionally established by the most powerful members of an organisation, by well-understood, implicit principles that are widely understood by members of the organisation (i.e. shared culture or ideology)… agents determine what to do by consulting this external, shared table of rules… [which] govern how people in an organisation jointly carry out the current primary tasks of their organisation… information, energy, and actions are characterised by uniformity, conformity, and repetition." (p.24-25)
<u>Shadow</u> – "… spontaneously and informally established by individual agents among themselves during the course of interacting in the legitimate system… group and organisational cultures develop that are not part of the officially sanctioned culture or ideology… [A set of rules which are not] by definition, engaging the current primary tasks of the organisation… [constitute] a repertoire of thoughts, perceptions, and behaviours that are potentially available to an organisation but are not currently being utilised for its main purpose." (p.26-27)
Further characteristics of shadow network:
- the group processes cannot simply be explained by the individuals present
- nonlinearity
- role played by emotions, friendship, trust, and other qualities
- fuzzy boundaries (overlap with shadow networks of other organisations)

Although the legitimate and shadow networks are "conceptually distinguishable, they are operationally so intertwined that they must be understood as a whole" (p.28)

b) Feedback:
Systems develop through feedback processes in which individual agents within it cycle through a process of discovery-choice-action, each stage of which is governed by the individual's internal rules (or 'cognitive map' (Huff 1990), or 'in-use theory' (Argyris and Schon 1978)) – these internal rules may be exclusive to the individual or shared more widely with the organisation.
<u>Key aspects of agents</u> *(verbatim)*:
- agents are affected by emotion and aspiration, inspiration and anxiety, compassion and avarice, honesty and deception, imagination and curiosity (the dynamic of inspiration and anxiety)

- agents are able to choose to give priority to their own individual mental purposes rather than shared ones (dynamic of conformity and individualism)
- agents are affected by power differentials among them, i.e. the leadership-followership dynamic that reflects the basic human tendency to take an omnipotent, omniscient, dominant roles at some times and submissive, dependent roles at other times
- agents are capable of systemic thinking, i.e. observing, reflecting upon, and altering behaviour according to their perceptions of the operation of the whole system of which they are a part (the property of consciousness and self-awareness)

c) Co-evolution and learning:
i) Feedback
- negative where information about deviations is fed back in a process of "intentional development and control… [to] damp down change and secure stability" (p.35)
- positive where information fed back into the discovery-choice-action loop "in a way that amplifies and destabilises it" (p.35)
ii) Learning
- Single-loop – "… behaviour is adjusted in the light of its consequences… if the response is not favourable then the behaviour is modified… anything more complex than this is has already been done before action is undertaken and is embodied in the schema that is then being used" (p.36)
- Complex – "… the schema driving behaviour is altered in the light of the responses that the behaviour provokes… learning in real-time, reflection-in-action (Schon 1987)" (p.36)

Further characteristics of complex adaptive systems:
- "Effective complexity is defined in terms of the length of the adapting system's *schema* ['a set of rules that reflects regularities in experience and enables a system to determine the nature of further experience and make sense of it' – p.289], and as such it is an internal property of the system just as much as it is a feature of the environment… [therefore, it is untenable to] distinguish sharply between a system and its environment [and attempt to] explain a system's behaviour in terms of adaptation to changes in the environment." (p.97)

- 'Bounded instability' (low dimensional chaos that "has global structure but is specifically unpredictable over the long term" (p.284)), expressed in various ways *(verbatim)* (p.97-98):
a) information both flows freely and is retained
b) schemas display both diversity and conformity; they are neither too long nor too short
c) agents are richly but not too richly connected
d) behaviour is both predictable and unpredictable
e) behaviour has pattern but that pattern is irregular
f) freedom of shape and movement exist, but within the constraints of boundaries and overall archetypes
g) there is stability in the archetypal form, but instability in the actualisation of that form
h) efficient operational schemas mask maladaptive evaluation schemas. This allows more efficient performance of the current primary task but it renders the system vulnerable to a change in the strategies pursued by any other system it interacts with. Hence, efficiency and effectiveness exist in tension with each other
i) destruction takes the form of amplifying feedback that breaks symmetries, and creation takes the form of spontaneous self-organisation that produces an emergent new order

	j) dominant schemas maintain the orderly performance of the current primary task, the current survival strategy; recessive schemas develop a replacement for dominant schemas and thus undermine and subvert them. The space for novelty is, therefore, characterised by the tension between sustaining the status quo and replacing it k) both competition and co-operation exist l) both order and disorder exist m) fitness landscapes are intermediate between smooth and rugged n) fluctuations keep a system away from equilibrium while canalisation or lock-in keep a system on a spatial or temporal path that, in a sense, takes the system to equilibrium o) the same complexity is a property of both a system's external environment and its internal nature, in the sense that its schema models the environment it interacts with **Causality and predictability:** - "Simple systems generate outcomes that are either highly predictable or completely unpredictable; either they have clear-cut links between cause and effect or no links occur and behaviour is random. Any single complex system is the opposite of this: its behaviour is predictable in some respects but unpredictable in others. In some cases causal links can be identified; in others, the sequence of causal links tends to become lost in the complexity of interactions… In complex systems, agents design their actions utilising short-term rationality, but system-wide, long-term patterns or strategies emerge" (p.103) - Implications for programme design "Once we understand the configuration of a network and its dynamics, we can predict the generic shape of the behaviour that system will produce and identify the archetypes associated with it. In principle, this enables us to design a particular type of network in order to generate selected kinds of archetypal behaviour… [but] the realised form cannot be intended by the designer of the network. Instead, the specific form emerges through the spontaneous self-organisation of the agents – through actual specific experience – and is thus unpredictable." (p.103-104) Knowledge of archetypal behaviour allows prediction of outcomes – "… this kind of prediction is not based on cause-and-effect reasoning; it is based on repeated experience with particular kind of schema. This, one kind of prediction requires us to know a cause-and-effect link, whereas another form of prediction relies on past experience of the general forms of behaviour produced by a particular system. This latter kind of prediction depends on pattern recognition ability, the ability to reason by analogy and intuition, rather than on analytic reasoning." (p.104)
Levels of concern & of action (community/neighbourhood/family/individual)	Organisations
Do the authors identify any barriers to success?	No
Additional notes	None

Authors (year) [Ref ID]	Zimmerman, B., Lindberg, C. & Plsek, P. (1998) **[1807]**	Focus/aim	Leadership/business focussed. Resource book for complexity science
Paper title	Edgeware – Ch. Titled "Tales"	**In theory only or using examples?**	Examples
Location of authors	USA/Canada	**Are metaphors used?**	Yes – complex systems: stock markets, forest ecosystems, the human body, the immune system, hospitals, spider plant p. 73 "forest fires clear the ground for new growth" = there needs to be destruction to enable reconstruction p.76 Complex systems = spider plant (doesn't plan or control its growth, has off-shoots which grow in its own way attached to but not mirroring the main plant. Over time, this may become the main hub with shoots off – but it evolves in an unpredictable way within a wider context).
Discipline/organisation of authors	Schulich School of Business York University Toronto Canada		
		Have the authors had practical experience of a WSA approach to a public health issue? [brief description if yes]	Yes– see 'Tales' section (p.49) for detailed examples
		Do the authors provide case examples from previous experience? [brief description if yes]	Yes – see 'Tales' section (p.49) for detailed examples
What comprises a WSA? **[extract key summary/text]**	P.8: **Definition of complex adaptive systems** "Complex adaptive systems are ubiquitous. Stock markets, human bodies, forest ecosystems, manufacturing businesses, immune systems and hospitals are all examples of CASs. What is a complex adaptive system? Each word is significant. "Complex" implies diversity – a great number of connections between a wide variety of elements. "Adaptive" suggests a capacity to alter or change – the ability to learn from experience. A "system" is a set of connected or interdependent things. The "things" in a CAS are independent agents. An agent may be a person, a molecule, a species or an organisation, among many others. These agents act based on local knowledge and conditions. Their individual moves are not controlled by a central body, master neuron or CEO. A CAS has a densely connected web of interacting agents, each operating from their own schema or local knowledge. In humans, schemata are the mental models an individual uses to make sense of their world." Testimonial: "As a physician, I learnt to think from a biological perspective. When I went into management, traditional organisational theory seemed artificial, foreign to my experience. So when I started studying complexity through the VHA projects, I was stunned. Here was a way of thinking about organisations that compared them to living things. That			

makes sense to me, intuitively." Richard Weinberg, MD.

From p.18: "Complexity is about reframing or understanding of many systems by using a metaphor associated with life and living systems rather than machines or mechanical systems. Viewing the world through a complexity lens means understanding the world from biological concepts".
Holistic – relationships between levels - lay knowledge – systems language – self aware – focus on ways people come up with solutions – ways of relating to one another based on equality and empowerment – self-sustaining – evolving – multiple levels of influence – wider focus than just the individual – theoretical framework – interactive effects

p.73 'Tales' –
"Another way to Think" - Chilton Memorial Hospital
Case study illustrates a new way of working within a hospital that saw individual patient care (e.g. taking blood, handling meal trays and cleaning) being dealt with by one person so there was a continuity and improved patient experience.
Building a community model of health – involved the whole community (e.g clergy, lawyers, schools and business people, hairdressers, barmen, mental health services, insurance company) and formed subgroups – the depression subgroup starting talking to people who would experience people in the community, e.g. priests, bartenders, hairdressers, who might know about people in the community who would have these problems – and then make resources available to these people to truly tackle issues within the community.

Other tales:
p.55
"Wizards and CEOs" – Muhlenberg Regional Medical Centre
All about leadership change within a regional medical centre, moving from a 'command-and-control' style of management to 'an open, growth-nurturing' style of management. Main principles of engaging new leadership style:
Letting go (**unleashing potential**) = giving up control;
Faces of transition = from a different way of doing to a different way of being,
Be open, not controlling (**wicked questions**, **tune to the edge** = "living systems are very close to the edge of chaos phase transitions where things are loose and fluid…Systems that are most adaptive are so loose they are a hairbreadth away from [being] out of control" Waldrop p.32) = allow things to unfold
Be straight, not secretive – "just talk to them. Don't worry about telling them" – sense of inclusion;
Be human, not omniscient – it's okay to fail and have failings; "his own frailties actually bind him to his staff" (p.66);
Be in a relationship – (**generative relationships**) a changing culture rather than a control culture
A culture of change and care – (**multiple actions**) "you have to keep trying…a be prepared to fail" (p.68).

p.69
"Emerges from the Fabric" – Hunterdon Medical Centre
"establishing the context and conditions to foster new community health improvement initiatives and creative approaches to inpatient nursing care" (p.51). Overview of the importance of the community model of healthcare without much detail – only example is of a change in the way nurse managers view their units, assessing them as you would with a high-end hotel chain rather than a hospital.

p.77

"Unleashing People Potential" – Muhlenberg Regional Medical Centre

Working relationships and leadership change within a regional medical centre. Express admission process trialled and adopted. Inspirational, empowering managers – "if it feels right, do it". "The paradox of structure and no structure is a way of leading that nurtures emergence, **self-organization** and **innovation** in the work place" (p.85).

Chinese cooking style of management = spend a lot of time preparing the food (planning), but when you're ready the cooking goes fast (p.86).

p.87
"Learn-As-You-Go Strategic Management" – University of Louisville Hospital

New CEO decided to reject the idea of a 5-year strategic plan for the hospital in favour of 'learning as we go' – "The tendency is to get some experts, plan it and avoid talking about what the real issues are" (p.88).

p.91
"What We Could Be Doing Together" – Memorial Hospital of Burlington County

"in markets changing as quickly as health care, it's important for management to be able to tap the potential contributions of the **shadow system**" (p.92) – several doctors were talking in the canteen about how patients weren't getting anticoagulents quickly enough, so they set up a team to study the problem and see how it was being managed elsewhere.

p.93 – "…we're moving towards a more community-oriented approach that will focus on illness prevention…this kind of community-based model would give people a significant role in managing their own health, responsibility would be spread out across the community"

"…how can we create a healthier community, rather than merely a fatter bottom line?"

p.95
"A Leap Into Uncertainty" – HealthEast

New President of HealthEast decided not to deal with Independent Physician Associations (IPAs) and instead to "start at the bottom and build something new – a grass-roots effort" (p.97). Using **minimum specification**, they subscribed to the view that "a few simple rules are sufficient for producing …diverse and complex self-organising behaviours in a system" (p.98).

Five individuals formed an "emerging physician equity model network" based on managing *care* rather than costs and in which physicians and community hospitals have a stake.

p.101
"Worldwide Complexity" – Institute for Health Care Improvement

Institute for Health Care Improvement is a not-for-profit corporation based in Boston which had the opportunity to expand into international collaborations, but time was limited. "Qualitative, rather than quantitative, analysis is acceptable when time is short. **Qualitative analysis** is the stuff of the complexity approach; general direction-setting, metaphor, storytelling, learning from action and so on" (p.104).

p.111
"A Complexity Tool Box" – VHA Inc.

Senior VP of VHA Inc. has been experimenting with complexity theory tools by building a Physician Leadership Network;

	as they built on the database, "the relationship between VHA's Dallas headquarters, our regional offices and the physicians we worked with began to change. We all had to coevolve, and we'll continue to **coevolve**. As long as people have **shared aspirations**, coevolution will generate new ways of meeting their needs. So products aren't going to have life cycles any more. The life cycle will be forever [**ecocycle**]" (p. 113). p.115 <u>"Make it Happen or Let it Happen?" – Federal Metals</u> A steel company created a complexity-informed plan for their long-term strategy
Levels of concern & of action (community/neighbourhood/family/individual)	Health care sector/regional health care system/institute or organization/division, department or working group/individual person
Do the authors identify any barriers to success?	Unclear
Additional notes	

Appendix 6   Evidence tables: Question 2

Study details	Programme focus	Whole system approach
Author (year) [Ref ID] Anon. (2005) [1784]/ Westley (2007) [1785] **Aim of study** Not applicable **Programme name** EPODE (Ensemble, Prévenons L'Obésité Des Enfants) **Study design** Press release **Source of funding** Each participating town makes a financial contribution to take part (c. 1 Euro/ inhabitant). Private sector funding from Ferrero, Assureurs Prévention Santé, Nestlé, Carrefour International Foundation (c. 1 Euro/ inhabitant). Funders undertake to not influence the programme's contents or advertise through it, although media coverage acknowledging their funding is allowed.	**Location (town, area, country)** Ten towns in different regions of France (Vitre, Evreux, Roubaix, Beauvais, Asnieres sur Seine, Meyzieu, Thiers, Beziers, Saint-Jean, Royan) **Setting (e.g. school, community, etc.)** School and community **Year/ timescale over which implemented** 2004-2009 **Participants (age, gender, socio-economic status, other relevant characteristics)** Children aged 5-12yrs **Was local knowledge used in the design and/or delivery of the programme? (If so, describe)** Given the adaptation of programme elements in each town it is possible that local knowledge was used, but this is not explicitly stated. **Policy context (or other key contextual details) in which programme was delivered** Implemented within the Programme National Nutrition Santé (PNSS) guidelines and the priorities set by the EPODE expert committees. **Barriers & facilitators?** Not reported **'Lessons' for the evaluation of obesity prevention programmes** Not reported	**Does the programme meet the criteria (interaction, co-ordination, multiple levels targeted simultaneously) of a WSA as proposed in the review protocol? (Describe, including original language used)** *Interaction* Yes – a range of actors from the public and private sectors are involved *Co-ordination* Yes – responsibility for co-ordination at both a national and local level is clearly defined in the programme framework *Multiple levels* Yes – the programme is designed to impact on a number of different levels (individual, family, school, community) simultaneously **Does the programme meet the criteria of an authentic WSA? (Describe, including original language used)** No, not at all – it's design and delivery are very 'top-down' with little apparent scope for the use of local knowledge. **Additional programme elements? (Describe)** None **Additional notes to help understand WSA to obesity prevention not covered by the above** None

Programme delivery
Stated aim of programme

To prevent the spread of childhood obesity through implementing a five-year action plan through:
- communicating simple and easy-to-use guidelines
- avoiding stigmatisation
- encouraging families to pass on their food culture to the next generation

Explicit theoretical model used?
None stated, although reference is made to "acting as a catalyst of energy and good will" in the effort to reduce obesity – the implication is that a broad community-based approach was taken.

Describe delivery of the programme (who steered, who delivered 'hands-on', how, duration)
Towns apply to be considered for taking part; organisers select towns on basis of attaining diversity within the country as a whole. Towns have to make a financial contribution (c. 1 Euro/ inhabitant) to take part, and agree to abide by a charter.

In each town, a local team is established comprising a project manager, medical expert, school doctor, school nurse, and dietician. Few details on who did what, but teachers, school doctors and nurses, healthcare professionals, childhood specialists, associations, shopkeepers, restaurant owners, caterers and food producers are all mentioned as being involved.

Programme is aimed at the 'whole population' – children, parents, teachers, health professionals, and businesses.

Describe the actual package of activity
The exact nature of the programme delivered in each town may differ according to local circumstances, but examples of components include:
- School breakfasts organised in conjunction with dietician and school caterers
- Secure routes for children to walk to school
- School educational sessions on healthy eating
- Exercise sessions (e.g. running) for children, parents and teachers
- Weighing and measuring of children each year, with written feedback to parents explaining their child's weight status
- Taster sessions in school canteen of seasonal food
- Healthy eating information leaflets
- Educational discussion sections for parents about healthy eating for themselves and their children
- Physically active events (e.g. hiking, sports competitions) during the yearly Nutrition and Exercise Week
- Community food taster sessions, plus open days and promotions based on a particular foodstuff or local dish (involving retailers, food producers, restaurant owners and school caterers)

At an organisational level:
- training for healthcare professionals on screening and managing childhood obesity
- mobilisation of school doctors and nurses for monitoring of BMI
- town-hospital network to improve communication and co-ordination in screening and management of childhood obesity

Framework for delivery of EPODE

Study details	Programme focus	Whole system approach
Author (year) [Ref ID] Anon. (2008) [1850] **Aim of study** Not applicable (delivery plan) **Programme name** Sheffield City Wide Initiative ('Healthy City') **Study design** Delivery plan **Source of funding** Not reported	**Location (town, area, country)** Sheffield (UK) **Setting (e.g. school, community, etc.)** Community, public sector, private sector **Year/ timescale over which implemented** 2009-2013 **Participants (age, gender, socio-economic status, other relevant characteristics)** Residents of Sheffield **Was local knowledge used in the design and/or delivery of the programme? (If so, describe)** A 'stakeholder workshop', involving local public sector representatives, was held to inform programme design. Reference is made to "well established partnerships with local communities" (p.18) that have been brought about through the 'Healthy City' programme of work. **Policy context (or other key contextual details) in which programme was delivered** Sheffield is a WHO-designated 'Healthy City' and has been awarded Beacon Status for work on reducing health inequalities. The delivery of 'Healthy City' is led by the Sheffield First Partnership, which "brings together the public, private, and not-for-profit sectors to work together to make Sheffield a successful city" (p.17) – a Children and Young People Board, Health and Wellbeing Board, and Environment Board jointly lead the partnership. (These Boards comprise senior elected members from all parties, Chief Executives and other senior officers from the City Council, PCT, acute NHS Trusts, and schools, and representatives from the private and not-for-profit sectors and Sheffield's two universities.	**Does the programme meet the criteria (interaction, co-ordination, multiple levels targeted simultaneously) of a WSA as proposed in the review protocol? (Describe, including original language used)** *Interaction* Unclear – a range of actors from the public and private sectors are involved, but it is unclear how (if at all) these actors communicate with one another. The impression given by the project plan is that these actors will be directed/ co-ordinated through the Partnership rather than through a 'bottom-up' approach. *Co-ordination* Yes – co-ordination of all actors by an established Partnership (Sheffield First) which, it is suggested, has a strong track record of effective co-ordination. *Multiple levels* Partially – the programme is designed to impact on a number of different levels (individual, family, school, community) simultaneously, but there is greater emphasis on project components aimed at the level of individuals. Plans for programme elements at wider levels (e.g. city planning) are very vague in comparison. **Does the programme meet the criteria of an authentic WSA? (Describe, including original language used)** No – in particular, lay knowledge and bottom-up approaches receive no attention in the project plans **Additional programme elements? (Describe)** None **Additional notes to help understand WSA to obesity prevention not covered by the above** None

	Voluntary sector engagement is also facilitated by the Health Partnership Network, which links the third sector representatives to >700 "organisations across the city with a specific interest in improving the health and well-being of the people of Sheffield" (p.17) Preventing obesity "has been a publicly stated priority for Sheffield City Council, Sheffield PCT, and the Citywide 0-19+ Partnership for more than two years" prior to the programme – and the City's Children and Young People's Plan (2006) linked obesity prevention with the development of the *Healthy Schools* programme. Sheffield has "agreed specific City Strategy priorities to improve the health of children and young people, reduce health inequalities and ensure Sheffield is a Healthy City by addressing the determinants of health" (p.18). **Barriers & facilitators?** Not reported **'Lessons' for the evaluation of obesity prevention programmes** Not reported	

Programme delivery

Stated aim of programme
To address the causes of overweight and obesity using a 'whole city' approach

Explicit theoretical model used?
No

Describe delivery of the programme (who steered, who delivered 'hands-on', how, duration)
Building a framework for delivery
Year 0
- agree delivery body and lead body
- agree steering group and reference group
- map and scope existing activities (including Living Streets) against areas of greatest need
Year 1
- link and cross reference all relevant city strategies
- stakeholder events to launch the plan and gain stakeholder commitment
- develop communications and marketing strategy, in line with *Change4Life*
- in partnership with children & young people, recruit local and city-wide role models (children & young people, parents, local celebrities) to use in project work, events and media campaigns
- strengthen political support
Years 2-5
- strengthen/ widen business sector and political support
- evaluation

Describe the actual package of activity
Physical activity (delivered through various public sector partners)
- strengthen links with Peak District, especially in relation to BME families and children with disabilities
- improvements to parks and open spaces
- use Living Streets audit to improve events menu and accessibility
- free swimming as part of 2012 Legacy Action Plan
- raise physical activity profile in school curriculum
- work with private sector companies and voluntary sector (through business broker) to identify business partners and funding opportunities
- train community health trainers/ educators/ champions to deliver healthy lifestyle programmes
- support *Healthy Schools* programme to achieve the physical activity theme
- enhance physical activity across the city by linking city Partnership Boards to private and voluntary sector
- build in physical activity requirements to city plans e.g. core strategy, residential guide, DIY Streets, Retro-Fit
- develop walking strategy and dance strategy

Transport (delivered through various public sector partners)
- implement evidence-based active travel programmes

- incorporate safe travel routes into menu of activities for city
- ensure childhood obesity perspective is embedded in strategic plans, e.g. highways development, housing renewal area planning, new builds

Healthy diet (delivered through various public and voluntary sector partners)
- raise profile of healthy eating in school curriculum
- focus branded food activity in early years settings
- attach "healthy lifestyle" dedicated staff to each children's centre, including community food educators
- increase number of school/ community 'cook and eat' clubs
- support schools in improving the meal experience, e.g. dining environments, on-site policies, training for staff
- engage with commercial sector to extend the National School Fruit and Vegetable scheme to secondary school pupils
- increase priority and support to school meals service to work in partnership with School Food Trust and private providers to increase the uptake of school meals
- develop plan to extend the breastfeeding friendly city initiative beyond health care settings by accrediting public buildings, parks, libraries and retailers
- support neighbourhoods to establish or enhance food co-ops, allotments, and growing spaces
- support local businesses (through business broker), including suppliers, shops, cafes and restaurants, to provide healthy food, targeting food deserts
- media campaign to support healthy food choices

Study details	Programme focus	Whole system approach
Author (year) [Ref ID] Anon. (2008) [1846] **Aim of study** Strategy document **Programme name** Healthy Weight, Healthy Lives (Tower Hamlets) **Study design** Strategy document **Source of funding** Not applicable	**Location (town, area, country)** London (UK) **Setting (e.g. school, community, etc.)** Schools, community **Year/ timescale over which implemented** 2008-2012 **Participants (age, gender, socio-economic status, other relevant characteristics)** Residents of Tower Hamlets **Was local knowledge used in the design and/or delivery of the programme? (If so, describe)** **Policy context (or other key contextual details) in which programme was delivered** **Barriers & facilitators?** **'Lessons' for the evaluation of obesity prevention programmes**	**Does the programme meet the criteria (interaction, co-ordination, multiple levels targeted simultaneously) of a WSA as proposed in the review protocol? (Describe, including original language used)** *Interaction* It is proposed that a range of actors from the public and private sectors will be involved, but it is unclear how communication will take place between these actors. Plans for community consultation, and the importance of including these in programme planning, are clearly outlined. *Co-ordination* It is unclear how the various programme elements and actors will be co-ordinated. *Multiple levels* The strategy proposes change at multiple levels (including engaging senior members of relevant organisations within the borough), but there is far greater detail about interventions aimed at changing individual's behaviour than on the broader aims of addressing the availability of healthy foods, environmental changes, or local Public Health policy change. **Does the programme meet the criteria of an authentic WSA? (Describe, including original language used)** No **Additional programme elements? (Describe)** None **Additional notes to help understand WSA to obesity prevention not covered by the above** None
Programme delivery		

Stated aim of programme
"Our long term vision is that Tower Hamlets will be a place that promotes and support health and well-being, providing opportunities for people from all sections of the community to be physically active, eat well and maintain a healthy weight throughout their lives" (p.6)

Explicit theoretical model used?
None stated

Describe delivery of the programme (who steered, who delivered 'hands-on', how, duration)
The following principles are stated as being "critical to the success of the strategy" (p.21):
- a system-wide approach with the engagement of a wide range of stakeholders
- long-term sustained interventions that are informed by the best available evidence
- targeting of interventions to address inequalities and prioritise high risk groups
- an emphasis on interventions that address the wider social, economic and environmental drivers of obesity
- ensuring that interventions are culturally appropriate, non-stigmatising, promote self-esteem, empower and which produce sustainable lifestyle changes
- ongoing monitoring and evaluation with a focus on continuous learning and improvement

There are seven strategic objectives:
- to gain high level support and commitment from all members of Tower Hamlets Partnership, and other relevant agencies and groups, to the strategy and to integrating the objectives of the strategy across all relevant policy areas
- to actively involve the wider community in developing and implementing the strategy
- to increase participation in physical activity by creating social, cultural, and physical environments that support and encourage active lifestyles
- to promote healthy eating by increasing the availability of and access to healthy food choices and reducing the availability of and access to foods that are high in fat, sugar and salt
- to create healthy organisations that support and encourage active lifestyles and healthy eating
- to provide consistent, evidence-based information, education and advice on how to maintain a healthy weight
- to provide evidence-based advice, support and treatment to people who are overweight or obese, and their families

Describe the actual package of activity
Initiatives at different stages of the lifecourse are grouped under four headings (strategy, engagement and monitoring; physical activity; healthy eating; and weight management):

Early years
Strategy, engagement and monitoring
- development of a health promotion strategy for maternity services
- Children's Centres to provide a focus for engagement with parents and carers
- Family Nurse Partnership pilot to provide intensive support to young, high risk mothers and carers
- annual measurement of children's height and weight in reception year
- quarterly monitoring of breastfeeding initiation rates

Physical activity
- Children's Centres to provide opportunities for active play and physical activity
- Play Strategy to enable children to play more actively by creating safe but challenging play spaces

Healthy eating
- Baby Friendly Initiative co-ordinators to improve support for breastfeeding as the norm in maternity services and health centres
- newly established post of Public Health Dietitian for Children to provide increased capacity to develop policies and initiatives to promote healthy eating
- Infant and toddler feeding guidelines and Healthy snacks policies for Children's Centres
- Children's Centres to provide drop-in sessions on infant nutrition and healthy eating, cook and eat programmes and other activities

Weight management
- newly established joint service for childhood obesity provided by the Nutrition and Dietetics and Physiotherapy departments
- multidisciplinary weekly obesity clinic at Royal London Hospital to provide tailored advice using behaviour change techniques to treat obesity and prevent it in other family members

Children & young people
Strategy, engagement and monitoring
- Children & Young People's Plan, the Local Area Agreement and the Health Through Education Team Plan include tackling obesity and promoting physical activity, sport and healthy eating as priorities
- parents, carers, children, young people, staff and governors are actively involved in the development and review of school physical activity and food policies
- all year 7 pupils are involved in 'Sportsearch' interactive programme that assesses attitudes and perceived barriers to being active and provides information on opportunities for sport and physical activity
- social marketing pilot included stakeholder consultation and focus groups with parents, carers, children and teachers
- monitoring of height and weight and physical activity provision in schools

Physical activity
- Play Strategy to enable children to play more actively by creating safe but challenging play spaces
- development of sports clubs and facilities through School Sports Partnerships (all schools in the borough participate in one of these)
- Olympic Education Strategy, in partnership with Tower Hamlets Music and Arts Service; Communities, Localities and Culture; and East London Business Alliance will promote participation in sporting and cultural activities
- encouragement of informal physical activity, e.g. 'Active Lunchtimes', 'Fit in 5!'

Healthy eating
- investment in improvement in school dining facilities
- Children's Services Contract Services team plan (working in partnership with the Nutrition & Dietetics team) for school catering to meet new Government Food Standards
- healthy breakfast clubs at schools
- training workshops for school staff, school nurses and parents on healthy packed lunches
- after school cookery clubs
- monthly recipe corner in *East End Life* to encourage children to cook at home with their families
- website (www.myschoollunch.co.uk) with recipes, competitions, tips and advice

Weight management
- community based support for overweight and obese children includes the BEST and MEND programmes and a new joint service provided by the Nutrition & Dietetics and Physiotherapy departments
- paediatric obesity clinic and paediatric groups at the Royal London Hospital support community-based programmes
- development of care pathway (covering both community and acute teams) for management of overweight and obesity in children and young people

Adults

Strategy, engagement and monitoring
- Community Plan and Local Area Agreement prioritise the importance of tackling obesity and promoting physical activity and healthy eating
- health priorities have been presented and discussed at all Local Area Partnership steering groups
- health trainers are actively involved in local networking and community events
- annual Active People survey provides information on levels of participation in sport and physical activity

Physical activity
- Green transport/ Sustainable travel plans to encourage walking and cycling are in place
- PCT works with borough council to provide advice on the health impact of road design, provision of cycle lanes and cycle parking
- wide range of exercise groups, e.g. healthy walks, dance and other types of physical activity through voluntary sector, e.g. 'Healthy Moves', Ramblers
- Link Age Plus provides signposting and support for older people to engage in physical activity

Healthy eating
- new post of Adult Public Health Dietitian established to develop a wider range of new initiatives
- dietitians working with PCT caterers to promote healthy food and drink choices

Weight management
- Expert Patient Programme empowers people with long-term conditions to take control of their lives, including adopting healthy lifestyles
- education on healthy eating and maintaining a healthy weight is provided for all new diagnosed diabetics
- physical activity pathway is being piloted in general practice
- LAP3 weight management programme
- some practices are directly funding weight management programmes to refer their patients to
- adult community dietitian sees morbidly obese adults at home for treatment

Study details	Programme focus	Whole system approach
Author (year) [Ref ID] Anon. (2009) [1847] **Aim of study** Strategy document **Programme name** Healthy Weight Healthy Lives (Ealing) **Study design** Strategy document **Source of funding** Not reported	**Location (town, area, country)** London (UK) **Setting (e.g. school, community, etc.)** School, community **Year/ timescale over which implemented** 2009-2012 **Participants (age, gender, socio-economic status, other relevant characteristics)** People who live, work, or study in Ealing **Was local knowledge used in the design and/or delivery of the programme? (If so, describe)** No **Policy context (or other key contextual details) in which programme was delivered** Not reported **Barriers & facilitators?** Not reported **'Lessons' for the evaluation of obesity prevention programmes** None reported	**Does the programme meet the criteria (interaction, co-ordination, multiple levels targeted simultaneously) of a WSA as proposed in the review protocol? (Describe, including original language used)** *Interaction* Working Groups appear to be mostly based around health, social care and transport professionals. Unclear how communication will take place between these actors. No mention of involvement of community members or the private or voluntary sector. *Co-ordination* Working Groups are have the responsibility for co-ordinating programme elements, but there is no indication of how this co-ordination will be put into practice. *Multiple levels* The majority of the strategy appears to be about informing individuals so that they can make healthier choices, although there are some elements that address the environment (e.g. for travel and school meal provision) – but it is not clear how these wider issues will be addressed. **Does the programme meet the criteria of an authentic WSA? (Describe, including original language used)** No **Additional programme elements? (Describe)** None **Additional notes to help understand WSA to obesity prevention not covered by the above** None
Programme delivery		

Stated aim of programme
"To empower everyone living, working or studying in Ealing to maintain a healthy weight by eating healthily and taking physical exercise" (p.1)

Explicit theoretical model used?
None

Describe delivery of the programme (who steered, who delivered 'hands-on', how, duration)
Steering Group oversees and co-ordinates four Task Groups (Children: healthy growth and healthy weight; Promoting healthier food choices; Building physical activity into our lives; and Personalised advice and support)

Adherence to the following principles envisaged as being "critical to the success of the strategy" (p.16):
- Prevention – focus on addressing the wider social, economic and environmental drivers of weight problems
- Equity and inclusion – ensuring that interventions are culturally appropriate, non-stigmatising, promoting self-esteem, empowerment and lifestyle changes
- Empowering communities – "our approach will equip people with the skills to understand and have a sense of ownership of factors affecting their health and weight; to improve their lifestyle, identity and remove barriers to health living" (p.16)
- Evidence-based – monitoring effectiveness, with a focus on continuous learning and evaluation

Describe the actual package of activity
Delivery of the programme is grouped around the four Task Groups, which have the following aims:
Children: healthy growth and healthy weight
- increase awareness of the importance of being active and the consequences of a sedentary lifestyle
- increase awareness of how to make healthy food choices and the consequences of not eating healthily (to create a healthier culture in schools and children's centres)
- creating the resource capability and cultivating a culture in schools and children's centres so that physical activity and a healthier diet are the default options throughout and beyond the school day
- creating the resource capability and widening access to, and use of, nutritional, dietary, and exercise advice and support services
- gaining a better insight into the causes of weight management issues in children, young people and families
- increase awareness of the benefits associated with breastfeeding

Promoting healthier food choices
- to increase the number of eligible families signing up for the Healthy Start scheme
- less consumption of high fat, salt and sugar foods, especially by children
- more consumption of fruit and vegetables and more people eating 5 a day, especially children
- more healthy options in convenience stores, school canteens, vending machines, at supermarket tills and at non-food retailers

Building physical activity into our lives
- to understand the current picture around activity in Ealing PCT
- to develop physical activity services responsive to need
- to increase awareness of the links between physical activity, obesity and health status, with a view to increasing activity levels among the people in Ealing, through providing appropriate advice and information on physical activity
- to promote alternative methods of accessing physical activity, particularly with respect to active travel
- build capacity amongst local services and within their staff to increase their understanding of their role to provide personalised physical activity advice and support and being empowered to fulfil this role

- to develop innovative physical activity programmes to engage inactive people and encourage those already active to do more
- to increase awareness of the current physical activity opportunities available in Ealing and to make every effort to ensure these services are available and accessible across the borough
- to identify funding sources and signpost services to these sources
- to develop service specifications and proposals for internal and external funding bids to increase the availability of physical activity opportunities

Personalised advice and support
- to develop obesity and overweight services, in order to increase the numbers of overweight and obese individuals being able to access appropriate advice and services
- to increase awareness of the links between overweight and obesity and health status
- build capacity amongst local services
- to develop service specifications and proposals to secure funding for personalised advice and support programmes

Study details	Programme focus	Whole system approach
Author (year) [Ref ID] Chomitz, McGowan et al. (2010) **[387]** **Aim of study** To assess the impact of a community-based healthy weight intervention on child weight and fitness… **Programme name** Healthy Living Cambridge Kids **Study design** Cohort study **Source of funding** • School Health • Cambridge Public Health Department • Institute for Community Health • Department of Education Carol M. White Physical Education Programme • USDA Community Food Projects • Blue Cross Blue Shield of Massachusetts • Massachusetts Department of Public Health	**Location (town, area, country)** Cambridge, Massachusetts, USA **Setting (e.g. school, community, etc.)** School, community, family **Year/ timescale over which implemented** 2004-2007 (3 years) **Participants (age, gender, socio-economic status, other relevant characteristics)** 1,858 kindergarten - 5th grade children, mean age 7.7yrs, 48.2% female, of mixed ethnicity (approx. ⅓ white, ⅓ black), 43.3% on lower income **Was local knowledge used in the design and/or delivery of the programme? (If so, describe)** Yes – school PE teachers and school nurses; possibly Task Force members (see notes on 'hands-on delivery' above). **Policy context (or other key contextual details) in which programme was delivered** No further details **Barriers and facilitators?** Strengths: • "the evolving nature of the intervention provides an opportunity to study a **"real world" situation** that is **sustainable** and can and is being **replicated** across the country" (p.S52). • "real world" measures help to validate the use of **evaluative tools** in community programmes • This is one of the few studies that demonstrates a **decrease in obesity** and an **increase in fitness** • Economically and ethnically **diverse cohort** • **Long-term** nature of the study (over 3 years)	**Does the programme meet the criteria (interaction, co-ordination, multiple levels targeted simultaneously) of a WSA as proposed in the review protocol? (Describe, including original language used)** Yes – **Interaction**: (p.S46) "the HLCK study is the result of 10 years of CBPR in Cambridge designed to develop and mobilise environmental and structural interventions within the community and school to promote healthy weight. The CBPR approach engaged community members in all aspects of the research process…" "delivered by the Healthy Children Task Force, a multidisciplinary coalition of elected officials, educators, health care and public health professionals, researchers and parents" **Coordination**: Citywide policies: "5-2-1" guidelines, local food preference policy; public health outreach; Healthy Living Cambridge poster campaign; quarterly newsletters; mini-grants to 15 community-based organisations to promote 5-2-1; community fitness programme; physical activity directories distributed annually; School policies and systems change; food purchasing systems established with a local farmer; Physical education: new PE expanded to all K-8th grade schools, including non-traditional activities (e.g. yoga, ballroom dancing, "Project Adventure" School Food Service: new recipes, incorporating fresh ingredients **Multiple levels targeted simultaneously**: The 3-year, multicomponent HLCK intervention continued to be guided by CBPR principles….HLCK adopted the social ecological model to target community, school, family and individuals.

Limitations:

- **No control sample** for comparison of BMI score and fitness levels
- Large amount of **missing data** – possibly due to transient population – so follow-up cohort was largely different from the original grouping; those that dropped out were most likely to be Asian, older children and/or less likely to have 5 portions of fruit & vegetables a day
- **Measurement data** was collected by teachers, not experts (although teachers were trained annually to collect this data, and "additional quality control procedures were in place")
- Whilst height and weight are objective measures, fitness testing carries a degree of **subjectivity** and **measurement bias** could have been introduced as the same people – PE teachers – who designed the HLCK intervention also collected the data
- **Difficult to define specific pre- and post-intervention benchmarking cut-off dates** due to the continuous and exponential nature of the intervention.

Lessons
"In conclusion, the HLCK approach, with formative and developmental phases, culminating in a full implementation of community-relevant initiatives is probably typical of how many communities are addressing childhood obesity in their cities or towns. Community-based environmental- and policy-oriented approaches are being encouraged by national agencies and funders. Our positive results…[show that]…"upstream" oriented, multidimensional interventions with children, schools, and communities, can curb and potentially prevent obesity" (p.S52)

Does the programme meet the criteria of an authentic WSA? (Describe, including original language used)
No – there is no mention of systems language, self-awareness as a WSA, focussing on a 'bottom-up ' intervention development, equality and empowerment, evolution, a *suitable* theoretical framework.

Additional programme elements? (Describe)
External partners both delivering and taking part in the intervention involved PE teachers, school nurses and families of children attending the participating schools.

Additional notes to help understand WSA to obesity prevention not covered by the above
None

Programme delivery

Stated aim of programme
(p.S46) "to illustrate how a community can harness and increase grassroots capacity to mobilize interventions and evaluate their outcomes"

Explicit theoretical model used?
Community-based participatory research (CBPR) approach, socio-ecological model

Describe delivery of the programme (who steered, who delivered 'hands-on', how, duration)
The programme involved a collaborative effort by The Healthy Children Task Force ('The Task Force') in Cambridge, the Institute for Community Health, and the Cambridge Public Health Department. The Healthy Children Task Force ('The Task Force') is a multidisciplinary coalition of elected officials, educators, health care and public health professionals, researchers and parents. Task Force members, both individually and through the institutions they represented, became involved in elements of both the intervention and the evaluation.

'Hands-on' delivery appears to have been delivered by "Task Force partners", although actual 'deliverers' is never made explicit except for school nurses and PE teachers (e.g. "Task Force partners were mobilised to seek grants, garner resources and pilot healthy weight interventions" (.S47).

The intervention developed in 4 phases:
Formative phase (1999-2001), involving a collaboration between Cambridge Public Schools (CPS) and research partners at the Institute for Community Health to develop;
a) a computerised programme for monitoring obesity data;
b) train school PE teachers and school nurses in how to monitor BMI and fitness levels of children;
c) buy standardised equipment or each school; create 5-2-1 guidelines to underpin campaigns (based on national goals and emergent research promoting 5 pieces of fruit a day, 2 hours or less of TV watching a day and 1 hour of exercise on all or most days of the week);
d) formative research including community forums and parent input, used to identify local families' interest in improvement to school meals and PE; and finally
e) Task Force partners were mobilized to find grants and resources and to pilot interventions.

