# NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

## PUBLIC HEALTH DRAFT GUIDELINE

# Oral health: local authority oral health improvement strategies

## What is this guideline about?

This guideline makes recommendations on undertaking oral health needs assessments, developing a local strategy on oral health and delivering community-based interventions and activities to:

- improve diet and reduce consumption of sugary food and drinks, alcohol and tobacco (and so improve general health too)
- improve oral hygiene
- increase the availability of fluoride (excluding water fluoridation)
- increase access to dental services.

Oral health is important to general health and wellbeing. Poor oral health can affect someone's ability to eat, speak, smile and socialise normally, for example, due to pain or social embarrassment (see the Department of Health's Dental quality and outcomes framework).

Oral health problems include gum (periodontal) disease, tooth decay (dental caries), tooth loss and oral cancers. Many of the risk factors– diet, hygiene, smoking, alcohol use, stress and trauma – are the same as for many chronic conditions, such as cancer, diabetes and heart disease (Sheiham and Watt 2000).

This guideline focuses, in particular, on people whose social or environmental circumstances or lifestyle place them at higher risk of poor oral health or make it difficult for them to access dental services. This includes people:

- from a lower socioeconomic group
- who are homeless or frequently move

- who are socially isolated or excluded
- who are old and frail
- who have physical or mental disabilities
- who smoke or misuse substances (including alcohol)
- who have a poor diet
- from some black, Asian and minority ethnic groups.

This guideline is for health and wellbeing boards, directors of public health, consultants in dental public health, and commissioners and frontline practitioners working more generally in health, social care and education. (For further details, see Who should take action?) In addition it may be of interest to members of the public.

See About this guideline for details of how the guideline was developed and its current status.

# Contents

# 1 Draft recommendations

## Section 1 Oral health strategy and oral health needs assessment

### *Recommendation 1 Make oral health a core component of the joint health and wellbeing strategy*

Health and wellbeing boards and directors of public health should:

- Make oral health a core component of the joint health and wellbeing strategy.
- Set up an oral health strategy and needs assessment group with input from several organisations, including:
  - a consultant in dental public health
  - a local authority public health representative
  - an NHS England commissioner of local dental services
  - a representative from a local professional dental network
  - representatives from children and adult social care services
  - a local healthwatch representative
  - a senior local government representative to lead on, and act as an advocate for, oral health
  - representatives from relevant community groups.

### *Recommendation 2 Develop an oral health strategy*

The oral health strategy and needs assessment group (see recommendation 1) should:

- Develop an oral health strategy. This should set out how the local authority and its health and wellbeing commissioning partners will:
  - Address the oral health needs of the local population including groups at higher risk of poor oral health (see recommendations 3–4).
  - Address any oral health inequalities within and between the local population and the rest of England.

  - Determine which oral health interventions should be commissioned for the general population and which should be commissioned for people at higher risk of oral health problems.
  - Identify and work in partnership with people who are in a position to improve oral health in their communities, including those working in children's services, education and health.
  - Set out the additional support that those working with groups at higher risk of poor oral health will be given, including training or resources. (See NICE guidance on community engagement.)
  - Use formative evaluation to determine what works for whom and in what circumstances.
  - Get all frontline staff in health, children and adult services to use every opportunity to promote oral health and emphasise the links with general health and wellbeing.
  - Ensure there are clear pathways across the life course (that is, for lifetime care) involving primary and secondary prevention of oral disease. (The former involves preventing disease in the first place, the latter prevention of a recurrence or progression of disease.) These pathways should also provide access to high quality dental care when needed.
  - Monitor and evaluate the effect of the local oral health improvement programme as a whole.

### *Recommendation 3 Carry out an oral health needs assessment*

The oral health strategy and needs assessment group (see recommendation 1) should:

- Define the scope of an oral health needs assessment for the local population. This should include:
  - What the assessment will and will not cover, for example, access to services for groups at higher risk of poor oral health, certain age groups or in certain settings (see recommendation 4).

  - The responsibilities of each partner organisation and how they will work together to make best use of resources (for example, detailing how data could be collected across organisations).
  - The need to include recommendations and outcomes from any previous oral health needs assessment (if available).
- Ensure the oral health needs assessment is an integral part of the joint strategic needs assessment and clearly linked to strategies on general health and wellbeing.
- Conduct the oral health needs assessment as part of a cyclical planning process geared towards improving oral health and reducing health inequalities. It should not be a one-off exercise that simply describes the target population.