Developmental/pilot phase (2001 – 2004)
In 2001, Task Force members piloted the use of individual BMI and fitness report cards in affecting parental awareness of their children's weight and condition. Following positive feedback, this was rolled out to all schools. Supports such as follow-up phonecalls and referral for weight management were implemented by school nurses from the Cambridge Public Health Department. Family feedback helped to refine this process. With more grant funding a pilot was run in four elementary schools to test the feasibility and efficacy of running school-yard gardens, cafeteria taste tests and family education to promote fruit and veg. Further grants for PE helped with professional training for PE teachers and new gym equipment in schools.

Implementation phase (2005-2007)
In 2005 Healthy Living Cambridge Kids (HLCK) was launched. The original collaboration was expanded to include CitySprouts (a gardening organisation), Cambridge Department of Human Service Programmes, Cambridge Green Streets Initiative, and the Federation of Massachusetts Farmers Markets. The intervention continued to be guided by CBPR principles. HLCK adopted the social ecological model to target community, school, family and individuals (see fig.1 below for key components);

Sustainability phase (2007 onwards)
No details

Describe the actual package of activity

12 elementary schools (kindergarten to 8th grade) and one high school in the Cambridge Public Schools (CPS) system. 64% students were non-white, 41% were low-income, 33% spoke a language other than English at home, and 50 countries of origin were reported.

A 3-year Healthy Living Cambridge Kids (HLCK) intervention was run, covering the items listed above in the '*Implementation phase*' (summarised in figure 1 below).

At the community level, key components were:

- "implementation strategies designed to provide policy support for healthy living choices such as a city council endorsement of the "5-2-1" guidelines and passage of a local food preference policy";
- !to provide opportunities for community advocacy such as the 5-2-1 coalition and youth sports commission";
- To provide training on putting the policies in place to after-school 'providers';
- "To raise community awareness of the many resources available in the city to promote healthy eating and active living through a poster campaign, newsletters, 5-2-1 mini-grants, and directories of physical activities distributed to all schoolchildren"

At the school level, key components were:

- "PE and food service policies, systems and were implemented in all…schools…to improve access to appealing, appropriate physical activity opportunities, and healthy food choices for all children";
- School stakeholders trained to implement policies;
- PE programmes such as Project Adventure and ballroom dancing, plus food service projects like new menu development and 'taste tests' were developed to promote 5-2-1;
- School yard gardens were created to promote food growth and educate children about the growing process;
- A school wellness policy was created;
- School nutrition policies restricted items for sale in vending machines;
- Limited access to a la carte foods (? Not sure what this means – possibly restricted cafeteria menu options);
- System-wide substitution of low-fat, high-fibre, wholegrain, lower-sugar and reduced additive options where possible, and products with trans-fats were phased out;
- The 5-2-1 ethos was promoted in all PE recess and snack policies.

At the family and individual level, key components were:

- Interventions were created to educate and raise awareness for families and individuals of the importance of student's health risk due to their BMI or fitness status, and solutions were offered to address individual and family health risks and lifestyle choices through school-based family nights;
- Annual BMI and fitness reports were carried out and parents were referred to paediatric specialists for follow-up;
- The distribution of fitness reports was followed by family event nights called "Fit Together", open to all families but specifically targeting those with obese children;
- Receptive families were offered subsidized weight management counselling at a local family-friendly obesity management clinic.

Key Components of *Healthy Living Cambridge Kids*

▦   **Citywide policies:** "5-2-1" guidelines; local food preference policy

Advocacy: Monthly 5-2-1 coalition meetings; establishment of youth sports commission (13 members)

Stakeholder training: Training for 20 after-school organisations

Public health outreach: Healthy Living Cambridge poster campaign (12 schools, bus shelters, city buildings); quarterly newsletters (1,800 subscribers); mini-

Study details	Programme focus	Whole system approach

grants to 15 community-based organisations to promote 5-2-1; community fitness programmes (230 participants); >4,000 physical activity directories distributed annually

■ **School policies and systems changes:** Wellness policy; 9 Food Service Advisory Board meetings; nutrition and vending machine guidelines; food purchasing system established with local farmer

Physical Education: "New PE" expanded to all K-8 schools, including non-traditional activities (i.e. yoga, ballroom dance, "Project Adventure"); quarterly professional development for teachers; before- and after-school programming expanded

School food service: School nutritionist and consultant chef introduced 15 new recipes emphasising fresh, local ingredients; 110 "taste-tests" in 12 schools, including staff coaching to prepare recipe; 4 group technique trainings; farm-to-school activities

School gardens: Educational programme expanded to six schools

Nutrition education: 45 healthy cooking classes; 74 nutrition education sessions

■ **Outreach events:** "Fit Together" family nights (721 participants); fitness expo (24 exhibitors)

Nutrition counselling: Offered to families of obese children

■ **Health and fitness progress report:** 4,000 K-8 reports distributed district-wide annually via mail

Study details	Programme focus	Whole system approach
Author (year) [Ref ID] De Silva-Sanigorski et al. (2010) **[6]** **Aim of study** "to determine the effectiveness of the Romp & Chomp intervention in reducing obesity and promoting healthy eating and active play in children aged 0–5 y" **Programme name** Romp & Chomp **Study design** "repeat crosssectional with a quasi-experimental design and comparison sample." **Source of funding** Partly supported by Dept.s of Human Services and Education and Early Childhood Development, the City of Greater Geelong, Geelong, Australia; Barwon Health, Newcomb, Australia; Deakin University, Geelong, Australia; Leisure Networks Association, Geelong, Australia; and the Dept. of Health and Ageing, Commonwealth of Australia, Canberra, Australia. Also partly supported by a VicHealth fellowship (ACB and AMdS-S) and by an Australian Research Council Australian Postgraduate Award (MN). Substantial in-kind contributions and resources were also provided by these organizations and many other organizations, particularly Dental Health Services Victoria and Kids—Go For Your Life. A total of111,200 Australian dollars was available for intervention implementation in addition to the substantial in-kind support from all partner organizations (in the form of resources, staff, project workers, infrastructure and access to data and services, etc). In addition to support,	**Location (town, area, country)** Geelong, Australia **Setting (e.g. school, community, etc.)** School, community, healthcare providers **Year/ timescale over which implemented** 2004-2008 (4 yrs) **Participants (age, gender, socio-economic status, other relevant characteristics)** Included the entire population of children aged 0-5 years old within the target area (≈ 12,000). Two age-groups were sampled: 2 yrs old – 1,587 intervention pop., 17,732 in the comparison pop.; ≈ 48% female; in $49^{th}/57^{th}$ percentile on the SocioEconomic Index for Areas and 17/13.2% overweight or obese. **Was local knowledge used in the design and/or delivery of the programme? (If so, describe)** Yes – "The CoGG [City of Greater Geelong] and BoQ [Borough of Queensland] were purposely selected as the intervention site through community consultation and established collaborative links between the DHS and Deakin University" (p.2) **Policy context (or other key contextual details) in which programme was delivered** Lots of talk of policy change, but no discussion of the current policy context. Wider social context: "Current thinking suggests that the interventions most likely to be successful are those that aim to improve environments, such that young children have better access to healthy foods and more opportunities for physical activity (11). Unfortunately, published studies to date have shown minimal effect on children's weight (12–17). Intervention designs are needed that are more comprehensive	**Does the programme meet the criteria (interaction, co-ordination, multiple levels targeted simultaneously) of a WSA as proposed in the review protocol? (Describe, including original language used)** *Interaction* Intervention planned by a collaboration between Barwon Health (the largest regional health service provider in the Victoria-Dental and Allied Health Units), the CoGG (local government managers of a range of children's care and health services), the Geelong Kindergarten Association (a cluster manager for 33 community-based preschools in the Geelong region), the Leisure Networks Association (regional sporting coordinating body), the Department of Human Services (DHS; the Victoria State health department), Deakin University (Geelong, Australia), Bellarine Community Health (a health service provider), Dental Health Services Victoria (the state's public oral health promotion and dental service provider), and the Department of Education and Early Childhood Development (state government department). *Coordination* 'Smiles4Miles', a pre-school oral health programme, and 'Kids-Go For Your Life' was a state-funded initiative aimed at improving healthy eating and fitness in early-years services also were taking place alongside the Romp & Chomp intervention. There are no clear details on how these interventions worked together. *Multiple levels* See table 1 below. Examples of multiple levels include development of community networks, distributing family resource folders and replacing

Deakin University also provided training and evaluation for the project.	and which can mimic the complex and multiple influences of today's obesity-promoting environment and reverse its effect. There is growing evidence that community-based multisetting, multistrategy interventions can reduce childhood obesity in older children (18, 19), and there are calls for these types of interventions in younger age groups" (p.1) **Barriers & facilitators?** From the authors: Limitations: 1. changes not solely attributable to R&C intervention 2. inaccurate response rates 3. only 68% of LGAs submitted anthropometric data 4. data collection methods biased towards parents with better language/parenting skills 5. enthusiastic nurses may have collected more data 6. higher SES in comparison sample may have led to greater desirability bias 7. behavioural data only collected at population level 8. parental reporting may have led to reporting/social desirability bias Strengths: 1. large sample size (target N=12,000) 2. use of existing child growth-monitoring data. **'Lessons' for the evaluation of obesity prevention programmes**	unhealthy snacks with healthy ones within childcare centres. **Does the programme meet the criteria of an authentic WSA? (Describe, including original language used)** no **Additional programme elements? (Describe)** None **Additional notes to help understand WSA to obesity prevention not covered by the above** None

Programme delivery

Stated aim of programme
"to determine the effectiveness of the Romp & Chomp intervention in reducing obesity and promoting healthy eating and active play in children aged 0–5 y"

Explicit theoretical model used?
No

Describe delivery of the programme (who steered, who delivered 'hands-on', how, duration)
Design, planning and implementation by Barwon Health (the largest regional health service provider in the Victoria-Dental and Allied Health Units), the CoGG (local government managers of a range of children's care and health services), the Geelong Kindergarten Association (a cluster manager for 33 community-based preschools in the Geelong region), the Leisure Networks Association (regional sporting coordinating body), the Department of Human Services (DHS; the Victoria State health department), Deakin University (Geelong, Australia), Bellarine Community Health (a health service provider), Dental Health Services Victoria (the state's public oral health promotion and dental service provider), and the Department of Education and Early Childhood Development (state government department) among

(unspecified) others

The intervention lasted from 2004-2008. The strategies are summarized in Table 1 below.

Describe the actual package of activity
Multi-level evaluation;
Education:
- Resource folders for children and parents
- Food safety regulations identified and supported
- Awareness-raising activities with parents, health professionals, and early-childhood workers.
- Development of professional training packages

Food & Drink
- Nutrition activity resources for parents and early-childhood service staff from reputable and compatible sources
- water bottles for children
- Lunch bags for children
- Sweet-drink demonstration resources
- Energy-dense foods display
- Use of benchmarks to inform policy
- Integration of policies and early-childhood nutrition and active play into local government and health-service strategic and public health plans.

Physical Activity
- physical activity resources for parents and early-childhood service staff from reputable and compatible sources
- Structured Active Play Program developed
- Settings staff trained in fundamental movement skills
- Active play demonstrations
- Active Play newsletter
- Integration of policies and early-childhood nutrition and active play into local government and health-service strategic and public health plans.

Environment
- Development and adoption of an overarching health and well-being policy for the Geelong Kindergarten Association
- Collaboration with Dental Health Services Victoria,
- Collaboration with Kids—Go For Your Life program
- Presence at school and community festivals
- Community consultation.
- Presentations at community forums

Media
- Communication plan and social marketing plan
- Series of posters, postcards, and brochures promoting overarching campaign and key messages
- Nutrition and drinks media release
- Promotional materials (eg, balloons, stickers, posters, postcards) produced and distributed
- Active Play newsletter

- E-mail, phone, or site visit access
- Active-play media release
- Development and distribution of posters and postcards to decrease TV watching
- Postcards (.1000) by December 2006 for dissemination to all families presenting to Maternal and Child Health Services, Long Day Care centers, and Family Day Care service.

Summary of the strategies implemented in Romp and Chomp

Romp & Chomp objectives and activities undertaken

Objective 1: To increase the capacity of relevant Geelong organizations to promote healthy eating and physical activity in children aged <5 y
Professional Development for early-childhood workers and service staff
Development and enhancement of partnership, strategic alliances and community organizational networks
Establishment of project management, coordination, budgetary and governance structures
Identification of funding and resources to support program implementation
Objective 2: To increase awareness of the project's key messages in homes and early-childhood settings
Overarching campaign message: children aged <5 y need daily 1) active play and 2) healthy food choices provided
Key messages: daily active play; less screen time; more fruit and vegetables and more water
Communication plan and social marketing plan
Nutrition and physical activity resources for parents and early-childhood service staff from reputable and compatible sources
Series of posters, postcards and brochures promoting overarching campaign and key messages (see above)
Postcards (>1000) by December 2006 for dissemination to all families presenting to Maternal and Child Health Services, Long Day Care centres and Family Day Care service.
Resource folders (≈1000) to 38 kindergartens by December 2006 with the goal of providing one folder to each family
Resource folders to a total of 46 kindergartens in total by April 2008
Community health professionals distribute folders to kindergartens with suggestions on possible applications.
All resource materials made available online for any early-childhood worker to access
Water bottles (1018) to 31 kindergartens in late 2006 (for 2007)
Water bottles (2031) to 43 kindergartens in late 2007 (for 2008)
Additional water bottles for children attending Long Day Care centres and Family Day Care service in April 2007
Lunch bags (2194) to 38 kindergartens in 2007 and 2826 lunch bags to 47 kindergartens in 2008
Sweet-drink demonstration resource to 76 kindergartens during 2005-2008
Family members (n=926) attend a kindergarten sweet-drink demonstration in 2008
Energy-dense foods display disseminated to all kindergartens and Long Day Care centres for display
Nutrition objectives
Objective 4: To significantly decrease high-sugar drinks and promote the consumption of water and milk
Objective 5: To significantly decrease energy-dense snacks and increase consumption of fruit and vegetables
Use of benchmarks to inform policy, including consultation with staff and review of resources from similar projects: Beat Start, Start Right Eat Right, Smiles for Miles and the Australian Guide to Health Eating for Children

Food safety regulations identified and supported

Production of 3 separate optional policies for kindergartens1) fruit and vegetable snack only; 2) fruit, vegetable and healthy sandwich; 3) fruit, vegetable, sandwich and healthy alternative. All were pilot tested and finalized.

Development and adoption of an overarching health and well-being policy for the Geelong Kindergarten Association in 2007/2008

Inclusion of polices into parent handbooks/booklets

Collaboration with Dental Health Services Victoria , which provided resources (lunch boxes, drink bottles and social marketing material for kindergarten children)

Collaboration with Kids – Go For Your Life program from 2007 for healthy eating and drink choices resources

Engagement of dental and primary care staff into Romp and Chomp project

Early-childhood settings staff trained to reinforce nutrition messages and healthy eating choices for children aged <5 y

Kindergartens given support from allied and dental health professionals to engage with parents on the topic of healthy eating and to provide support for staff to adopt and implement health and well-being/nutrition polices

Community health workers and allied and dental health professionals trained to support kindergartens to undertake the intervention activities

Quarterly inserts into early-childhood newsletters

Email, phone or site visit access to dietician and other allied health professionals for early-childhood workers as required

Nutrition and drinks media release

Promotional materials (e.g. Balloons, stickers, posters, postcards) produced and distributed

Activity objectives

Objective 6: To increase structured active play in kindergarten and day care

Development, pilot testing and implementation of a physical activity policy for early-childhood care and educational settings.

Inclusion of polices into parent booklets

Collaboration with Kids – Go For Your Life program from 2007 for active play resources.

Structured Active Play Program developed with input from early-childhood workers. Pilot-tested, produced and disseminated to all early-childhood settings.

Settings staff trained in fundamental movement skills and ways to provide active play opportunities for young children. Professional development for early-childhood staff (active play workshops).

Training included how to use the Structured Active Play Program and how to adapt it for each setting

Active play demonstrations at kindergartens in City of Greater Geelong provided by allied health and dental professionals

Active Play newsletter (with information for parents and games for children) produced and distributed

Quarterly inserts placed into early-childhood newsletters

Structured Active Play Program training incorporated into early-childhood workers' vocational training

Presence at school and community festivals, where active-play games were demonstrated and children and parents encouraged to participate

Email, phone or site visit access to occupational therapists for early-childhood workers as required around implementing active-play program

Active-play media release

Promotional materials (e.g. balloons, stickers, posters, postcards etc) produced and distributed.

Objective 7: To significantly increase home/family-based active play and decrease television-viewing time

Overall needs-assessment evaluation identifying factors found to influence quality and quantity of screen-time viewing

Literature review, mind-mapping exercise and focus groups with parents

Overall summary of recommendations for possible future strategies directed at reducing screen time/exposure in children.
Development and distribution of posters and postcards
Cross-cutting intervention strategies
Ministerial project launch.
Ongoing media coverage (print and radio).
Awareness-raising activities with parents, health professionals and early-childhood workers.
Community consultation.
Development and pilot testing of intervention strategies with early-childhood workers.
Development of professional training packages for early-childhood staff and dental and allied health professionals to implement the integrated health promotion package.
Presence at community festivals in the intervention region.
Presentations at community forums and early-childhood and health conferences.
Integration of policies and early-childhood nutrition and active play into local government and health-service strategic and public health plans.

Study details	Programme focus	Whole system approach
Author (year) [Ref ID] Directorate of Public Health, NHS Westminster (2010) [1851] **Aim of study** Response to consultation from NICE **Programme name** Westminster City Council **Study design** Not applicable **Source of funding** Not reported	**Location (town, area, country)** London (UK) **Setting (e.g. school, community, etc.)** Individual, school, community **Year/ timescale over which implemented** 2009-2013 **Participants (age, gender, socio-economic status, other relevant characteristics)** Residents of Westminster **Was local knowledge used in the design and/or delivery of the programme? (If so, describe)** Community consultation is proposed to be used (postal survey, targeted face-to-face 'surveying' to "access seldom heard groups" (p.7)) **Policy context (or other key contextual details) in which programme was delivered** Westminster has one of the highest rates of children's overweight and obesity in England (24.4% of 4-5 year olds, 39.9% of 11 year olds). Some wards within Westminster (Queens Park, Westbourne Park, Church Street) are in the top 20% of most deprived wards in the country. Also, Queens Park, Harrow Road, Westbourne, Churchill and Millbank are in the 20% highest quintiles of the Child Poverty Index for London. **Barriers & facilitators?** None reported **'Lessons' for the evaluation of obesity prevention programmes** None reported	**Does the programme meet the criteria (interaction, co-ordination, multiple levels targeted simultaneously) of a WSA as proposed in the review protocol? (Describe, including original language used)** *Interaction* It is proposed that a range of actors from the public and private sectors will be involved, but it is unclear how communication will take place between these actors. Plans for community consultation, and the importance of including these in programme planning, are clearly outlined in the proposal. *Co-ordination* It is unclear how the various programme elements and actors will be co-ordinated. *Multiple levels* Partially – the proposed programme elements are expected to impact on a number of different levels simultaneously, but there is far greater detail on projects aimed at the level of individuals. Plans for programme elements at wider levels (e.g. influencing the formation of local health policy) are not so clear. **Does the programme meet the criteria of an authentic WSA? (Describe, including original language used)** No – although plans for community consultation are clear **Additional programme elements? (Describe)** None **Additional notes to help understand WSA to obesity prevention not covered by the above** None

Programme delivery

Stated aim of programme
The 'major health campaign', which it is indicated will supplement the other obesity prevention interventions already in progress, has the following vision: "A Westminster where residents enjoy optimal health and wellbeing, free from the negative impacts of ill-health associated with obesity, smoking, and alcohol, and where individuals are not disproportionately affected as result of where they live, what type of accommodation they live in, their income levels, ethnicity, age, gender, existing health issues, disability, sexual orientation or faith" (p.6)

Explicit theoretical model used?
None stated

Describe delivery of the programme (who steered, who delivered 'hands-on', how, duration)
See 'activity' section below

Describe the actual package of activity
NHS partners:
Primary care providers – early identification, awareness raising, and management of overweight and obesity
Community services (health visitors, child community health services, school nurses) – prevention and management activities in schools and early years centres
Hospital services and specialist acute centres - promotion of healthy eating, physical activity of patients and staff
Mental health services – prevention and management of overweight and obesity in those with mental health problems
Nutrition and dietetics – managing obesity and educating health care professionals and the public

Non-NHS partners:
Westminster City Council – improving access to leisure centres, opportunities to be physically active, availability of healthy food and public space, lobbying for local healthy policies and promoting health messages
Schools and education organisations – improving school meals, encouraging schools to become members of Westminster Healthy Schools scheme
Voluntary organisations and community organisations – supporting the community to make healthy choices through community-based healthy living centres and initiatives
Leisure centres (private) – better access to affordable physical activity
Local media – promote healthy living and provide information on how to make healthy choices
Local employers – increased access to healthy eating and physical activity
Local food suppliers and caterers – increased access to healthy food and school meals, meals on wheels, etc.

A number of interventions are already in progress in Westminster
- Kickstart – a 12-week healthy lifestyle club for obese children, piloted since 2006 and now commissioned – designed to decrease obesity by improving eating habits, increasing physical activity, and decreasing sedentary behaviours. Uses a staged approach to nutritional targets, self-monitoring, the assessment of psychosocial outcomes, and goal-setting
- Fit for Life – free 13-week weight loss programme open to overweight and obese adults who live or work in Westminster
- Drop-in to Weigh-in – weekly adult weight management session for adults who live or work in Westminster

A 'major health campaign' (starting in 2009), to meet the strategic goals identified in the *NHS Westminster Strategic Plan 2008-2013*, is based around the following seven themes:
- development of a local evidence and knowledge-base which can be sustained to ensure the effective targeting of health improvement resources
- reduction of health inequalities related to smoking, obesity and alcohol

- residents have the life skills and resilience to make healthier lifestyle choices
- residents, partners and other stakeholders participate in decision-making and deliver local activities that support health improvement including health promotion
- healthy public policy at a local level supports, enables and champions health improvement and health promotion and addresses the wider determinants of health
- accessible, responsive, targeted and effective preventative and health promotion services are provided and sustained
- development of a skilled and competent workforce to deliver effective services to improve health, and minimise and treat the consequences of ill-health

A needs assessment, which will include the results of local 'insight' work designed to access local views and knowledge within deprived wards, will be used as the basis for the development of proposals for obesity (as well as smoking, coronary heart disease, cancer and alcohol misuse) prevention work - proposals will include a mixture of an integrated social marketing campaign, local service development, and other health improvement interventions. A plan for monitoring and evaluating the impact of the major health campaign, and a framework for ongoing monitoring of longer-term health improvement in Westminster, will also be implemented.

Study details	Programme focus	Whole system approach
Author (year) [Ref ID] Economos et al. (2007) [22] **Aim of study** "To test the hypothesis that a community-based environmental change intervention could prevent weight gain in young children (7.6 +/- 1.0yrs)" **Programme name** Shape Up Somerville: Eat Smart, Play Hard **Study design** CBA **Source of funding** Center for Disease Control and Prevention; Blue Cross, Inc.; Blue Shield, Inc.; United Way of Massachusetts Bay; United States Potato Board; Stoneyfield Farm; Dole Food Company	**Location (town, area, country)** Somerville, Boston (USA) **Setting (e.g. school, community, etc.)** School and community **Year/ timescale over which implemented** 2002-2005 (3yrs, including evaluation period) **Participants (age, gender, socio-economic status, other relevant characteristics)** Children aged 7-10yrs (Grades 1-3 in public elementary schools) All communities were broadly similar; non-English speaking in the home (28-36%), median household income (c.US$39,500-46,500), percentage below poverty line (12.5%-14.5%) **Was local knowledge used in the design and/or delivery of the programme? (If so, describe)** Building on the already established relationship between the study team and the programme community, a "wide variety" of community members from the four main language communities (Portuguese, Haitian-Creole, Spanish, English) and professionals were engaged with through meetings, focus groups, and key informant interviews. **Policy context (or other key contextual details) in which programme was delivered** Research team had a constructive working relationship with the programme community prior to the design and implementation of the programme. **Barriers & facilitators?** None identified **'Lessons' for the evaluation of obesity prevention programmes**	**Does the programme meet the criteria (interaction, co-ordination, multiple levels targeted simultaneously) of a WSA as proposed in the review protocol? (Describe, including original language used)** *Interaction* Unclear – whilst the extent of the programme components suggests that organisations/ partners were talking to one another, this is not explicitly stated *Co-ordination* Probably – Advisory councils were established, suggesting that a co-ordinated approach to programme delivery was taken *Multiple levels* Yes - Individual, school, community, and city-wide environment (and policy) addressed **Does the programme meet the criteria of an authentic WSA? (Describe, including original language used)** No, although lay knowledge plays an important role in the CBPR approach **Additional programme elements? (Describe)** None **Additional notes to help understand WSA to obesity prevention not covered by the above** None

| | - Randomisation may not be pragmatically possible with the CBPR approach, as being able to "capitalise on an existing collaborative foundation [enabled the programme to be delivered] within a relatively short time period of funding (3 years)" (p.1334)

- Collaboration with the community was vital – "although the up-front investment required to build and extend relationships during the planning year was both time- and labour-intensive, once the intervention was launched and carried out, the co-operation and buy-in from the community was genuine and unwavering" (p.1334)

- Gaining consent for the participation of children in the research may be problematic in ethnically diverse communities, where multiple languages are spoken and the community is unfamiliar with research techniques. | |

Programme delivery

Stated aim of programme
To use a community-based participatory research approach, where "systematic inquiry, participation, and action to address urban health problems" (p.1326) was used in an effort to reduce BMI in young children.

Explicit theoretical model used?
Community Based Participatory Research (CBPR) (Leung et al. (2004); Minkler (2005))

Describe delivery of the programme (who steered, who delivered 'hands-on', how, duration)
Building on the already established relationship between the study team and the programme community, a "wide variety" of community members from the four main language communities (Portuguese, Haitian-Creole, Spanish, English) and professionals were engaged with through meetings, focus groups, and key informant interviews. In this way, the programme and study was designed and planned. Advisory councils arose from this process of engagement that "remained actively involved throughout the study" (p.1327).

On the whole, 'delivery' did not appear to be the responsibility of specific professional or community groups; the focus was on what appropriate actions might be within the programme and finding the best (groups) of people to implement these actions (see below). "Many groups and individuals within the community (including children, parents, teachers, school food service providers, city departments, policy makers, healthcare providers, before- and after- school programmes, restaurants and the media) were engaged in the implementation of the intervention" (p.1327)

Describe the actual package of activity

Focus was on changing the before-, during-, and after-school environments of children:

Before school
- Breakfast programme (taste tests, healthy food options – *unclear* whether food, or just information, was provided)
- Walk to school campaign (walking bus, 'traffic calming tactics' *(unclear)*, safe routes to school maps, walking contests)

During school
- Professional development (nutrition and physical activity) for all school staff
- School health office (anthropometric equipment)
- School food service (healthy options, taste tests, ice cream only sold one day a week, enhanced presentation of food) – including "union contract negotiations that led to enhancements" (p.1328)
- Classroom curriculum (daily 10 minutes of 'Cool moves' (*unclear* – probably physical activity); weekly 30 minute nutrition and physical activity lesson)
- 'Enhanced recess' (new play equipment)
- School 'wellness' policy development on environment (food service, classroom, physical education, after-school, school health, travel to school

After school
- Curriculum (physical activity, cooking lessons, healthy snack promotion, farm trips)
- Professional development for programme staff
- Walking campaign (see 'Before school')

Home
- Parent outreach and education (bi-monthly newsletter, free and reduced coupons (*unclear* for what)
- Family events
- Parent nutrition forums
- Child's 'Health report card' mailed each year

Community
- 'Shape up Somerville' Community Advisory Council
- Ethnic minority group collaborations
- Walking/pedestrian training
- City employee wellness campaign
- 'Farmer's market' initiative
- Local physician and clinic staff training
- 'Approved' restraurants
- City ordinances on walkability/bikeability
- Annual 'Family Fitness Fair'
- Regular local media placement
- Monthly common in *Somerville Journal*
- Collaboration with City of Somerville health events
- Resource guides (physical activity, healthy meeting)

Intervention community was also helped to "secure over US$1.5m from other funding sources to continue many of the intervention activities" (p.1328)

Study details	Programme focus	Whole system approach
Author (year) [Ref ID] Heywood et al. (2008) [1787] **Aim of study** 'Project initiation document' **Programme name** Middlesbrough's Healthy Town **Study design** 'Project initiation document' **Source of funding** Not stated	**Location (town, area, country)** Middlesbrough (UK) **Setting (e.g. school, community, etc.)** Community **Year/ timescale over which implemented** 2008-ongoing **Participants (age, gender, socio-economic status, other relevant characteristics)** Not reported **Was local knowledge used in the design and/or delivery of the programme? (If so, describe)** "Our vision is to work with local people to develop locally owned and appropriate solutions to achieve a significant cultural shift in attitudes, aspirations, and behaviours for an active and healthy life." (p.12) **Policy context (or other key contextual details) in which programme was delivered** Local strategy documents: - Middlesbrough's Joint strategic needs assessment (highlights the need to tackle obesity as a key shared priority between City Council and PCT) - *Healthy Weight Healthy Lives* partnership, chaired by Director of Public Health, provides leadership and commissioning responsibility for the prevention and treatment of obesity - *Active Middlesbrough* (physical activity strategy) - *Healthy Schools* partnership monitors physical activity in schools - Local regeneration schemes - Local transport plans - Play strategy 2007-2011 - Middlesbrough Climate Change Community Action Plan - Local *Agenda 21* framework	**Does the programme meet the criteria (interaction, co-ordination, multiple levels targeted simultaneously) of a WSA as proposed in the review protocol? (Describe, including original language used)** *Interaction* Yes – a range of actors from the public and private sectors are involved *Co-ordination* Yes – co-ordination by a programme board is clearly defined *Multiple levels* Yes – the programme is designed to impact on a number of different levels (individual, family, school, community) simultaneously **Does the programme meet the criteria of an authentic WSA? (Describe, including original language used)** No – although it is proposed that significant use will be made of local knowledge **Additional programme elements? (Describe)** None **Additional notes to help understand WSA to obesity prevention not covered by the above** None

	Barriers & facilitators? Not reported **'Lessons' for the evaluation of obesity prevention programmes** None stated, although it is proposed that evaluation will draw on the experience of evaluating the EPODE programme. Formal links with evaluation team at Durham University being established.	

Programme delivery

Stated aim of programme

To "develop a sustainable, collaborative and multi-faceted town-wide approach to increase physical activity and healthy eating, focusing on the needs (and where appropriate *demands*) of the local people and communities in some of the most disadvantaged parts of the town" (p.2), with five key objectives:

- social marketing programme to shape all four themes (below) with an "ambitious marketing strategy to foster ownership and encourage behaviour change" (aiming for synergy with the *Change4Life* programme)
- using community development approaches, engage communities in a town-wide programme of urban farming (Theme 1)
- enhance the physical environment to increase the number of public places for recreation, play, walking and cycling (Theme 2)
- work with employers and schools to address cultural, institutional, and sociological barriers that discourage physical activity and active travel (Theme 3)
- provide training and support to develop an ambitious junior health trainer programme (Theme 4)

Explicit theoretical model used?

Not stated, but the 'community development approach' can be seen to be strongly rooted in bottom-up approaches that focus on both individual behaviour change and the wider environment.

A logic model (see extracted Figure 1, below) is proposed as a basis for the programme design and evaluation.

Describe delivery of the programme (who steered, who delivered 'hands-on', how, duration)

It is proposed that the programme elements will be delivered 'synergistically' (*not* as individual projects) through the programme board management and leadership (see extracted figure: Integration of the four key themes using a social marketing approach).

Programme components and partnerships through which they are proposed to be delivered are detailed below.

Describe the actual package of activity

Each theme has a named lead and details of outcomes that will be measured in evaluating the programme. Partners involved in delivery are listed in parentheses:

- Community urban farming – developing allotments, growing food in underused public places, development of leisure farm with cooking lessons, horticultural training, development of food co-ops and food policy council, annual town meal (to be held in the town's Centre Square), healthy lifestyle trail (based in grounds of

Nature's World) aimed at families with young children and schools (Middlesbrough Environment City, Groundwork South Tees, Healthy Schools Partnership, MVCA/MCN, Unity City Academy, STEM, Biddick Sports College, Teesside Homeless Action Group, Middlesbrough FC, Nature's World)

- Enhancing play, recreation and the physical environment – "integrated work programme focusing on natural play, cycling for health, home zones, countryside walking and cycling centre, and cycling road circuit", plus addressing other barriers (e.g. litter and dog fouling) (Middlesbrough Council, Middlesbrough Environment City, Groundwork, Sustrans)

- Schools and workplaces active travel – "We will seek to understand the complex reasons explaining the low levels of active travel… and develop appropriate actions [to address] attitudinal, physical, and cultural barriers" (Middlesbrough Council, Middlesbrough FC, Middlesbrough Environment City, Healthy Schools Partnership, Sustrans)

- Junior health trainer programme: youth and community engagement (age 14-16yrs) – creation of a sustainable infrastructure for delivery of programme using hub-and-spoke model engaging all primary, secondary and special schools (East Middlesbrough Enterprise Centre, Middlesbrough Council, Middlesbrough FC, Healthy Schools Partnership, Biddick Sports College)

Integration of the four key themes using a social marketing approach

Marketing & communications
Informed by social marketing research
Incorporating social norms approaches & theory
Strong evaluation & sustainable planning

Community beliefs, attitudes & behaviours

Culture and aspirations

Enhancing play, recreation and the physical environment
Increasing the enjoyment & experience of walking, cycling & play

Schools & workplace active travel
Policy development, strategic working with employers

Achieving synergy

Middlesbrough Urban Farming
community empowerment; physical activity; enhancing the environment

Junior Health Trainers: youth & community engagement
Working across schools & communities; training & development; opportunities

What the community is saying

Understanding barriers to PA & healthy eating

Middlesbrough

| Communities, schools & families | Multi-faced approaches | Strategic decisions & Policy | Physical environment | The need for sustainability | Evaluation & supporting evidence base |

Foresight: recommended approaches to tackling obesity

Fig 1: Logic model for interventions

MODERATORS

= Measured   = Modelled

Ethnicity, socio-cultural factors, gender, age, SES

Δ Knowledge, attitudes, beliefs, perceptions etc

INDIVIDUAL MEDIATORS

INPUTS

Intervention Dose[1]

Δ Community capacity[2]

Δ Behaviours

OUTCOMES

Δ Anthropometry[4]

POPULATION MEDIATORS

Δ Environments[3]

Δ QoL

Δ Policy

Δ QALYs gained
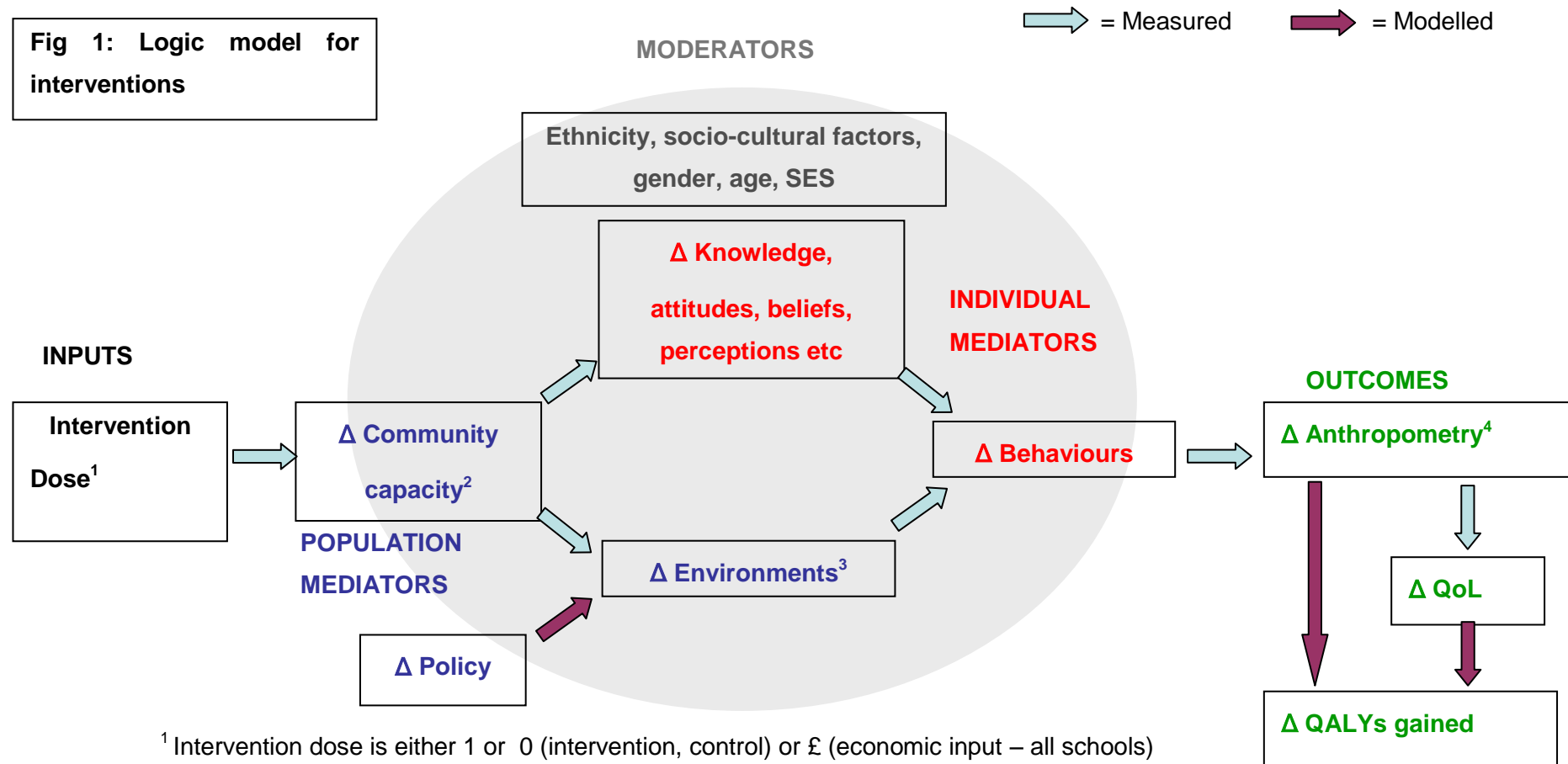
[1] Intervention dose is either 1 or 0 (intervention, control) or £ (economic input – all schools)

[2] Capacity is leadership, skills/knowledge, structures, resources

Study details	Programme focus	Whole system approach
Author (year) [Ref ID] Libman et al. (2010) [1855] **Aim of study** To compare responses to childhood obesity in London and New York City **Programme name** Not applicable **Study design** Narrative comparison **Source of funding** Not reported	**Location (town, area, country)** London (UK) and New York City (USA) **Setting (e.g. school, community, etc.)** City-wide **Year/ timescale over which implemented** Not reported **Participants (age, gender, socio-economic status, other relevant characteristics)** Residents of London and New York City **Was local knowledge used in the design and/or delivery of the programme? (If so, describe)** Reference is made to working with community groups, but it is unclear how this takes place **Policy context (or other key contextual details) in which programme was delivered** See under programme delivery **Barriers & facilitators?** See table ('Factors facilitating and blocking municipal action to reduce childhood obesity') below **'Lessons' for the evaluation of obesity prevention programmes** None reported	**Does the programme meet the criteria (interaction, co-ordination, multiple levels targeted simultaneously) of a WSA as proposed in the review protocol? (Describe, including original language used)** Whilst there is enough information provided to judge that the approaches in both London and New York are, broadly, WSA as defined in the review protocol, there is insufficient detail provided on the interaction, co-ordination, multiple levels criteria to judge whether or not the strategies meet the WSA criteria. **Does the programme meet the criteria of an authentic WSA? (Describe, including original language used)** No **Additional programme elements? (Describe)** None **Additional notes to help understand WSA to obesity prevention not covered by the above** None
Programme delivery		
Stated aim of programme Not reported **Explicit theoretical model used?** None stated **Describe delivery of the programme (who steered, who delivered 'hands-on', how, duration)** Not stated **Describe the actual package of activity** *London*		

Overview:
- "London's response to childhood obesity uses the Mayor's authority over transportation and planning and builds on its decentralised structure to encourage grassroots innovation and community tailored interventions" (p.16)
- Healthy Weight Healthy Lives Task Force "is an example of a city drawing on its network of local authorities and community-based groups to develop a regional strategy for addressing childhood obesity
- Well London (a lottery-funded initiative) draws together city government, academic institutions, civil society groups and health care providers to support community-led projects in the city's most deprived areas – "these local projects are part of a citywide evaluation, in effect, they turn the challenge of working with Local Authorities into a living laboratory for health promotion"

Food:
- London Food Strategy (following public consultation) launched in 2006 outlined 'farm to fork' vision for the city's food system – emphasising local foods, improving conditions for the food workforce, celebrating diverse food cultures, reducing the city's ecological footprint, and promoting health.

Transportation:
- "London government appears to have more authority than New York's to set transportation policy and to consider the environmental and social consequences of their decisions" (p.17), e.g. congestion charge, Transport for London range of strategies to promote active travel (e.g. workplace travel plans, partnerships with PCTs to support transition of people from driving to biking or walking)

Green space:
- citywide urban agriculture scheme (Capital Growth) – matches partners who have space for growing food with people who would like to garden but lack access to green space
- urban agriculture sites also act as sites for education on cooking and nutrition

Planning and housing:
- since 2006, all London boroughs have been required to have a Children & Young People's Plan that includes play in their open space planning strategies (these are required to be developed in consultation with children and youth)
- typology of play spaces to "ensure that there are appropriate play spaces for children and youth of different stages in development"
- play planning guidance requires all new housing developments to include space for young people to play

Schools:
- National standards for school food, but "considerable variation" across boroughs in how these standards are met
- Islington funds free school lunches

Health inequalities:
- London is the first world city to "develop and employ and integrated citywide policy strategy that focuses on reducing inequalities in health. Based on WHO's Commission of Social Determinants of Health, London's strategy aims to reduce inequalities in health by changing the social conditions that impede people from leading healthy lives whilst also emphasising empowerment" (p.19)

New York
Overview:
"New York's response to childhood obesity exercises the strong authority of the city health code while also encouraging collaboration across departments of health, transportation, buildings, education and planning" (p.19)

Food:
- Mayor and City Council created Office of the Food Policy Coordinator (2007) to promote access to affordable, healthy food for low-income residents
- nutritional standards for all food served by city agencies
- media campaign
- Healthy Bodega initiative – Department of Health works with owners of corner stores to improve the quantity, quality, and display of fresh foods while reducing promotion of alcohol and tobacco
- Farmer's markets are being equipped to accept electronic food stamp payments so that local foods become accessible to poor communities
- Planning changes to promote the building of supermarkets in areas with high rates of diet-related disease and limited food retail, e.g. developers may be given the right to build larger buildings in exchange for including a grocery store on the ground level or eliminate land use restrictions on locating supermarkets in light manufacturing areas. "Financial incentives may also apply, e.g. real estate tax reduction, sales tax exemption and mortgage recoding tax deferral – to qualify for these incentives, supermarkets must dedicate at least 30% of their retail space to perishable goods and meet minimum requirements on square footage devoted to fresh produce" (p.20)

Transportation:
- Congestion charge proposal was rejected in 2008
- Safe Routes to Schools programme

Green space:
- "a number of initiatives for increasing access to parks and recreational spaces" e.g. adding lighting to athletic fields (p.21)

Planning and housing:
- Active Design Guidelines released in 2009 (collaboration between City Departments of Health and Mental Hygiene, Design and Construction, Transportation and Planning) to "provide planners and architects with a manual of strategies for promoting physical activity through the design of neighbourhoods, streets, buildings and work places" (p.21)

Schools:
- physical education equipment investment
- changes in food provision in schools, e.g. breakfast clubs, removal of sweet drinks from vending machines
- city Health Code for children aged 2-5 attending non-residential group day care – bans drinks with added sweeteners, limits servings of fruit juice, bans TV and video viewing for children under 2 years, maximum of 1 hour for children over 2 years, physical activity required every day for 1 hour (of which half must be structured and guided)

Health inequalities:
- District Public Health Offices and partnerships with community-based groups and coalitions deliver programmes to address health inequalities, e.g. NYC Food & Fitness Partnership "brings together more than 100 community-based organisations, non-profits, and academic institutions to develop action plans and policy agendas to reduce obesity"

Factors facilitating and blocking municipal action to reduce childhood obesity	
London	New York City

Factors facilitating municipal action	• Strong municipal control of transportation system • Explicit commitment to reducing inequities in health • National health care system that provides coverage to all • Relatively stable national funding for health care and education • Some business support for healthier eating options • National Child Measurement Program and Healthy Weight, Healthy Lives childhood obesity targets and program funding • Stated commitment to social determinants of health approach by Mayor and Regional Director of Public Health • London Health Observatory, an independent monitor of health trends • Olympics and commitment to health legacy	• Strong Mayor who supports vigorous municipal public health role • Strong health department with forceful leadership that supports vigorous role for public health • Health Code that enables action outside political process • Active and energetic non profit sector with interests in a variety of food and obesity issues • Public support for action to reduce obesity • Central school system with decision-making concentrated in Mayor's office • Many public officials with strong positions on obesity, food and health • City Council President, Mayor, Governor and President who have said health and food are priorities • Economic crisis that provides window of opportunity
Factors blocking municipal action	• Economic crisis that distracts public and policy maker attention • Food and retail industries with deep pockets to influence political process and modest incentive to change • Limited municipal involvement in public health • Decentralized/borough level authority over food and education • Competing priorities at different levels	• Food and retail industries with deep pockets to influence political process and modest incentive to change • Economic crisis that distracts public and policy maker attention • Complex, often anarchic system of government that makes implementation of change difficult • Federal control of school food policy • Strong commitment to incrementalism • High value on individual responsibility as solution to social problems and corporate and political promotion of these values • Competing priorities at different levels • Food and retail industries with deep pockets to influence political process and modest incentive to change

Study details	Programme focus	Whole system approach
Author (year) [Ref ID] NHS North West et al. (2008) [1788] **Aim of study** Not applicable – strategy document **Programme name** North West framework to achieve healthy weight in children and families **Study design** Not applicable – strategy document **Source of funding** Not reported	**Location (town, area, country)** North West England **Setting (e.g. school, community, etc.)** Schools, organisations (both public and private), community **Year/ timescale over which implemented** 2008-ongoing **Participants (age, gender, socio-economic status, other relevant characteristics)** Whole community **Was local knowledge used in the design and/or delivery of the programme? (If so, describe)** No **Policy context (or other key contextual details) in which programme was delivered** National Service Frameworks (NSF) and toolkits based on: - *Choosing Health* white paper and subsequent delivery plans on *Delivering Choosing Health: Making healthier choices easier*; *Choosing a better diet: A food and health action plan*; and *Choosing activity: A physical activity plan* - *Lightening the load: tackling overweight and obesity – a toolkit for developing local strategies to tackle overweight and obesity in children and adults* - *National Service Framework for children, young people and maternity services* (especially standards 1, 2 and 3) - *Maternity matters: choice, access and continuity of care in a safe service* - NICE Clinical Guideline 43: *Obesity: the prevention, identification, assessment and management of overweight and obesity in adults and children*	**Does the programme meet the criteria (interaction, co-ordination, multiple levels targeted simultaneously) of a WSA as proposed in the review protocol? (Describe, including original language used)** *Interaction* Yes – a range of actors from the public and private sectors are involved *Co-ordination* Yes – co-ordination by a programme board is clearly defined, and there is a clear drive to ensure that programmes are 'joined-up' *Multiple levels* Yes – the programme is designed to impact on a number of different levels (individual, family, school, community) simultaneously **Does the programme meet the criteria of an authentic WSA? (Describe, including original language used)** No – there does not appear to be any consultation with local communities, use of lay knowledge, or recognition of the role played by the relationships formed within the networks. **Additional programme elements? (Describe)** None **Additional notes to help understand WSA to obesity prevention not covered by the above** None

	Barriers & facilitators? None reported **'Lessons' for the evaluation of obesity prevention programmes** None reported	

Programme delivery

Stated aim of programme
To define and progress the contribution regional organisations can make to achieve the Public Service Agreement to improve the health and wellbeing of children and young people.

Explicit theoretical model used?
None

Describe delivery of the programme (who steered, who delivered 'hands-on', how, duration)
As set out in the description on programme activity below

Describe the actual package of activity
Strategy to be delivered through three alliances:
- Children's healthy weight alliance
- Physical activity alliance
- Food and nutrition alliance
(the relationships with other actors in the system, and the regional network, are shown in the figures below)

Components of strategy:

Food and nutrition
a) work with the food industry
- raise profile of food signpost labelling
- highlight opportunities for product reformulation to reduce levels of fat, sugar, and salt
- work in partnership with DEFRA to support delivery of Public Sector Food Procurement Initiative
- development of food supply chains to support provision of healthier and local foods in the public and private sectors
- engagement of and dialogue with industry and Food NW regarding the food and health agenda
- delivery of health elements of the NW Food and Drink strategy (2007-10)

b) increase demand for healthier food
- 'Our Life' to develop consumer insight and use this to develop campaigns to influence the attitudes and behaviours of the public
- communications framework to ensure clear consistent messages on healthy eating across the region
- Healthy Workplace policies, linked to Sustainable Development Plans

- targeting of most disadvantaged and vulnerable communities (increase awareness and improve access to healthy foods)
- work with food supply chain to increase availability of healthy food in most disadvantaged and vulnerable communities

c) catering and hospitality
- promotion of *Commissioning Healthier Catering and Hospitality Guidance* (and audit of uptake)
- promotion of FSA guidelines in publicly funded institutions

Active travel and transport
- scoping of regional organisations involved in active travel and transport
- production of briefing paper about joining up of sectors
- action plan for implementing physical activity and active travel in the NHS
- promotion to increase uptake of active travel guidance
- seminar for regional stakeholders to increase coherence and shared issues
- increase access for children and young people to play and recreational opportunities

Green space/ open space
- regional work programme with Natural England
- delivery of the *Forestry Framework Action Plan*
- encourage the use of green space for health and well-being (including community food growing in deprived areas) through signing up agencies to joined-up actions
- provide equal opportunities for increase access to green space by ethnic minorities, in accordance with principles of *Cleaner, Safer, Greener Communities*
- development of regional strategy with a range of partners to make best use of existing green space and ensure that green space and outdoor play and recreation opportunities are incorporated into new developments

Built environment
- briefing paper on impact of the built environment, to include Sport England's active design publication on physical activity
- implementation of outcomes from NW Health & Physical Activity Forum conference on the natural and built environment
- development of a regional approach which fosters an environment that promotes physical activity and reflects associated design guidance e.g. Sustainable Building and Building Health
- improve child friendly, physically and socially safe streets and neighbourhoods
- key partners to identify and maximise opportunities to create active communities through the sustainable communities agenda, and explore opportunities to develop the concept of 'Fit Cities'

Sport, active recreation and play
- maximise opportunities for joined up action on physical activity and sport through strategic regional planning
- audit of access to sport facilities by disabled people and minority and deprived communities
- sharing practice from local programme implementation (e.g. Green Gyms) through NW Health & Physical Activity Forum
-delivery of Play England's objectives for increased opportunities for play and recreation for children and young people
- all environmental organisations to be engaged with the promotion of physical activity

Strategy also includes actions to be taken in primary and secondary care settings; maternity, parenting and early years settings; schools; and the use of social marketing to influence behaviour change; and measures to address people's emotional health and well being.

Children's Healthy Weight Alliance

Physical Activity Alliance
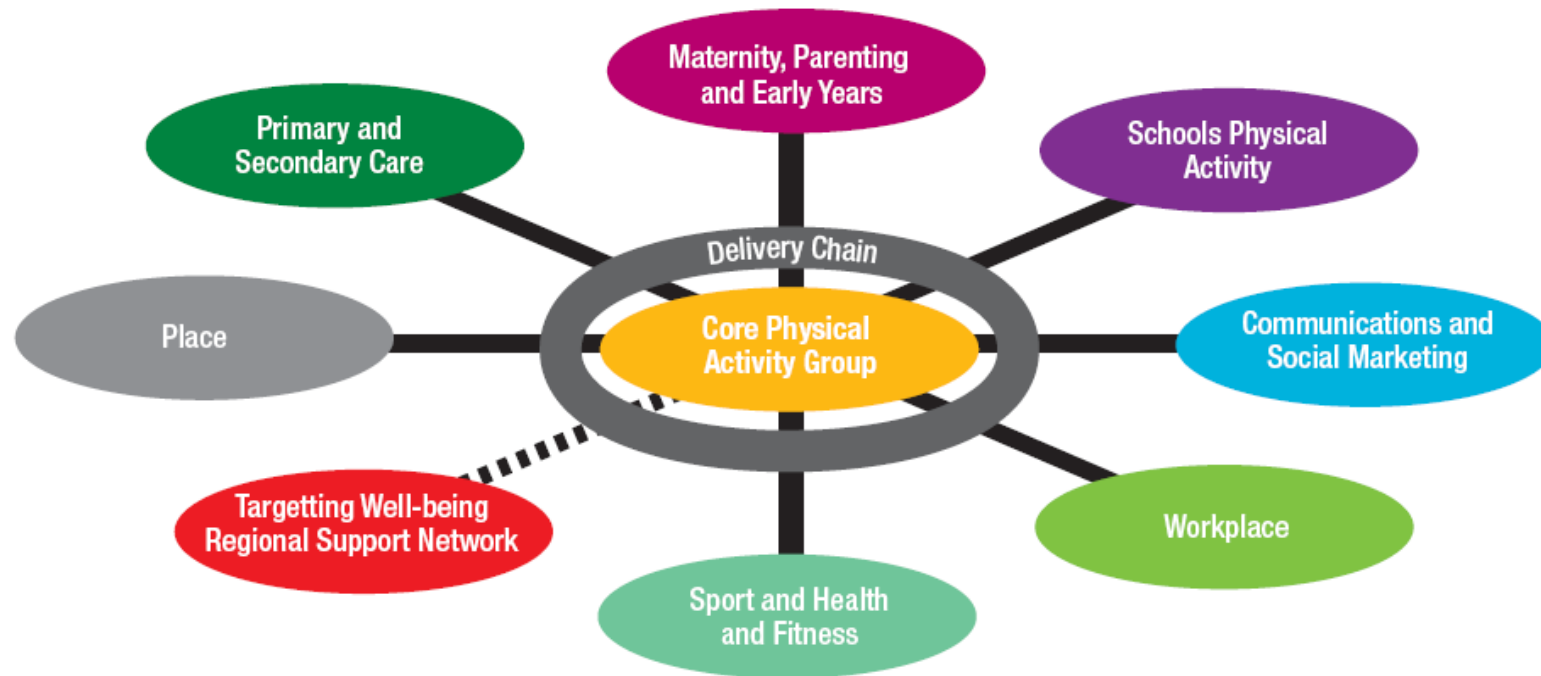
Food and Nutrition Alliance
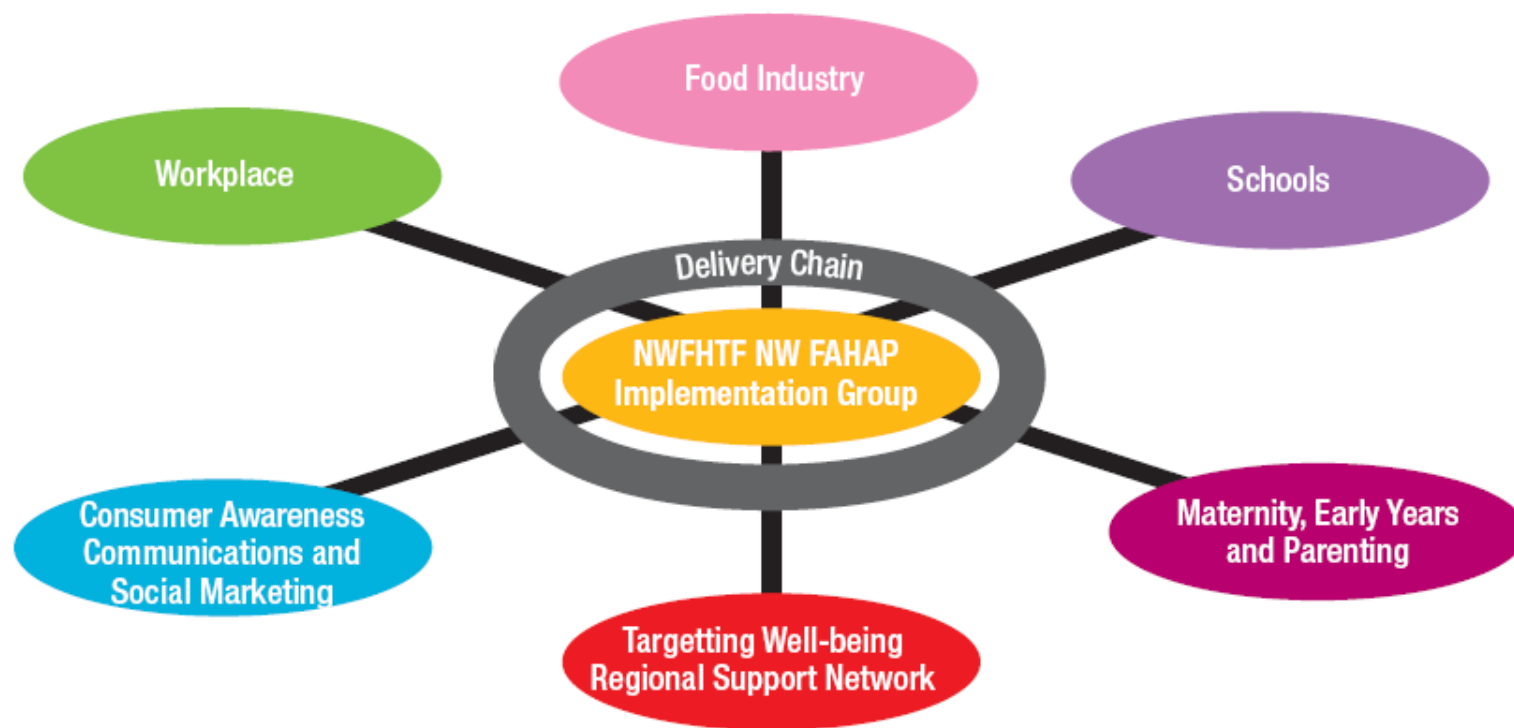
NWFHTF – North West Food & Health Task Force group

NWFAHAP - North West Food & Health Action Plan

GONW
Early Years
Leads Group

Breast
Feeding
Liaison
Group

NW Food &
Health Forum

NW Healthy
& Physical
Activity Forum

PCT Physical
Activity Leads
Network

GONW
Parenting
Comissioning
Leads Group

**Food & Nutrition
Alliance**

**Physical Actvity
Alliance**

**Healthy Weight
Alliance**

Breast
Feeding
Liaison
Group

Healthy Schools
Network

Sub-Regional
Obesity
Networks

Public Health Networks

North West Public Health Network & Special Interest Group

Study details	Programme focus	Whole system approach
Author (year) [Ref ID] Sanigorksi et al. (2008) [16] **Aim of study** "To evaluate the effects of Be Active Eat Well on reducing children's unhealthy weight gain" **Programme name** Be Active Eat Well **Study design** CBA **Source of funding** Commonwealth Department of Health and Ageing; Victorian Department of Health Services; Victorian Health Promotion Foundation	**Location (town, area, country)** Colac, Victoria (Australia) (Control: south-west region of Victoria) **Setting (e.g. school, community, etc.)** School, community and "other partners" **Year/ timescale over which implemented** 2003-2006 (3yrs) **Participants (age, gender, socio-economic status, other relevant characteristics)** Children aged 4-12yrs The town of Colac was "purposively selected as the intervention site as it had not previously been engaged in similar community-based projects, it was geographically contained and it had good infrastructure and community networks to support the programme" (p.1062) **Was local knowledge used in the design and/or delivery of the programme? (If so, describe)** *Unclear*, although "the action plan was developed by the agencies and other stakeholders" (p.1061) **Policy context (or other key contextual details) in which programme was delivered** Not reported **Barriers & facilitators?** Not reported **'Lessons' for the evaluation of obesity prevention programmes** - There may be sound pragmatic reasons for the purposive selection of a programme community, but that this may limit generalisability - however, "the use of a capacity-building approach has built in flexibility by design and should overcome this, and	**Does the programme meet the criteria (interaction, co-ordination, multiple levels targeted simultaneously) of a WSA as proposed in the review protocol? (Describe, including original language used)** *Interaction* Probably – the extent of the programme and involvement of health and community agencies suggests that considerable interaction took place *Co-ordination* Probably – the extent of the programme and involvement of health and community agencies suggests that co-ordination took place *Multiple levels* Yes - Individual, school, community and wider policy issues addressed **Does the programme meet the criteria of an authentic WSA? (Describe, including original language used)** No, except for the focus on developing community capacity in the development of the programme of obesity prevention **Additional programme elements? (Describe)** None **Additional notes to help understand WSA to obesity prevention not covered by the above** None

| the intervention activities are designed to be transferable to other communities as they have been delivered through fairly standard settings/services" (p.1066) | |

Programme delivery

Stated aim of programme
"To build the community's capacity to create its own solutions to promoting healthy eating, physical activity and healthy weight in children aged 4-12 years and their families." (p.1061) through:
- enhancing the skills of health professionals and stakeholders
- reorienting organisational priorities
- developing networks and partnerships to build leadership and community ownership
- developing sustainable health promotion strategies

Objectives:
- Capacity-building (broad actions around governance, partnerships, co-ordination, training and resource allocation)
- Targeting evidence-based behaviour changes (TV viewing, sugary drink consumption, energy dense snacks consumption, active play, active transport) through social marketing, programmes and policies.
- Small parent support and education programme
- Education programme to improve deep-frying practices in food outlets (e.g. healthier frying oils, wider chips)

Explicit theoretical model used?
No, but rationale for programme drew strongly on notions of community capacity (Hawe et al. (1997); Rogers et al. (1995)), where "enhancing skills, reorienting organisational priorities, creating partnerships and structures, building leadership and community ownership, and finding the resources to promote healthy eating and physical activity in a sustainable way" (p.1061) is central.

Describe delivery of the programme (who steered, who delivered 'hands-on', how, duration)
Programme designed by Colac Area Health (lead agency), Colac Otway Shire and Colac Neighbourhood Renewal, supported by Deakin University (training and evaluation). It is likely, given the rationale for the programme design, that community members were strongly involved, but it is *unclear* how this involvement took place, or its extent.

Unclear who was responsible for delivery of the programme.

Describe the actual package of activity
Nutrition strategies (increase water, fruit and vegetables; decrease sweet drinks and energy dense snacks)
- School-appointed dietitian for support
- School nutrition policies (including policies around water, fruit breaks, canteens, fundraising)
- Training for canteen staff
- Canteen menu changes
- Professional development for teachers about healthy eating curriculum
- One-off class sessions conducted by dietitians

- Taste tests of new canteen items
- Fresh taste programme (Melbourne Markets)
- Healthy breakfast days
- Interactive, glossy children's newsletters
- Teacher fliers (linking to children's newsletters)
- Promotional materials (e.g. balloons, stickers)
- Happy healthy families programme (small groups, 6 weeks – *unclear* what involved)
- Parent tips sheets
- Healthy lunchbox tip sheets
- Community garden
- Choice chips programme (7 hot chip outlets in Colac)
- Fruit shop displays (3 shops involved)

Physical activity strategies (increase active transport and time spent being active after school)
- After-school activities programme
- Be Active arts programme
- Walking school buses
- Walk to school days
- Promotional materials (e.g. balloons, stickers)
- Sporting club coach training
- Sporting club equipment
- Two class sets of pedometers for rotation between schools

Screen time (limit TV viewing time)
- TV power down week, including a 2-week curriculum
- Interactice, glossy, children's newsletters
- Teacher fliers (linking to children's newsletters)

Across all strategies
- Sponsorship of the Colac Kana festival 2004
- Sponsorship of kids day out 2003
- Broad media coverage over 4 years (57 newspaper articles, 21 paid adverts)
- Incorporation of BAEW strategies on Municipal Early Years Plan (Colac Otway Shire)
- Incorporation of BAEW strategies into Integrated Health Promotion Plan (Colac Area Health)
- Incorporation of BAEW strategies into Municipal Public Health Plan (Colac Otway Shire)
- Social marketing training
- Obesity prevention training

Study details	Programme focus	Whole system approach
Author (year) [Ref ID] Simmons et al. (2009) [317] **Aim of study** To evaluate an intervention aimed at reducing the prevalence of overweight and obesity in youth. **Programme name** "The Pacific OPIC Project" (Obesity Prevention In Communities) **Study design** Community-wide quasi-experimental with control communities for each study **Source of funding** Wellcome Trust (UK) Health Research Council (New Zealand) National Health and Medical Research Council (Australia)	**Location (town, area, country)** Nasinu - Fiji; Nukunuku, Houma & Kolonga -Tonga; Mangere – New Zealand; East Geelong/Bellarine Peninsula – Australia; **Setting (e.g. school, community, etc.)** Range of settings ranging from secondary schools, village districts, churches/religious groups, homes, health centres **Year/ timescale over which implemented** 3 years **Participants (age, gender, socio-economic status, other relevant characteristics)** Young people aged 12-18 years from four different countries located on sites which reflect the ethnic mix of the area. **Was local knowledge used in the design and/or delivery of the programme? (If so, describe)** Community workshops, involving representatives from schools, local church groups, "organisations operating within the intervention area", and community leaders were used to develop the draft action plans for each site using the ANGELO (Analysis Grid for Elements Linked to Obesity) Framework (developed by Swinburn *et al.* (1999) which centres on identifying obesogenic elements within the environment, and then identifies "potential behaviours for targeting, knowledge and skills gaps to fill, in addition to environmental barriers in the homes, schools, churches and communities that needed to be addressed" (p.149 **[1]**) – see fig.1 below. **Policy context (or other key contextual details) in which programme was delivered** Prevalence rates of overweight and obesity are "particularly high and increasing rapidly in Pacific	**Does the programme meet the criteria (interaction, co-ordination, multiple levels targeted simultaneously) of a WSA as proposed in the review protocol? (Describe, including original language used)** **Does the programme meet the criteria of an authentic WSA? (Describe, including original language used)** **Additional programme elements? (Describe)** **Additional notes to help understand WSA to obesity prevention not covered by the above**

	populations…It is likely that socio-cultural factors play a large part in the development of obesity. Any intervention programmes…need to take into account the main behaviours and underlying socio-cultural factors that are contributing to obesity" **Barriers & facilitators?** Limitations to ANGELO model: The model to date has only been tried in small scales (towns and villages), so "a pathway needs to be found for scaling this up" to the city, regional or national level. ANGELO focuses on obesity prevention, but the principles would apply if the scope was broadened. Additional training and facilitation would be needed to do this. Focus group methodologies could be useful but are not tested here. See ANGELO table 5 below for possible environmental barriers to healthy living. **'Lessons' for the evaluation of obesity prevention programmes** None	

Programme delivery

Stated aim of programme
"The Pacific OPIC (Obesity Prevention In Communities) Project includes whole-of-community intervention programs in four countries (Fiji, Tonga, New Zealand, Australia) aimed at reducing the prevalence of overweight and obesity in youth" (p.147)

Explicit theoretical model used?
None, although health promotion action is described:.

"Health promotion action at a community level needs to become embedded in the organisations working in that community and to ensure that community owns and embraces the action. The challenges are considerable, particularly in achieving a sufficiently high and sustainable 'dose' of intervention and evaluating the process, impacts and outcomes to a sufficiently high standard given all the constraints associated with such projects" (p.147).

Describe delivery of the programme (who steered, who delivered 'hands-on', how, duration)
See fig. 2 for a broad overview of the 4 OPIC interventions alongside the Sentinel project interventions (not covered here).

The intervention was formulated by the Pacific OPIC Project team – it is unclear who this consisted of. The timeframe for the intervention was 3 years.

To secure community buy-in (for steering, support and delivery) each of the 4 sites took a slightly different approach:

Fiji

The Ministry of Education wrote to principles of secondary schools within the intervention and control areas expressing endorsement and support of the project. Secondary school principles, community/church/religious leaders and local town councils were contacted to arrange meetings with their members. An intensive awareness programme followed targeted at all residents of the area highlighting the benefits of getting involved with the programme and seeking their support as partners.

Tonga

Initial conversations took place between Ministry of Health health centre staff, town officers and church ministers. A number of meetings were then held with wider stakeholders including Ministry of Health Head Office staff, Health Promotion Unit, Ministry of Education, education administrators of church schools, school principals, youth leaders, women's groups, and key people from the villages. Research staff attended existing health programme meetings to gain access to communities.

New Zealand

The principal investigators met with each of the 4 principals of the schools taking part in the intervention to discuss the purpose of the project and gain support. Principal investigators also received letters of support from the Ministry of Health.

Australia

Initial discussions and planning took place with the Department of Human Services and "key stakeholders within the intervention area" to look at the appropriateness and location of the project. The research team met with principals of each of the 5 participating schools to discuss timeframe, goals and logistics of the project.

Describe the actual package of activity

In each intervention site, preliminary socio-cultural interviews were conducted with 12-18 year olds to determine their knowledge relating to food and eating, activity and inactivity and preferred body size, and the results of these interviews informed and shaped the community workshops that followed.

Once the community consultations and socio-cultural studies had taken place, each site organised a community workshop to develop an action plan using the ANGELO framework based on an Analysis Grid for Elements Linked to Obesity – see Fig. 3 below.

At a 2-day workshop, teachers, students and community members are led through this structured process to form an action plan to be used as a living document that evolves through the course of the project. Examples of the behavioural elements of the Action Plans for Fiji (table 1) and Tonga (table 2) are shown below. One the Action Plans were drafted, the 4 countries followed different progression routes:

In Fiji, they set up 2 working groups: the Local Steering Committee formed from Ministerial level stakeholder representatives from Health, Education and Women, members of the Healthy Youth Healthy Communities project, local town council, and health centres. Their role was to advise and support the project team with implementation and act as liaison between organisations and project staff. The second working group was the individual Schools Implementation Committees made up of teachers, pupils, canteen managers and school administrators. Their role is to implement the action plan in the school setting. Their initial behavioural objective was to address the issue of students missing breakfast using multiple strategies such as
- social marketing via pamphlets to parents and students;
- students promoting breakfast during parent interview days;
- school canteens opening early to sell breakfast before school; and

- education for students in time management.

In Tonga, the Ma'alahi Youth Project linked with: the Healthy Islands Committee in each district; village committees; youth groups; and church groups to work on implementation, identifying key people in each village to act as role models. Their initial behavioural objective targets physical activity by
- **promoting weekly village walking groups,**
- **a 'keeping the village clean' programme,**
- **aerobics for youth, and**
- **targeted mother-and-daughter interventions.**

In Mangere an inter-school committee was organised, alongside Student Health Councils (SHC). Interested students formed the SHC where they met for training and education on obesity and nutritional issues, and were responsible for promoting project objectives and initiating change within their school. Community organisations (such as National Heart Foundation, Counties Manakau Sport, Counties Manakau District Health Board and local area health providers) worked with schools to promote project objectives. The initial objective identified by the 'Living 4 Life' schools was to raise consumption of water and decrease consumption of fizzy drinks. Examples of strategies employed as part of this initiative were:
- **social marketing campaign developed by students;**
- **distribution of water bottles to students and staff;**
- **school newsletter education and parent evening sessions;**
- **strategic installation of new water fountains; and**
- **implementation of a school water policy**.

In Australia, a teacher in each intervention school was appointed School Project Officer to coordinate the running of the intervention in their school and work with students on the intervention. Students who attended the ANGELO workshop extended their role to become Ambassadors for the 'It's Your Move!' project within the school. POs received formal training in social marketing. An implementation workshop was held for all the students across the 5 intervention schools Student ambassadors received media training funded by the Dept. of Health to ensure effective delivery of messages. "concurrently, local organisations are reorienting their priorities to include obesity prevention and local and state governments have been proactive in obesity prevention in Victoria". Behavioural strategies focussed on raising consumption of water and decreasing consumption of fizzy drinks, including:
- **social marketing through water bottles, screen savers and posters**
- **education through the school curriculum and professional development for staff**
- **increasing the number of water dispensers in schools and the community; and**
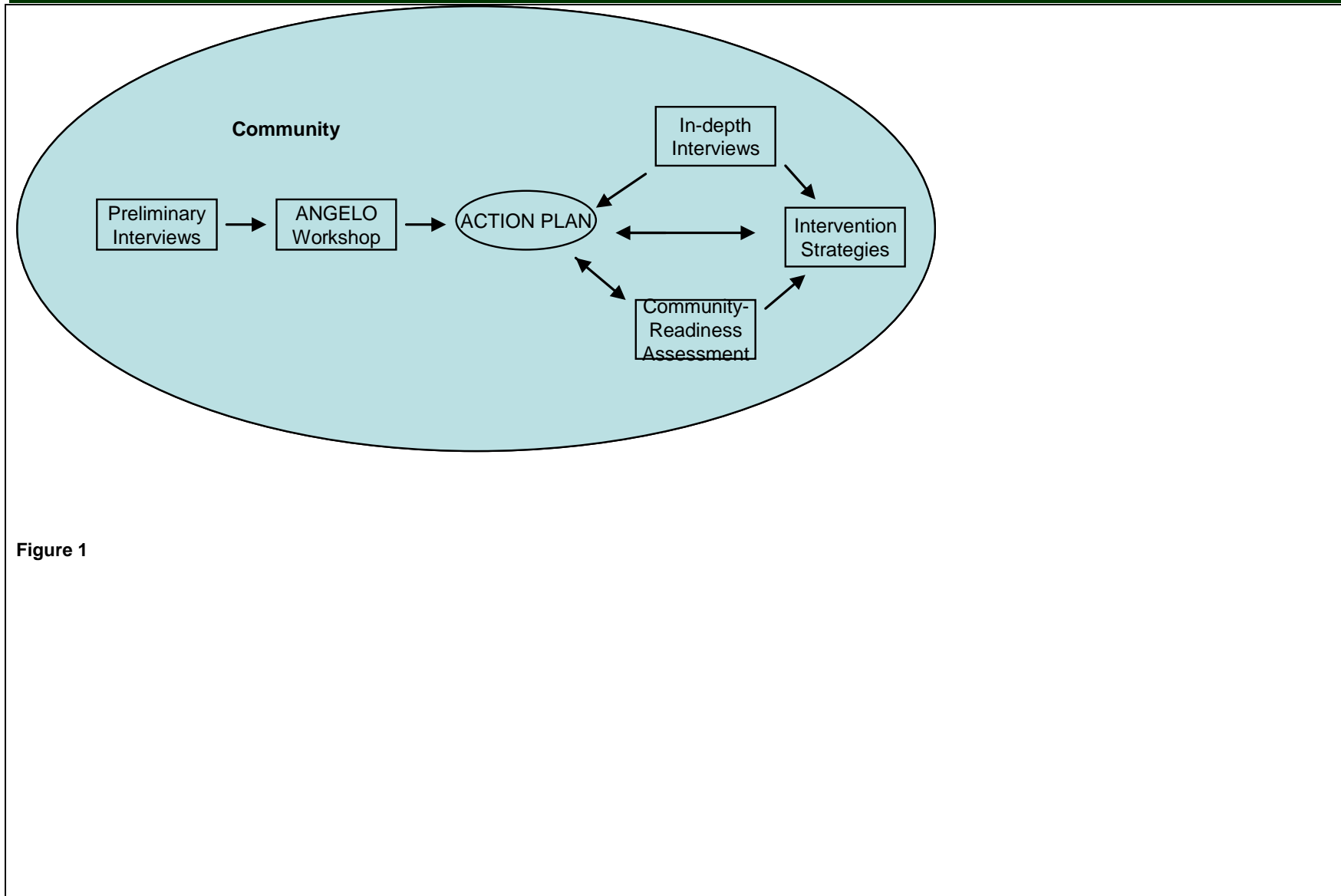- **implementation of a water policy**

Figure 1

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┌─────────────────────┐              ┌─────────────────────────┐
│  SENTINEL SITE FOR  │              │  OBESITY PREVENTION IN  │
│  OBESITY PREVENTION │              │   COMMUNITIES (OPIC)    │
└─────────────────────┘              │     COLLABORATION       │
                                     └─────────────────────────┘
       ┌───────────┐          ┌──────────┐  ┌──────┐  ┌────────┐
       │ AUSTRALIA │          │   NEW    │  │ FIJI │  │ TONGA  │
       └───────────┘          │ ZEALAND  │  └──────┘  └────────┘
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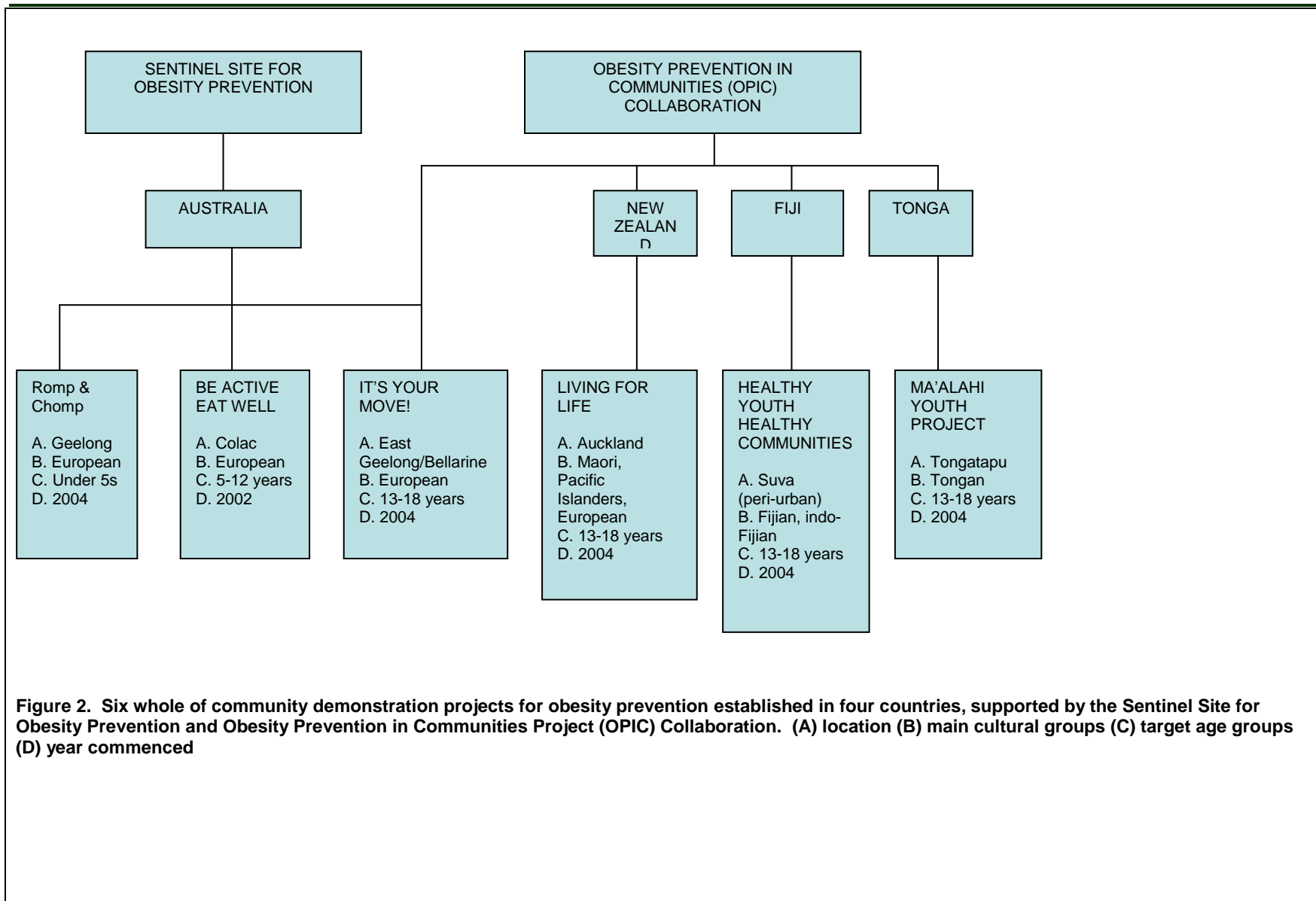| Romp & Chomp	BE ACTIVE EAT WELL	IT'S YOUR MOVE!	LIVING FOR LIFE	HEALTHY YOUTH HEALTHY COMMUNITIES	MA'ALAHI YOUTH PROJECT
A. Geelong B. European C. Under 5s D. 2004	A. Colac B. European C. 5-12 years D. 2002	A. East Geelong/Bellarine B. European C. 13-18 years D. 2004	A. Auckland B. Maori, Pacific Islanders, European C. 13-18 years D. 2004	A. Suva (peri-urban) B. Fijian, indo-Fijian C. 13-18 years D. 2004	A. Tongatapu B. Tongan C. 13-18 years D. 2004

Figure 2. Six whole of community demonstration projects for obesity prevention established in four countries, supported by the Sentinel Site for Obesity Prevention and Obesity Prevention in Communities Project (OPIC) Collaboration. (A) location (B) main cultural groups (C) target age groups (D) year commenced
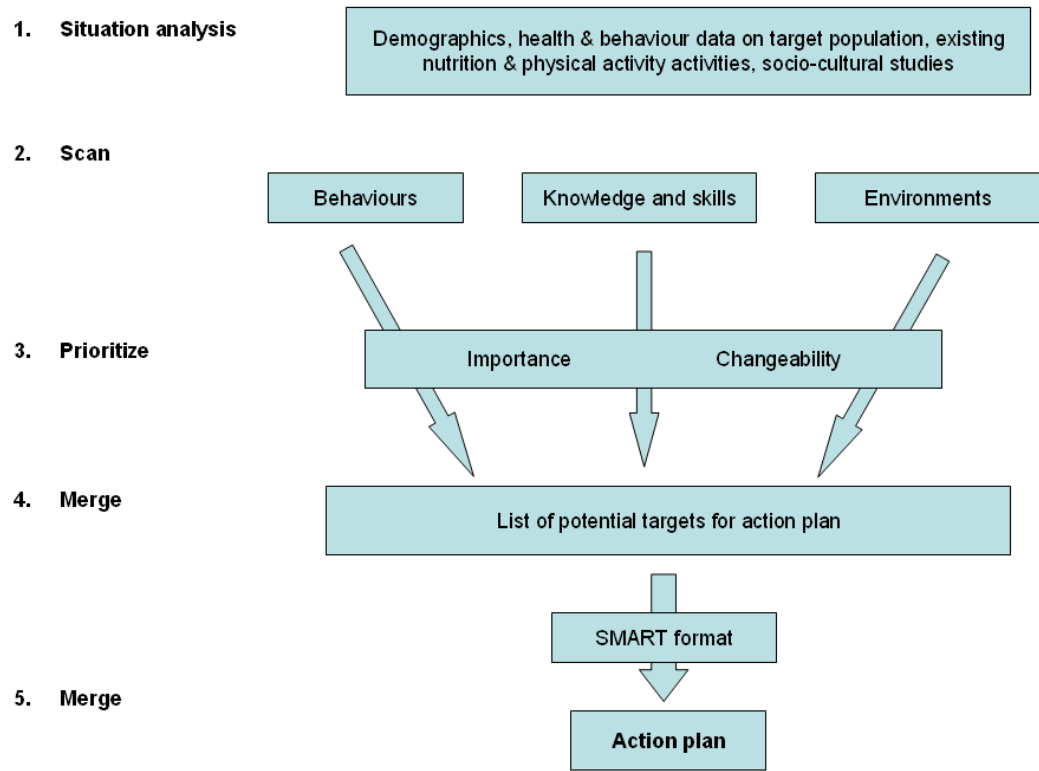
1.   Situation analysis   Demographics, health & behaviour data on target population, existing nutrition & physical activity activities, socio-cultural studies

2.   Scan

Behaviours   Knowledge and skills   Environments

3.   Prioritize   Importance   Changeability

4.   Merge   List of potential targets for action plan

SMART format

5.   Merge   **Action plan**

Fig.3

Behavioural and innovation objectives of the Fiji 'Healthy Youth Healthy Communities' Action Plan (Standard objectives on capacity building, social marketing messages and evaluation not shown)

Aim: To improve the health and wellbeing of individuals and strengthen the Nasinu Community through health eating and physical activity

Objectives	Key Strategies
1. To significantly reduce the proportion of adolescents who skip breakfast on school days	• Promote breakfast with students and parents – pamphlets & school assembly morning talks • School canteen providing breakfast
2. To improve the healthiness of food at school by significantly decreasing the consumption of high sugar drinks and promoting the consumption of water and by significantly increasing fruit and vegetable consumption	• Develop school polices for canteens to support water, fruit and vegetable consumption • Curriculum development with Home Economics and Agricultural Science
3. To significantly decrease the consumption of energy dense snacks and significantly increase consumption of fruit as afternoon snacks	• Social marketing (include fruits and vegetables) for snacks and benefits of F&V; what constitutes healthy snack • Student information on healthy snacks, F&V snacks
4. To significantly increase the proportion of adolescents living within walking distance to school to walk to and from school with a sense of safety 5. To support physical education teachers to conduct physical education classes effectively	• "Walking buddies" • Road safety skills • School policy on physical education classes • Partnership with organizations to provide equipment such as hoops, ropes and other sports equipment
6. To significantly increase the amount of active play after school and on weekends and significantly decrease the time spent watching TV and playing on computers or electronic games	• House rules on screen time and outside play time • School walkathon
7. To develop a program for promoting healthy eating and physical activity within churches, mosques and temples	• Food preparation skills • Budgeting skills

Behavioural and innovation objectives of the Tonga 'Ma'alahi Youth' Action Plan Action Plan (Standard objectives on capacity building, social marketing messages and evaluation not shown)

Aim: To increase the capacity of Nukunuku, Houma and Kolonga districts to promote healthy eating and regular physical activity amongst the youth and reduce the rates of overweight and obesity

Objectives	Key Strategies
1. To significantly increase the proportion of youth who eat healthy breakfast on school days.	• Promote eating breakfast before school for students • Parent, teachers and student information and motivation
2. To significantly increase the proportion of youth who eat (a healthy) school lunch	• Develop policies for canteens and food vendors

	• Parent, teachers and students information and motivation
3. To significantly increase the consumption of vegetables and fruits for youth	• Develop programs for growing vegetables and fruits • Parents and youth information and motivation
4. To significantly increase the participation in physical activities and informal activities (especially for girls)	• Village walking groups • Keeping the village clean program
5. To significantly increase the participation in organized sports, especially for girls	• Develop polices promoting mandatory PE at schools • Community indoor and outdoor facilities
6. To promote water consumption and significantly reduce the consumption of sweet drinks	• Introduction of water polices in intervention schools churches, celebrations
7. To develop a programme where village and church leaders are champions for healthy eating and regular physical activity	• Parents, teachers and students information and motivation • Champion program for key people as role models.