### *Recommendation 4 Use a range of data sources to inform the oral health needs assessment*

The oral health strategy and needs assessment group should:

- Use local demographic and deprivation profiles to identify groups that may be at higher risk of poor oral health.
- Use national surveys of oral health (adult and child) and NHS dental epidemiological programme data to gain an idea of local oral health needs relative to the national picture and comparator areas.
- Use national demographic and socioeconomic data and the established link between these factors and dental disease to determine likely local needs.
- Use local expertise and local health and lifestyle surveys and consultations to understand local oral health needs in the context of general health.
- Consider seeking advice on survey design and the collection, analysis and interpretation of epidemiological data relevant to oral health.

# Section 2 Promoting oral health for everyone

## *Recommendation 5 Include information and advice on oral health in local health and wellbeing policies*

Local authorities and other commissioners and providers of public services should:

- Ensure all health and wellbeing and diseases prevention policies for children and young people include evidence-based advice and information about oral health, in line with the 'advice for patients' in Delivering better oral health. This includes policies covering:
  - nutrition for infants and children, including breastfeeding and weaning practices
  - local food, drink and snacks policies that affect children in a range of settings, including nurseries and children's centres
  - providers of childcare services (including childminding services) in the private and voluntary sector
  - children and young people in primary and secondary education.
- Ensure health and wellbeing and disease prevention policies for adults (including local government health and social care policies and strategies) have information and advice about oral health. This should be included with information about the common risk factors for ill health, such as the use of alcohol and tobacco and a poor diet.

## *Recommendation 6 Create environments that promote oral health*

Local authorities and other commissioners of public services should:

- Ensure all public services promote oral health by:
  - encouraging and supporting breastfeeding
  - making plain drinking water freely available
  - offering a choice of food, drinks and snacks (including from vending machines) that support good oral health and a healthier diet (for example, that are sugar-free or low in sugar). This includes services

based in premises wholly or partly owned, hired or funded by the public sector such as:

- ◊ nurseries and children's centres and other early years services (including services provided during pregnancy)
- ◊ schools
- ◊ food banks
- ◊ leisure centres
- ◊ community centres.

- Consider linking up with local organisations in other sectors (for example, commercial food outlets) to promote oral health and a healthier balanced diet.

### *Recommendation 7 Ensure frontline staff understand the importance of oral health*

Providers of health care, social care, child care and education should ensure all staff are aware of:

- the ‘advice for patients’ in Delivering better oral health
- the fact that tooth decay and gum disease are preventable
- how fluoride can help prevent tooth decay
- links between dietary habits and tooth decay
- links between health inequalities and oral health
- the needs of groups at higher risk of poor oral health
- where to get advice about local dental services, including advice about costs and transport links
- how oral health in childhood affects oral health in adulthood
- links between poor oral health and alcohol and tobacco use.

## Section 3 Early years services (0 to 5 years)

### *Recommendation 8 Include oral health promotion in early years service specifications*

Local authorities and health and wellbeing commissioning partners should:

- Ensure early years service specifications include a requirement to promote oral health. This includes services delivered by:
  - midwives, health visiting teams and family nurse practitioners
  - early years services, children's centres and nurseries
  - child care services in the public, private, voluntary and independent sectors (including childminding services)
  - frontline health and social care practitioners working with families who may be at higher risk of poor oral health (for example, families with complex needs, teenage parents and minority ethnic communities where poor oral health is prevalent and people find it difficult to use services)
- Ensure services include advice about oral health (in line with 'advice for patients' in Delivering better oral health) in information provided on health, wellbeing, diet, nutrition and parenting. (This includes links to established parenting programmes such as those provided by Parenting UK.)

### *Recommendation 9 Provide oral health information and advice through early years services*

Local authorities and health and wellbeing commissioning partners should:

- Ensure frontline staff in early years services including education and health understand and can apply the principles and practices that promote oral health. They should be able to work with families so parents, carers and other family members understand how good oral health contributes to children's overall health, wellbeing and development. This includes:
  - promoting breastfeeding and healthy weaning and food, snacks and drinks that are part of a healthier diet
  - explaining that tooth decay is a preventable disease and how fluoride can help prevent it
  - promoting the use of fluoride toothpaste as soon as teeth come through (see Delivering better oral health for appropriate concentrations)
  - encouraging people to regularly visit the dentist from when a child gets their first tooth.

- Ensure frontline staff can encourage families to develop good oral health practices by:
  - giving a practical demonstration of how to achieve and maintain good oral hygiene and encouraging tooth brushing from an early age
  - advising on alternatives to sugary foods, drinks and snacks as pacifiers and treats
  - using sugar-free medicine
  - giving details of how to access routine and emergency dental services
  - explaining who is entitled to free dental treatment.
- Ensure staff receive training in oral health at their induction and at annual intervals.

### *Recommendation 10 Provide tailored information and advice through early years services in areas where there is a higher risk of poor oral health*

Local authorities and health and wellbeing commissioning partners should:

- Provide tailored and targeted services to meet the oral health needs of families at higher risk of poor oral health. (This includes young children who are not attending nursery.)
- Ensure early years services identify and work in partnership with relevant local community organisations (see recommendation 1) to develop and deliver tailored oral health advice and information for these families.
- Ensure health and social care practitioners can demonstrate and provide culturally appropriate advice and information.

### *Recommendation 11 Provide supervised tooth brushing schemes in nurseries based in areas where children are at higher risk of poor oral health*

Local authorities and health and wellbeing commissioning partners should:

- Consider providing a supervised tooth brushing scheme as part of early years services in areas where children are at higher risk of poor oral health

(identified by the oral health needs assessment – see recommendation 4).The scheme should include:

- supervised daily tooth brushing using free toothbrushes and toothpaste (for use at school and at home)
- a designated lead person at all establishments
- access to dental support and guidance
- support and training for staff to deliver the scheme (this should be recorded and monitored)
- arrangements for getting informed consent where needed
- performance monitoring at least once every term against a checklist drawn up and agreed with the oral health strategy and needs assessment group (see recommendation 2).

### *Recommendation 12 Provide fluoride varnish programmes in nurseries based in areas where children are at higher risk of poor oral health*

Local authorities and health and wellbeing commissioning partners should:

- Consider providing a supervised tooth brushing scheme in nurseries in areas where children are at higher risk of poor oral health (see recommendation 11). If this is not feasible, consider a twice-yearly fluoride varnish programme, as part of early years services for children aged 3 years and older.
- Use information from the health needs assessment to target nurseries in areas of higher risk and follow up children who do not visit the dentist regularly.

### *Recommendation 13 Provide supervised tooth brushing schemes and fluoride varnish programmes in nurseries based in areas where children are at very high risk of poor oral health*

Local authorities and health and wellbeing commissioning partners should:

- If resources are available, consider providing both a supervised tooth brushing scheme and a fluoride varnish programme in nurseries in areas where children are at very high risk of poor oral health.

## Section 4 Children in primary education

### *Recommendation 14 Promote oral health in the primary school curriculum*

Local education authorities, school governors and head teachers should:

- Ensure opportunities are found in the curriculum to teach children about the importance of maintaining good oral health. Ensure the information is age-appropriate, relevant to local needs and follows the ‘advice for patients’ in Delivering better oral health.

### *Recommendation 15 Promote a 'whole-school' approach to oral health in primary education*

Local education authorities, school governors and head teachers should:

- Promote a 'whole-school' approach to oral health by:
  - making plain drinking water freely available
  - providing a choice of food, drinks and snacks that are sugar-free or low in sugar and form part of a healthier diet (including those offered in vending machines)
  - displaying and promoting evidence-based, age-appropriate, oral health information for parents, carers and children (this should be relevant to local needs and include details on how to access local dental services).
- Identify and link with relevant local partners to promote oral health. This could include oral health promotion schemes commissioned by the local authority and local community networks (see recommendation 1).

### *Recommendation 16 Promote oral health in primary schools in areas where children are at higher risk of poor oral health*

Local education authorities, school governors and head teachers should:

- Identify primary school staff in schools in areas where children are at higher risk of poor oral health who could be trained to promote oral health.
- Train these staff to give:
  - age-appropriate, evidence-based advice and information from 'advice for patients' in Delivering better oral health
  - advice and information about where to get routine and emergency dental treatment, including advice about costs (for example, transport costs)
  - advice and help to access local community networks offering further information, advice and support about general child health and development.
- Implement and promote local authority-commissioned oral health promotion schemes.
- Look for opportunities to talk with parents or carers about, and involve them in, improving their children's oral health. For example, opportunities might arise at parent-teacher evenings, open days or by encouraging parents and carers to get involved in developing the school food policy.