List of potential environmental barriers in the home/family setting, separated by environment type from the four communities targeting the adolescent age group

Environment type	Identified elements in home/family setting (articulated as barriers)
Physical What is/is not available?	*Food*: • Not enough fruit available • Too many high fat snacks available • Mainly high fat, low vegetable meals • Too many high sugar drinks at home • Junk food for lunchboxes • Not enough homes have gardens *Physical activity*: • Few backyards to be active in • Low ownership of equipment • Parents not available to support physical activity • TV in rooms including bedrooms • TV always on in common area
Economic What are the financial factors?	*Food*: • Not enough household money for fruit and vegetables • Too much pocket money given and used for junk food • Not enough money given for healthy lunches • Healthy food not a priority for available money • Healthy oils are more expensive then dripping • Some families don't have enough money for breakfast and lunch *Physical activity*:

- Not enough household money for sport/recreation
- Too much money spent on sedentary entertainment (e.g. XBOX)

Policy
What are the rules?

Food:

- Few homes rules about eating junk food/after school snacks
- Rules and monitoring of 'spending' not tight enough

Physical activity:
- No rules about TV viewing/computer game use
- Rules limiting physical activity in neighbourhood facilities
- Games, sports and exercise restricted around exams

Socio-cultural
What are the attitudes, beliefs, perceptions, values and practices?

Food:

- Family practices not supportive of healthy eating (e.g. high fat, low fruit and vegetables, rushed meals, not eating together, skipping breakfast, different meals for the adolescents)
- Popular foods are high in fat (e.g. takeaway, deep fried foods)
- High status foods are high in fat (e.g. meats, deep fried foods)

Physical activity:
- Families not active together
- Family practices not supportive of active transport, sports/informal activities
- Higher value given to sedentary activities
- Higher value given to school work versus sports and games
- Walking long distances (e.g. 2 km) not accepted
- Families don't want girls to go out unsupervised

Body size:
- Perception that overweight cannot be controlled
- Fear that addressing weight issues will lead to eating disorders
- Large body size accepted/as a sign of wealth, status

Study details	Programme focus	Whole system approach
Author (year) [Ref ID] Twiss et al. (2000) **[42]** **Aim of study** is the longest running statewide program of its kind in the nation. After providing a brief history, the authors give an overview of the supporting activities and resources the Program provides to Healthy Cities and Communities initiatives throughout California. **Programme name** California Healthy Cities and Communities **Study design** Review paper **Source of funding** The Healthy Cities Project; grant from California Endowment	**Location (town, area, country)** California, USA (statewide) **Setting (e.g. school, community, etc.)** Statewide – community, social groups, schools, farmers markets, family, individual **Year/ timescale over which implemented** From 1987onwards **Participants (age, gender, socio-economic status, other relevant characteristics)** All residents of California **Was local knowledge used in the design and/or delivery of the programme? (If so, describe)** Yes - Project was eager to work more directly with other "lead" organizations, for example, community-based organizations and other nonprofit groups. **Policy context (or other key contextual details) in which programme was delivered** "In California, several key leaders in public health and the Healthy Cities movement, drawing on their professional experience as well as research suggesting that people who feel well connected to others tend to enjoy healthier lives, decided that something different was needed to improve the public's health. As the World Health Organization was starting its Healthy Cities campaign in Europe, these leaders decided to bring the Healthy Cities model to the United States. In 1987, they launched the California Healthy Cities Project." (p.125-126) **Barriers & facilitators?**	**Does the programme meet the criteria (interaction, co-ordination, multiple levels targeted simultaneously) of a WSA as proposed in the review protocol? (Describe, including original language used)** Yes *Interaction* The Programme facilitates networking, peer-to-peer exchange, the cultivation of positive relationships and helps to embrace ethnic and cultural diversity. The community designs steers the intervention consistent with the Healthy Communities philosophy. *Coordination* The Programme takes a multi-layered approach which includes technical assistance, funding, promotion, coordination and collaboration, systems reform, programme evaluation and celebration. *Multiple levels targeted simultaneously* Placing of offices within the heart of multiple sectors, to make networking, relationship-building and "cross-pollination" easier **Does the programme meet the criteria of an authentic WSA? (Describe, including original language used)** Yes – language used for community working ("governance, collaborative planning, systems thinking, and intersectoral coalition building"), inclusiveness ("engage ethnic communities through inclusive and empowering approaches"; "Meeting "ground rules" are posted, and "jargon police" monitor the use of acronyms and language that can be exclusionary"), language of 'participation', multi-layered approaches ("the Program provides an important link to practitioners

	None detailed – overview piece, lack of 'ground-level' detail **Lessons** As above	in the community-building field and the Healthy Cities and Communities movement nationally and internationally") 'synergy', 'cross pollination' etc. **Additional programme elements? (Describe)** None **Additional notes to help understand WSA to obesity prevention not covered by the above** None

Programme delivery

Stated aim of programme
California Healthy Cities and Communities is the longest running statewide program of its kind in the nation. After providing a brief history, the authors give an overview of the supporting activities and resources the Program provides to Healthy Cities and Communities initiatives throughout California.
Explicit theoretical model used?
None stated

Describe delivery of the programme (who steered, who delivered 'hands-on', how, duration)
Steered by California Healthy Cities Project since 1987. delivered hands-on by communities and cities "Cities were the level of government closest to the people; they had responsibility and resources for many health determinants such as safety, housing, and economic development; and they had the ability to rally broad constituencies, including the business sector and residents, based on civic pride and a sense of place. Even though there were 447 municipalities in California at the time, they provided a discrete, identifiable audience with whom to start a movement. The League of California Cities, based in Sacramento, the state capital, offered opportunities for partnership." (p.126)

Duration: ongoing.

Describe the actual package of activity
Education:
- The city of Berkeley developed public use standards for community gardens on city property, providing free water use, fences, and help with installation.
- In the city of Chula Vista one teacher now works full-time to institute a garden-based school curriculum.
- community education programmes run (e.g. day-long orientation session, regional workshop)

Funding and sustainability
"The initial funding for the Project was provided through the Preventive Health Services Block Grant from the Centers for Disease Control and Prevention, administered by DHS. This funding has remained at the same level since 1993. In the last few years, additional funding streams have been added to increase local grants, bolster the infrastructure of the state program, conduct a cross-site evaluation, and support special projects, such as conference scholarships and publications. Resource limitations, and a goal of engaging communities that are genuinely committed to Healthy Cities and Communities principles, determine local funding strategies. At first, for the Project's demonstration program, the only financial assistance provided was for travel to Project-sponsored meetings. The

Project also had a small reserve for consultant contracts to be used locally. Frequently, however, communities needed resources for implementing the most basic activities of their work plans, for example, community outreach and local promotion."
"A 50% match is required for each of the implementation grants; the goals has a matching requirement is imposed to emphasize the need to plan for influence I sustainability from the beginning" (p.129)

Coordination and collaboration:
"Coordination and collaboration among public, private, and nonprofit groups is the cornerstone of the Healthy Cities and Communities philosophy. The road to collaboration is fraught with challenges. Turf issues, crossed communications, and conceptual misunderstandings all have the potential to derail rewarding, synergistic efforts. Nonetheless, collaboration has been a key ingredient in much of the Program's success" (p.129).

Relationships:
- "mutual support is an important, albeit intangible, aspect of all of these relationships. The Healthy Cities and Communities movement is about people. Emotional and spiritual support and encouragement to continue this work might be the most valuable outcome of collaboration." (p.130)

Systems change:
State level:
At the state level, systems reform may take place *within* and *across* state-level organizations.
- It is systems reform when a state public health department partners with organizations or develops constituencies outside the traditional public health infrastructure.
- Likewise, it is systems reform when non-health organizations incorporate Healthy Cities and Communities principles into their missions and operations and when they collaborate across sectors to improve the public's health.

Municipal level:
In California, systems reform at the municipal level-which generally has no statutory responsibility for public health-has involved instituting
policies and practices that make explicit the city's role and contribution in community health promotion and protection. At the local level, policy initiatives have transformed vacant land, increased access to healthful foods, expanded community gardening, reduced exposure to
environmental tobacco smoke, restricted alcohol availability, and improved transportation safety.

Individual level:
- city of Pasadena developed a ground-breaking Quality of Life Index to improve planning, policy making, and resource allocation with extensive
input from residents, technical panels, and neighborhood groups.

Public/Private sector:
- In the city of West Hollywood, a small, densely populated urban area in greater Los Angeles, positive experiences with school-based community gardens prompted the manager of an apartment complex where one student lives to establish an on-site garden for its residents.
- The Escondido Downtown Business Association provides same-day reimbursement for farmers who accept food vouchers at their open-air market.

Food security:
- Seed grants have stimulated and supported demonstration programs, which are resulting in cross-sectoral action and policy.
- Community garden cooperatives and related micro-enterprises have been established.
- Food policy councils, with representation from multiple sectors, are working to improve summer lunch programs and to promote community gardening through
- reducing city water fees,
- organizing a healthy canned food drive, and

- supporting teachers as they integrate gardening and physical activity into daily classroom routines.
- The Adopt-a-Lot Program in the City of Escondido takes advantage of an exemplary land use policy to allow residents, neighborhood groups, and organizations to qualify for a special, no-fee permit when they "adopt" public or private vacant land on a temporary basis for recreational use or other community purposes.

Multi-Agency working – example of smoking
"Increasingly, DHS [US Department of Health] programs have taken a more environmental perspective. Several DHS programs, especially those in the area of chronic disease and injury prevention, now recognize municipalities and Healthy Communities coalitions as major players in advancing prevention objectives and specifically focus on them for local assistance contracts.
For several years, beginning in 1990, the Project worked in a formal partnership with the League of California Cities and Americans for Nonsmokers' Rights to educate and support municipal officials statewide about tobacco control. Before January 1990, only one California
city had an ordinance that completely banned smoking in restaurants. Four years later, more than 100 cities had banned smoking in restaurants and almost 90 cities had eliminated smoking in the workplace. This local action provided the foundation for state legislation, which went
into effect in 1995, that required smoke-free workplaces and allowed local governments to enact stronger policies." (p.131)

History and origins
Original set-up: 10 pilot cities chosen for a demonstration programme, and when this was successful a further 33 joined in. The project then expanded to communities: "In 1998, the Project entered its next major phase with a grant from the California Endowment. With these new resources, grants were made available to 20 qualifying communities that encompass neighborhoods, unincorporated areas, and multi-jurisdictional regions. With this expansion, the Project changed its name to California Healthy Cities and Communities (referred to here as "the Program")." (p.127)

Offers on-site consultation to allow skill-building for community coalitions and cultivation of relationships facilitates communication, acts as a sounding board and assists in embracing ethnic and cultural diversity. Educational programme is run to develop and nurture relationships between participants; literature and information development – producing quarterly newsletters, bulletin of funding opportunities, best practices and the latest reference materials.

Funding: has been expanded to increase local grants (? P.128)

Promotion: multi-pronged information campaign; Enlisting city government officials, including city
managers and key department heads, as spokespersons for the Healthy Cities movement has been one of the most effective promotion methods. These people have credibility because they are well-respected and active in their professions and can be vigorous advocates among
their peers. The value of these peer-to-peer transactions cannot be overstated because they lend access to a larger audience." (p.129)

Cooordination and collaboration; Systems reform: One of the Program's goals has always been to influence policy making and resource allocations on the part of public and private organizations at the local and state level. In California, systems reform at the municipal level-which generally has no statutory responsibility for public health-has involved instituting policies and practices that make explicit the city's role and contribution in community health promotion and protection. At the local level, policy initiatives have transformed vacant land, increased access to healthful foods, expanded community gardening, reduced exposure to environmental tobacco smoke, restricted alcohol availability, and improved transportation safety. At the state level, systems reform may take place within and across state-level organizations. (p.130)

"The private sector has been active in the food security arena as well. In the city of West Hollywood, a small, densely populated urban area in greater Los Angeles, positive experiences with school-based community gardens prompted the manager of an apartment complex where one student lives to establish an on-site garden for its residents. The Escondido Downtown Business Association provides same-day reimbursement for farmers who accept food vouchers at their open-air market. Systems reform benefits tremendously from a comprehensive framework. The city of Pasadena developed a ground-breaking Quality of Life Index to improve planning, policy making…" (p.131)

Interventions:
Media:
Annual Meeting and regional workshops, hosted by participating communities with minimal registration fees and low-cost meals;
'Connections' quarterly newsletter;
'Highlights' – biannual bulletin of funding opportunities;
Shared best practices, innovative community-building strategies and websites;

Education:
- 'Social entrepreneurs'/ community champions
- community presentations
- Information sharing
- Municipal-level policies
- community education programmes
- Healthy Cities promotion
- latest reference materials

Food & drink
- garden-based curriculum
- farm voucher reimbursement
- school yard gardens
- Seed grants
- healthy canned food drive
- summer lunch programmes

Environment
- Strategic siting of HQ
- community gardens
- reduced city water fees
- Adopt-a-Lot Program

Appendix 7   Sources excluded at full text stage

Q1 (WSA in theory) exclusion references	Reason
Aaron, D. J., Markovic, N., Danielson, M. E., Honnold, J. A., Janosky, J. E., & Schmidt, N. J. 2001, "Behavioral risk factors for disease and preventive health practices among lesbians", *American Journal of Public Health*, vol. 91, no. 6, pp. 972-976.	Not called (whole) system approach/ working/ other
Ajdacic, V., Angst, J., Eich, D., Gamma, A., Hasler, G., Milos, G., Pine, D. S., & Rossler, W. 2004, "The associations between psychopathology and being overweight: a 20-year prospective study", *Psychological Medicine; 34 (6) Aug 2004* p. -1057.	Not called (whole) system approach/ working/ other
Al, R., I, Al, N. Y., Al Rashdan, I., & Al Nesef, Y. 2010, "Prevalence of overweight, obesity, and metabolic syndrome among adult Kuwaitis: results from community-based national survey", *Angiology*, vol. 61, no. 1, pp. 42-48.	Not called (whole) system approach/ working/ other
Al-Asmary, S. M., Al-Shehri, A. A., Farahat, F. M., bdel-Fattah, M. M., Al-Shahrani, M. M., Al-Omari, F. K., Al-Otaibi, F. S., Al-Malki, D. M., 2008, "Community-based screening for pre-hypertension among military active duty personnel", *Saudi Medical Journal*, vol. 29, no. 12, pp. 1779-1784.	Not called (whole) system approach/ working/ other
Alfonso, M. L., Nickelson, J., Hogeboom, D. L., French, J., Bryant, C. A., McDermott, R. J., Baldwin, J. A.2008, "Assessing local capacity for health intervention", *Evaluation & Program Planning*, vol. 31, no. 2, pp. 145-159.	Not called (whole) system approach/ working/ other
Ali, H. I., Bernsen, R. M., & Baynouna, L. M. 2008, "Barriers to weight management among Emirati women: a qualitative investigation of health professionals' perspectives", *International Quarterly of Community Health Education*, vol. 29, no. 2, pp. 143-160.	Not called (whole) system approach/ working/ other
Allan, J. D. 1988, "Knowing what to weigh: women's self-care activities related to weight", *Advances in Nursing Science*, vol. 11, no. 1, pp. 47-61.	Not called (whole) system approach/ working/ other
Allan, J. D. 1998, "Explanatory models of overweight among African American, Euro-American, and Mexican American women", *Western Journal of Nursing Research*, vol. 20, no. 1, pp. 45-67.	Not called (whole) system approach/ working/ other
Al-Lawati, J. A., Jousilahti, P.2008, "Body mass index, waist circumference and waist-to-hip ratio cut-off points for categorisation of obesity among Omani Arabs", *Public Health Nutrition*, vol. 11, no. 1, pp. 102-108.	Not called (whole) system approach/ working/ other
Allen, K. D., Renner, J. B., Devellis, B., Helmick, C. G., & Jordan, J. M. 2008, "Osteoarthritis and sleep: the Johnston County Osteoarthritis Project", *Journal of Rheumatology*, vol. 35, no. 6, pp. 1102-1108.	Not called (whole) system approach/ working/ other

Q1 (WSA in theory) exclusion references	Reason
Almeida, O. P., Calver, J., Jamrozik, K., Hankey, G. J., Flicker, L.2009, "Obesity and metabolic syndrome increase the risk of incident depression in older men: the health in men study", *American Journal of Geriatric Psychiatry*, vol. 17, no. 10, pp. 889-898.	Not called (whole) system approach/ working/ other
Al-Nuaim, A. A., Bamgboye, E. A., Al-Rubeaan, K. A., & Al-Mazrou, Y. 1997, "Overweight and obesity in Saudi Arabian adult population, role of sociodemographic variables", *Journal of Community Health*, vol. 22, no. 3, pp. 211-224.	Not called (whole) system approach/ working/ other
Alvarez, J., Pavao, J., Baumrind, N., Kimerling, R. 2007, "The relationship between child abuse and adult obesity among california women", *American Journal of Preventive Medicine*, vol. 33, no. 1, pp. 28-33.	Not called (whole) system approach/ working/ other
Andersen, I., Heitmann, B. L., Wagner, G. 2008, "Obesity and sexual dysfunction in younger Danish men.[Erratum appears in J Sex Med. 2008 Nov;5(11):2735 Note: Heitmann, Berit L [corrected to Heitmann, Berit L]]", *Journal of Sexual Medicine*, vol. 5, no. 9, pp. 2053-2060.	Not called (whole) system approach/ working/ other
Anderson, S. E., Cohen, P., Naumova, E. N., Jacques, P. F., Must, 2007, "Adolescent obesity and risk for subsequent major depressive disorder and anxiety disorder: prospective evidence", *Psychosomatic Medicine*, vol. 69, no. 8, pp. 740-747.	Not called (whole) system approach/ working/ other
Andersson, C. M., Bjärås, G. E. M., & Östenson, C. 2002, "A stage model for assessing a community-based diabetes prevention program in Sweden", *Health Promotion International*, vol. 17, no. 4, pp. 317-328.	Not called (whole) system approach/ working/ other
Andreyeva, T., Puhl, R. M., Brownell, K. D. 2008, "Changes in perceived weight discrimination among Americans, 1995-1996 through 2004-2006", *Obesity*, vol. 16, no. 5, pp. 1129-1134.	Not called (whole) system approach/ working/ other
Anon 2007, "Culturally sensitivity community-based interventions", *American Journal of Nursing*, vol. 107, no. 2, pp. 47-48.	Not called (whole) system approach/ working/ other
Aoun, S., Osseiran-Moisson, R., Collins, F., Newton, R., & Newton, M. 2009, "A Self-management Concept for Men at the Community Level: The 'Waist' Disposal Challenge", *Journal of Health Psychology*, vol. no. 5, no. pp. 663-674.	Not called (whole) system approach/ working/ other
Ärnlöv, J., Ingelsson, E., Sundström, J., & Lind, L. 2010, "Impact of body mass index and the metabolic syndrome on the risk of cardiovascular disease and death in middle-aged men", *Circulation*, vol. 121, no. 2, pp. 230-237.	Not called (whole) system approach/ working/ other
Ayas, N. T., Garshick, E., Lieberman, S. L., Wien, M. F., Tun, C., & Brown, R. 1999, "Breathlessness in spinal cord injury depends on injury level", *Journal of Spinal Cord Medicine*, vol. 22, no. 2, pp. 97-102.	Not called (whole) system approach/ working/ other

Q1 (WSA in theory) exclusion references	Reason
Aytekin, N. T., Pala, K., Irgil, E., Akis, N., & Aytekin, H. 2002, "Distribution of blood pressures in Gemlik District, north-west Turkey", *Health & Social Care in the Community*, vol. 10, no. 5, pp. 394-402.	Not called (whole) system approach/ working/ other
Bahrami, H., Bluemke, D. A., Kronmal, R., Bertoni, A. G., Lloyd-Jones, D. M., Shahar, E., Szklo, M., Lima, J. A.. 2008, "Novel metabolic risk factors for incident heart failure and their relationship with obesity: the MESA (Multi-Ethnic Study of Atherosclerosis) study", *Journal of the American College of Cardiology*, vol. 51, no. 18, pp. 1775-1783.	Not called (whole) system approach/ working/ other
Baker, I. R., Dennison, B. A., Boyer, P. S., Sellers, K. F., Russo, T. J., Sherwood, N. A. 2007, "An asset-based community initiative to reduce television viewing in New York state", *Preventive Medicine*, vol. 44, no. 5, pp. 437-441.	Not called (whole) system approach/ working/ other
Balagopal, P., Kamalamma, N., Patel, T. G., & Misra, R. 2008, "A community-based diabetes prevention and management education program in a rural village in India", *Diabetes Care*, vol. 31, no. 6, pp. 1097-1105.	Not called (whole) system approach/ working/ other
Barnard, N. D., Gloede, L., Cohen, J., Jenkins, D. J., Turner-McGrievy, G., Green, A. A., Ferdowsian, H., Barnard, N. D., H. 2009, "A low-fat vegan diet elicits greater macronutrient changes, but is comparable in adherence and acceptability, compared with a more conventional diabetes diet among individuals with type 2 diabetes", *Journal of the American Dietetic Association*, vol. 109, no. 2, pp. 263-272.	Not called (whole) system approach/ working/ other
Barroso, C. S., Cullum-Gomez, C., Hoelscher, D. M., Kelder, S. H., Murray, N. G. 2005, "Self-reported barriers to quality physical education by physical education specialists in Texas", *Journal of School Health*, vol. 75, no. 8, pp. 313-319	Potentially relevant for qualitative review
Bartfai, T., Waalen, J., & Buxbaum, J. N. 2007, "Adipose tissue as a modulator of clinical inflammation: does obesity reduce the prevalence of rheumatoid arthritis?", *Journal of Rheumatology*, vol. 34, no. 3, pp. 488-493.	Not called (whole) system approach/ working/ other
Bazzano, A. T., Zeldin, A. S., Diab, I. R., Garro, N. M., Allevato, N. A., Lehrer, D., WRC Project Oversight Team.2009, "The Healthy Lifestyle Change Program: a pilot of a community-based health promotion intervention for adults with developmental disabilities", *American Journal of Preventive Medicine*, vol. 37, no. 6 Suppl 1, p. S201-S208.	Not called (whole) system approach/ working/ other
Beaston-Blaakman, A., Shepard, D. S., Stone, N., & Shevitz, A. H. 2007, "Cost-effectiveness of clinical interventions for AIDS wasting", *AIDS Care*, vol. no. 8, no. pp. 996-1001.	Not called (whole) system approach/ working/ other

Q1 (WSA in theory) exclusion references	Reason
Behrendt, C. E., Wang, C., Wang, S., & Chou, P. 2008, "Re: "Hepatitis C virus infection and the development of type 2 diabetes in a community-based longitudinal study"... Wang CS, Wang ST, Yao WJ, et al. Hepatitis C virus infection and the development of type 2 diabetes in a community-based longitudinal study. Am J Epidemiol 2007;166:196-203", *American Journal of Epidemiology*, vol. 167, no. 6, pp. 751-753.	Not called (whole) system approach/ working/ other
Benedict, S., Campbell, M., Doolen, A., Rivera, I., Negussie, T., & Turner-McGrievy, G. 2007, "Seeds of hope: a model for addressing social and economic determinants of health in a women's obesity prevention project in two rural communities", *Journal of Women's Health (15409996)*, vol. 16, no. 8, pp. 1117-1125.	Not called (whole) system approach/ working/ other
Benyshek, D. C.2007, "The developmental origins of obesity and related health disorders--prenatal and perinatal factors. [Review] [97 refs]", *Collegium Antropologicum*, vol. 31, no. 1, pp. 11-17.	Not called (whole) system approach/ working/ other
Bergkvist, D., Hekmat, K., Svensson, T., Dahlberg, L.. 2009, "Obesity in orthopedic patients", *Surgery for Obesity & Related Diseases*, vol. 5, no. 6, pp. 670-672.	Not called (whole) system approach/ working/ other
Berry, D., Turner, M., Biederman, D., & Flanagan, O. 2009, "Benefits for Latino, African American, and White children and parents taught together in the same community-based weight management intervention", *Hispanic Health Care International*, vol. 7, no. 4, pp. 203-213.	Not called (whole) system approach/ working/ other
Bersamin, A., Hanni, K. D., Winkleby, M. A..2009, "Predictors of trying to lose weight among overweight and obese Mexican-Americans: a signal detection analysis", *Public Health Nutrition*, vol. 12, no. 1, pp. 64-73.	Not called (whole) system approach/ working/ other
Bjaras, G., Ahlbom, A., Alvarsson, M., Burstrom, B., Diderichsen, F., Efendic, S., Grill, V., Haglund, B. J., Norman, A., Persson, P., Svanstrom, L., Tillgren, S. P., Ullen, H., & Ostenson, C. 1997, "Strategies and methods for implementing a community-based diabetes primary prevention program in Sweden", *Health Promotion International*, vol. 12, no. 2, pp. 151-161.	Not called (whole) system approach/ working/ other
Blanker, M. H., Bohmen, A. M., Groeneveld, F. P. M., Bernsen, R. M. D., Prins, A., Thomas, S., & Bosch, J. L. H. 2001, "Correlates for erectile and ejaculatory dysfunction in older Dutch men: a community-based study", *Journal of the American Geriatrics Society*, vol. 49, no. 4, pp. 436-442.	Not called (whole) system approach/ working/ other
Booth, M. L., Gibbons, K., Green, J., Haikerwal, A., O'Neill, C., Raman, S., & Waters, E. 2003, "Social, cultural and environmental influences on child activity and eating in Australian migrant communities", *Child: Care*, vol. pp.441	Potentially relevant for qualitative review

Q1 (WSA in theory) exclusion references	Reason
Bradley, S., Beckham, S., Washburn, A.2009, "The Hawai'i Community Resource Obesity Project: results from the Lifestyle Enhancement Program", *Hawaii Medical Journal* , vol. 68, no. 4, pp. 80-84.	Not called (whole) system approach/ working/ other
Bramble, J., Cornelius, L. J., & Simpson, G. 2009, "Eating as a cultural expression of caring among Afro	Potentially relevant for qualitative review
Brook, J. S., Zhang, C., Saar, N. S., Brook, D. W.. 2009, "Psychosocial predictors, higher body mass index, and aspects of neurocognitive dysfunction", *Perceptual & Motor Skills*, vol. 108, no. 1, pp. 181-195.	Not called (whole) system approach/ working/ other
Brown, H. S., III, Perez, A., Li, Y. P., Hoelscher, D. M., Kelder, S. H., Rivera, R. 2007, "The cost-effectiveness of a school-based overweight program", *International Journal of Behavioral Nutrition & Physical Activity*, vol. 4, p. 47.	Potentially relevant for cost-effectiveness review
Brown, W. J., Lee, C., & Oyomopito, R. 1996, "Effectiveness of a bilingual heart health program for Greek-Australian women", *Health Promotion International; 11 (2) Jun 96* p. -25.	Not called (whole) system approach/ working/ other
Bunce, A. E., Griest, S., Howarth, L. C., Beemsterboer, P., Cameron, W., & Carney, P. A. 2009, "Educating youth about health and science using a partnership between an academic medical center and community-based science museum", *Journal of Community Health*, vol. 34, no. 4, pp. 262-271.	Not called (whole) system approach/ working/ other
Cadmus, L., Patrick, M. B., Maciejewski, M. L., Topolski, T., Belza, B., & Patrick, D. L. 2010, "Community-based aquatic exercise and quality of life in persons with osteoarthritis", *Medicine & Science in Sports & Exercise*, vol. 42, no. 1, pp. 8-16.	Not called (whole) system approach/ working/ other
Callahan, C. M., Stump, T. E., Stroupe, K. T., & Tierney, W. M. 1998, "Cost of health care for a community of older adults in an urban academic healthcare system", *Journal of the American Geriatrics Society*, vol. 46, no. 11, pp. 1371-1378.	Not called (whole) system approach/ working/ other
Campbell, P. & Conway, A. 2005, "Developing a local public health infrastructure: the Maine Turning Point experience", *Journal of Public Health Management & Practice*, vol. 11, no. 2, pp. 158-165.	Not called (whole) system approach/ working/ other
Carroll, S., Cooke, C. B., Butterly, R. J., Moxon, J. W. D., Moxon, J. W. A., & Dudfield, M. 2000, "Waist circumference in the assessment of obesity and associated risk factors in coronary artery disease patients", *Coronary Health Care*, vol. 4, no. 4, pp. 179-187.	Not called (whole) system approach/ working/ other
Carter-Edwards, L., Bastian, L. A., Schultz, M., Amamoo, M. A., Ostbye, T.2009, "An internet-based weight loss intervention initiated by a newspaper", *Preventing Chronic Disease*, vol. 6, no. 3, p. A101.	Not called (whole) system approach/ working/ other

Q1 (WSA in theory) exclusion references	Reason
Cerin, E., Barnett, A., & Baranowski, T. 2009, "Testing theories of dietary behavior change in youth using the mediating variable model with intervention programs", *Journal of Nutrition Education & Behavior*, vol. 41, no. 5, pp. 309-318.	Not called (whole) system approach/ working/ other
Chan, C.2008, "Childhood obesity and adverse health effects in Hong Kong. [Review] [21 refs]", *Obesity Reviews*, vol. 9 Suppl 1, pp. 87-90.	Not called (whole) system approach/ working/ other
Chang, M. W., Brown, R., Nitzke, S. 2009, "Participant recruitment and retention in a pilot program to prevent weight gain in low-income overweight and obese mothers", *BMC Public Health*, vol. 9, p. 424.	Not called (whole) system approach/ working/ other
Chang, P. C., Li, T. C., Wu, M. T., Liu, C. S., Li, C. I., Chen, C. C., Lin, W. Y., Yang, S. Y., Lin 2008, "Association between television viewing and the risk of metabolic syndrome in a community-based population", *BMC Public Health*, vol. 8, p. 193.	Not called (whole) system approach/ working/ other
Chang, Y., Woo, H. Y., Sung, E., Kim, C. H., Kang, H., Lu, Y. S., Park, K. H. 2008, "Prevalence of acanthosis nigricans in relation to anthropometric measures: community-based cross-sectional study in Korean pre-adolescent school children", *Pediatrics International*, vol. 50, no. 5, pp. 667-673.	Not called (whole) system approach/ working/ other
Chen, W., Bao, W., Begum, S., Elkasabany, A., Srinivasan, S. R., & Berenson, G. S. 2000, "Age-related patterns of the clustering of cardiovascular risk variables of Syndrome X from childhood to young adulthood in a population made up of Black and White subjects: the Bogalusa Heart Study", *Diabetes*, vol. 49, no. 6, pp. 1042-1049.	Not called (whole) system approach/ working/ other
Chen, W., Srinivasan, S. R., Elkasabany, A., & Berenson, G. S. 1999, "Cardiovascular risk factors clustering features of insulin resistance syndrome (Syndrome X) in a biracial (black-white) population of children, adolescents, and young adults: the Bogalusa Heart Study", *American Journal of Epidemiology*, vol. 150, no. 7, pp. 667-675.	Not called (whole) system approach/ working/ other
Chhabra, P., Chhabra, S. K.2007, "Distribution and determinants of body mass index of non-smoking adults in Delhi, India", *Journal of Health, Population & Nutrition*, vol. 25, no. 3, pp. 294-301.	Not called (whole) system approach/ working/ other
Chia, S. E., Lau, W. K., Chin, C. M., Tan, J., Ho, S. H., Lee, J., Cheng, C."Effect of ageing and body mass index on prostate-specific antigen levels among Chinese men in Singapore from a community-based study", *BJU International*, vol. 103, no. 11, pp. 1487-1491.	Not called (whole) system approach/ working/ other
Chien, K. L., Hsu, H. C., Su, T. C., Chang, W. T., Chen, P. C., Chen, M. F., Lee, Y. T. 2008, "Sibling and parental history in type 2 diabetes risk among ethnic Chinese: the Chin-Shan Community Cardiovascular Cohort Study", *European Journal of Cardiovascular Prevention & Rehabilitation*, vol. 15, no. 6, pp. 657-662.	Not called (whole) system approach/ working/ other

Q1 (WSA in theory) exclusion references	Reason
Chittari, M. V., Bush, K., Bellary, S., Kumar, S., Barnett, A. H., & O'Hare, J. P. 2007, "Microvascular and cardiovascular disease in South Asians: the emerging challenge", *Practical Diabetes International*, vol. 24, no. 6, pp. 328-333.	Not called (whole) system approach/ working/ other
Chorley, J. N., Cianca, J. C., Divine, J. G., & Hew, T. D. 2002, "Baseline injury risk factors for runners starting a marathon training program", *Clinical Journal of Sport Medicine*, vol. 12, no. 1, pp. 18-24.	Not called (whole) system approach/ working/ other
Chu, N. 2010, "Strategies for prevention and treatment of obesity among children in Taiwan", *Research in Sports Medicine*, vol. 18, no. 1, pp. 37-49.	Not called (whole) system approach/ working/ other
Chuang, S. Y., Bai, C. H., Chen, W. H., Lien, L. M., Pan, W. H. 2009, "Fibrinogen independently predicts the development of ischemic stroke in a Taiwanese population: CVDFACTS study", *Stroke*, vol. 40, no. 5, pp. 1578-1584.	Not called (whole) system approach/ working/ other
Chugh, S. S., Reinier, K., Teodorescu, C., Evanado, A., Kehr, E., Al, S. M., Mariani, R., Gunson, K., & Jui, J. 2008, "Epidemiology of sudden cardiac death: clinical and research implications", *Progress in Cardiovascular Diseases*, vol. 51, no. 3, pp. 213-229.	Not called (whole) system approach/ working/ other
Cliff, D. P., Wilson, A., Okely, A. D., Mickle, K. J., & Steele, J. R. 2007, "Feasibility of SHARK: a physical activity skill-development program for overweight and obese children", *Journal of Science & Medicine in Sport*, vol. 10, no. 4, pp. 263-267.	Not called (whole) system approach/ working/ other
Collings, A. S., Saules, K. K., Saad, L. R.2008, "A prospective study of predictors of successful weight maintenance by women enrolled in community-based weight-loss programs", *Eating & Weight Disorders: EWD*, vol. 13, no. 1, pp. 38-47.	Not called (whole) system approach/ working/ other
Cournot, M., Grandjean, H., Lauwers-Cances, V., Nourhashemi, F., Reynish, W., Riviere, D., Rolland, Y., & Vellas, B. 2003, "Sarcopenia, calf circumference, and physical function of elderly women: a cross-sectional study", *Journal of the American Geriatrics Society; 51 (8) Aug 2003* p. -1124.	Not called (whole) system approach/ working/ other
Covic, T., Roufeil, L., Dziurawiec, S. 2007, "Community beliefs about childhood obesity: its causes, consequences and potential solutions", *Journal of Public Health*, vol. 29, no. 2, pp. 123-131.	Not called (whole) system approach/ working/ other
Cowell, J. M., Montgomery, A. C., & Talashek, M. L. 1989, "Cardiovascular risk assessment in school-age children: a school and community partnership in health promotion", *Public Health Nursing*, vol. 6, no. 2, pp. 67-74.	Not called (whole) system approach/ working/ other
Crawford, D. 2002, "Population strategies to prevent obesity", *British Medical Journal; 324 (7367) 5 Oct 2002* p. -9.	Not called (whole) system approach/ working/ other

Q1 (WSA in theory) exclusion references	Reason
Cremonini, F., Camilleri, M., Clark, M. M., Beebe, T. J., Locke, G. R., Zinsmeister, A. R., Herrick, L. M., Talley, N. J.2009, "Associations among binge eating behavior patterns and gastrointestinal symptoms: a population-based study", *International Journal of Obesity*, vol. 33, no. 3, pp. 342-353.	Not called (whole) system approach/ working/ other
Cuevas, A., Alvarez, V., Olivos, C.2009, "The emerging obesity problem in Latin America. [Review] [105 refs]", *Expert Review of Cardiovascular Therapy*, vol. 7, no. 3, pp. 281-288.	Not called (whole) system approach/ working/ other
Cullen, M. W., Ebbert, J. O., Vierkant, R. A., Wang, A. H., & Cerhan, J. R. 2009, "No interaction of body mass index and smoking on diabetes mellitus risk in elderly women", *Preventive Medicine*, vol. 48, no. 1, pp. 74-79.	Not called (whole) system approach/ working/ other
Cullum-Gomez, C., Barroso, C. S., Hoelscher, D. M., Ward, J. L., Kelder, S. H. 2006, "Factors influencing implementation of the Coordinated Approach to Child Health (CATCH) Eat Smart School Nutrition Program in Texas", *Journal of the American Dietetic Association*, vol. 106, no. 12, pp. 2039-2044.	Potentially relevant for effectiveness review
Culos-Reed, S. N., Doyle-Baker, P. K., Paskevich, D., Devonish, J. A., Reimer, R. A.. 2007, "Evaluation of a community-based weight control program", *Physiology & Behavior*, vol. 92, no. 5, pp. 855-860.	Not called (whole) system approach/ working/ other
Cummings, D. M., Henes, S., Kolasa, K. M., Olsson, J., Collier, D., 2008, "Insulin resistance status: predicting weight response in overweight children", *Archives of Pediatrics & Adolescent Medicine*, vol. 162, no. 8, pp. 764-768.	Not called (whole) system approach/ working/ other
Curtis, L., Brown, Z. G., Gill, J. E. 2008, "Sisters Together: Move More, Eat Better: a community-based health awareness program for African-American women", *Journal of National Black Nurses Association*, vol. 19, no. 2, pp. 59-64.	Not called (whole) system approach/ working/ other
Curtis, P. 2008, "The experiences of young people with obesity in secondary school: some implications for the healthy school agenda", *Health & Social Care in the Community*, vol. 16, no. 4, pp. 410-418.	Not called (whole) system approach/ working/ other
Daniel, M., Cargo, M. D., Lifshay, J., & Green, L. W. 2004, "Cigarette smoking, mental health and social support: data from a Northwestern First Nation", *Canadian Journal of Public Health*, vol. 95, no. 1, pp. 45-50.	Not called (whole) system approach/ working/ other
Darga, L. L., Magnan, M., Mood, D., Hryniuk, W. M., DiLaura, N. M., Djuric, Z. 2007, "Quality of life as a predictor of weight loss in obese, early-stage breast cancer survivors", *Oncology Nursing Forum*, vol. 34, no. 1, pp. 86-92.	Not called (whole) system approach/ working/ other

Q1 (WSA in theory) exclusion references	Reason
Davis, J. M., III, Roger, V. L., Crowson, C. S., Kremers, H. M., Therneau, T. M., & Gabriel, S. E. 2008, "The presentation and outcome of heart failure in patients with rheumatoid arthritis differs from that in the general population", *Arthritis & Rheumatism*, vol. 58, no. 9, pp. 2603-2612.	Not called (whole) system approach/ working/ other
Davis, M. M., McGonagle, K., Schoeni, R. F., Stafford, F. 2008, "Grandparental and parental obesity influences on childhood overweight: implications for primary care practice", *Journal of the American Board of Family Medicine: JABFM*, vol. 21, no. 6, pp. 549-554.	Not called (whole) system approach/ working/ other
Davis, T. M., Bruce, D. G., Davis, W. A.2007, "Prevalence and prognostic implications of the metabolic syndrome in community-based patients with type 1 diabetes: the Fremantle Diabetes Study", *Diabetes Research & Clinical Practice*, vol. 78, no. 3, pp. 412-417.	Not called (whole) system approach/ working/ other
de Boer, I.H, Katz, R., Fried, L. F., Ix, J. H., Luchsinger, J., Sarnak, M. J., Shlipak, M. G., Siscovick, D. S., & Kestenbaum, B. 2009, "Obesity and change in estimated GFR among older adults", *American Journal of Kidney Diseases*, vol. 54, no. 6, pp. 1043-1052.	Not called (whole) system approach/ working/ other
De, S., Small, J., & Baur, L. A. 2008, "Overweight and obesity among children with developmental disabilities", *Journal of Intellectual & Developmental Disability*, vol. 33, no. 1, pp. 43-48.	Not called (whole) system approach/ working/ other
DeBate, R. D., McDermott, R. J., Baldwin, J. A., Bryant, C. A., Courtney, A. H., Hogeboom, D. L., Nickelson, J., Phiilips, L. M., & Alfonso, M. L. 2009, "Factors associated with tweens' intentions to sustain participation in an innovative community-based physical activity intervention", *American Journal of Health Education*, vol. 40, no. 3, pp. 130-139.	Not called (whole) system approach/ working/ other
Devine, C. M., Nelson, J. A., Chin, N., Dozier, A., Fernandez, I. D., Devine, C. M., Nelson, J. A., Chin, N., Dozier, A., & Fernandez, I. D. 2007, ""Pizza is cheaper than salad": assessing workers' views for an environmental food intervention", *Obesity*, vol. 15 Suppl 1, pp. 57S-68S.	Not called (whole) system approach/ working/ other
Dick, J. J. 2004, "Weight loss interventions for adult obesity: evidence for practice", *Worldviews on Evidence-Based Nursing*, vol. 1, no. 4, pp. 209-215.	Not called (whole) system approach/ working/ other
Dillemans, B., Sakran, N., Van, C. S., Sablon, T., Defoort, B., Van, D. E., Akin, F., Moreels, N., Lambert, S., Mulier, J., Date, R., Vandelanotte, M., Feryn, T., Proot, L.2009, "Standardization of the fully stapled laparoscopic Roux-en-Y gastric bypass for obesity reduces early immediate postoperative morbidity and mortality: a single center study on 2606 patients", *Obesity Surgery*, vol. 19, no. 10, pp. 1355-1364.	Not called (whole) system approach/ working/ other

Q1 (WSA in theory) exclusion references	Reason
Ding, J., Kritchevsky, S. B., Newman, A. B., Taaffe, D. R., Nicklas, B. J., Visser, M., Lee, J. S., Nevitt, M., Tylavsky, F. A., Rubin, S. M., Pahor, M., & Harris, T. B. 2007, "Effects of birth cohort and age on body composition in a sample of community-based elderly", *American Journal of Clinical Nutrition*, vol. 85, no. 2, pp. 405-411.	Not called (whole) system approach/ working/ other
Dodani, S., Mistry, R., Farooqi, M., Khwaja, A., Qureshi, R., & Kazmi, K. 2004, "Prevalence and awareness of risk factors and behaviours of coronary heart disease in an urban population of Karachi, the largest city of Pakistan: a community survey", *Journal of Public Health*, vol. 26, no. 3, pp. 245-250.	Not called (whole) system approach/ working/ other
Dohm, F. A., Fairburn, C. G., Kraemer, H. C., Pike, K. M., Striegel-Moore, R. H., & Wilfley, D. E. 2005, "Toward an understanding of risk factors for binge-eating disorder in Black and White women: a community-based case-control study", *Psychological Medicine; 35 (6) Jun 2005* p. -917.	Not called (whole) system approach/ working/ other
Dooris, M. & Doherty, S. 2010, "Healthy universities-time for action: a qualitative research study exploring the potential for a national programme", *Health Promotion International*, vol. 25, no. 1, pp. 94-106.	Duplicate
Dooris, M. 2009, "Holistic and sustainable health improvement: the contribution of the settings-based approach to health promotion", *Perspectives in Public Health*, vol. 129, no. 1, pp. 29-36.	Duplicate
Dowse, G. K., Gareeboo, H., Alberti, K. G. M. M., & Zimmet, P. 1995, "Changes in population cholesterol concentrations and other cardiovascular risk factor levels after five years of the non-communicable disease intervention programme in Mauritius", *British Medical Journal; 311 (7015) 11 Nov 95* p. -9.	Not called (whole) system approach/ working/ other
Dunlop, A. L., Leroy, Z., Trowbridge, D. L., & Kibbe, D. L. 2007, "Improving providers' assessment and management of childhood overweight: results of an intervention", *Ambulatory Pediatrics*, vol. 7, no. 6, pp. 453-458.	Not called (whole) system approach/ working/ other
Eakin, E., Brown, W., Schofield, G., Mummery, K., & Reeves, M. 2007, "General practitioner advice on physical activity--who gets it?", *American Journal of Health Promotion*, vol. 21, no. 4, pp. 225-229.	Not called (whole) system approach/ working/ other
Economos, C. D., Folta, S. C., Goldberg, J., Hudson, D., Collins, J., Baker, Z., Lawson, E., Nelson, M. 2009, "A community-based restaurant initiative to increase availability of healthy menu options in Somerville, Massachusetts: Shape Up Somerville", *Preventing Chronic Disease*, vol. 6, no. 3, p. A102	Potentially relevant for qualitative review

Q1 (WSA in theory) exclusion references	Reason
Economos, C. D., Sacheck, J. M., Kwan Ho, C. K., Irizarry, L., Guillemont, J., Collins, J. J., Hyatt, R. R.2008, "School-based behavioral assessment tools are reliable and valid for measurement of fruit and vegetable intake, physical activity, and television viewing in young children.[Erratum appears in J Am Diet Assoc. 2008 Nov;108(11):1936 Note: Irizzary, Laura [corrected to Irizarry, Laura]]", *Journal of the American Dietetic Association*, vol. 108, no. 4, pp. 695-701.	Not called (whole) system approach/ working/ other
Eichler, K., Zoller, M., Steurer, J., Bachmann, L. M.2007, "Cognitive-behavioural treatment for weight loss in primary care: a prospective study", *Swiss Medical Weekly*, vol. 137, no. 35-36, pp. 489-495.	Not called (whole) system approach/ working/ other
Englert, H. S., Diehl, H. A., Greenlaw, R. L., Willich, S. N., Aldana, S. 2007, "The effect of a community-based coronary risk reduction: the Rockford CHIP", *Preventive Medicine*, vol. 44, no. 6, pp. 513-519.	Not called (whole) system approach/ working/ other
Ennen, K. A. 2004, "Knowledge of stroke warning symptoms and risk factors: variations by rural and urban categories", *Journal* p. -NaN.	Not called (whole) system approach/ working/ other
Erinosho, T. & Dixon, L. B. 2007, "Involvement of nutrition and dietetic students in a community-based research project", *Topics in Clinical Nutrition*, vol. 22, no. 4, pp. 367-378.	Not called (whole) system approach/ working/ other
Esther, M., Grace, N., Joan, K., & Katarina, H. 2003, "Preparing nurses to face the pandemic of diabetes mellitus: a literature review", *Journal of Advanced Nursing; 41 (5) Mar 2003* p. -434.	Not called (whole) system approach/ working/ other
Everett, B. M., Glynn, R. J., Danielson, E., & Ridker, P. M. 2008, "Combination therapy versus monotherapy as initial treatment for stage 2 hypertension: a prespecified subgroup analysis of a community-based, randomized, open-label trial", *Clinical Therapeutics*, vol. 30, no. 4, pp. 661-673.	Not called (whole) system approach/ working/ other
Fan, J. G., Farrell, G. C., Asia-Pacific Working Party for Prevention of Hepatocellular Carcinoma. 2009, "Prevention of hepatocellular carcinoma in nonviral-related liver diseases. [Review] [86 refs]", *Journal of Gastroenterology & Hepatology*, vol. 24, no. 5, pp. 712-719.	Not called (whole) system approach/ working/ other
Fan, J. G., Saibara, T., Chitturi, S., Kim, B. I., Sung, J. J., Chutaputti, A., Asia-Pacific Working Party for NAFLD.2007, "What are the risk factors and settings for non-alcoholic fatty liver disease in Asia-Pacific?", *Journal of Gastroenterology & Hepatology*, vol. 22, no. 6, pp. 794-800.	Not called (whole) system approach/ working/ other
Faucher, M. A. & Mobley, J. 2010, "Brief Report: A Community Intervention on Portion Control Aimed at Weight Loss in Low-Income Mexican American Women", *Journal of Midwifery & Women's Health*, vol. no. 1, no. pp. 60-64, p. -Feb.	Not called (whole) system approach/ working/ other
Faucher, M. A. 2008, "From the American College of Nurse-Midwives: Promotoras De Salud and Portion Control: A Community Intervention Aimed at Weight Loss in Low-Income Mexican-American Women", *Journal of Midwifery & Women's Health*, vol. no. 5, no. pp. 482, p. -Oct.	Not called (whole) system approach/ working/ other

Q1 (WSA in theory) exclusion references	Reason
Feeney, L., Kelly, F., Lee, J., Kelly, E., McLaughlin, S., & O'Boyle, J. H. 2007, "Point prevalence of diabetes, obesity, hyperlipidaemia, hypertension and smoking in outpatients on clozapine", *Irish Journal of Psychological Medicine*, vol. 24, no. 2, pp. 59-62.	Not called (whole) system approach/ working/ other
Feinstein, M., Liu, K., Ning, H., Fitchett, G., & Lloyd-Jones, D. M. 2010, "Burden of cardiovascular risk factors, subclinical atherosclerosis, and incident cardiovascular events across dimensions of religiosity: the multi-ethnic study of atherosclerosis", *Circulation*, vol. 121, no. 5, pp. 659-667.	Not called (whole) system approach/ working/ other
Fernald, L. C., Neufeld, L. M.2007, "Overweight with concurrent stunting in very young children from rural Mexico: prevalence and associated factors", *European Journal of Clinical Nutrition*, vol. 61, no. 5, pp. 623-632.	Not called (whole) system approach/ working/ other
Filbert, E., Chesser, A., Hawley, S. R., & St Romain, T. 2009, "Community-based participatory research in developing an obesity intervention in a rural county", *Journal of Community Health Nursing*, vol. 26, no. 1, pp. 35-43.	Not called (whole) system approach/ working/ other
Findholt, N. & Grogoitti, V. 2007, "Lessons from a rural community-based participatory research partnership", *Communicating Nursing Research*, vol. 40, pp. 491-492.	Not called (whole) system approach/ working/ other
Findholt, N., Peters, J., Michael, Y., & Davis, M. 2008, "Community based rural health research: environmental influences on activity and diets: a rural photovoice project", *Communicating Nursing Research*, vol. 41, pp. 103-104.	Not called (whole) system approach/ working/ other
Finkelstein, E. A., Khavjou, O. A., Mobley, L. R., Haney, D. M., & Will, J. C. 2004, "Racial/ethnic disparities in coronary heart disease risk factors among "Wisewoman" enrollees", *Journal of Women's Health (15409996)*, vol. 13, no. 5, pp. 503-519.	Not called (whole) system approach/ working/ other
Fogarty, A. W., Glancy, C., Jones, S., Lewis, S. A., McKeever, T. M., Britton, J. R. 2008, "A prospective study of weight change and systemic inflammation over 9 y", *American Journal of Clinical Nutrition*, vol. 87, no. 1, pp. 30-35.	Not called (whole) system approach/ working/ other
Folta, S. C., Lichtenstein, A. H., Seguin, R. A., Goldberg, J. P., Kuder, J. F., & Nelson, M. E. 2009, "The StrongWomen	Potentially relevant for effectiveness review
Fonarow, G. C. 2007, "A practical approach to reducing cardiovascular risk factors. [Review] [67 refs]", *Reviews in Cardiovascular Medicine*, vol. 8 Suppl 4, p. S25-S36.	Not called (whole) system approach/ working/ other
Fowler-Brown, A. G., Bennett, G. G., Goodman, M. S., Wee, C. C., Corbie-Smith, G. M., James, S. A. 2009, "Psychosocial stress and 13-year BMI change among blacks: the Pitt County Study", *Obesity*, vol. 17, no. 11, pp. 2106-2109.	Not called (whole) system approach/ working/ other

Q1 (WSA in theory) exclusion references	Reason
Franzini, L., Elliott, M. N., Cuccaro, P., Schuster, M., Gilliland, M. J., Grunbaum, J. A., Franklin, F., & Tortolero, S. R. 2009, "Influences of physical and social neighborhood environments on children's physical activity and obesity", *American Journal of Public Health*, vol. 99, no. 2, pp. 271-279.	Not called (whole) system approach/ working/ other
Freiberg, M. S., Pencina, M. J., D'Agostino, R. B., Lanier, K., Wilson, P. W., Vasan, R. S. 2008, "BMI vs. waist circumference for identifying vascular risk", *Obesity*, vol. 16, no. 2, pp. 463-469.	Not called (whole) system approach/ working/ other
Friedrich, M. J. 2007, "Researchers address childhood obesity through community-based programs", *JAMA: Journal of the American Medical Association*, vol. 298, no. 23, pp. 2728-2731.	Not called (whole) system approach/ working/ other
Fujimura, T., Nakamoto, M., Shirono, S., Morita, H., Suizu, K., Nishimura, Y., & Harada, N. 2004, "Effectiveness of group education for diabetes prevention measured by change in hemoglobin A1c", *International Medical Journal*, vol. 11, no. 2, pp. 111-115.	Not called (whole) system approach/ working/ other
Gale, L., Naqvi, H., Russ, L.2009, "Asthma, smoking and BMI in adults with intellectual disabilities: a community-based survey", *Journal of Intellectual Disability Research*, vol. 53, no. 9, pp. 787-796.	Not called (whole) system approach/ working/ other
Gallicchio, L., Chang, H. H., Christo, D. K., Thuita, L., Huang, H. Y., Strickland, P., Ruczinski, I., Clipp, S., Helzlsouer, K. J. 2009, "Single nucleotide polymorphisms in obesity-related genes and all-cause and cause-specific mortality: a prospective cohort study", *BMC Medical Genetics*, vol. 10, p. 103.	Not called (whole) system approach/ working/ other
Gance-Cleveland, B. & Wardbegnoche, W. 2008, "Community-based participatory research: obesity prevention", *Communicating Nursing Research*, vol. 41, pp. 261-262.	Not called (whole) system approach/ working/ other
Gao, W., Dong, Y., Nan, H., Tuomilehto, J., & Qiao, Q. 2008, "The likelihood of diabetes based on the proposed definitions for impaired fasting glucose", *Diabetes Research & Clinical Practice*, vol. 79, no. 1, pp. 151-156.	Not called (whole) system approach/ working/ other
Gao, Y., Griffiths, S., Chan, E. Y.2008, "Community-based interventions to reduce overweight and obesity in China: a systematic review of the Chinese and English literature. [Review] [48 refs]", *Journal of Public Health*, vol. 30, no. 4, pp. 436-448.	Not called (whole) system approach/ working/ other
García, R., Bracho, A., Cantero, P., & Glenn, B. A. 2009, ""Pushing" physical activity, and justice", *Preventive Medicine*, vol. 49, no. 4, pp. 330-334.	Not called (whole) system approach/ working/ other
Gentile, D. A., Welk, G., Eisenmann, J. C., Reimer, R. A., Walsh, D. A., Russell, D. W., Callahan, R., Walsh, M., Strickland, S., Fritz, K. 2009, "Evaluation of a multiple ecological level child obesity prevention program: Switch what you Do, View, and Chew", *BMC Medicine*, vol. 7, p. 49.	Duplicate

Q1 (WSA in theory) exclusion references	Reason
George, A., Eisenstein, D., Wegienka, G. 2009, "Analysis of the impact of body mass index on the surgical outcomes after robot-assisted laparoscopic myomectomy", *Journal of Minimally Invasive Gynecology*, vol. 16, no. 6, pp. 730-733.	Not called (whole) system approach/ working/ other
Gesell, S. B., Reynolds, E. B., Ip, E. H., Fenlason, L. C., Pont, S. J., Poe, E. K., & Barkin, S. L. 2008, "Social influences on self-reported physical activity in overweight Latino children", *Clinical Pediatrics*, vol. 47, no. 8, pp. 797-803.	Not called (whole) system approach/ working/ other
Ghosh, A. 2008, "Comparison of risk variables associated with the metabolic syndrome in pre- and postmenopausal Bengalee women", *Cardiovascular Journal of Africa*, vol. 19, no. 4, pp. 183-187.	Not called (whole) system approach/ working/ other
Gill, T. P., Baur, L. A., Bauman, A. E., Steinbeck, K. S., Storlien, L. H., Fiatarone Singh, M. A., Brand-Miller, J. C., Colagiuri, S., Caterson, I. D. 2009, "Childhood obesity in Australia remains a widespread health concern that warrants population-wide prevention programs. [Review] [23 refs]", *Medical Journal of Australia*, vol. 190, no. 3, pp. 146-148.	Not called (whole) system approach/ working/ other
Goh, Y., Bogart, L. M., Sipple	Potentially relevant for qualitative review
Goldberg, J. P., Collins, J. J., Folta, S. C., McLarney, M. J., Kozower, C., Kuder, J., Clark, V., Economos, C. D. 2009, "Retooling food service for early elementary school students in Somerville, Massachusetts: the Shape Up Somerville experience", *Preventing Chronic Disease*, vol. 6, no. 3, p. A103	Potentially relevant for qualitative review
Goldfinger, J. Z., Arniella, G., Wylie-Rosett, J., & Horowitz, C. R. 2008, "Project HEAL: peer education leads to weight loss in Harlem", *Journal of Health Care for the Poor & Underserved*, vol. 19, no. 1, pp. 180-193.	Not called (whole) system approach/ working/ other
Gombosi, R. L., Olasin, R. M., Bittle, J. L.2007, "Tioga County Fit for Life: a primary obesity prevention project", *Clinical Pediatrics*, vol. 46, no. 7, pp. 592	Potentially relevant for effectiveness review
Goodwin, R. D., Sourander, A., Duarte, C. S., Niemela, S., Multimaki, P., Nikolakaros, G., Helenius, H., Piha, J., Kumpulainen, K., Moilanen, I., Tamminen, T., & Almqvist, F. 2009, "Do mental health problems in childhood predict chronic physical conditions among males in early adulthood? Evidence from a community-based prospective study", *Psychological Medicine*, vol. no. 2, no. pp. 301-311.	Not called (whole) system approach/ working/ other
Green, J., Waters, E., Haikerwal, A., O'Neill, C., Raman, S., Booth, M. L., & Gibbons, K. 2003, "Social, cultural and environmental influences on child activity and eating in Australian migrant communities", *Child: Care, Health & Development*, vol. 29, no. 6, pp. 441	Potentially relevant for qualitative review

Q1 (WSA in theory) exclusion references	Reason
Greeno, C. G., Jackson, C., Williams, E. L., & Fortmann, S. P. 1998, "The effect of perceived control over eating on the life satisfaction of women and men: results from a community sample", *International Journal of Eating Disorders*, vol. 24, no. 4, pp. 415-420.	Not called (whole) system approach/ working/ other
Gregorio, D. I., DeChello, L. M., & Segal, J. 2008, "Service learning within the University of Connecticut Master of Public Health Program", *Public Health Reports*, vol. 123, pp. 44-53.	Not called (whole) system approach/ working/ other
Guerrero, R. T., Paulino, Y. C., Novotny, R., Murphy, S. P. 2008, "Diet and obesity among Chamorro and Filipino adults on Guam", *Asia Pacific Journal of Clinical Nutrition*, vol. 17, no. 2, pp. 216-222.	Not called (whole) system approach/ working/ other
Guerrero-Romero, F., Violante, R., Rodriguez-Moran, M. 2009, "Distribution of fasting plasma glucose and prevalence of impaired fasting glucose, impaired glucose tolerance and type 2 diabetes in the Mexican paediatric population", *Paediatric and Perinatal Epidemiology*, vol. 23, no. 4, pp. 363-369.	Not called (whole) system approach/ working/ other
Gunn, J., McCallum, Z., Sanci, L., Gerner, B., Harris, C., & Wake, M. 2008, "What do GPs get out of participating in research? Experience of the LEAP trial", *Australian Family Physician*, vol. 37, no. 5, pp. 372-377.	Not called (whole) system approach/ working/ other
Gupta, N. & Kochar, G. K. 2009, "Dietary and socio-economic factors associated with obesity in North Indian population", *Internet Journal of Health*, vol. 9, no. 1, p. -NaN.	Not called (whole) system approach/ working/ other
Gupta, R., Kaul, V., Bhagat, N., Agrawal, M., Gupta, V. P., Misra, A., Vikram, N. K. 2007, "Trends in prevalence of coronary risk factors in an urban Indian population: Jaipur Heart Watch-4", *Indian Heart Journal*, vol. 59, no. 4, pp. 346-353.	Not called (whole) system approach/ working/ other
Guthrie, L. C., Butler, S. C., & Ward, M. M. 2009, "Time perspective and socioeconomic status: a link to socioeconomic disparities in health?", *Social Science & Medicine*, vol. 68, no. 12, pp. 2145-2152.	Not called (whole) system approach/ working/ other
Hach, I., Ruhl, U. E., Klose, M., Klotsche, J., Kirch, W., Jacobi, F. 2007, "Obesity and the risk for mental disorders in a representative German adult sample", *European Journal of Public Health*, vol. 17, no. 3, pp. 297-305.	Not called (whole) system approach/ working/ other
Haire-Joshu, D., Auslander, W. F., Houston, C. A., & Williams, J. H. 1999, "Staging of dietary patterns among African American women", *Health Education & Behavior*, vol. 26, no. 1, pp. 90-103.	Not called (whole) system approach/ working/ other
Hale, J. V., Burke, G. C., & Arias-Cantu, M. 2004, "Diabetes in Texas: policy implications", *Texas Journal of Rural Health*, vol. 22, no. 1, pp. 42-50.	Not called (whole) system approach/ working/ other

Q1 (WSA in theory) exclusion references	Reason
Hall, M. H., Muldoon, M. F., Jennings, J. R., Buysse, D. J., Flory, J. D., Manuck, S. B. 2008, "Self-reported sleep duration is associated with the metabolic syndrome in midlife adults", *Sleep*, vol. 31, no. 5, pp. 635-643.	Not called (whole) system approach/ working/ other
Hanni, K. D., Garcia, E., Ellemberg, C., & Winkleby, M. 2009, "Steps to a Healthier Salinas: targeting the taqueria: implementing healthy food options at Mexican American restaurants", *Health Promotion Practice*, vol. 10, no. 2, p. 91S-NaN.	Not called (whole) system approach/ working/ other
Hanni, K. D., Garcia, E., Ellemberg, C., & Winkleby, M. 2009, "Steps to a Healthier Salinas", *Health Promotion Practice*, vol. no. 2 Suppl, no. pp. 91S-99S.	Not called (whole) system approach/ working/ other
Hanni, K. D., Garcia, E., Ellemberg, C., Winkleby, M. 2009, "Targeting the taqueria: implementing healthy food options at Mexican American restaurants", *Health Promotion Practice*, vol. 10, no. 2 Suppl, pp. 91S	Duplicate
Harris, M. I. 1998, "Diabetes in America: epidemiology and scope of the problem", *Diabetes Care*, vol. 21, p. C11-NaN.	Not called (whole) system approach/ working/ other
Harris, S. B., Gittelsohn, J., Hanley, A., Barnie, A., Wolever, T. M. S., Gao, J., Logan, A., & Zinman, B. 1997, "The prevalence of NIDDM and associated risk factors in native Canadians", *Diabetes Care*, vol. 20, no. 2, pp. 185-188.	Not called (whole) system approach/ working/ other
Haugen, H. A., Tran, Z. V., Wyatt, H. R., Barry, M. J., Hill, J. O. O. 2007, "Using telehealth to increase participation in weight maintenance programs", *Obesity*, vol. 15, no. 12, pp. 3067-3077.	Not called (whole) system approach/ working/ other
Hawkins, S. S., Cole, T. J., Law, C., Millennium Cohort Study Child Health Group 2009, "An ecological systems approach to examining risk factors for early childhood overweight: findings from the UK Millennium Cohort Study", *Journal of Epidemiology & Community Health*, vol. 63, no. 2, pp. 147-155.	Not called (whole) system approach/ working/ other
Hearn, L. A., Miller, M. R., Campbell-Pope, R. 2008, "Review of evidence to guide primary health care policy and practice to prevent childhood obesity. [Review] [32 refs]", *Medical Journal of Australia*, vol. 188, no. 8 Suppl, p. S87-S91.	Not called (whole) system approach/ working/ other
Heath, E. M., Coleman, K. J.2002, "Evaluation of the institutionalization of the coordinated approach to child health (CATCH) in a U.S./Mexico border community", *Health Education & Behavior*, vol. 29, no. 4, pp. 444-460.	Potentially relevant for effectiveness review
Hellerstein, D. J., Almeida, G., Devlin, M. J., Mendelsohn, N., Helfand, S., Dragatsi, D., Miranda, R., Kelso, J. R., Capitelli, L.. 2007, "Assessing obesity and other related health problems of mentally ill Hispanic patients in an urban outpatient setting", *Psychiatric Quarterly*, vol. 78, no. 3, pp. 171-181.	Not called (whole) system approach/ working/ other

Q1 (WSA in theory) exclusion references	Reason
Henry, L. L. & Royer, L. 2004, "Legislative and policy update. Community-based strategies for pediatric nurses to combat the escalating childhood obesity epidemic", *Pediatric Nursing*, vol. 30, no. 2, pp. 162-165.	Not called (whole) system approach/ working/ other
Ho, C. S., Tsai, A. C. 2007, "Prevalence of overweight and obesity and its associated factors in aboriginal Taiwanese: findings from the 2001 National Health Interview Survey in Taiwan", *Asia Pacific Journal of Clinical Nutrition*, vol. 16, no. 3, pp. 572-579.	Not called (whole) system approach/ working/ other
Holm, J. E., Vogeltanz-Holm, N., Poltavski, D., & McDonald, L. 2010, "Assessing health status, behavioral risks, and health disparities in American Indians living on the northern plains of the U.S", *Public Health Reports*, vol. 125, no. 1, pp. 68-79.	Not called (whole) system approach/ working/ other
Hovell, M. F., Mulvihill, M. M., Buono, M. J., Liles, S., Schade, D. H., Washington, T. A., Manzano, R., & Sallis, J. F. 2008, "Culturally Tailored Aerobic Exercise Intervention for Low-income Latinas", *American Journal of Health Promotion*, vol. no. 3, no. pp. 155-163, p. -Feb.	Not called (whole) system approach/ working/ other
Hunskaar, S. 2008, "A systematic review of overweight and obesity as risk factors and targets for clinical intervention for urinary incontinence in women. [Review] [77 refs]", *Neurourology & Urodynamics*, vol. 27, no. 8, pp. 749-757.	Not called (whole) system approach/ working/ other
Ingelsson, E., Arnlov, J., Sundstrom, J., Riserus, U., Michaelsson, K., Byberg, L. 2009, "Relative importance and conjoint effects of obesity and physical inactivity for the development of insulin resistance", *European Journal of Cardiovascular Prevention & Rehabilitation*, vol. 16, no. 1, pp. 28-33.	Not called (whole) system approach/ working/ other
Ingelsson, E., Larson, M. G., Fox, C. S., Yin, X., Wang, T. J., Lipinska, I., Pou, K. M., Hoffmann, U., Benjamin, E. J., Keaney, J. F., Jr., Vasan, R. S.2007, "Clinical correlates of circulating visfatin levels in a community-based sample", *Diabetes Care*, vol. 30, no. 5, pp. 1278-1280.	Not called (whole) system approach/ working/ other
Ingelsson, E., Sullivan, L. M., Fox, C. S., Murabito, J. M., Benjamin, E. J., Polak, J. F., Meigs, J. B., Keyes, M. J., O'Donnell, C. J., Wang, T. J., D'Agostino, R. B., Wolf, P. A., Vasan, R. S. 2007, "Burden and prognostic importance of subclinical cardiovascular disease in overweight and obese individuals", *Circulation*, vol. 116, no. 4, pp. 375-384.	Not called (whole) system approach/ working/ other
Jacobs, J. M., Cohen, A., Hammerman-Rozenberg, R., & Stessman, J. 2006, "Global Sleep Satisfaction of Older People: The Jerusalem Cohort Study", *Journal of the American Geriatrics Society*, vol. no. 2, no. pp. 325-329.	Not called (whole) system approach/ working/ other

Q1 (WSA in theory) exclusion references	Reason
Jacobs-van der Bruggen MAM, Bos, G., Bemelmans, W. J., Hoogenveen, R. T., Vijgen, S. M., & Baan, C. A. 2007, "Lifestyle interventions are cost-effective in people with different levels of diabetes risk: results from a modeling study", *Diabetes Care*, vol. 30, no. 1, pp. 128-135.	Not called (whole) system approach/ working/ other
Jean-Baptiste, M., Tek, C., Liskov, E., Chakunta, U. R., Nicholls, S., Hassan, A. Q., Brownell, K. D., & Wexler, B. E. 2007, "A pilot study of a weight management program with food provision in schizophrenia", *Schizophrenia Research*, vol. 96, no. 1-3, pp. 198-205.	Not called (whole) system approach/ working/ other
Jefferson, V. W., Melkus, G. D., & Spollett, G. R. 2000, "Health-promotion practices of young Black women at risk for diabetes", *Diabetes Educator*, vol. 26, no. 2, pp. 295-303.	Not called (whole) system approach/ working/ other
Jennings, A. E., Alberga, A., Sigal, R. J., Jay, O., Boule, N. G., Kenny, G. P. 2009, "The effect of exercise training on resting metabolic rate in type 2 diabetes mellitus", *Medicine & Science in Sports & Exercise*, vol. 41, no. 8, pp. 1558-1565.	Not called (whole) system approach/ working/ other
Johnstone, R., Nicol, K., Donaghy, M., & Lawrie, S. 2009, "Barriers to uptake of physical activity in community-based patients with schizophrenia", *Journal of Mental Health*, vol. 18, no. 6, pp. 523-533.	Not called (whole) system approach/ working/ other
Jones, A. & Woodworth, B. 2009, "Weight management programmes in the United Kingdom: a role for mental health professionals", *Mental Health Nursing*, vol. 29, no. 2, pp. 12-16.	Not called (whole) system approach/ working/ other
Joo, N. S., Kim, B. T. 2007, "Mobile phone short message service messaging for behaviour modification in a community-based weight control programme in Korea", *Journal of Telemedicine & Telecare*, vol. 13, no. 8, pp. 416-420.	Not called (whole) system approach/ working/ other
Joosse, L., Stearns, M., Anderson, H., Hartlaub, P., Euclide, J. 2008, "Fit Kids/Fit Families: a report on a countywide effort to promote healthy behaviors", *WMJ*, vol. 107, no. 5, pp. 231-236.	Not called (whole) system approach/ working/ other
Justus, M. B., Ryan, K. W., Rockenbach, J., Katterapalli, C., Card-Higginson, P. 2007, "Lessons learned while implementing a legislated school policy: body mass index assessments among Arkansas's public school students", *Journal of School Health*, vol. 77, no. 10, pp. 706-713.	Not called (whole) system approach/ working/ other
Kalaitzidis, R., Li, S., Wang, C., Chen, S. C., McCullough, P. A., Bakris, G. L. 2009, "Hypertension in early-stage kidney disease: an update from the Kidney Early Evaluation Program (KEEP)", *American Journal of Kidney Diseases*, vol. 53, no. 4 Suppl 4, p. S22-S31.	Not called (whole) system approach/ working/ other
Kannan, S., Dvonch, J. T., Schulz, A. J., Israel, B. A., Mentz, G., House, J., Max, P., & Reyes, A. G. 2010, "Exposure to fine particulate matter and acute effects on blood pressure: effect modification by measures of obesity and location", *Journal of Epidemiology & Community Health*, vol. 64, no. 1, pp. 68-75.	Not called (whole) system approach/ working/ other

Q1 (WSA in theory) exclusion references	Reason
Katz, D. L., Brunner, R. L., Jeor, S. T., Scott, B., Jekel, J. F., & Brownell, K. D. 1998, "Dietary fat consumption in a cohort of American adults, 1985-1991: covariates, secular trends, and compliance with guidelines", *American Journal of Health Promotion*, vol. 12, no. 6, pp. 382-391.	Not called (whole) system approach/ working/ other
Kayrooz, K., Moy, T. F., Yanek, L. R., & Becker, D. M. 1998, "Dietary fat patterns in urban African American women", *Journal of Community Health*, vol. 23, no. 6, pp. 453-470.	Not called (whole) system approach/ working/ other
Kegler, M. C., Norton, B. L., Aronson, R. E., Kegler, M. C., Norton, B. L., & Aronson, R. E. 2008, "Strengthening community leadership: evaluation findings from the california healthy cities and communities program", *Health Promotion Practice*, vol. 9, no. 2, pp. 170-179	Potentially relevant for qualitative review
Keyserling, T. C., Ammerman, A. S., Samuel-Hodge, C. D., Ingram, A. F., Skelly, A. H., Elasy, T. A., Johnston, L. F., Cole, A. S., & Henríquez-Roldán, C. F. 2000, "A diabetes management program for African American women with type 2 diabetes", *Diabetes Educator*, vol. 26, no. 5, pp. 796-806.	Not called (whole) system approach/ working/ other
Keyserling, T. C., Samuel-Hodge, C. D., Ammerman, A. S., Ainsworth, B. E., Henríquez-Roldán, C. F., Elasy, T. A., Skelly, A. H., Johnston, L. F., & Bangdiwala, S. I. 2002, "A randomized trial of an intervention to improve self-care behaviors of African-American women with type 2 diabetes: impact of physical activity", *Diabetes Care*, vol. 25, no. 9, pp. 1576-1584.	Not called (whole) system approach/ working/ other
Kim, K. H., Linnan, L., Campbell, M. K., Brooks, C., Koenig, H. G., & Wiesen, C. 2008, "The WORD (Wholeness, Oneness, Righteousness, Deliverance): a faith-based weight-loss program utilizing a community-based participatory research approach", *Health Education & Behavior*, vol. 35, no. 5, pp. 634-651.	Not called (whole) system approach/ working/ other
Kim, S. H., Morton, D. J., & Barrett-Connor, E. L. 1997, "Carbonated beverage consumption and bone mineral density among older women: the Rancho Bernardo Study", *American Journal of Public Health*, vol. 87, no. 2, pp. 276-280.	Not called (whole) system approach/ working/ other
Kim, S., Koniak-Griffin, D., Flaskerud, J. H., & Guarnero, P. A. 2004, "The impact of lay health advisors in cardiovascular health promotion: using a community-based participatory approach", *Journal of Cardiovascular Nursing*, vol. 19, no. 3, pp. 192-200.	Not called (whole) system approach/ working/ other
Kirk-Gardner, R. & Steven, D. 2003, "Hearts for Life: a community program on heart health promotion", *Canadian Journal of Cardiovascular Nursing*, vol. 13, no. 1, pp. 5-11.	Not called (whole) system approach/ working/ other
Klassen, A. C., Garrett-Mayer, E., Houts, P. S., Shankar, S., & Torio, C. M. 2008, "The relationship of body size to participation and success in a fruits and vegetables intervention among low-income women", *Journal of Community Health*, vol. 33, no. 2, pp. 78-90.	Not called (whole) system approach/ working/ other

Q1 (WSA in theory) exclusion references	Reason
Ko, G. T., Tang, J. S.2007, "Waist circumference and BMI cut-off based on 10-year cardiovascular risk: evidence for "central pre-obesity"", *Obesity*, vol. 15, no. 11, pp. 2832-2839.	Not called (whole) system approach/ working/ other
Kobau, R., Zahran, H., Thurman, D. J., Zack, M. M., Henry, T. R., Schachter, S. C., & Price, P. H. 2008, "Epilepsy surveillance among adults --- 19 States, Behavioral Risk Factor Surveillance system, 2005", *MMWR Surveillance Summaries*, vol. 57, no. SS-6, pp. 1-21.	Not called (whole) system approach/ working/ other
Kondo, T., Abe, M., Ueyama, J., Kimata, A., Yamamoto, K., Hori, Y. 2009, "Use of waist circumference and ultrasonographic assessment of abdominal fat distribution in predicting metabolic risk factors in healthy Japanese adults", *Journal of Physiological Anthropology*, vol. 28, no. 1, pp. 7-14.	Not called (whole) system approach/ working/ other
Kopelman, P. 2010, "Foresight Report: the obesity challenge ahead", *Proceedings of the Nutrition Society*, vol. 69, no. 1, pp. 80-85.	Duplicate
Kopelman, P., Jebb, S. A., & Butland, B. 2007, "'Tackling obesities: Future choices' project", *Obesity Reviews*, vol. 8, p. VI-IX.	Duplicate
Koshy, S. M., Garcia-Garcia, G., Pamplona, J. S., Renoirte-Lopez, K., Perez-Cortes, G., Gutierrez, M. L., Hemmelgarn, B., Lloyd, A., Tonelli, M. 2009, "Screening for kidney disease in children on World Kidney Day in Jalisco, Mexico", *Pediatric Nephrology*, vol. 24, no. 6, pp. 1219-1225.	Not called (whole) system approach/ working/ other
Krummel, D. A., Koffman, D. M., Bronner, Y., Davis, J., Greenlund, K., Tessaro, I., Upson, D., & Wilbur, J. 2001, "Cardiovascular health interventions in women: what works?", *Journal of Women's Health & Gender-Based Medicine*, vol. 10, no. 2, pp. 117-137.	Not called (whole) system approach/ working/ other
Kubo, A., Levin, T. R., Block, G., Rumore, G., Quesenberry, C. P., Jr., Buffler, P.2009, "Cigarette smoking and the risk of Barrett's esophagus", *Cancer Causes & Control*, vol. 20, no. 3, pp. 303-311.	Not called (whole) system approach/ working/ other
Kumar, H. K. V., Verma, A., Muthukrishnan, J., Modi, K. D., Fox, C. S., Pencina, M. J., & Vasan, R. S. 2008, "Obesity and hypothyroidism: symbiotic coexistence... Fox CS, Pencina MJ, D'Agostino RB, et al. Relations of thyroid function to body weight: cross-sectional and longitudinal observations in a community-based sample. Arch Intern Med. 2008;168(6):587-92", *Archives of Internal Medicine*, vol. 168, no. 19, pp. 2168-2169.	Not called (whole) system approach/ working/ other
La Londe, M. A., Graffagnino, C. L., Falko, J. M., Snow, R. J., Spencer, K., Caulin-Glaser, T.. 2008, "Effect of a weight management program on the determinants and prevalence of metabolic syndrome", *Obesity*, vol. 16, no. 3, pp. 637-642.	Not called (whole) system approach/ working/ other
lang, T. & Rayner, G. 2005, "Obesity: a growing issue for European policy?", *J Eur Soc Policy*, vol. 15, p.	Duplicate