### *Recommendation 17 Provide supervised tooth brushing for primary schools based in areas where children are at higher risk of poor oral health*

Local education authorities, school governors and head teachers should:

- Consider providing a supervised tooth brushing scheme in primary schools in areas where children are at higher risk of poor oral health. Focus in particular on reception and year 1 (up to age 7). (See recommendation 11.)

### *Recommendation 18 Provide fluoride varnish programmes for primary schools based in areas where children are at higher risk of poor oral health*

Local education authorities, school governors and head teachers should:

- Consider providing a supervised tooth brushing scheme in primary schools in areas where children are at higher risk of poor oral health (see

recommendation 17). If this is not feasible, consider providing a twice-yearly fluoride varnish programme.

### *Recommendation 19 Provide supervised tooth brushing and fluoride varnish programmes for primary schools in areas where children are at very high risk of poor oral health*

Local education authorities, school governors and head teachers should:

- If resources are available, consider providing both a supervised tooth brushing scheme and a fluoride varnish programme in primary schools in areas where children are at very high risk of poor oral health.

## Section 5 Secondary education

### *Recommendation 20 Include information about oral health in the secondary school curriculum*

Local education authorities, school governors and head teachers should:

- Ensure opportunities are found in the curriculum to teach the importance of maintaining good oral health. This should use age-appropriate, evidence-based information based on ‘advice for patients’ in Delivering better oral health.
- Ensure school nursing services encourage good oral health, including effective tooth brushing, use of fluoride toothpaste and regular dental check-ups.
- Ensure all school leavers know where to get advice and help about oral health, including dental treatment and help with costs. Provide them with details of relevant services, including links to relevant local community networks.
- Consider identifying and training secondary school staff in areas where children and young people are at higher risk of poor oral health who could advise on dental issues. This includes giving advice about dental treatment and costs, and promoting oral health among students (for example, explaining the links between diet, alcohol, tobacco and oral health).

# Section 6: Providing adult services

## *Recommendation 21 Promote oral health in the workplace*

Local authorities and NHS England area teams should:

- Work together to promote oral health using the 'advice for patients' in Delivering better oral health. This should be part of efforts to improve general health and wellbeing at work.
- Consider commissioning programmes to raise awareness of evidence-based oral health information and advice.
- Display information on all premises about local dental services. This information should include details of eligibility for reduced cost or free treatment. It should also include details on how to obtain appropriate forms (for example, for people receiving certain benefits, including pregnancy and maternity benefits).
- Consider displaying national guidelines on oral health in all premises. This information should include, for example, details about effective oral hygiene techniques, including the use of fluoride products and tooth brushing techniques.
- Consider providing employees with dental services, free or discounted toothbrushes, fluoride toothpaste and other oral hygiene products in the workplace.

## *Recommendation 22 Commission targeted services for groups of adults at higher risk of poor oral health*

Local authorities and NHS England area teams should:

- Provide tailored oral health interventions, including outreach services, to meet the needs of people at higher risk of poor oral health who live independently in the community
- Review adult community health and social care service specifications to ensure oral health is included in care plans.
- Ensure services deliver evidence-based oral health advice in line with the 'advice for patients' in Delivering better oral health.

- Ensure services promote oral health, for example by:
  - giving demonstrations of how to clean teeth and use other oral health and hygiene techniques (as appropriate)
  - promoting the use of fluoride toothpaste
  - providing free or discounted materials including fluoride toothpaste and manual and electric toothbrushes.
- Ensure local care pathways encourage people to use dental services.

### *Recommendation 23 Develop specifications for targeted, 1-to-1 services for adults at a higher risk of poor oral health*

Local authority commissioners and health and wellbeing commissioning partners should:

- Ensure specifications for 1-to-1 services delivered to people at higher risk of poor oral health include a requirement to promote oral health in the context of overall health and wellbeing. Relevant services include: domiciliary care, services caring for or supporting people with learning difficulties or mental health problems, and substance misuse services.
- Ensure service specifications include:
  - an assessment of oral health, including referral or advice to go to a dentist or other clinical services (this may be because of pain, concerns about appearance or difficulty in eating)
  - making oral health care – through self-care or clinical services – an integral part of care planning
  - support to help service users maintain good oral hygiene
  - staff training in how to promote oral health during inductions and once a year (see recommendations 9 and 24).