Q1 (WSA in theory) exclusion references	Reason
Lawrence, H. P., Romanetz, M., Rutherford, L., Cappel, L., Binguis, D., & Rogers, J. B. 2004, "Effects of a community-based prenatal nutrition program on the oral health of Aboriginal preschool children in northern Ontario", *Probe (08341494)*, vol. 38, no. 4, p. 172-NaN.	Not called (whole) system approach/ working/ other
Lee, D. S., Massaro, J. M., Wang, T. J., Kannel, W. B., Benjamin, E. J., Kenchaiah, S., Levy, D., D'Agostino, R. B., Sr., Vasan, R. S.2007, "Antecedent blood pressure, body mass index, and the risk of incident heart failure in later life", *Hypertension*, vol. 50, no. 5, pp. 869-876.	Not called (whole) system approach/ working/ other
Leibson, C. L., O'Brien, P. C., Atkinson, E., Palumbo, P., & Melton, L. J., III 1997, "Relative contributions of incidence and survival to increasing prevalence of adult-onset diabetes mellitus: a population-based study", *American Journal of Epidemiology*, vol. 146, no. 1, pp. 12-23.	Not called (whole) system approach/ working/ other
Leigh-Hunt, N., Rudolf, M.2008, "A review of local practice regarding investigations in children attending obesity clinics and a comparison of the results with other studies", *Child: Care, Health & Development*, vol. 34, no. 1, pp. 55-58.	Not called (whole) system approach/ working/ other
Lhussler, M., Carr, S. M., & Robson, A. 2008, "The potential contribution of realistic evaluation to small-scale community interventions", *Community Practitioner*, vol. 81, no. 9, pp. 25-29.	Not called (whole) system approach/ working/ other
Li, X., Li, S., Ulusoy, E., Chen, W., Srinivasan, S. R., & Berenson, G. S. 2004, "Childhood adiposity as a predictor of cardiac mass in adulthood: the Bogalusa Heart Study", *Circulation*, vol. 110, no. 22, pp. 3488-3493.	Not called (whole) system approach/ working/ other
Liang, J., Xue, Y., Zou, C., Zhang, T., Song, H., & Qi, L. 2009, "Serum uric acid and prehypertension among Chinese adults", *Journal of Hypertension*, vol. 27, no. 9, pp. 1761-1766.	Not called (whole) system approach/ working/ other
Lieb, W., Benndorf, R. A., Benjamin, E. J., Sullivan, L. M., Maas, R., Xanthakis, V., Schwedhelm, E., Aragam, J., Schulze, F., Boger, R. H., Vasan, R. S.2009, "Plasma asymmetric dimethylarginine, L-arginine and left ventricular structure and function in a community-based sample", *Atherosclerosis*, vol. 204, no. 1, pp. 282-287.	Not called (whole) system approach/ working/ other
Lieb, W., Sullivan, L. M., Harris, T. B., Roubenoff, R., Benjamin, E. J., Levy, D., Fox, C. S., Wang, T. J., Wilson, P. W., Kannel, W. B., Vasan, R. S. 2009, "Plasma leptin levels and incidence of heart failure, cardiovascular disease, and total mortality in elderly individuals", *Diabetes Care*, vol. 32, no. 4, pp. 612-616.	Not called (whole) system approach/ working/ other
Lin, C. H., Chou, C. Y., Lin, C. C., Huang, C. C., Liu, C. S., Lai, S. W. 2007, "Waist-to-height ratio is the best index of obesity in association with chronic kidney disease", *Nutrition*, vol. 23, no. 11-12, pp. 788-793.	Not called (whole) system approach/ working/ other

Q1 (WSA in theory) exclusion references	Reason
Lin, K., Tsao, H., Chen, C., & Chou, P. 2004, "Hypertension was the major risk factor leading to development of cardiovascular diseases among men with hyperuricemia", *Journal of Rheumatology*, vol. 31, no. 6, pp. 1152-1159.	Not called (whole) system approach/ working/ other
Lin, W. Y., Lai, M. M., Li, C. I., Lin, C. C., Li, T. C., Chen, C. C., Lin, T., Liu, C. S. 2009, "In addition to insulin resistance and obesity, brachial-ankle pulse wave velocity is strongly associated with metabolic syndrome in Chinese--a population-based study (Taichung Community Health Study, TCHS)", *Journal of Atherosclerosis & Thrombosis*, vol. 16, no. 2, pp. 105-112.	Not called (whole) system approach/ working/ other
Lin, W. Y., Liu, C. S., Li, T. C., Lin, T., Chen, W., Chen, C. C., Li, C. I., Lin, C. C. 2008, "In addition to insulin resistance and obesity, hyperuricemia is strongly associated with metabolic syndrome using different definitions in Chinese populations: a population-based study (Taichung Community Health Study)", *Annals of the Rheumatic Diseases*, vol. 67, no. 3, pp. 432-433.	Not called (whole) system approach/ working/ other
Link, C. L., McKinlay, J. B. 2009, "Disparities in the prevalence of diabetes: is it race/ethnicity or socioeconomic status? Results from the Boston Area Community Health (BACH) survey.[Summary for patients in Ethn Dis. 2009 Summer;19(3):364-5; PMID: 19771632]", *Ethnicity & Disease*, vol. 19, no. 3, pp. 288-292.	Not called (whole) system approach/ working/ other
Lipscomb, E. R., Finch, E. A., Brizendine, E., Saha, C. K., Hays, L. M., & Ackermann, R. T. 2009, "Reduced 10-Year Risk of Coronary Heart Disease in Patients Who Participated in a Community-Based Diabetes Prevention Program: The DEPLOY pilot study", *Diabetes Care*, vol. 32, no. 3, pp. 394-397.	Not called (whole) system approach/ working/ other
Lohrmann, D. K. 2008, "A complementary ecological model of the coordinated school health program", *Public Health Reports*, vol. 123, no. 6, pp. 695	Duplicate
Lombard, C. B., Deeks, A. A., Ball, K., Jolley, D., Teede, H. J., Lombard, C. B. 2009, "Weight, physical activity and dietary behavior change in young mothers: short term results of the HeLP-her cluster randomized controlled trial", *Nutrition Journal*, vol. 8, p. 17.	Not called (whole) system approach/ working/ other
Lombard, C., Deeks, A., Jolley, D., Teede, H. J.2009, "Preventing weight gain: the baseline weight related behaviors and delivery of a randomized controlled intervention in community based women", *BMC Public Health*, vol. 9, p. 2.	Not called (whole) system approach/ working/ other
Loomba, R., Hwang, S. J., O'Donnell, C. J., Ellison, R. C., Vasan, R. S., D'Agostino, R. B., Sr., Liang, T. J., Fox, C. S. 2008, "Parental obesity and offspring serum alanine and aspartate aminotransferase levels: the Framingham heart study.[Erratum appears in Gastroenterology. 2008 Sep;135(3):1017]", *Gastroenterology*, vol. 134, no. 4, pp. 953-959.	Not called (whole) system approach/ working/ other

Q1 (WSA in theory) exclusion references	Reason
Luke, A. H., Rotimi, C. N., Cooper, R. S., Long, A. E., Forrester, T. E., Wilks, R., Bennett, F. I., Ogunbiyi, O., Compton, J. A., & Bowsher, R. R. 1998, "Leptin and body composition of Nigerians, Jamaicans, and US blacks... including commentary by Havel PJ", *American Journal of Clinical Nutrition*, vol. 67, no. 3, pp. 391-399.	Not called (whole) system approach/ working/ other
Ma, J., King, A. C., Wilson, S. R., Xiao, L., Stafford, R. S. 2009, "Evaluation of lifestyle interventions to treat elevated cardiometabolic risk in primary care (E-LITE): a randomized controlled trial", *BMC Family Practice*, vol. 10, p. 71.	Not called (whole) system approach/ working/ other
Macaulay, A. C., Paradis, G., Potvin, L., Cross, E. J., Saad-Haddad, C., McComber, A., Desrosiers, S., Kirby, R., Montour, L. T., Lamping, D. L., Leduc, N., & Rivard, M. 1997, "The Kahnawake Schools Diabetes Prevention Project: intervention, evaluation, and baseline results of a diabetes primary prevention program with a native community in Canada", *Preventive Medicine*, vol. 26, no. 6, pp. 779-791.	Not called (whole) system approach/ working/ other
Madan, A. K., Tichansky, D. S., Ternovits, C. A., Speck, K. E., Steinhauer, B. W., Croce, M. A., Fabian, T. C.2007, "Establishing a laparoscopic bariatric program in a safety net hospital", *Surgical Endoscopy*, vol. 21, no. 5, pp. 801-804.	Not called (whole) system approach/ working/ other
Madsen, K. A., Thompson, H. R., Wlasiuk, L., Queliza, E., Schmidt, C., Newman, T. B. 2009, "After-school program to reduce obesity in minority children: a pilot study", *Journal of Child Health Care*, vol. 13, no. 4, pp. 333-346.	Not called (whole) system approach/ working/ other
Makepeace, A., Davis, W. A., Bruce, D. G., & Davis, T. M. 2008, "Incidence and determinants of carpal tunnel decompression surgery in type 2 diabetes: the Fremantle Diabetes Study", *Diabetes Care*, vol. 31, no. 3, pp. 498-501.	Not called (whole) system approach/ working/ other
Malavazos, A. E., Cereda, E., Delnevo, A., Passeri, E., Tufano, A., Sburlati, L., Orsi, E., Morricone, L., & Ambrosi, B. 2008, "Thyroid function and body weight: should we also consider the interplay with insulin resistance and fat distribution?... Fox CS, Pencina MJ, D'Agostino RB, et al. Relations of thyroid function to body weight: cross-sectional and longitudinal observations in a community-based sample. Arch Intern Med 2008;168(6):587-92", *Archives of Internal Medicine*, vol. 168, no. 20, pp. 2284-2286.	Not called (whole) system approach/ working/ other
Mansour, A. A., Al-Hassan, A. A., & Al-Jazairi, M. I. 2007, "Cut-off values for waist circumference in rural Iraqi adults for the diagnosis of metabolic syndrome", *Rural & Remote Health*, vol. 7, no. 4, pp. 765-766.	Not called (whole) system approach/ working/ other
Manuck, S. B., Phillips, J. E., Gianaros, P. J., Flory, J. D., Muldoon, M. F. 2010, "Subjective socioeconomic status and presence of the metabolic syndrome in midlife community volunteers", *Psychosomatic Medicine*, vol. 72, no. 1, pp. 35-45.	Not called (whole) system approach/ working/ other

Q1 (WSA in theory) exclusion references	Reason
Marino, R. V. 2009, "Generation XL: the childhood obesity pandemic: a community-based solution", *JAOA: Journal of the American Osteopathic Association*, vol. 109, no. 7, pp. 349-351.	Not called (whole) system approach/ working/ other
Marshall, N. S., Glozier, N., Grunstein, R. R.2008, "Is sleep duration related to obesity? A critical review of the epidemiological evidence. [Review] [58 refs]", *Sleep Medicine Reviews*, vol. 12, no. 4, pp. 289-298.	Not called (whole) system approach/ working/ other
Marsot-Dupuch, K. 2001, "Pulsatile and nonpulsatile tinnitus: a systemic approach", *Seminars in Ultrasound CT & MRI*, vol. 22, no. 3, pp. 250-271.	Not called (whole) system approach/ working/ other
Maserejian, N. N., Giovannucci, E. L., McKinlay, J. B.2009, "Dietary macronutrients, cholesterol, and sodium and lower urinary tract symptoms in men", *European Urology*, vol. 55, no. 5, pp. 1179-1189.	Not called (whole) system approach/ working/ other
McCarthy, W. J., Yancey, A. K., Harrison, G. G., Leslie, J., & Siegel, J. M. 2007, "Fighting cancer with fitness: dietary outcomes of a randomized, controlled lifestyle change intervention in healthy African-American women", *Preventive Medicine*, vol. 44, no. 3, pp. 246-254.	Not called (whole) system approach/ working/ other
McConnon, A., Kirk, S. F., Ransley, J. K., McConnon, A., Kirk, S. F. L., & Ransley, J. K. 2009, "Process evaluation of an internet-based resource for weight control: use and views of an obese sample", *Journal of Nutrition Education & Behavior*, vol. 41, no. 4, pp. 261-267.	Not called (whole) system approach/ working/ other
McCormick, D. P., Ramirez, M., Caldwell, S., Ripley, A. W., Wilkey, D. 2008, "YMCA program for childhood obesity: a case series", *Clinical Pediatrics*, vol. 47, no. 7, pp. 693-697.	Not called (whole) system approach/ working/ other
McDermott, R. J., Nickelson, J., Baldwin, J. A., Bryant, C. A., Alfonso, M., Phillips, L. M., DeBate, R. D. 2009, "A community-school district-university partnership for assessing physical activity of tweens", *Preventing Chronic Disease*, vol. 6, no. 1, p. A15.	Not called (whole) system approach/ working/ other
McIver, S., O'Halloran, P., & McGartland, M. 2009, "Yoga as a treatment for binge eating disorder: A preliminary study", *Complementary Therapies in Medicine*, vol. 17, no. 4, pp. 196-203.	Not called (whole) system approach/ working/ other
McKey, A. & Huntington, A. 2004, "Obesity in pre-school children: issues and challenges for community based child health nurses", *Contemporary Nurse: A Journal for the Australian Nursing Profession*, vol. 18, no. 1-2, pp. 145-152.	Not called (whole) system approach/ working/ other
McKinnon, R. A., Reedy, J., Morrissette, M. A., Lytle, L. A., & Yaroch, A. L. 2009, "Measures of the Food Environment: A Compilation of the Literature, 1990-2007", *American Journal of Preventive Medicine*, vol. no. 4S1, no. pp. S124-S133.	Not called (whole) system approach/ working/ other

Q1 (WSA in theory) exclusion references	Reason
McPhillips, J. B., Lasater, T. M., McKenney, J. L., Carleton, R. A., Lefebvre, R. C., McKinlay, S. M., Assaf, A. R., & Banspach, S. W. 1994, "Characteristics of respondents to telephone and household cardiovascular disease risk factor surveys", *Health Education Research*, vol. 9, no. 4, pp. 535-544.	Not called (whole) system approach/ working/ other
McSweeney, J. C., Allan, J. D., & Mayo, K. 1997, "Theory. Exploring the use of explanatory models in nursing research and practice", *Image: Journal of Nursing Scholarship*, vol. 29, no. 3, pp. 243-249.	Not called (whole) system approach/ working/ other
Meas, T., Deghmoun, S., Armoogum, P., Alberti, C., Levy-Marchal, C., Meas, T., Deghmoun, S., Armoogum, P., Alberti, C., & Levy-Marchal, C. 2008, "Consequences of being born small for gestational age on body composition: an 8-year follow-up study", *Journal of Clinical Endocrinology & Metabolism*, vol. 93, no. 10, pp. 3804-3809.	Not called (whole) system approach/ working/ other
Meigs, J. B., Larson, M. G., Fox, C. S., Keaney, J. F., Jr., Vasan, R. S., & Benjamin, E. J. 2007, "Association of oxidative stress, insulin resistance, and diabetes risk phenotypes: the Framingham Offspring Study", *Diabetes Care*, vol. 30, no. 10, pp. 2529-2536.	Not called (whole) system approach/ working/ other
Menon, V. U., Kumar, K. V., Gilchrist, A., Sugathan, T. N., Sundaram, K. R., Nair, V., & Kumar, H. 2006, "Prevalence of known and undetected diabetes and associated risk factors in central Kerala--ADEPS... Amrita Diabetes and Endocrine Population Survey (ADEPS)", *Diabetes Research & Clinical Practice*, vol. 74, no. 3, pp. 289-295.	Not called (whole) system approach/ working/ other
Messent, P. R., Cooke, C. B., & Long, J. 1998, "Physical activity, exercise and health of adults with mild and moderate learning disabilities", *British Journal of Learning Disabilities*, vol. 26, no. 1, pp. 17-23.	Not called (whole) system approach/ working/ other
Micali, N., Treasure, J., Simonoff, E., Micali, N., Treasure, J., & Simonoff, E. 2007, "Eating disorders symptoms in pregnancy: a longitudinal study of women with recent and past eating disorders and obesity", *Journal of Psychosomatic Research*, vol. 63, no. 3, pp. 297-303.	Not called (whole) system approach/ working/ other
Miettola, J., Niskanen, L. K., Viinamäki, H., & Kumpusalo, E. 2008, "Metabolic syndrome is associated with self-perceived depression", *Scandinavian Journal of Primary Health Care*, vol. 26, no. 4, pp. 203-211.	Not called (whole) system approach/ working/ other
Miller, D. K., Malmstrom, T. K., Joshi, S., Andresen, E. M., Morley, J. E., & Wolinsky, F. D. 2004, "Clinically relevant levels of depressive symptoms in community-dwelling middle-aged African Americans", *Journal of the American Geriatrics Society*, vol. 52, no. 5, pp. 741-749.	Not called (whole) system approach/ working/ other
Miller, E., Wieneke, K. M., Murphy, J. M., Desmond, S., Schiff, A., Canenguez, K. M., & Kleinman, R. E. 2008, "Child and Parental Poor Health among Families at Risk for Hunger Attending a Community Health Center", *Journal of Health Care for the Poor and Underserved*, vol. no. 2, no. pp. 550-561.	Not called (whole) system approach/ working/ other

Q1 (WSA in theory) exclusion references	Reason
Miller, J. L., Silverstein, J. H., Miller, J. L., & Silverstein, J. H. 2007, "Management approaches for pediatric obesity. [Review] [82 refs]", *Nature Clinical Practice Endocrinology & Metabolism*, vol. 3, no. 12, pp. 810-818.	Not called (whole) system approach/ working/ other
Mjelde-Mossey, L. A. 2005, "Social Work's Partnership in Community-Based Stroke Prevention for Older Adults: A Collaborative Model", *Social Work in Health Care*, vol. no. 2, no. pp. 57-71.	Not called (whole) system approach/ working/ other
Mohatt, G. V., Plaetke, R., Klejka, J., Luick, B., Lardon, C., Bersamin, A., Hopkins, S., Dondanville, M., Herron, J., Boyer, B., & Center for Alaska Native Health Research. 2007, "The Center for Alaska Native Health Research Study: a community-based participatory research study of obesity and chronic disease-related protective and risk factors", *International Journal of Circumpolar Health*, vol. 66, no. 1, pp. 8-18.	Not called (whole) system approach/ working/ other
Molenaar, E. A., Hwang, S. J., Vasan, R. S., Grobbee, D. E., Meigs, J. B., D'Agostino, R. B. S., Levy, D., & Fox, C. S. 2008, "Burden and rates of treatment and control of cardiovascular disease risk factors in obesity: the Framingham Heart Study", *Diabetes Care*, vol. 31, no. 7, pp. 1367-1372.	Not called (whole) system approach/ working/ other
Mond, J. M., Hay, P. J., Rodgers, B., & Owen, C. 2009, "Comparing the health burden of eating-disordered behavior and overweight in women", *Journal of Women's Health (15409996)*, vol. 18, no. 7, pp. 1081-1090.	Not called (whole) system approach/ working/ other
Mond, J., Myers, T. C., Crosby, R., Hay, P., & Mitchell, J. 2008, "'Excessive exercise' and eating-disordered behaviour in young adult women: further evidence from a primary care sample", *European Eating Disorders Review*, vol. 16, no. 3, pp. 215-222.	Not called (whole) system approach/ working/ other
Mounach, A., Abayi, D. A., Ghazi, M., Ghozlani, I., Nouijai, A., Achemlal, L., Bezza, A., & El, M. A. 2009, "Discordance between hip and spine bone mineral density measurement using DXA: prevalence and risk factors", *Seminars in Arthritis & Rheumatism*, vol. 38, no. 6, pp. 467-472.	Not called (whole) system approach/ working/ other
Murrock, C. J., Higgins, P. A., & Killion, C. 2009, "Dance and peer support to improve diabetes outcomes in African American women", *Diabetes Educator*, vol. 35, no. 6, pp. 995-1003.	Not called (whole) system approach/ working/ other
Nakamura, Y., Sekikawa, A., Kadowaki, T., Kadota, A., Kadowaki, S., Maegawa, H., Kita, Y., Evans, R. W., Edmundowicz, D., Curb, J. D., Ueshima, H. 2009, "Visceral and subcutaneous adiposity and adiponectin in middle-aged Japanese men: the ERA JUMP study", *Obesity*, vol. 17, no. 6, pp. 1269-1273.	Not called (whole) system approach/ working/ other

Q1 (WSA in theory) exclusion references	Reason
Nakamura, Y., Turin, T. C., Kita, Y., Tamaki, S., Tsujita, Y., Kadowaki, T., Murakami, Y., Okamura, T., Ueshima, H.2007, "Associations of obesity measures with metabolic risk factors in a community-based population in Japan", *Circulation Journal*, vol. 71, no. 5, pp. 776-781.	Not called (whole) system approach/ working/ other
Naylor, P. J., McKay, H. A.2009, "Prevention in the first place: schools a setting for action on physical inactivity. [Review] [66 refs]", *British Journal of Sports Medicine*, vol. 43, no. 1, pp. 10-13.	Not called (whole) system approach/ working/ other
Neovius, M., Rasmussen, F.2008, "Evaluation of BMI-based classification of adolescent overweight and obesity: choice of percentage body fat cutoffs exerts a large influence. The COMPASS study", *European Journal of Clinical Nutrition*, vol. 62, no. 10, pp. 1201-1207.	Not called (whole) system approach/ working/ other
Nguyen, Q. M., Srinivasan, S. R., Xu, J., Chen, W., & Berenson, G. S. 2008, "Changes in risk variables of metabolic syndrome since childhood in pre-diabetic and type 2 diabetic subjects: the Bogalusa heart study", *Diabetes Care*, vol. 31, no. 10, pp. 2044-2050.	Not called (whole) system approach/ working/ other
Nomura, I., Kato, J., Kitamura, K.2009, "Association between body mass index and chronic kidney disease: a population-based, cross-sectional study of a Japanese community", *Vascular Health & Risk Management*, vol. 5, no. 1, pp. 315-320.	Not called (whole) system approach/ working/ other
O'Connell, N. 2006, "Managing Diabetes in Primary Care", *Nursing Times*, vol. no. 4, no. pp. 38-39, p. -30.	Not called (whole) system approach/ working/ other
O'Connor, J., Steinbeck, K., Hill, A., Booth, M., Kohn, M., Shah, S., & Baur, L. 2008, "Evaluation of a community-based weight management program for overweight and obese adolescents: the Loozit study", *Nutrition & Dietetics*, vol. 65, no. 2, pp. 121-128.	Not called (whole) system approach/ working/ other
O'Donnell, L., Bonaparte, B., Joseph, H., Agronick, G., Leow, D. M., Myint, U., & Stueve, A. 2009, "Keep It Up: development of a community-based health screening and HIV prevention strategy for reaching young African American men", *AIDS Education & Prevention*, vol. 21, no. 4, pp. 299-314.	Not called (whole) system approach/ working/ other
Oh, J. Y., Lim, S., Kim, D. J., Kim, N. H., Kim, D. J., Moon, S. D., Jang, H. C., Cho, Y. M., Song, K. H., Ahn, C. W., Sung, Y. A., Park, J. Y., Shin, C., Lee, H. K., & Park, K. S. 2008, "A report on the diagnosis of intermediate hyperglycemia in Korea: A pooled analysis of four community-based cohort studies", *Diabetes Research & Clinical Practice*, vol. 80, no. 3, pp. 463-469.	Not called (whole) system approach/ working/ other
Olvera, N., Bush, J. A., Sharma, S. V., Knox, B. B., Scherer, R. L., Butte, N. F. 2010, "BOUNCE: a community-based mother-daughter healthy lifestyle intervention for low-income Latino families", *Obesity*, vol. 18 Suppl 1, p. S102-S104.	Not called (whole) system approach/ working/ other

Q1 (WSA in theory) exclusion references	Reason
Onwuchewa, A., Bellgam, H., & Asekomeh, G. 2009, "Stroke at the university of port harcourt teaching hospital, rivers state, Nigeria", *Tropical Doctor*, vol. 39, no. 3, pp. 150-152.	Not called (whole) system approach/ working/ other
Oster, R. T. & Toth, E. L. 2009, "Differences in the prevalence of diabetes risk-factors among First Nation, Métis and non-Aboriginal adults attending screening clinics in rural Alberta, Canada", *Rural & Remote Health*, vol. 9, no. 2, pp. 1170-1171.	Not called (whole) system approach/ working/ other
Oster, R. T., Virani, S., Strong, D., Shade, S., & Toth, E. L. 2009, "Diabetes care and health status of First Nations individuals with type 2 diabetes in Alberta", *Canadian Family Physician*, vol. 55, no. 4, pp. 386-394.	Not called (whole) system approach/ working/ other
Palep-Singh, M., Picton, H. M., Barth, J. H., & Balen, A. H. 2008, "Ethnic variations in the distribution of obesity and biochemical metabolic abnormalities in fertility clinic attendees", *Journal of Reproductive Medicine*, vol. 53, no. 2, pp. 117-123.	Not called (whole) system approach/ working/ other
Paley, J. 2010, "The appropriation of complexity theory in health care", *Journal of Health Services Research & Policy*, vol. 15, no. 1, pp. 59-61.	Duplicate
Park, K., Gross, M., Lee, D. H., Holvoet, P., Himes, J. H., Shikany, J. M., & Jacobs, D. R., Jr. 2009, "Oxidative stress and insulin resistance: the coronary artery risk development in young adults study", *Diabetes Care*, vol. 32, no. 7, pp. 1302-1308.	Not called (whole) system approach/ working/ other
Park, S. K., Tucker, K. L., O'Neill, M. S., Sparrow, D., Vokonas, P. S., Hu, H., & Schwartz, J. 2009, "Fruit, vegetable, and fish consumption and heart rate variability: the Veterans Administration Normative Aging Study", *American Journal of Clinical Nutrition*, vol. 89, no. 3, pp. 778-787.	Not called (whole) system approach/ working/ other
Paschal, A. M., Lewis, R. K., Martin, A., Dennis-Shipp, D., & Simpson, D. S. 2004, "Baseline assessment of the health status and health behaviors of African Americans participating in the Activities-for-Life program: a community-based health intervention program", *Journal of Community Health*, vol. 29, no. 4, pp. 305-319.	Not called (whole) system approach/ working/ other
Pate, R. R., Saunders, R. P., Ward, D. S., Felton, G., Trost, S. G., & Dowda, M. 2003, "Evaluation of a community-based intervention to promote physical activity in youth: lessons from active winners", *American Journal of Health Promotion*, vol. 17, no. 3, pp. 171-183.	Not called (whole) system approach/ working/ other
Patel, A. I., Bogart, L. M., Uyeda, K. E., Martinez, H., Knizewski, R., Ryan, G. W., Schuster, M. A. 2009, "School site visits for community-based participatory research on healthy eating", *American Journal of Preventive Medicine*, vol. 37, no. 6 Suppl 1, p. S300-S306.	Not called (whole) system approach/ working/ other

Q1 (WSA in theory) exclusion references	Reason
Patel, J. A., Patel, N. A., Thomas, R. L., Nelms, J. K., Colella, J. J. 2008, "Pregnancy outcomes after laparoscopic Roux-en-Y gastric bypass", *Surgery for Obesity & Related Diseases*, vol. 4, no. 1, pp. 39-45.	Not called (whole) system approach/ working/ other
Perry, C. & Hoffman, B. 2010, "Assessing tribal youth physical activity and programming using a community-based participatory research approach", *Public Health Nursing*, vol. 27, no. 2, pp. 104-115.	Not called (whole) system approach/ working/ other
Pescatello, L. S. & Murphy, D. 1998, "Lower intensity physical activity is advantageous for fat distribution and blood glucose among viscerally obese older adults", *Medicine & Science in Sports & Exercise*, vol. 30, no. 9, pp. 1408-1414.	Not called (whole) system approach/ working/ other
Peterson, K. E., Sorensen, G., Pearson, M., Hebert, J. R., Gottlieb, B. R., & McCormick, M. C. 2002, "Design of an intervention addressing multiple levels of influence on dietary and activity patterns of low-income, postpartum women", *Health Education Research*, vol. 17, no. 5, pp. 531-541.	Not called (whole) system approach/ working/ other
Plugge, E. H., Foster, C. E., Yudkin, P. L., & Douglas, N. 2009, "Cardiovascular disease risk factors and women prisoners in the UK: the impact of imprisonment", *Health Promotion International*, vol. no. 4, no. pp. 334-343.	Not called (whole) system approach/ working/ other
Pomietto, M., Docter, A. D., Van Borkulo, N., Alfonsi, L., Krieger, J., & Liu, L. L. 2009, "Small steps to health: building sustainable partnerships in pediatric obesity care. [Review] [21 refs]", *Pediatrics*, vol. 123 Suppl 5, p. S308-S316.	Not called (whole) system approach/ working/ other
Pou, K. M., Massaro, J. M., Hoffmann, U., Lieb, K., Vasan, R. S., O'Donnell, C. J., & Fox, C. S. 2009, "Patterns of abdominal fat distribution: the Framingham Heart Study", *Diabetes Care*, vol. 32, no. 3, pp. 481-485.	Not called (whole) system approach/ working/ other
Pourhoseingholi, M. A., Kaboli, S. A., Pourhoseingholi, A., Moghimi-Dehkordi, B., Safaee, A., Mansoori, B. K., Habibi, M., & Zali, M. R. 2009, "Obesity and functional constipation; a community-based study in Iran", *Journal of Gastrointestinal & Liver Diseases*, vol. 18, no. 2, pp. 151-155.	Not called (whole) system approach/ working/ other
Puhl, R. M., Andreyeva, T., & Brownell, K. D. 2008, "Perceptions of weight discrimination: prevalence and comparison to race and gender discrimination in America", *International Journal of Obesity*, vol. 32, no. 6, pp. 992-1000.	Not called (whole) system approach/ working/ other
Puri, S., Mangat, C., Bhatia, V., Kalia, M., Sehgal, A., & Kaur, A. P. 2009, "Awareness of risk factors and aspects of breast cancer among North Indian women", *Internet Journal of Health*, vol. 8, no. 2, pp. 3-4.	Not called (whole) system approach/ working/ other

Q1 (WSA in theory) exclusion references	Reason
Ramsey, F., Ussery-Hall, A., Garcia, D., McDonald, G., Easton, A., Kambon, M., Balluz, L., Garvin, W., & Vigeant, J. 2008, "Prevalence of selected risk behaviors and chronic diseases -- Behavioral Risk Factor Surveillance System (BRFSS), 39 Steps communities, United States, 2005", *MMWR Surveillance Summaries*, vol. 57, no. SS-11, pp. 1-21.	Not called (whole) system approach/ working/ other
Rao, M. N., Blackwell, T., Redline, S., Stefanick, M. L., Ancoli-Israel, S., Stone, K. L., & Osteoporotic Fractures in Men (MrOS) Study Group. 2009, "Association between sleep architecture and measures of body composition", *Sleep*, vol. 32, no. 4, pp. 483-490.	Not called (whole) system approach/ working/ other
Rao, M. V., Qiu, Y., Wang, C., & Bakris, G. 2008, "Hypertension and CKD: Kidney Early Evaluation Program (KEEP) and National Health and Nutrition Examination Survey (NHANES), 1999	Duplicate
Rayner, G. 2009, "Conventional and ecological public health", *Public Health*, vol. 123, no. 9, pp. 587-591.	Duplicate
Reddy, E. V., Kadhiravan, T., Mishra, H. K., Sreenivas, V., Handa, K. K., Sinha, S., Sharma, S. K. 2009, "Prevalence and risk factors of obstructive sleep apnea among middle-aged urban Indians: a community-based study", *Sleep Medicine*, vol. 10, no. 8, pp. 913-918.	Not called (whole) system approach/ working/ other
Rennert, N. J. & Charney, P. 2003, "Preventing cardiovascular disease in diabetes and glucose intolerance: evidence and implications for care", *Primary Care*, vol. 30, no. 3, pp. 569-593.	Not called (whole) system approach/ working/ other
Reppert, A., Steiner, B. F., & Chapman-Novakofski, K. 2008, "Prevalence of metabolic syndrome and associated risk factors in Illinois", *American Journal of Health Promotion*, vol. 23, no. 2, pp. 130-138.	Not called (whole) system approach/ working/ other
Resnicow, K., Yaroch, A. L., Davis, A., Wang, D. T., Lyn, R., London, J., Kotler, H., & Hall, M. 1999, "Gem no. 306. GO GIRLS!: Development of a community-based nutrition and physical activity program for overweight African-American adolescent females", *Journal of Nutrition Education*, vol. 31, no. 5, pp. 283C-2NaN.	Not called (whole) system approach/ working/ other
Rice, M. C., Wicks, M. N., & Martin, J. C. 2008, "Health risk characteristics of black female informal caregivers on welfare", *Clinical Nursing Research*, vol. 17, no. 1, pp. 20-32.	Not called (whole) system approach/ working/ other
Ridner, S. H. & Dietrich, M. S. 2008, "Self-reported comorbid conditions and medication usage in breast cancer survivors with and without lymphedema", *Oncology Nursing Forum*, vol. 35, no. 1, pp. 57-64.	Not called (whole) system approach/ working/ other
Rimmer, J. H. 1999, "Health promotion for people with disabilities: the emerging paradigm shift from disability prevention to prevention of secondary conditions", *Physical Therapy*, vol. 79, no. 5, pp. 495-503.	Not called (whole) system approach/ working/ other

Q1 (WSA in theory) exclusion references	Reason
Rivenes, A. C., Harvey, S. B., & Mykletun, A. 2009, "The relationship between abdominal fat, obesity, and common mental disorders: results from the HUNT study", *Journal of Psychosomatic Research*, vol. 66, no. 4, pp. 269-275.	Not called (whole) system approach/ working/ other
Roberts, R. E., Kaplan, G. A., Shema, S. J., & Strawbridge, W. J. 2000, "Are the obese at greater risk for depression?", *American Journal of Epidemiology*, vol. 152, no. 2, pp. 163-170.	Not called (whole) system approach/ working/ other
Robertson, W., Friede, T., Blissett, J., Rudolf, M. C., Wallis, M., & Stewart-Brown, S. 2008, "Pilot of "Families for Health": community-based family intervention for obesity", *Archives of Disease in Childhood*, vol. 93, no. 11, pp. 921-927.	Not called (whole) system approach/ working/ other
Robinson, T. N., Kraemer, H. C., Matheson, D. M., Obarzanek, E., Wilson, D. M., Haskell, W. L., Pruitt, L. A., Thompson, N. S., Haydel, K. F., Fujimoto, M., Varady, A., McCarthy, S., Watanabe, C., Killen, J. D. 2008, "Stanford GEMS phase 2 obesity prevention trial for low-income African-American girls: design and sample baseline characteristics", *Contemporary Clinical Trials*, vol. 29, no. 1, pp. 56-69.	Not called (whole) system approach/ working/ other
Rodbard, H. W., Fox, K. M., & Grandy, S. 2009, "Impact of obesity on work productivity and role disability in individuals with and at risk for diabetes mellitus", *American Journal of Health Promotion*, vol. 23, no. 5, pp. 353-361.	Not called (whole) system approach/ working/ other
Roman, C. G. & Chalfin, A. 2008, "Fear of Walking Outdoors: A Multilevel Ecologic Analysis of Crime and Disorder", *American Journal of Preventive Medicine*, vol. no. 4, no. pp. 306-312.	Not relevant to public health
Romon, M., Lommez, A., Tafflet, M., Basdevant, A., Oppert, J. M., Bresson, J. L., Ducimetiere, P., Charles, M. A., Borys, J. M. 2009, "Downward trends in the prevalence of childhood overweight in the setting of 12-year school- and community-based programmes", *Public Health Nutrition*, vol. 12, no. 10, pp. 1735-1742.	Not called (whole) system approach/ working/ other
Rosemar, A., Angeras, U., & Rosengren, A. 2008, "Body mass index and groin hernia: a 34-year follow-up study in Swedish men", *Annals of Surgery*, vol. 247, no. 6, pp. 1064-1068.	Not called (whole) system approach/ working/ other
Rosemar, A., Angeras, U., & Rosengren, A. 2008, "Body mass index and diverticular disease: a 28-year follow-up study in men", *Diseases of the Colon & Rectum*, vol. 51, no. 4, pp. 450-455.	Not called (whole) system approach/ working/ other
Rosser, W. 2008, "Bringing important research evidence into practice: Canadian developments", *Family Practice*, vol. 25 Suppl 1, p. i38-i43.	Not called (whole) system approach/ working/ other
Rouen, P. A. 2009, "Study of women veterans in menopause", *Journal* p. -NaN.	Not called (whole) system approach/ working/ other

Q1 (WSA in theory) exclusion references	Reason
Rutter, M. K., Parise, H., Benjamin, E. J., Levy, D., Larson, M. G., Meigs, J. B., Nesto, R. W., Wilson, P. W. F., & Vasan, R. S. 2003, "Impact of glucose intolerance and insulin resistance on cardiac structure and function: sex-related differences in the Framingham Heart Study", *Circulation*, vol. 107, no. 3, pp. 448-455.	Not called (whole) system approach/ working/ other
Ruxton, C. H. S., Gardner, E. J., & McNulty, H. M. 2010, "Is sugar consumption detrimental to health? A review of the evidence 1995-2006. [Review] [176 refs]", *Critical Reviews in Food Science & Nutrition*, vol. 50, no. 1, pp. 1-19.	Not called (whole) system approach/ working/ other
Sachdev, H. P. S., Osmond, C., Fall, C. H. D., Lakshmy, R., Ramji, S., Dey Biswas, S. K., Prabhakaran, D., Tandon, N., Reddy, K. S., Barker, D. J. P., & Bhargava, S. K. 2009, "Predicting adult metabolic syndrome from childhood body mass index: follow-up of the New Delhi birth cohort", *Archives of Disease in Childhood*, vol. 94, no. 10, pp. 768-774.	Not called (whole) system approach/ working/ other
Sacher, P. M., Kolotourou, M., Chadwick, P. M., Cole, T. J., Lawson, M. S., Lucas, A., Singhal, A., 2010, "Randomized controlled trial of the MEND program: a family	Potentially relevant for effectiveness review
Saito, T., Nishise, Y., Makino, N., Haga, H., Ishii, R., Okumoto, K., Ito, J. I., Watanabe, H., Saito, K., Takeda, H., Togashi, H., Kubota, I., Daimon, M., Kato, T., Kawata, S. 2009, "Impact of metabolic syndrome on elevated serum alanine aminotransferase levels in the Japanese population", *Metabolism: Clinical & Experimental*, vol. 58, no. 8, pp. 1067-1075.	Not called (whole) system approach/ working/ other
Sakuragi, S., Abhayaratna, K., Gravenmaker, K. J., O'Reilly, C., Srikusalanukul, W., Budge, M. M., Telford, R. D., Abhayaratna, W. P. 2009, "Influence of adiposity and physical activity on arterial stiffness in healthy children: the lifestyle of our kids study", *Hypertension*, vol. 53, no. 4, pp. 611-616.	Not called (whole) system approach/ working/ other
Salmon, J., Booth, M. L., Phongsavan, P., Murphy, N., & Timperio, A. 2007, "Promoting physical activity participation among children and adolescents. [Review] [118 refs]", *Epidemiologic Reviews*, vol. 29, pp. 144	Potentially relevant for effectiveness review
Salyer, J., Flattery, M., Joyner, P., Friend, J., & Elswick, R. K. J. 2007, "Community-based weight management in long-term heart transplant recipients: a pilot study", *Progress in Transplantation*, vol. 17, no. 4, pp. 315-323.	Not called (whole) system approach/ working/ other
Sarkar, J., Lix, L. M., Bruce, S., & Young, T. K. 2010, "Ethnic and regional differences in prevalence and correlates of chronic diseases and risk factors in northern Canada", *Preventing Chronic Disease*, vol. 7, no. 1, p. A13.	Not called (whole) system approach/ working/ other

Q1 (WSA in theory) exclusion references	Reason
Sasai, H., Sairenchi, T., Iso, H., Irie, F., Otaka, E., Tanaka, K., Ota, H., & Muto, T. 2010, "Relationship between obesity and incident diabetes in middle-aged and older Japanese adults: the Ibaraki Prefectural Health Study", *Mayo Clinic Proceedings*, vol. 85, no. 1, pp. 36-40.	Not called (whole) system approach/ working/ other
Sato, K., & Tamashiro, H. 2008, "Gender differences in the relationships between obesity and lifestyle risk factors in a small farming town in Japan", *Asia-Pacific Journal of Public Health*, vol. 20 Suppl, pp. 236-243.	Not called (whole) system approach/ working/ other
Schellenbaum, G. D., Smith, N. L., Heckbert, S. R., Lumley, T., Rea, T. D., Furberg, C. D., Lyles, M. F., & Psaty, B. M. 2005, "Weight Loss, Muscle Strength, and Angiotensin-Converting Enzyme Inhibitors in Older Adults with Congestive Heart Failure or Hypertension", *Journal of the American Geriatrics Society*, vol. no. 11, no. pp. 1996-2000.	Not called (whole) system approach/ working/ other
Schetzina, K. E., Dalton, W. T., Lowe, E. F., Azzazy, N., Von Werssowetz, K. M., Givens, C., & Stern, H. P. 2009, "Developing a coordinated school health approach to child obesity prevention in rural Appalachia: results of focus groups with teachers, parents, and students", *Rural & Remote Health*, vol. 9, no. 4, pp. 1157-1Dec.	Not called (whole) system approach/ working/ other
Schuetzmann, M., Richter-Appelt, H., Schulte-Markwort, M., & Schimmelmann, B. G. 2008, "Associations among the perceived parent-child relationship, eating behavior, and body weight in preadolescents: results from a community-based sample", *Journal of Pediatric Psychology*, vol. 33, no. 7, pp. 772-782.	Not called (whole) system approach/ working/ other
Schuster, R. J., Tasosa, J., & Terwoord, N. A. 2008, "Translational research--implementation of NHLBI Obesity Guidelines in a primary care community setting: the Physician Obesity Awareness Project", *Journal of Nutrition, Health & Aging*, vol. 12, no. 10, pp. 764S-769S.	Not called (whole) system approach/ working/ other
Schwarz, P. E. H., Li, J., Lindstrom, J., Bergmann, A., Gruhl, U., Saaristo, T., & Tuomilehto, J. 2007, "How should the clinician most effectively prevent type 2 diabetes in the obese person at high risk?. [Review] [57 refs]", *Current Diabetes Reports*, vol. 7, no. 5, pp. 353-362.	Not called (whole) system approach/ working/ other
Scott, A. 2008, "Screening for malnutrition in the community: the MUST tool", *British Journal of Community Nursing*, vol. 13, no. 9, pp. 406-2.	Not called (whole) system approach/ working/ other
Seidel, M. C., Powell, R. O., Zgibor, J. C., Siminerio, L. M., & Piatt, G. A. 2008, "Translating the Diabetes Prevention Program into an urban medically underserved community: a nonrandomized prospective intervention study", *Diabetes Care*, vol. 31, no. 4, pp. 684-689.	Not called (whole) system approach/ working/ other

Q1 (WSA in theory) exclusion references	Reason
Seidell, J. C., Nooyens, A. J., Visscher, T. L. 2005, "Cost-effective measures to prevent obesity: epidemiological basis and appropriate target groups", *Proceedings of the Nutrition Society*, vol. 64, no. 1, pp. 1-5.	Potentially relevant for cost-effectiveness review/economic modelling
Sharp, L. K., Curtis, L. M., Mosnaim, G., Shalowitz, M. U., Catrambone, C., & Sadowski, L. S. 2009, "The influence of caregiver's psychosocial status on childhood asthma and obesity", *Annals of Allergy, Asthma, & Immunology*, vol. 103, no. 5, pp. 386-394.	Not called (whole) system approach/ working/ other
Shetty, P. 259, "Community-based approaches to address childhood undernutrition and obesity in developing countries", *Nestle Nutrition Workshop Series*, vol. Paediatric Programme. 63, pp. 227-254.	Not called (whole) system approach/ working/ other
Shibli, R., Rubin, L., Akons, H., & Shaoul, R. 2008, "Morbidity of overweight (>or=85th percentile) in the first 2 years of life", *Pediatrics*, vol. 122, no. 2, pp. 267-272.	Not called (whole) system approach/ working/ other
Shobe, M. A. & Dienemann, J. 2008, "Intimate Partner Violence in the United States: An Ecological Approach to Prevention and Treatment", *Social Policy and Society*, vol. no. 2, no. pp. 185	Not relevant to public health
Shrewsbury, V. A., O'Connor, J., Steinbeck, K. S., Stevenson, K., Lee, A., Hill, A. J., Kohn, M. R., Shah, S., Torvaldsen, S., & Baur, L. A. 2009, "A randomised controlled trial of a community	Potentially relevant for effectiveness review
Sims, R., Gordon, S., Garcia, W., Clark, E., Monye, D., Callender, C., & Campbell, A. 2008, "Perceived stress and eating behaviors in a community-based sample of African Americans", *Eating Behaviors*, vol. 9, no. 2, pp. 137-142.	Not called (whole) system approach/ working/ other
Singh, N. P., Ingle, G. K., Saini, V. K., Jami, A., Beniwal, P., Lal, M., & Meena, G. S. 2009, "Prevalence of low glomerular filtration rate, proteinuria and associated risk factors in North India using Cockcroft-Gault and Modification of Diet in Renal Disease equation: an observational, cross-sectional study", *BMC Nephrology*, vol. 10, p. 4.	Not called (whole) system approach/ working/ other
Smith, S. A., Hulsey, T., & Goodnight, W. 2008, "Effects of obesity on pregnancy. [Review] [53 refs]", *JOGNN - Journal of Obstetric, Gynecologic, & Neonatal Nursing*, vol. 37, no. 2, pp. 176-184.	Not called (whole) system approach/ working/ other
Sohler, N., Lubetkin, E., Levy, J., Soghomonian, C., & Rimmerman, A. 2009, "Factors associated with obesity and coronary heart disease in people with intellectual disabilities", *Social Work in Health Care*, vol. 48, no. 1, pp. 76-89.	Not called (whole) system approach/ working/ other
Sonneville, K. R., La Pelle, N., Taveras, E. M., Gillman, M. W., & Prosser, L. A. 2009, "Economic and other barriers to adopting recommendations to prevent childhood obesity: results of a focus group study with parents", *BMC Pediatrics*, vol. 9, p. 81.	Not called (whole) system approach/ working/ other

Q1 (WSA in theory) exclusion references	Reason
Sothern, M. S. 2004, "Obesity prevention in children: physical activity and nutrition", *Nutrition*, vol. 20, no. 7/8, pp. 704-709.	Not called (whole) system approach/ working/ other
Speliotes, E. K., Massaro, J. M., Hoffmann, U., Foster, M. C., Sahani, D. V., Hirschhorn, J. N., O'Donnell, C. J., & Fox, C. S. 2008, "Liver fat is reproducibly measured using computed tomography in the Framingham Heart Study", *Journal of Gastroenterology & Hepatology*, vol. 23, no. 6, pp. 894-899.	Not called (whole) system approach/ working/ other
Speroni, K. G., Tea, C., Earley, C., Niehoff, V., & Atherton, M. 2008, "Evaluation of a pilot hospital-based community program implementing fitness and nutrition education for overweight children", *Journal for Specialists in Pediatric Nursing: JSPN*, vol. 13, no. 3, pp. 144-153.	Not called (whole) system approach/ working/ other
Stanish, H. I., McCubbin, J. A., Draheim, C. C., & van der, Mars. H. 2001, "Participation of adults with mental retardation in a video- and leader-directed aerobic dance program", *Adapted Physical Activity Quarterly*, vol. 18, no. 2, pp. 142-156.	Not called (whole) system approach/ working/ other
Stessman, J., Jacobs, J. M., Ein-Mor, E., & Bursztyn, M. 2009, "Normal body mass index rather than obesity predicts greater mortality in elderly people: the Jerusalem Longitudinal Study", *Journal of the American Geriatrics Society*, vol. 57, no. 12, pp. 2232-2239.	Not called (whole) system approach/ working/ other
Stokols, D. 1996, "Translating social ecological theory into guidelines for community health promotion", *American Journal of Health Promotion*, vol. 10, no. 4, pp. 282	Duplicate
Suarez-Balcazar, Y., Redmond, L., Kouba, J., Hellwig, M., Davis, R., Martinez, L. I., & Jones, L. 2007, "Introducing systems change in the schools: the case of school luncheons and vending machines", *American Journal of Community Psychology*, vol. 39, no. 3-4, pp. 335-345.	Duplicate
Subak, L. L., Richter, H. E., & Hunskaar, S. 2009, "Obesity and urinary incontinence: epidemiology and clinical research update. [Review] [44 refs]", *Journal of Urology*, vol. 182, no. 6 Suppl, p. S2-S7.	Not called (whole) system approach/ working/ other
Swain, C. 2009, "MEND programmes: community solutions to a national problem", *Primary Health Care*, vol. 19, no. 6, pp. 20-24.	Not called (whole) system approach/ working/ other
Swinburn, B., Bell, C., King, L., Magarey, A., O'Brien, K., Waters, E., & Primary Prevention Group of the Australian Childhood and Adolescent Obesity Research Network. 2007, "Obesity prevention programs demand high	Potentially relevant for effectiveness review

Q1 (WSA in theory) exclusion references	Reason
Takata, Y., Ansai, T., Soh, I., Akifusa, S., Sonoki, K., Fujisawa, K., Awano, S., Kagiyama, S., Hamasaki, T., Nakamichi, I., Yoshida, A., & Takehara, T. 2007, "Association between body mass index and mortality in an 80-year-old population", *Journal of the American Geriatrics Society*, vol. 55, no. 6, pp. 913-918.	Not called (whole) system approach/ working/ other
Tas, U., Verhagen, A. P., Bierma-Zeinstra, S. M., Hofman, A., Odding, E., Pols, H. A., & Koes, B. W. 2007, "Incidence and risk factors of disability in the elderly: the Rotterdam Study", *Preventive Medicine*, vol. 44, no. 3, pp. 272-279.	Not called (whole) system approach/ working/ other
Taylor, R. W., McAuley, K. A., Barbezat, W., Strong, A., Williams, S. M., & Mann, J. I. 2007, "APPLE Project: 2-y findings of a community-based obesity prevention program in primary school age children", *American Journal of Clinical Nutrition*, vol. 86, no. 3, pp. 735-742.	Not called (whole) system approach/ working/ other
Teichtahl, A. J., Wang, Y., Wluka, A. E., Szramka, M., English, D. R., Giles, G. G., O'Sullivan, R., & Cicuttini, F. M. 2008, "The longitudinal relationship between body composition and patella cartilage in healthy adults", *Obesity*, vol. 16, no. 2, pp. 421-427.	Not called (whole) system approach/ working/ other
Teichtahl, A. J., Wluka, A. E., Wang, Y., Hanna, F., English, D. R., Giles, G. G., & Cicuttini, F. M. 2009, "Obesity and adiposity are associated with the rate of patella cartilage volume loss over 2 years in adults without knee osteoarthritis", *Annals of the Rheumatic Diseases*, vol. 68, no. 6, pp. 909-913.	Not called (whole) system approach/ working/ other
Thomas, G. N., Hong, A. W. L., Tomlinson, B., Lam, C. W. K., Critchley, J. A. J., Sanderson, J. E., Woo, J., & Lau, E. 2004, "Increasing insulin resistance contributes to worsening glycaemic and lipid profiles in older Chinese subjects", *Diabetes Research & Clinical Practice*, vol. 64, no. 2, pp. 123-129.	Not called (whole) system approach/ working/ other
Thorstensson, C. A., Gooberman-Hill, R., Adamson, J., Williams, S., & Dieppe, P. 2009, "Help-seeking behaviour among people living with chronic hip or knee pain in the community", *BMC Musculoskeletal Disorders*, vol. 10, p. 153.	Not called (whole) system approach/ working/ other
Thurston, R. C., Sowers, M. R., Sutton-Tyrrell, K., Everson-Rose, S. A., Lewis, T. T., Edmundowicz, D., & Matthews, K. A. 2008, "Abdominal adiposity and hot flashes among midlife women", *Menopause (10723714)*, vol. 15, no. 3, pp. 429-435.	Not called (whole) system approach/ working/ other
Tsuchiya, N. 2000, "A minor complaint with major consequences: a survey of urinary incontinence in Japan", *Journal* p. -NaN.	Not called (whole) system approach/ working/ other
Twiss, J., Dickinson, J., Duma, S., Kleinman, T., Paulsen, H., & Rilveria, L. 2003, "Community gardens: lessons learned from California Healthy Cities and Communities", *American Journal of Public Health*, vol. 93, no. 9, pp. 1435-1438.	Duplicate

Q1 (WSA in theory) exclusion references	Reason
Tyler, D. O., Allan, J. D., & Alcozer, F. R. 1997, "Weight loss methods used by African American and Euro-American women", *Research in Nursing & Health*, vol. 20, no. 5, pp. 413-424.	Not called (whole) system approach/ working/ other
Utter, J., Scragg, R., Ni Mhurchu, C., & Schaaf, D. 2007, "What effect do attempts to lose weight have on the observed relationship between nutrition behaviors and body mass index among adolescents?", *International Journal of Behavioral Nutrition & Physical Activity*, vol. 4, p. 40.	Potentially relevant for effectiveness review
Utter, J., Scragg, R., Schaaf, D., & Mhurchu, C. N. 2008, "Relationships between frequency of family meals, BMI and nutritional aspects of the home food environment among New Zealand adolescents", *International Journal of Behavioral Nutrition & Physical Activity*, vol. 5, p. 50.	Potentially relevant for effectiveness review
Velagaleti, R. S., & Vasan, R. S. 2007, "Heart failure in the twenty-first century: is it a coronary artery disease or hypertension problem?. [Review] [98 refs]", *Cardiology Clinics*, vol. 25, no. 4, pp. 487-495.	Not called (whole) system approach/ working/ other
Viana, V., Sinde, S., & Saxton, J. C. 2008, "Children's Eating Behaviour Questionnaire: associations with BMI in Portuguese children", *British Journal of Nutrition*, vol. 100, no. 2, pp. 445-450.	Not called (whole) system approach/ working/ other
Villagra, V. G. 2009, "An obesity/cardiometabolic risk reduction disease management program: a population-based approach", *American Journal of Medicine*, vol. 122, no. 4 Suppl 1, p. S33-S36.	Not called (whole) system approach/ working/ other
Vogelzangs, N., Beekman, A. T. F., Kritchevsky, S. B., Newman, A. B., Pahor, M., Yaffe, K., Rubin, S. M., Harris, T. B., Satterfield, S., Simonsick, E. M., & Penninx, W. J. H. 2007, "Psychosocial risk factors and the metabolic syndrome in elderly persons: findings from the Health, Aging and Body Composition study", *Journals of Gerontology Series A: Biological Sciences & Medical Sciences*, vol. 62A, no. 5, pp. 563-570.	Not called (whole) system approach/ working/ other
Vogt, M. T., Valentin, R. S., Forrest, K. Y., Nevitt, M. C., & Cauley, J. A. 1997, "Bone mineral density and aortic calcification: the study of osteoporotic fractures", *Journal of the American Geriatrics Society*, vol. 45, no. 2, pp. 140-146.	Not called (whole) system approach/ working/ other
Vogt, R., Bersamin, A., Ellemberg, C., & Winkleby, M. A. 2008, "Evaluation of risk factors and a community intervention to increase control and treatment of asthma in a low-income semi-rural California community", *Journal of Asthma*, vol. 45, no. 7, pp. 568-574.	Not called (whole) system approach/ working/ other
Wang, C. S., Wang, S. T., Yao, W. J., Chang, T. T., & Chou, P. 2007, "Hepatitis C virus infection and the development of type 2 diabetes in a community-based longitudinal study", *American Journal of Epidemiology*, vol. 166, no. 2, pp. 196-203.	Not called (whole) system approach/ working/ other
Wang, L., Yao, D., & Wu, T. 2004, "Prevalence of overweight and smoking patients with coronary heart disease in rural China", *Australian Journal of Rural Health*, vol. 12, no. 1, pp. 17-22.	Not called (whole) system approach/ working/ other

Q1 (WSA in theory) exclusion references	Reason
Wang, T. T., Chen, T. H., Wang, P. E., Lai, H., Lo, M. T., Chen, P. Y., Chiu, S. Y. 2009, "A population-based study on the association between type 2 diabetes and periodontal disease in 12,123 middle-aged Taiwanese (KCIS No. 21)", *Journal of Clinical Periodontology*, vol. 36, no. 5, pp. 372-379.	Not called (whole) system approach/ working/ other
Waqa, G., & Mavoa, H. 2006, "Sociocultural factors influencing the food choices of 16-18 year-old indigenous Fijian females at school", *Pacific Health Dialog*, vol. 13, no. 2, pp. 57-64	Potentially relevant for qualitative review
Ward-Begnoche, W. L., Gance-Cleveland, B., Harris, M. M., & Dean, J. 2008, "Description of the Design and Implementation of a School-Based Obesity Prevention Program Addressing Needs of Middle School Students", *Journal of Applied School Psychology*, vol. no. 2, no. pp. 247-263.	Not called (whole) system approach/ working/ other
Ward-Begnoche, W. L., Gance-Cleveland, B., Simpson, P., Parker, J., Jo, C., Dean, J., Graham, D., & Thompson, J. 2009, "Effectiveness of a school-based obesity prevention program", *International Journal of Health Promotion & Education*, vol. 47, no. 2, pp. 51-57.	Not called (whole) system approach/ working/ other
Watanabe, H., Tanabe, N., Watanabe, T., Darbar, D., Roden, D. M., Sasaki, S., & Aizawa, Y. 2008, "Metabolic syndrome and risk of development of atrial fibrillation: the Niigata preventive medicine study", *Circulation*, vol. 117, no. 10, pp. 1255-1261.	Not called (whole) system approach/ working/ other
Waters, E. 2009, "Building an evidence base to meet the needs of those tackling obesity prevention", *J Public Health (Oxf)*, vol. 31, no. 2, pp. 300-302.	Not called (whole) system approach/ working/ other
Weinrich, S. P., Priest, J., Reynolds, W., Godley, P. A., Tuckson, W. & Weinrich, M.2007, "Body mass index and intake of selected foods in African American men", *Public Health Nursing*, vol. 24, no. 3, pp. 217-229.	Not called (whole) system approach/ working/ other
Welsh, E. M., Sherwood, N. E., Van Wormer, J. J., Hotop, A. M., Jeffery 2009, "Is frequent self-weighing associated with poorer body satisfaction? Findings from a phone-based weight loss trial", *Journal of Nutrition Education & Behavior*, vol. 41, no. 6, pp. 425-428.	Not called (whole) system approach/ working/ other
Wen, L. M., Baur, L. A., Rissel, C., Wardle, K., Alperstein, G., Simpson, J. M.2007, "Early intervention of multiple home visits to prevent childhood obesity in a disadvantaged population: a home-based randomised controlled trial (Healthy Beginnings Trial)", *BMC Public Health*, vol. 7, p. 76.	Not called (whole) system approach/ working/ other
West, N. A. & Haan, M. N. 2009, "Body adiposity in late life and risk of dementia or cognitive impairment in a longitudinal community-based study", *Journals of Gerontology Series A: Biological Sciences & Medical Sciences*, vol. 64A, no. 1, pp. 103-110.	Not called (whole) system approach/ working/ other

Q1 (WSA in theory) exclusion references	Reason
Whaley-Connell, A. T., Sowers, J. R., McFarlane, S. I., Norris, K. C., Chen, S., Li, S., Qiu, Y., Wang, C., Stevens, L. A., Vassalotti, J. A., & Collins, A. J. 2008, "Diabetes mellitus in CKD: Kidney Early Evaluation Program (KEEP) and National Health and Nutrition and Examination Survey (NHANES) 1999-2004", *American Journal of Kidney Diseases*, vol. 51, no. 4 Suppl 2, p. S21-NaN.	Duplicate
Whaley-Connell, A. T., Sowers, J. R., Stevens, L. A., McFarlane, S. I., Shlipak, M. G., Norris, K. C., Chen, S., Qiu, Y., Wang, C., Li, S., Vassalotti, J. A., & Collins, A. J. 2008, "CKD in the United States: Kidney Early Evaluation Program (KEEP) and National Health and Nutrition Examination Survey (NHANES) 1999-2004", *American Journal of Kidney Diseases*, vol. 51, no. 4 Suppl 2, p. S13-NaN.	Not called (whole) system approach/ working/ other
White House Task Force on Childhood Obesity Report to the President 2010, *SOLVING THE PROBLEM OF CHILDHOOD OBESITY WITHIN A GENERATION: White House Task Force on Childhood Obesity Report to the President*.	Not called (whole) system approach/ working/ other
Wieringa, N. F., van der Windt, H. J., Zuiker, R. R. M., Dijkhuizen, L., Verkerk, M. A., Vonk, R. J., & Swart, J. A. A. 2008, "Positioning functional foods in an ecological approach to the prevention of overweight and obesity", *Obesity Reviews*, vol. 9, no. 5, pp. 464-473.	Duplicate
Williams, J. H., Belle, G. A., Houston, C., Haire-Joshu, D., & Auslander, W. F. 2001, "Process evaluation methods of a peer-delivered health promotion program for African American women", *Health Promotion Practice*, vol. 2, no. 2, pp. 135-143.	Not called (whole) system approach/ working/ other
Williams-Piehota, P. A., McCormack, L. A., Bann, C. M., O'Toole, M., Burton, J., Karns, S., Lux, L., & Kamerow, D. 2009, "Physical activity levels among participants in the Robert Wood Johnson Foundation Diabetes Initiative", *Diabetes Spectrum*, vol. 22, no. 3, pp. 170-178.	Not called (whole) system approach/ working/ other
Wilson, D. K. 2009, "New perspectives on health disparities and obesity interventions in youth. [Review] [49 refs]", *Journal of Pediatric Psychology*, vol. 34, no. 3, pp. 231-244.	Not called (whole) system approach/ working/ other
Wing, Y. K., Li, S. X., Li, A. M., Zhang, J., Kong, A. P.2009, "The effect of weekend and holiday sleep compensation on childhood overweight and obesity", *Pediatrics*, vol. 124, no. 5, p. e994-e1000.	Not called (whole) system approach/ working/ other
Wolman, J., Skelly, E., Kolotourou, M., Lawson, M., Sacher, P.2008, "Tackling toddler obesity through a pilot community-based family intervention", *Community Practitioner*, vol. 81, no. 1, pp. 28-31.	Not called (whole) system approach/ working/ other
Wright, S. C. & Ramukumba, T. S. 2008, "Lifestyle risk factors in an urban South African community", *Curationis*, vol. 31, no. 1, pp. 68-77.	Not called (whole) system approach/ working/ other

Q1 (WSA in theory) exclusion references	Reason
Wylie, A., Furmedge, D. S., Appleton, A., Toop, H., Coats,T. 2009, "Medical curricula and preventing childhood obesity: pooling the resources of medical students and primary care to inform curricula", *Education for Primary Care*, vol. 20, no. 2, pp. 87-92.	Not called (whole) system approach/ working/ other
Yamagata, K., Ishida, K., Sairenchi, T., Takahashi, H., Ohba, S., Shiigai, T., Narita, M., & Koyama, A. 2007, "Risk factors for chronic kidney disease in a community-based population: a 10-year follow-up study", *Kidney International*, vol. 71, no. 2, pp. 159-167.	Not called (whole) system approach/ working/ other
Yang, Y., Wu, J., Lu, F., Chang, W., Wu, C., & Chang, C. 2007, "In addition to obesity and insulin resistance, microalbuminuria and diminished insulin secretion are linked with the metabolic syndrome in community-dwelling nondiabetic Taiwanese subjects", *Diabetes Research & Clinical Practice*, vol. 76, no. 1, pp. 102-111.	Not called (whole) system approach/ working/ other
Yoo, H. J., Kim, B. T., Park, Y. W., Park, K. H., Kim, C. W., Joo, N. S.2010, "Difference of body compositional changes according to the presence of weight cycling in a community-based weight control program", *Journal of Korean Medical Science*, vol. 25, no. 1, pp. 49-53.	Not called (whole) system approach/ working/ other
Zhang, W., Sun, K., Yang, Y., Zhang, H., Hu, F. B.,2009, "Plasma uric acid and hypertension in a Chinese community: prospective study and metaanalysis", *Clinical Chemistry*, vol. 55, no. 11, pp. 2026-2034.	Not called (whole) system approach/ working/ other

Q2 (WSA in practice) exclusion references	Reason
Abrams, D. B., Graham, A. L., Levy, D. T., Mabry, P. L., & Orleans, C. T. 2010, "Boosting population quits through evidence	Insufficient description of key elements and relationships of a WSA
Allender, S., Gleeson, E., Crammond, B., Sacks, G., Lawrence, M., Peeters, A., Loff, B., & Swinburn, B. 2009, "Moving beyond 'rates, roads and rubbish': How do local governments make choices about healthy public policy to prevent obesity?", *Australian and New Zealand Health Policy*, vol. 23, no. 6, p. 20.	Doesn't describe Whole System approach in theory or in practice
American Dietetic Association 2006, "Position of the American Dietetic Association: individual-, family-, school-, and community-based interventions for pediatric overweight", *Journal of the American Dietetic Association*, vol. 106, no. 6, pp. 925-945.	Doesn't describe Whole System approach in theory or in practice
Anon. 2010, *Healthy weight and healthy lives in Hillingdon (DRAFT)*, NHS Hillingdon, London.	Doesn't describe Whole System approach in theory or in practice
Ashton, A., Gillespie, B., & Dawson, J. 2010, *Manchester's healthy weight strategy 2010-2013*, NHS Manchester, Manchester.	Doesn't describe Whole System approach in theory or in practice
ASTHO & NIHCM 2007, *Childhood Obesity: Harnessing the Power of Public and Private Partnerships*, Association of State and Territorial Health Officials & National Institute for Health Care Management Foundation.	Doesn't describe Whole System approach in theory or in practice
Bailey, K. D. 1994, *Sociology and the new systems theory: Toward a theoretical synthesis* State University of New York Press, Saratoga Springs, NY	Doesn't describe Whole System approach in theory or in practice
Bailey, N. T. J. 1991, "The use of operational modelling of HIV/AIDS in a systems approach to public health decision making" *Mathematical Biosciences*, vol. 107, no. 2, pp. 413-430.	Doesn't describe Whole System approach in theory or in practice
Barnes, M., Sullivan, H., & Matka, E. 2003, *The development of collaborative capacity in Health Action Zones: A final report from the national evaluation*, University of Birmingham, Birmingham.	Doesn't describe Whole System approach in theory or in practice
Batterman, S., Eisenberg, J., Hardin, R., Kruk, M. E., Lemos, M. C., Michalak, A. M., Mukherjee, B., Renne, E., Stein, H., Watkins, C., & Wilson, M. L. 2009, "Sustainable control of water-related infectious diseases: a review and proposal for interdisciplinary health-based systems research", *Environmental Health Perspectives*, vol. 117, no. 7, pp. 1023-1033.	Doesn't describe Whole System approach in theory or in practice
Biener, L., Harris, J., & Hamilton, W. 2004, "Impact of the Massachusetts tobacco control programme: population based trend analysis", *MMWR Morb Mortal Wkly Rep*, vol. 54, pp. 1121	Potentially relevant for effectiveness review
BMA 2005, *Preventing Childhood Obesity*.	Doesn't describe Whole System approach in

	theory or in practice
Borys, J. M., Peze, K., Guinot, S., & et. al. 2007, "The EPODE - Ensemble prevenons l'Obesite des enfants - obesity prevention program: A holistic approach to nutrition ", *Annals of Nutrition and Metabolism*, vol. 51, no. 1, p. 333.	Abstract only
Borys, J. M., Peze, K., LeBodo, Y., & et.al. 2008, "Obesity prevention in childhood: first results of EPODE program ", *International Journal of Obesity*, vol. 32, p. S198.	Abstract only
Borys, J. M., Peze, K., LeBodo, Y., & et.al. 2010, "EPODE European Network: Integrative approaches on lifestyles to prevent", *International Journal of Obesity*, vol. 32, p. S221.	Abstract only
Borys, J. M., Romon, M., & Raffib, S. 2007, "Preventing childhood obesity: EPODE, a successful long term integrated community approach", *International Journal of Obesity*, vol. 31, no. S199, p. S199.	Abstract only
Breslow, L. 1996, "Social ecological strategies for promoting healthy lifestyles", *American Journal of Health Promotion; 10 (4) Mar/Apr 96* p. -7.	Programme, but not WSA
Brommels, M. 2006, *Order out of chaos? Implications of complexity theory for healthcare managment.*	Doesn't describe Whole System approach in theory or in practice
Bronfenbrenner, U. 1979, *The Ecology of Human Development: Experiments by Nature and Design* Harvard University Press, CA, Massacheusetts.	Doesn't describe Whole System approach in theory or in practice
Bubolz, M. M. & Sontag, M. S. 1993, "Human ecology theory," in *Sourcebook of family theories and methods: a contextual approach*, P. Boss et al., eds., Plenum Press, New York.	Unobtainable
Bull, S., Eakin, E., Reeves, M., Kimberly, R.2006, "Multi-level support for physical activity and healthy eating", *Journal of Advanced Nursing*, vol. 54, no. 5, pp. 585-593.	Doesn't describe Whole System approach in theory or in practice
Butterfoss, F. D., Goodman, R. M., & Wandersman, A. 1993, "Community coalitions for prevention and health promotion", *Health Education Research*, vol. 8, no. 3, pp. 315-330.	Doesn't describe Whole System approach in theory or in practice
Cabinet Office 2007, *Capability review of the Department of Health*, Cabinet Office, London.	Doesn't describe Whole System approach in theory or in practice
Caraher, M. & Dowler, E. 2007, "Food projects in London: lessons for policy and practice -- a hidden sector and the need for 'more unhealthy puddings...sometimes'", *Health Education Journal*, vol. 66, no. 2, pp. 188-206.	Doesn't describe Whole System approach in theory or in practice
Chaffee, M. W. & McNeill, M. M. 2007, "A model of nursing as a complex adaptive system", *Nursing Outlook*, vol. 55, no. 5, pp. 232	Doesn't describe Whole System approach in theory or in practice

Chang, D. I., Bultman, L., Drayton, V. L., Knight, E. K., Rattay, K. T., & Barrett, M. 2007, "Beyond medical care: how health systems can address children's needs through health promotion strategies", *Health Affairs*, vol. 26, no. 2, pp. 466-474.	Not applicable to local level
Cheadle, A., Beery, W. L., Greenwald, H. P., Nelson, G. D., Pearson, D., & Senter, S. 2003, "Evaluating the California Wellness Foundation's Health Improvement Initiative: a logic model approach", *Health Promotion Practice*, vol. 4, no. 2, pp. 146-157.	Potentially relevant for effectiveness review
Checkland, P. 1995, *Systems thinking, systems practice* Wiley, Bath.	Doesn't describe Whole System approach in theory or in practice
Chee, K. C. 2009, "Choosing health, constrained choices", *Global Health Promotion*, vol. 16, no. 4, pp. 54-57.	Doesn't describe Whole System approach in theory or in practice
Choi, K., Yep, G. A., & Kumekawa, E. 1998, "HIV prevention among Asian and Pacific Islander American men who have sex with men: a critical review of theoretical models and directions for future research", *AIDS Education & Prevention*, vol. 10, no. 3, pp. 19-31.	Doesn't describe Whole System approach in theory or in practice
Cilliers, P. 2001, "Boundaries, hierarchies and networks in complex systems.", *International Journal of Innovation Management*, vol. 5, pp. 135-147.	Doesn't describe Whole System approach in theory or in practice
CLOCC 2003, *CLOCC: Consortium to Lower Obesity in Chicago Children*.	Unobtainable
Cochrane, T., & Davey, R. C. 2008, "Increasing uptake of physical activity: a social ecological approach", *Journal of the Royal Society for the Promotion of Health*, vol. 128, no. 1, pp. 31-40.	Doesn't describe Whole System approach in theory or in practice
Coleman, K. J., Tiller, C. L., Sanchez, J., Heath, E. M., Sy, O., Milliken, G., & Dzewaltowski, D. A. 2005, "Prevention of the epidemic increase in child risk of overweight in low	Doesn't describe Whole System approach in theory or in practice
Commission on the Social Determinants of Health 2005, *Towards a conceptual framework for analysis and action on the social determinants of health*, WHO, Geneva.	Doesn't describe Whole System approach in theory or in practice
Dattee, B. & Barlow, J. 2010, "Complexity and whole-system change programmes", *Journal of Health Services and Policy*, vol. 15, no. Suppl 2, pp. 19-25.	Doesn't describe Whole System approach in theory or in practice
Davies, H. & Nutley, S. 2000, "Developing learning organisations in the new NHS", *British Medical Journal*, vol. 320, pp. 998-1001.	Doesn't describe Whole System approach in theory or in practice
Davison, K. K., & Birch, L. L. 2001, "Childhood overweight: a contextual model and recommendations for future research. [Review] [117 refs]", *Obesity Reviews*, vol. 2, no. 3, pp. 159	Insufficient description of key elements and relationships of a WSA
De Silva-Sanigorski, A. M., Bolton, K., Haby, M., Kremer, P., Gibbs, L., Waters, E., & Swinburn, B. 2010, "Scaling up community-based obesity prevention in Australia: Background and evaluation design of the	Doesn't describe Whole System approach in

Health Promoting Communities: Being Active Eating Well initiative", *BMC Public Health*, vol. 10, no. 1, p. 65.	theory or in practice
Deakin University 2007, *WHO Collaborating Centre for Obesity Prevention and Related Research and Training*.	Unobtainable
Denney-Wilson, E., & Baur, L. A. 2007, "Adolescent obesity: making a difference to the epidemic. [Review] [45 refs]", *International Journal of Adolescent Medicine & Health*, vol. 19, no. 3, pp. 235-243.	Doesn't describe Whole System approach in theory or in practice
Dickinson, J., Duma, S., Paulsen, H., Rilveria, L., Twiss, J., & Weinman, T. 2003, "Community gardens: lessons learned from California healthy cities and communities", *American Journal of Public Health; 93 (9) Sep 2003* p. -1438.	Doesn't describe Whole System approach in theory or in practice
Dooris, M. 2009, "Holistic and sustainable health improvement: the contribution of the settings	Doesn't describe Whole System approach in theory or in practice
Duckett, S. J. 2000, "The Australian health care system", *South Melbourne, Vic: Oxford UP*.	Doesn't describe Whole System approach in theory or in practice
Dwyer, J., Needham, L., Simpson, J. R., Heeney, E. S., Dwyer, J., Needham, L., Simpson, J. R., & Heeney, E. S. 2008, "Parents report intrapersonal, interpersonal, and environmental barriers to supporting healthy eating and physical activity among their preschoolers", *Applied Physiology, Nutrition, & Metabolism = Physiologie Appliquee, Nutrition et Metabolisme*, vol. 33, no. 2, pp. 338	Potentially relevant for qualitative review
Edwards, P. & Tsouros, A. 2006, *Promoting physical activity and active living in urban environments: The Role of Local Governments*, WHO Europe, Copenhagen.	Not applicable to local level
Egger, G. & Swinburn, B. 1997, "An "ecological" approach to the obesity pandemic", *British Medical Journal*, vol. 315, no. 7106, pp. 477	Insufficient description of key elements and relationships of a WSA
Egger, G., Swinburn, B., & Rossner, S. 2003, "Dusting off the epidemiological triad: could it work with obesity?", *Obes.Rev.*, vol. 4, pp. 115-119.	Doesn't describe Whole System approach in theory or in practice
Eiglad, E. & Bookchin, M. 2007, *Social ecology and communalism* AK Press, Berkeley, CA.	Unobtainable
El, A. W. & Phillips, C. J. 2001, "Interprofessional collaboration: a stakeholder approach to evaluation of voluntary participation in community partnerships", *Journal of Interprofessional Care*, vol. 15, no. 4, pp. 351-369.	Doesn't describe Whole System approach in theory or in practice
Ellis, T. 2005, *Regional public health systems event workshop*, North West Strategic Health Authorities and Government Office North West, Stockport.	Unobtainable
EPODE 2005, *EPODE: Together, Let's Prevent Childhood Obesity: A Year of Pragmatic Actions For,*	Not applicable to local level

With and By the Community.

Erikkson, J., Forsen, T., Osmond, C., & Barker, D. 2003, "Obesity From Cradle to Grave", *International Journal of Obesity*, vol. 27, pp. 722-727.	Doesn't describe Whole System approach in theory or in practice
Estabrooks, P. A., Fisher, E. B., & Hayman, L. L. 2008, "What is needed to reverse the trends in childhood obesity? A call to action", *Annals of Behavioral Medicine*, vol. 36, no. 3, pp. 209	Potentially relevant for effectiveness review
Finegood, D. T., Karanfil, O., & Matteson, C. L. 2008, "Getting from analysis to action: framing obesity research, policy and practice with a solution-oriented complex systems lens", *Healthcarepapers*, vol. 9, no. 1, pp. 36-41.	Doesn't describe Whole System approach in theory or in practice
Finegood, D. T., Merth, T. D. N., & Rutter, H. 2010, "Implications of the Foresight Obesity System Map for Solutions to Childhood Obesity", *Obesity*, vol. 18, p. S13	Doesn't describe Whole System approach in theory or in practice
Finnish Ministry of Social Affairs and Health, a. E. O. o. H. S. a. P. 2006, *Health in all policies: prospects and potentials*, Finnish Ministry of Social Affairs and Health, and European Observatory on Health Systems and Policies, Helsinki.	Doesn't describe Whole System approach in theory or in practice
Fiore, M. C., Keller, P. A., & Curry, S. J. 2007, "Health system changes to facilitate the delivery of tobacco-dependence treatment", *Am J Prev.Med.*, vol. 33, no. 6 Suppl, p. S349-S356.	Doesn't describe Whole System approach in theory or in practice
Fleury, J., & Lee, S. M. 2006, "The social ecological model and physical activity in African American women. [Review] [81 refs]", *American Journal of Community Psychology*, vol. 37, no. 1-2, pp. 129-140.	Doesn't describe Whole System approach in theory or in practice
Galvez, M. P., Pearl, M., & Yen, I. H. 2010, "Childhood obesity and the built environment", *Current Opinion in Pediatrics*, vol. 22, no. 2, pp. 202-208.	Doesn't describe Whole System approach in theory or in practice
Gao, Y., Griffiths, S., & Chan, E. Y. 2007, "Community-based interventions to reduce overweight and obesity in China: a systematic review of the Chinese and English literature (Structured abstract)", *Journal of Public Health*, vol. 30, pp. 436-448	Unobtainable
Garcia, A. C. & Henry, C. J. 2000, "Perspectives in practice. Community participation in nutrition communication: models and linkage systems for management", *Canadian Journal of Dietetic Practice & Research*, vol. 61, no. 2, pp. 60-67.	Doesn't describe Whole System approach in theory or in practice
Gentile, D. A., Welk, G., Eisenmann, J. C., Reimer, R. A., Walsh, D. A., Russell, D. W., Callahan, R., Walsh, M., Strickland, S., Fritz, K.2009, "Evaluation of a multiple ecological level child obesity prevention program: Switch what you Do, View, and Chew", *BMC Medicine*, vol. 7, p. 49	Programme but not WSA
Giles-Corti, B. & King, A. C. 2009, "Creating active environments across the life course: "thinking outside the square"", *British Journal of Sports Medicine*, vol. 43, no. 2, pp. 109-113.	Programme, but not WSA

Gil-Gonzalez, D., Ruiz-Cantero, M. T., & Alvarez-Dardet, C. 2009, "How political epidemiology research can address why the millenium development goals have not been achieved: developing a research agenda", *J Epidemiol.Community Health*, vol. 63, pp. 278-280.	Doesn't describe Whole System approach in theory or in practice
Gilmartin, M. J. 1999, *Strategy and organizational effectiveness: A case study of health care service change*.	Programme but not WSA
Gohlke, J. M. & Portier, C. J. 2007, "The forest for the trees: a systems approach to human health research", *Environmental Health Perspectives*, vol. 115, no. 9, pp. 1261-1264.	Doesn't describe Whole System approach in theory or in practice
Golan, M., & Weizman, A. 2001, "Familial approach to the treatment of childhood obesity: conceptual mode. [Review] [37 refs]", *Journal of Nutrition Education*, vol. 33, no. 2, pp. 102-107.	Doesn't describe Whole System approach in theory or in practice
Gold, J. A., Frisch, J., Pepple, S., & Spurlin, D. 2000, "A systems approach works best for smoking cessation", *WMJ*, vol. 99, no. 8, p. 59.	Doesn't describe Whole System approach in theory or in practice
Gonzalez-Zapata, L. I., Ortiz-Moncada, C., & Alvarez-Dardet, C. 2007, "Mapping public policy options responding to obesity: the case of Spain", *Obesity Reviews*, vol. 8, no. 0, pp. 99-108.	Doesn't describe Whole System approach in theory or in practice
Greenhalgh, T., Plsek, P., Wilson, T., Fraser, R., & Holt, T. 2010, "Response to 'The appropriation of complexity theory in health care'", *Journal of Healh Services Research and Policy*, vol. 15, no. 2, pp. 115-117.	Doesn't describe Whole System approach in theory or in practice
Gregson, J., Foerster, S. B., Orr, R., Jones, L., Benedict, J., Clarke, B., Hersey, J., Lewis, J., & Zotz, K. 2001, "System, environmental, and policy changes: using the social	Potentially relevant for effectiveness review
Hall, K., Zimmerman, A., Samos, J., Simon, P. R., & Hollinshead, W. H. 1997, "Coordinating care for children's health: A public health integrated information systems approach", *American Journal of Preventive Medicine*, vol. 13, no. 2, pp. 32-36.	Doesn't describe Whole System approach in theory or in practice
Hall, N., Crosswaite, K., Hocking, A., Oortwjin, W., Nelissen, E., Mathijssen, J., & Summerbell, C. 2008, *Preventative public policy and childhood obesity: Case studies in England and the Netherlands*, ECORYS Research Programme, Leeds.	Doesn't describe Whole System approach in theory or in practice
Hammond, R. A. 2009, "Complex Systems Modeling for Obesity Research", *Preventing Chronic Disease*, vol. 6, no. 3.	Programme, but not WSA
Huang, T., Drewnowski, A., Kumanyika, S., & Glass, T. A. 2009, "A Systems-Oriented Multilevel Programme, but not WSA zFramework for Adressing Obesity in the 21st Century", *Preventing Chronic Disease*, vol. 6, no. 3.	Doesn't describe Whole System approach in theory or in practice
Hanson, G. F. 1996, *Transformation from informal community group to community-based health care*	Programme but not WSA

organization: a case study of change.	
Harvey, P. W., Steele, J., Bruggemann, J. N., Jeffery, R. W.1998, "The development and evaluation of lighten up, an Australian community-based weight management program", *American Journal of Health Promotion*, vol. 13, no. 1, pp. 8-11.	Doesn't describe Whole System approach in theory or in practice
Hawkins, S. S., Cole, T. J., Law, C., & Millennium Cohort Study Child Health Group. 2009, "An ecological systems approach to examining risk factors for early childhood overweight: findings from the UK Millennium Cohort Study", *Journal of Epidemiology & Community Health*, vol. 63, no. 2, pp. 147-155.	Doesn't describe Whole System approach in theory or in practice
Hawkins, S. S., Law, C.2006, "A review of risk factors for overweight in preschool children: a policy perspective. [Review] [154 refs]", *International Journal of Pediatric Obesity* , vol. 1, no. 4, pp. 195	Potentially relevant for effectiveness review
Henwood, M. & Hudson, B. 2005, "A happy couple?", *Community Care; (1587) 25 Aug 2005*	Insufficient description of key elements and relationships of a WSA
Hills, D., Elliot, E., Kowarzik, U., & Sullivan, F. 2010, *The evaluation of the Big Lottery Fund Healthy Living Centres Programme. Final Report. Bridge Consortium*, Big Lottery Fund, London.	Unobtainable
Hills, M., Mullett, J., & Carroll, S. 2007, "Community-based participatory action research: transforming multidisciplinary practice in primary health care", *Revista Panamericana de Salud PÃºblica*, vol. 21, no. 2-3, pp. 125-136	Potentially relevant for qualitative review
HNE Health 2007, *Hunter New England Child Obesity Prevention Programme*.	Unobtainable
Hobbs, S. H. 2008, "Getting from fat to fit: the role of policy in the obesity disaster", *Healthcare Papers*, vol. 9, no. 1, pp. 8-22.	Programme, but not WSA
Hoelscher, D. M., Springer, A. E., Ranjit, N., Perry, C. L., Evans, A. E., Stigler, M., & Kelder, S. H. 2010, "Reductions in child obesity among disadvantaged school children with community involvement: the Travis County CATCH Trial", *Obesity*, vol. 18 Suppl 1, p. S36	Doesn't describe Whole System approach in theory or in practice
Holder, H. D. 2001, "Prevention of alcohol problems in the 21st century: challenges and opportunities", *American Journal on Addictions*, vol. 10, no. 1, pp. 1-15.	Doesn't describe Whole System approach in theory or in practice
Hopper, J. A., & Gallagher, R. E. 2003, "Tobacco cessation: new challenges, new opportunities", *Journal of Cancer Education*, vol. 18, no. 3, pp. 128-133.	Doesn't describe Whole System approach in theory or in practice
Huberty, J. L., Balluff, M., O'Dell, M., & Peterson, K. 2010, "From good ideas to actions: A model-driven community collaborative to prevent childhood obesity", *Preventive Medicine*, vol. pp. S36-S43, no. Jan 2010.	Doesn't describe Whole System approach in theory or in practice
Humbert, L., Chad, K., Bruner, M., Spink, K., Muhajarine, N., Andersen, K., & et al. 2008, "Using a	Doesn't describe Whole System approach in

naturalistic ecological approach to examine the factors influencing youth physical activity across grades 7 to 12", *Health Education & Behavior*, vol. 35, no. 2, pp. 158-173.	theory or in practice
Hunter, D. J. 2008, "The state of the public health system in England", *Public Health*, vol. 122, no. 10, pp. 1042	Insufficient description of key elements and relationships of a WSA
Hunter, D. J. 2009, "Leading for health and wellbeing: the need for a new paradigm", *J Public Health (Oxf)*, vol. 31, no. 2, pp. 202-204.	Programme, but not WSA
Hunter, D. J., Marks, L., & Smith, K. 2007, *The public health system in England: a scoping study*, NIHR SDO, London, Final Report.	Programme, but not WSA
Institute of Medicine 2003, *The future of the public's health in the 21st Century*, The National Academies Press, Washington DC.	Doesn't describe Whole System approach in theory or in practice
IOTF report to WHO 2004, "Obesity in children and young people: A crisis in public health", *Obesity Reviews*.	Doesn't describe Whole System approach in theory or in practice
Jain, A. 2005, "Treating obesity in individuals and populations", *BMJ*, vol. 331, pp. 1387	Potentially relevant for effectiveness review
Jee, M., Popay, J., Everitt, A., & Eversley, J. 1999, "Evaluating a whole systems approach to primary health care development", *London - 11-13 Cavendish Square, W1G 0AN: King's Fund*.	Doesn't describe Whole System approach in theory or in practice
Joint Improvement Team 2005, *A-Z Introductory Guide to Health and Social Care in Scotland - Whole Systems Working*.	Doesn't describe Whole System approach in theory or in practice
Jordan, T. & Jordan, T. 2008, "Lite'n Up program", *Journal of the Kentucky Medical Association*, vol. 106, no. 3, pp. 114-117.	Doesn't describe Whole System approach in theory or in practice
Kegler, M. C., Painter, J. E., Twiss, J. M., Aronson, R., & Norton, B. L. 2009, "Evaluation findings on community participation in the California Healthy Cities and Communities program", *Health Promotion International*, vol. 24, no. 4, pp. 300	Potentially relevant for qualitative review
Kelder, S., Hoelscher, D. M., Barroso, C. S., Walker, J. L., Cribb, P., & Hu, S. 2005, "The CATCH Kids Club: a pilot after-school study for improving elementary students' nutrition and physical activity", *Public Health Nutrition*, vol. 8, no. 2, pp. 133-140	Doesn't describe Whole System approach in theory or in practice
Kennedy, V. C., & Moore, F. I. 2001, "A systems approach to public health workforce development", *Journal of Public Health Management & Practice*, vol. 7, no. 4, pp. 17-22.	Doesn't describe Whole System approach in theory or in practice
Key, J. D., Oexmann, M. J., & Russell, A. M. 2009, "Community and school-based interventions to prevent obesity in children and adolescents", *Journal - South Carolina Medical Association*, vol. 105, no.	Doesn't describe Whole System approach in theory or in practice

2, pp. 59-63.	
King, L. & Gill, T. 2009, *The CO-OPS collaboration of community-based obesity prevention sites. Best Practice Principles for Community-based Obesity Prevention*, CO-OPS Secretariat, Geelong.	Not applicable to local level
Kirk, S. F. L., Penney, T. L., & McHugh, T. l. F. 2009, "Characterizing the obesogenic environment: the state of the evidence with directions for future research", *Obesity Reviews.*	Doesn't describe Whole System approach in theory or in practice
Kok, G., Gottlieb, N. H., Commers, M., & Smerecnik, C. 2008, "The ecological approach in health promotion programs: a decade later", *American Journal of Health Promotion*, vol. 22, no. 6, pp. 437-443.	Doesn't describe Whole System approach in theory or in practice
Kopelman, P. & Kopelman, P. 2010, "Symposium 1: Overnutrition: consequences and solutions: Foresight Report: the obesity challenge ahead", *Proceedings of the Nutrition Society*, vol. 69, no. 1, pp. 80-85.	Programme, but not WSA
Krieger, N. 2001, "Historical roots of social epidemiology: socioeconomic gradients in health and contextual analysis", *International Journal of Epidemiology*, vol. 30, pp. 899-900.	Doesn't describe Whole System approach in theory or in practice
Krieger, N. 2001, "Theories for social epidemioogy in the 21st century: an eco-social perspective", *International Journal of Epidemiology*, vol. 30, pp. 668-677.	Doesn't describe Whole System approach in theory or in practice
Kuipers, Y. M. 2009, *Focusing on obesity through a health equity lens.*	Not applicable to local level
Kumanyika, S. K., Whitt-Glover, M. C., Gary, T. L., Prewitt, T. E., Odoms-Young, A. M., Banks-Wallace, J., Beech, B. M., Halbert, C. H., Karanja, N., Lancaster, K. J., & Samuel-Hodge, C. D. 2007, "Expanding the obesity research paradigm to reach African American communities. [31 refs]", *Preventing Chronic Disease*, vol. 4, no. 4, p. A112.	Doesn't describe Whole System approach in theory or in practice
LaMontagne, A. D., Keegel, T., & Vallance, D. 2007, "Protecting and promoting mental health in the workplace: developing a systems approach to job stress", *Health Promotion Journal of Australia*, vol. no. 3, no. pp. 221-228.	Doesn't describe Whole System approach in theory or in practice
Lang, T. & Rayner, G. 2005, "Obesity: A Growing Issue for European Policy?", *Journal of European Social Policy*, vol. no. 4, no. pp. 301-327.	Doesn't describe Whole System approach in theory or in practice
Lang, T. & Rayner, G. 2007, "Overcoming policy cacophony on obesity: an ecological public health framework for policy makers", *Obes.Rev.*, vol. 8, no. Suppl. 1, pp. 165-181.	Programme, but not WSA
Latkin, C. A. & Knowlton, A. R. 2005, "Micro-social structural approaches to HIV prevention: a social ecological perspective", *AIDS Care*, vol. 17, p. S102-SNaN.	Doesn't describe Whole System approach in theory or in practice
Laver, S. M. L., van der, B. B., & Kok, G. 2005, "Using theory to design an intervention for HIV/AIDS prevention in farm workers in rural Zimbabwe", *International Quarterly of Community Health Education*,	Doesn't describe Whole System approach in theory or in practice

vol. 25, no. 1-2, pp. 135-149.	theory or in practice
Lawrence, M. 2009, "Food guides. A compromise solution", *Public Health Nutr.*, vol. 12, no. 8, p. 1305.	Doesn't describe Whole System approach in theory or in practice
Lawrence, S. A. 2002, "Behavioral interventions to increase physical activity", *Journal of Human Behavior in the Social Environment*, vol. 6, no. 1, pp. 25-45.	Doesn't describe Whole System approach in theory or in practice
Lee, A., Ho, M., & Keung, V. 2010, "Healthy school as an ecological model for prevention of childhood obesity", *Research in Sports Medicine*, vol. 18, no. 1, pp. 49	Potentially relevant for effectiveness review
Levy, L. Z. & Petty, K. 2008, "Childhood obesity prevention: compelling challenge of the twenty-first century", *Early Child Development and Care*, vol. no. 6, no. pp. 609-615.	Doesn't describe Whole System approach in theory or in practice
Libman, K., Freudenberg, N., & O'Keefe, E. 2010, *A tale of two ObesCities: Comparing responses to childhood obesity in London and New York City*, City University of New York and London Metropolitan University, New York and London.	Not applicable to local level
Lohrmann, D. K. 2010, "A complementary ecological model of the coordinated school health program", *Journal of School Health*, vol. 80, no. 1, pp. 1-10.	Programme, but not WSA
Longjohn, M. M. 1962, "Chicago project uses ecological approach to obesity prevention. [Review] [30 refs]", *Pediatric Annals*, vol. 33, no. 1, pp. 55-57.	Doesn't describe Whole System approach in theory or in practice
Lukes, J. S. 1997, *Catalytic leadership: Strategies for an interconnected world* Jossey-Bass, New York.	Doesn't describe Whole System approach in theory or in practice
Lytle, L. A. 2009, "Examining the etiology of childhood obesity: The IDEA study", *American Journal of Community Psychology*, vol. 44, no. 3-4, pp. 338-349.	Doesn't describe Whole System approach in theory or in practice
Mackenzie, M., Lawson, L., Mackinnon, J., Meth, F., & Truman, J. 2003, *National Evaluation of Health Action Zones. The Integrated Case Studies: A Move Toward Whole Systems Change?*, University of Glasgow, Glasgow.	Unobtainable
Mackinnon, J., Meth, F., & Truman, J. 2003, *National Evaluation of Health Action Zones. The Integrated Case Studies: A Move Toward Whole Systems Change?*, University of Glasgow, Glasgow.	Doesn't describe Whole System approach in theory or in practice
Marinker, M. 2006, "Constructive conversations about health: policy and values", *Abingdon: Radcliffe Publishing*.	Doesn't describe Whole System approach in theory or in practice
Matheson, A., Dew, K., & Cumming, J. 2009, "Complexity, evaluation and the effectiveness of community	Doesn't describe Whole System approach in theory or in practice

McCormack, B. & Stone, I. 2007, "Economic Costs of Obesity and the case for Government Intervention. Short Science Review", *Obes.Rev.*, vol. 8, no. s1, pp. 161	Potentially relevant for cost-effectiveness review/economic modelling
McLaren, L. & Hawe, P. 2005, "Ecological perspectives in health research", *Journal of Epidemiology & Community Health*, vol. 59, pp. 6	Insufficient description of key elements and relationships of a WSA
McLeroy, K. R., Bibeau, D., Steckler, A., & Glanz, K. 1988, "An ecological perspective on health promotion programmes", *Health Education Quarterly;* vol. 15, pp. 351-377.	Programme, but not WSA
McMichael, A. J. 2001, *Human frontiers, environment and disease* Cambridge University Press, Cambridge.	Unobtainable
Meister, J. S., & Guernsey de Zapien, J. 2005, "Bringing health policy issues front and center in the community: expanding the role of community health coalitions", *Preventing Chronic Disease*, vol. 2, no. 1, p. A16.	Doesn't describe Whole System approach in theory or in practice
Mietus-Snyder, M. L., & Lustig, R. H. 2008, "Childhood obesity: adrift in the "limbic triangle". [Review] [106 refs]", *Annual Review of Medicine*, vol. 59, pp. 147-162.	Doesn't describe Whole System approach in theory or in practice
Ministerio de Sanidad y Politica Social 2010, *Strategy for Nutrition, Physical Activity and the Prevention of Obesity (Spain-Public-Private)*.	Doesn't describe Whole System approach in theory or in practice
Morris, G. P. 2010, "Ecological public health and climate change policy", *Perspectives in Public Health*, vol. 130, no. 1, pp. 34-40.	Programme, but not WSA
Newell, B., Proust, K., Dyball, R., McManus, P., Newell, B., Proust, K., Dyball, R., & McManus, P. 2007, "Seeing obesity as a systems problem. [Review] [11 refs]", *New South Wales Public Health Bulletin*, vol. 18, no. 11-12, pp. 214-218.	Programme, but not WSA
NHS North West, Government Office for the North West, & Department of Health 2008, *A North West Framework: To achieve healthy weight for children & families within the context of food & nutrition and physical activity*, North West Regional Public Health Group.	Not applicable to local level
Nigg, C., Maddock, J., Yamauchi, J., Pressler, V., Wood, B., & Jackson, S. 2005, "The Healthy Hawaii Initiative: a social ecological approach promoting healthy communities", *American Journal of Health Promotion*, vol. 19, no. 4, pp. 310-314.	Doesn't describe Whole System approach in theory or in practice
Ockene, J. K. 2006, "Fulfilling our assignment to improve the health of all: good science just isn't enough", *Ann Behav Med*, vol. 31, pp. 14-20.	Doesn't describe Whole System approach in theory or in practice
Ockene, J. K., Edgerton, E. A., Teutsch, S. M., Marion, L. N., Miller, T., Genevro, J. L., Loveland-Cherry, C. J., Fielding, J. E., & Briss, P. A. 2007, "Integrating evidence-based clinical and community strategies	Doesn't describe Whole System approach in theory or in practice

to improve health. [Review] [42 refs]", *American Journal of Preventive Medicine*, vol. 32, no. 3, pp. 244-252.

Ockene, J. K., Edgerton, E. A., Teutsch, S. M., Marion, L. N., Miller, T., Genevro, J. L., Loveland-Cherry, C. J., Fielding, J. E., & Briss, P. A. 2007, "Integrating evidence-based clinical and community strategies to improve health. [Review] [42 refs]", *American Journal of Preventive Medicine*, vol. 32, no. 3, pp. 244-252.	Not applicable to local level
Ockene, J. K., Edgerton, E. A., Teutsch, S. M., Marion, L. N., Miller, T., Genevro, J. L., Loveland-Cherry, C. J., Fielding, J. E., Briss, P. A., Ockene, J. K., Edgerton, E. A., Teutsch, S. M., Marion, L. N., Miller, T., Genevro, J. L., Loveland-Cherry, C. J., Fielding, J. E., & Briss, P. A. 2007, "Integrating evidence-based clinical and community strategies to improve health. [Review] [42 refs]", *American Journal of Preventive Medicine*, vol. 32, no. 3, pp. 244-252.	Programme, but not WSA
Palla, G., Derenyi, I., Farkas, I., & Vicsek, T. 2005, "Uncovering the overlapping community structure of complex networks", *Nature*, vol. 435, pp. 814-818.	Doesn't describe Whole System approach in theory or in practice
Panter-Brick, C., Clarke, S. E., Lomas, H., Pinder, M., & Lindsay, S. W. 2006, "Culturally compelling strategies for behaviour change: a social ecology model and case study in malaria prevention", *Social Science & Medicine*, vol. 62, no. 11, pp. 2810-2826.	Doesn't describe Whole System approach in theory or in practice
Paton, K., Sungupta, S., & Hassan, L. 2005, "Settings, systems and organisation development: the Healthy Living and Working Model", *Health Promotion International*, vol. 20, no. 1, pp. 81-89.	Programme, but not WSA
Pearce, N. & Merletti, F. 2006, "Complexity, simplicity and epidemiology", *International Journal of Epidemiology*, vol. 35, pp. 515-519.	Programme, but not WSA
Peterson, K. E., Sorensen, G., Pearson, M., Hebert, J. R., Gottlieb, B. R., & McCormick, M. C. 2002, "Design of an intervention addressing multiple levels of influence on dietary and activity patterns of low-income, postpartum women", *Health Education Research*, vol. 17, no. 5, pp. 531-540.	Doesn't describe Whole System approach in theory or in practice
Pless, B. 2004, "Road traffic injury prevention - WHO report advocates input from public health and a systems approach", *British Medical Journal*, vol. 328, no. 7444, p. 846	Insufficient description of key elements and relationships of a WSA
Plsek, P. & Greenhalgh, T. 2001, "The challenge of complexity in health care.", *BMJ*, vol. 323, pp. 625-628.	Doesn't describe Whole System approach in theory or in practice
Popay, J. & Williams, G. 1998, "Partnership in health: beyond the rhetoric", *J Epidemiol.Community Health*, vol. 52, no. 7, pp. 410-411.	Programme, but not WSA
Galea, S., Riddle, M., & Kaplan, G. A. 2010, "Causal thinking and complex system approaches in epidemiology", *International Journal of Epidemiology*, vol. 39, no. 1, pp. 97-106.	

Pronk, N. P., & Boucher, J. 1999, "Systems approach to childhood and adolescent obesity prevention and treatment in a managed care organization", *International Journal of Obesity & Related Metabolic Disorders: Journal of the International Association for the Study of Obesity*, vol. 23 Suppl 2, p. S38-S42.	Doesn't describe Whole System approach in theory or in practice
Pronk, N. P., Boucher, J. L., Gehling, E., Boyle, R. G., & Jeffery, R. W. 2002, "A platform for population-based weight management: description of a health plan-based integrated systems approach", *American Journal of Managed Care*, vol. 8, no. 10, pp. 847-857.	Doesn't describe Whole System approach in theory or in practice
Raffin, S., Peze, K., Guinot, S., & et.al. 2007, "Fight against childhood obesity: EPODE - Ensemble Prevenons l'Obesite", *Annals of Nutrition and Metabolism*, vol. 51, no. 1, p. 353.	Abstract only
Raffin, S., Peze, K., LeBodo, Y., & et al. 2008, "EPODE: a childhood obesity prevention program where social marketing methods are fundamental", *International Journal of Obesity*, vol. 32, p. S196.	Abstract only
Rayner, G. 2007, "Multidisciplinary public health: Leading from the front?", *Public Health*, vol. 121, no. 6, pp. 449	Doesn't describe Whole System approach in theory or in practice
Rayner, G. 2009, "Conventional and ecological public health", *Public Health*, vol. 123, no. 9, pp. 587	Insufficient description of key elements and relationships of a WSA
Rimer, B. K., Glanz, K., & Lerman, C. 1991, "Contributions of public health to patient compliance", *Journal of Community Health*, vol. 16, no. 4, pp. 225-241.	Doesn't describe Whole System approach in theory or in practice
Robbins, H., Krakow, M., & Warner, D. 2002, "Adult smoking intervention programmes in Massachusetts: a comprehensive approach with promising results", *Tob Control*, vol. 11, no. suppl.2, p. ii4-ii7.	Not applicable to local level
Robbins, H., Krakow, M., & Warner, D. 2002, "Adult smoking intervention programmes in Massachusetts: a comprehensive approach with promising results", *Tob Control*, vol. 11, no. suppl.2, p. ii4-ii7.	Not applicable to local level
Rogers, A., Flowers, J., & Pencheon, D. 1999, "Improving access needs a whole systems approach. And will be important in averting crises in the millennium winter", *BMJ*, vol. 319, no. 7214, pp. 866-867.	Doesn't describe Whole System approach in theory or in practice
Roussos, S. T. & Fawcett, S. B. 2000, "A review of collaborative partnerships as a strategy for improving community health", *Annual Review of Public Health*, vol. 21, pp. 369-402.	Doesn't describe Whole System approach in theory or in practice
Rudolf, M. C. J., Hunt, C., George, J., & Clarkson, J. 2010, *Evaluation of the 'Tackling childhood obesity with HENRY' e-course designed for professionals working in child care and health settings*.	Doesn't describe Whole System approach in theory or in practice
Rudolf, M. C. J., Hunt, C., George, J., Hajibagheri, K., & Blair, M. 2010, "HENRY: Development, pilot and long term evaluation of a programme to help practitioners work more effectively with parents of	Doesn't describe Whole System approach in theory or in practice

babies and preschool children to prevent childhood obesity", *Child: Care, Health & Development*, vol. In press.	
Sacher, P. M., Chadwick, P., Wells, J. C. K., Williams, J. E., Cole, T. J., & Lawson, M. S. 2005, "Assessing the acceptability and feasibility of the MEND Programme in a small group of obese 7	Potentially relevant for effectiveness review
Sacher, P. M., Kolotourou, M., Chadwick, P. M., Cole, T. J., Lawson, M. S., Lucas, A., & Singhal, A. 2010, "Randomized controlled trial of the MEND program: a family	Doesn't describe Whole System approach in theory or in practice
Sacks, G., Swinburn, B., & Lawrence, M. 2008, "A systematic policy approach to changing the food system and physical activity environments to prevent obesity", *Australian and New Zealand Health Policy*, vol. 5, no. 13.	Not applicable to local level
Sacks, G., Swinburn, B., & Lawrence, M. 2009, "Obesity Policy Action framework and analysis grids for a comprehensive policy approach to reducing obesity", *Obes.Rev.*, vol. 10, no. 1, pp. 76-86.	Doesn't describe Whole System approach in theory or in practice
Sallis, J. F., Cervero, R. B., Ascher, W., Henderson, K. A., Kraft, M. K., & Kerr, J. 2006, "An ecological approach to creating active living communities. [Review] [87 refs]", *Annual Review of Public Health*, vol. 27, pp. 297-322.	Doesn't describe Whole System approach in theory or in practice
Schultz, J., Utter, J., Mathews, L., Cama, T., Mavoa, H., & Swinburn, B. 2007, "The Pacific OPIC Project (Obesity Prevention in Communities): action plans and interventions", *Pacific Health Dialog*, vol. 14, no. 2, pp. 147	Doesn't describe Whole System approach in theory or in practice
Schwartz, M. B. & Brownell, K. D. 2007, "Actions necessary to prevent childhood obesity: creating the climate for change", *Journal of Law and Medical Ethics*, vol. 35, pp. 78-89.	Doesn't describe Whole System approach in theory or in practice
Seddon, J. 2008, *Systems thinking in the public sector* Triarchy, Axminster.	Doesn't describe Whole System approach in theory or in practice
Serhan, C. N. 2009, "Systems approach to inflammation resolution: identification of novel anti-inflammatory and pro-resolving mediators. [Review] [31 refs]", *Journal of Thrombosis & Haemostasis*, vol. 7 Suppl 1, pp. 44-48.	Doesn't describe Whole System approach in theory or in practice
Shea, S., & Basch, C. E. 1990, "A review of five major community-based cardiovascular disease prevention programs. Part I: Rationale, design, and theoretical framework. [Review] [179 refs]", *American Journal of Health Promotion*, vol. 4, no. 3, pp. 203-213.	Doesn't describe Whole System approach in theory or in practice
Sherry, L. & Gibson, D. 2002, "The path to teacher leadership and educational technology", *Contemporary Issues in Educational Technology*, vol. 2, no. 2, pp. 178-203.	Doesn't describe Whole System approach in theory or in practice
Smith, K. E., Bambra, C., & Joyce, K. E. 2009, "Partners in health? A systematic review of the impact of	Doesn't describe Whole System approach in

organisational partnerships on public health outcomes in England between 1997 and 2008", *J Public Health (Oxf)*, vol. advanced access published 30 January 2009.	theory or in practice
Sowden, A. J. & Stead, L. F. 2003, "*Community interventions for preventing smoking .in young people .Cochrane Database of Systematic Reviews: Reviews 2003 Issue 1 John Wiley.& Sons., Ltd Chichester, UK DOI.: 10.1002/14651858.CD001291.*	Doesn't describe Whole System approach in theory or in practice
Stokols, D. 1996, "Translating social ecological theory into guidelines for community health promotion", *Am J Health Promot*, vol. 10, pp. 282-298.	Programme, but not WSA
Story, M., Kaphingst, K. M., Robinson-O'Brien, R., & Glanz, K. 2008, "Creating healthy food and eating environments: policy and environmental approaches. [Review] [107 refs]", *Annual Review of Public Health*, vol. 29, pp. 253-272.	Doesn't describe Whole System approach in theory or in practice
Sund, E. R., Jones, A., & Midthjell, K. 2010, "Individual, family, and area predictors of BMI and BMI change in an adult Norwegian population: findings from the HUNT study", *Social Science & Medicine*, vol. 70, no. 8, pp. 1194-1202.	Doesn't describe Whole System approach in theory or in practice
Susser, M. & Susser, E. 1996, "Choosing a future for epidemiology: 1. Eras and paradigms", *American Journal of Public Health*, vol. 86, pp. 668-673.	Doesn't describe Whole System approach in theory or in practice
Swinburn, B. 2009, "Obesity prevention in children and adolescents. [Review] [73 refs]", *Child & Adolescent Psychiatric Clinics of North America*, vol. 18, no. 1, pp. 209-223.	Doesn't describe Whole System approach in theory or in practice
Swinburn, B., Egger, G., & Raza, F. 1999, "Dissecting obesogenic environments: the development and application of a framework for identifying and prioritizing environmental interventions for obesity", *Prev.Med.*, vol. 29, no. 6 Pt 1, pp. 563-570.	Doesn't describe Whole System approach in theory or in practice
Swinburn, B., Egger, G., & Raza, F. 1999, "Dissecting obesogenic environments: the development and application of a framework for identifying and prioritising environmental interventions for obesity", *Prev.Med.*, vol. 29, pp. 563-570.	Programme, but not WSA
Swinburn, B., Gill, T., & Kumanyika, S. 2005, "Obesity prevention: a proposed framework for translating evidence into action", *Obes.Rev.*, vol. 6, no. 1, pp. 23-33.	Doesn't describe Whole System approach in theory or in practice
Swinburn, B., Pryor, J., McCabe, M., Carter, R., de Court, Schaaf, D., & Scragg, R. 2007, "The Pacific OPIC Project (Obesity Prevention in Communities)	Potentially relevant for effectiveness review
Termini, A. 1991, "Ecologically based interventions in residential and school facilities: Theory or practice?", *Adolescence*, vol. 26, no. 102, pp. 387-388.	Doesn't describe Whole System approach in theory or in practice
Thomas, H., Fitzpatrick, L. D., Rideout, E., & Muresan, J. 2008, "What is the effectiveness of	Unobtainable

community-based/primary care interventions in reducing obesity among adults in the general population? (Provisional abstract)", *City of Hamilton, Public Health and Community Services* p. 01.

Thomas, P., While, A., & West London, R. N. 2001, "Increasing research capacity and changing the culture of primary care towards reflective inquiring practice: the experience of the West London Research Network (WeLReN)", *Journal of Interprofessional Care*, vol. 15, no. 2, pp. 133-139.

Doesn't describe Whole System approach in theory or in practice

Twiss, J., Dickinson, J., Duma, S., Kleinman, T., Paulsen, H., & Rilveria, L. 2003, "Community gardens: lessons learned from California Healthy Cities and Communities", *American Journal of Public Health*, vol. 93, no. 9, pp. 1435-1438.

Doesn't describe Whole System approach in theory or in practice

Vandenbroeck, I. P., Goossens, J., & Clemens, M. 2007, *Building the Obesity System Map*.

Doesn't describe Whole System approach in theory or in practice

Veitch, J., Bagley, S., Ball, K., & Salmon, J. 2006, "Where do children usually play? A qualitative study of parents' perceptions of influences on children's active free

Potentially relevant for qualitative review

Vieira, M., Klock, P., Costa, R., & Erdmann, A. L. 2009, "A nursing model as a complex adaptive system", *Aquichan*, vol. 9, no. 3, pp. 212-221

Not in English

Wall, M., Hayes, R., Moore, D., Petticrew, M., Clow, A., Schmidt, E., Draper, A., Lock, K., Lynch, R., & Renton, A. 2009, "Evaluation of community level interventions to address social and structural determinants of health: a cluster randomised controlled trial", *BMC Public Health*, vol. 9, p. 207.

Doesn't describe Whole System approach in theory or in practice

Walt, G. 1994, "Health policy: an introduction to process and power", *Johannesburg :: Witwatersrand University Press ;; London :: Zed Books*.

Doesn't describe Whole System approach in theory or in practice

Wandersman, A., Valois, R., Ochs, L., de la Cruz, D. S., Adkins, E., & Goodman, R. M. 1996, "Toward a social ecology of community coalitions", *American Journal of Health Promotion*, vol. 10, no. 4, pp. 299-308.

Doesn't describe Whole System approach in theory or in practice

Wang, G. & Dietz, W. H. 2002, "Economic burden of obesity in youths aged 6 to 17 years: 1979

Potentially relevant for cost-effectiveness review/economic modelling

Wharf Higgins, J., Begoray, J., & MacDonald, M. 2009, "A Social Ecological Conceptual Framework for Understanding Adolescent Health Literacy in the Health Education Classroom", *Am J Community Psychol.*, vol. 44, pp. 350-362.

Programme, but not WSA

White, J.V., Dwyer J.D., Wellman N.S., Blackburn G.L., Barrocas, A., Chernoff R., Cohen D., Lysen L. , Moore, S., Moyer W., Pla, G. and Roe, D.1993, "Beyond nutrition screening: a systems approach to nutrition intervention. Challenges and opportunities for dietetics professionals. [Review] [12 refs]", *Journal of the American Dietetic Association*, vol. 93, no. 4, pp. 405-407

Doesn't describe Whole System approach in theory or in practice

WHO Europe 2007, "Designing and developing a strategy to prevent obesity," in *The challenge of obesity in the WHO European region and the strategies for response*, F. Branca, H. Nikogosian, & T. Lobstein, eds., WHO Regional Office for Europe, Copenhagen.	Not applicable to local level
Wieringa, N. F., van der Windt, H. J., Zuiker, R. R. M., Dijkhuizen, L., Verkerk, M. A., Vonk, R. J., & Swart, J. A. A. 2008, "Positioning functional foods in an ecological approach to the prevention of overweight and obesity. [Review] [27 refs]", *Obesity Reviews*, vol. 9, no. 5, pp. 464	Not applicable to local level
Wilkinson, M. 1999, "Creative writing: its role in evaluation", *London: King's Fund*.	Doesn't describe Whole System approach in theory or in practice
Willis, T. 2010, *An evaluation of HENRY*, University of Leeds, Leeds.	Doesn't describe Whole System approach in theory or in practice
Wilson, B. 1990, "Systems: Concepts, Methodologies and Applications," Wiley, Chichester, p. 24.	Doesn't describe Whole System approach in theory or in practice
Wolff, T. 2001, "Community coalition builing-contemporary practice and research", *American Journal of Community Psychology*, vol. 29, pp. 165-172.	Doesn't describe Whole System approach in theory or in practice
York, N. L. & Hahn, E. J. 2007, "The Community Readiness Model: evaluating local smoke-free policy development", *Policy Polit.Nurs.Pract.*, vol. 8, no. 3, pp. 184-200.	Doesn't describe Whole System approach in theory or in practice

Appendix 8   Pacific OPIC Project: ANGELO framework

The *Pacific OPIC Project* was a supporting organisation for obesity prevention projects that used the Analysis Grid for Elements Linked to Obesity (ANGELO) framework (Swinburn et al. 1999) with communities to identify factors contributing to obesogenic environments and work towards jointly agreed obesity prevention priorities. The ANGELO framework categorises factors into two sizes (micro/ macro) and four types (physical, economic, policy and sociocultural) of environment. Six projects were involved:

Healthy Youth Healthy Communities (Fiji)

Ma'alahi Youth Project (Tonga)

Living for Life (New Zealand)

Romp & Chomp (Australia)

Be Active Eat Well (Australia)

It's Your Move (Australia)

The use of the ANGELO framework was motivated by an understanding of health promotion at a community level needing to:

> *become embedded in the organisations working in that community and to ensure that the community owns and embraces the action." (Simmons et al. 2009, p.147)*

As such, all of the *OPIC* programmes had a planning period (including community engagement and the development of action plans) of one year, followed by a three year intervention period "based on capacity building principles" (Simmons et al. 2009). The process of initially engaging with communities, organisations and other actors (e.g. schools and public sector officials) differed in each country as was considered appropriate, although the basis on which different approaches (e.g. through school principals, or government health officials) were decided upon is not stated. However,

the process of consulting with community members was thoroughly described; initially, socio-cultural interviews or focus groups were conducted with 12-18 year olds about their knowledge of eating, activity and inactivity and preferred body size. These interviews were used to inform the two-day community workshops at which teachers, students and community members used the ANGELO framework to identify priorities for obesity prevention in their communities and agree upon an action plan. The action plans for the obesity prevention programmes therefore did not follow a blueprint, but differed according to the priorities identified through the community workshops.

Appendix 9   Bibliography

Anon. 2005, *EPODE: Together, Let's Prevent Childhood Obesity: A Year of Pragmatic Actions For, With and By the Community*.

Anon. 2008a, *Healthy weight, healthy lives in Tower Hamlets*, NHS Tower Hamlets, London.

Anon. 2008b, *Sheffield city wide initiative to prevent and reduce childhood obesity: Delivery plan 2008-2013 (DRAFT)*.

Anon. 2009, *Ealing Borough Healthy Weight: Healthy Lives strategy 2009 to 2012*.

Antonovsky, A. 1996, "The salutogenic model as a theory to guide health promotion", *Health Promotion International*, vol. 11, no. 1, pp. 11-18.

Attwood, M., Pedler, M., Pritchard, S., & Wilkinson, D. 2003, *Leading Change: A guide to whole systems working* Policy Press, Bristol.

Bauld, L. & Mackenzie, M. 2007, "Health Action Zones: multi-agency partnerships to improve health," in *Public health: social context and action*, A. Scriven & S. Garman, eds., Open University Press, Maidenhead.

Benington, J. & Hartley, J. 2009, *"Whole systems go!" Improving leadership across the whole public health system*, National School of Government: Sunningdale Institute.

Berkeley, D. & Springett, J. 2006, "From rhetoric to reality: A systemic approach to understanding the constraints faced by Health For All initiatives in England", *Social Science & Medicine*, vol. no. 11, no. pp. 2877-2889.

Bronfenbrenner, U. 1979, *The Ecology of Human Development: Experiments by Nature and Design* Harvard University Press, CA, Massacheusetts.

Butland, B., Jebb, S., Kopelman, P., McPherson, K., Thomas, S., Mardell, J., & Parry, V. 2007, *Foresight: Tackling obesities: Future choices - project report*, Department of Innovation, Universities and Skills, London, 2nd edition.

Chomitz, V. R., McGowan, R. J., Wendel, J. M., Williams, S. A., Cabral, H. J., King, S. E., Olcott, D. B., Cappello, M., Breen, S., & Hacker, K. A. 2010, "Healthy Living Cambridge Kids: a community-based participatory effort to promote healthy weight and fitness", *Obesity*, vol. 18 Suppl 1, p. S45-S53.

de Silva-Sanigorski, A. M., Bell, A. C., Kremer, P., Nichols, M., Crellin, M., Smith, M., Sharp, S., de, G. F., Carpenter, L., Boak, R., Robertson, N., & Swinburn, B. A. 2010, "Reducing obesity in early childhood: results from Romp & Chomp, an Australian community-wide intervention program", *American Journal of Clinical Nutrition*, vol. 91, no. 4, pp. 831-840.

Directorate of Public Health NHS Westminster 2010, *Overview of whole systems approach: Local obesity systems in Westminster - Response to consultation from NICE*.

Dooris, M. 2006, "Healthy settings: challenges to generating evidence of effectiveness", *Health Promotion International*, vol. 21, no. 1, pp. 55-65.

Dooris, M., Poland, B., Kolbe, L., de Leeuw, E., McCall, D., & Wharf Higgins, J. 2007, "Healthy settings: Building evidence for the effectiveness of whole system health promotion - challenges and future directions," in *Global perspectives on health promotion effectiveness*, D. V. McQueen & C. Jones, eds., Springer, New York, pp. 327-352.

Economos, C. D., Hyatt, R. R., Goldberg, J. P., Must, A., Naumova, E. N., Collins, J. J., Nelson, M. E., Economos, C. D., Hyatt, R. R., Goldberg, J. P., Must, A., Naumova, E. N., Collins, J. J., & Nelson, M. E. 2007, "A community intervention reduces BMI z-score in children: Shape Up Somerville first year results", *Obesity*, vol. 15, no. 5, pp. 1325-1336.

Edgren, L. 2008, "The meaning of integrated care: a systems approach", *International Journal of Integrated Care*, vol. 8.

Hawe, P., Shiell, A., & Riley, T. 2009, "Theorising interventions as events in systems", *Am J Community Psychol.*, vol. 43, pp. 267-276.

Heywood, P., Jackson, K., Duffield, J., & Summerbell, C. 2008, *Middlesborough's Healthy Town Project Initiation Document: Appendix 1.*

Hudson, B. 2004a, *Whole Systems Working: a discussion paper for the integrated care network*.

Hudson, B. 2006, *Whole Systems Working: A guide and discussion paper*, Integrated Care Network, Department of Health, London.

Hudson, B. 2004b, "Analysing network partnerships: Benson re-visited", *Public Management Review*, vol. 6, no. 1, pp. 75-94.

IDeA 2007, *Working as a whole system: improving the quality of life for older people*, IDeA, London.

Iles, V. & Sutherland, K. 2001, *Organisatonal Change: A review for health care managers, professionals and researchers*, NHS Service Delivery and Organisation R&D Programme, London.

Information Policy Unit NHS Executive 2000, *Working in partnership: developing a whole systems approach: good practice guide*, NHS Executive, London.

Libman, K., Freudenberg, N., & O'Keefe, E. 2010, *A tale of two ObesCities: Comparing responses to childhood obesity in London and New York City*, City University of New York and London Metropolitan University, New York and London.

NHS North West, Government Office for the North West, & Department of Health 2008, *A North West Framework: To achieve healthy weight for children & families within the context of food & nutrition and physical activity*, North West Regional Public Health Group.

NICE 2009, *Methods for the development of NICE Public Health guidance (second edition).*

Ottawa Charter for Health Promotion 1986, *Ottawa Charter for Health Promotion, first international conference on health promotion (Ottawa, 21 November 1986) - WHO/HPR/HEP/95.1.*

Plamping, D., Gordon, P., & Pratt, J. 1998, "Action zones and large numbers: why working with lots of people makes sense", *London - 11-13 Cavendish Square, London W1M 0AN: King's Fund Publishing.*

Plsek, P. 2001, *'Why won't the NHS do as it's told - and what might we do about it?' Leading Edge 1*, The NHS Confederation, London.

Popay, J. & Williams, G. 1998, "Partnership in health: beyond the rhetoric", *J Epidemiol.Community Health*, vol. 52, no. 7, pp. 410-411.

Pratt, J., Gordon, P., & Plamping, D. 2005a, *Working Whole Systems: Putting theory into practice in organisations (2nd ed.)* Radcliffe Publishing, Oxon.

Pratt, J., Gordon, P., & Plamping, D. 2005b, *Working whole systems: putting theory into practice in organisations*, 2nd edition edn, Radcliffe Publishing, Oxford.

Rickles, D., Hawe, P., & Shiell, A. 2007, "A simple guide to chaos and complexity", *Journal of Epidemiology and Community Health*, vol. 61, pp. 933-937.

Ritzer, G. 1991, *Meta-theorizing in Sociology* Lexington Books, Lexington, MA.

Rowe, A. & Hogarth, A. 2005, "Use of complex adaptive systems metaphor to achieve professional and organizational change", *Journal of Advanced Nursing*, vol. 51, no. 4, pp. 396-405.

Sanigorski, A. M., Bell, A. C., Kremer, P. J., Cuttler, R., & Swinburn, B. A. 2008, "Reducing unhealthy weight gain in children through community capacity-building: results of a quasi-experimental intervention program, Be Active Eat Well", *International Journal of Obesity*, vol. 32, no. 7, pp. 1060-1067.

Senge, P. 1993, *The fifth discipline* Century Hudson, London.

Simmons, A., Mavoa, H. M., Bell, A. C., De Court, Schaaf, D., Schultz, J., Swinburn, B. A., Simmons, A., Mavoa, H. M., Bell, A. C., De Court, Schaaf, D., Schultz, J., & Swinburn, B. A. 2009, "Creating community action plans for obesity prevention using the ANGELO (Analysis Grid for Elements Linked to Obesity) Framework", *Health Promotion International*, vol. 24, no. 4, pp. 311-324.

Stacey, R. 1996, *Complexity and creativity in organisations* Berrett-Koehler, San Francisco.

Swinburn, B., Egger, G., & Raza, F. 1999, "Dissecting obesogenic environments: the development and application of a framework for identifying and prioritizing environmental interventions for obesity", *Prev.Med.*, vol. 29, no. 6 Pt 1, pp. 563-570.

Twiss, J. M., Duma, S., Look, V., Shaffer, G. S., Watkins, A. C., Twiss, J. M., Duma, S., Look, V., Shaffer, G. S., & Watkins, A. C. 2000, "Twelve years and counting: California's experience with a statewide Healthy Cities and Community program", *Public Health Reports*, vol. 115, no. 2-3, pp. 125-133.

Westley, H. 2007, "Thin Living", *BMJ*, vol. 335, pp. 1236-1237.

White House Task Force on Childhood Obesity 2010, *Solving the problem of childhood obesity within a generation*, Executive Office of the President of the United States, Washington, DC.

Zimmerman, B., Lindberg, C., & Plsek, P. 1998, *Edgeware insights from complexity science for health care leaders.* VHA, Irving (TX).