### *Recommendation 24 Train frontline staff working with adults at higher risk of poor oral health*

Local authorities and health and wellbeing commissioning partners should:

- Commission training for frontline staff to ensure they can meet the needs of adults in groups at higher risk of poor oral health. The training should be based on 'advice for patients' in Delivering better oral health. It includes:
  - How good oral health contributes to people's overall health and wellbeing.
  - The consequences of poor oral health, for example, dental pain and infection. (This can exacerbate symptoms associated with dementia and can also contribute to malnutrition among older people.)
  - How the appearance of teeth contributes to self-esteem.
  - Basic assessment and care planning for oral health.
  - Causes, symptoms and secondary prevention of dental decay (including root caries in older people).
  - Causes, symptoms and how to prevent gum disease. This includes: the role of plaque in gum disease and how it can affect the immunity of people with diabetes; the role of high sugar diets; the link between the use of sugar-sweetened methadone and poor oral health; and smoking as a risk factor for gum disease and oral cancer.
  - Techniques for helping people maintain good oral hygiene (including the use of fluoride toothpaste).
  - Local pathways for routine, urgent and domiciliary care, and specialist services.
  - Entitlements to free dental treatment or help with costs.

# 2 Who should take action?

## *Introduction*

The guideline is for: local health and wellbeing boards, directors of public health, consultants in dental public health, commissioners and decision makers in local authorities and the NHS, school governors and head teachers. It is also for frontline practitioners working more generally in health, social care and education. They could be working in local authorities, the NHS and other organisations in the public, private, voluntary and community sectors. It

will also be of interest to dentists, dental hygienists and other dental care professionals.

### *Who should do what at a glance*

This section will be completed in the final document.

### *Who should take action in detail*

This section will be completed in the final document.

# 3 Context

### *Introduction*

Oral health is important to general health and wellbeing. Poor oral and dental health can affect a person's ability to eat, speak and socialise normally (for example, due to social embarrassment, pain) (Dental quality and outcomes framework, Department of Health 2011). Oral diseases are also associated with coronary heart disease (Humphrey et al. 2008; Mathews 2008); diabetes complications (Grossi and Genco1998; Stewart et al. 2001; Taylor 2001); rheumatoid arthritis (Ortiz et al. 2009); and adverse pregnancy outcomes (Xiong et al. 2006).

Tooth decay (dental caries) and gum disease (periodontal disease) are the most common dental problems in the UK. They can be painful, expensive to treat and can seriously damage health if left unchecked (Dental quality and outcomes framework, Department of Health 2011). However, both problems are largely preventable (Levine and Stillman-Lowe 2009).

### *Oral health in England*

While oral health in England has improved significantly across the population as a whole over recent decades, marked inequalities persist. The adult dental health survey 2009 (The Health and Social Care Information Centre 2011) reported that the proportion of adults in England without any natural teeth fell over the last 30 years from 28% to 6%. However, the survey also showed a

clear socioeconomic gradient. For example, people from managerial and professional occupation households had better oral health (91%) compared to people from routine and manual occupation households (79%).

The NHS dental epidemiology programme for England oral health survey of children aged 12 showed that levels of dental disease among this group are decreasing, in line with previous survey years. However, from May 2006, data are only collected about children if written information and consent has been provided. Previously, consent was assumed if a letter was sent to the parents or guardians and no objection was received. These consent arrangements suggest a bias towards the participation of those who are less likely to have tooth decay (Davies et al. 2011).

Data collected between 2008 and 2009 show 66.6% of 12 year old children were free from visually obvious dental decay. However, 33.4% reported having dental caries (with 1 or more teeth severely decayed, extracted or filled). The same survey reported a higher prevalence and severity of oral disease among those living in Yorkshire and the Humber, the north west and north east compared to those in the midlands and south west; with the lowest levels of disease reported in the south and east (The NHS dental epidemiology programme for England: oral health survey of 12 year old children 2008/2009, North West Public Health Observatory 2010).

The National dental epidemiology programme for England oral health survey of 5 year old children 2012 (Public Health England 2013) indicates wide variations in dental health across the general population. A significant number of children (72.1%) are free from obvious dental decay, with only 27.9% having at least 1 decayed, missing or filled tooth. However, at the local authority level, the prevalence of dental caries ranges greatly: from the lowest reported of 12.5% in Brighton and Hove to the highest of 53.2% in Leicester.

### *Improving the oral health of local populations*

Risk factors for poor oral health include: diet, tobacco and alcohol consumption, trauma and stress (Sheiham and Watt 2000).

Risk factors for severe dental caries in the UK include: living in a deprived area; being from a lower socioeconomic group or living with a family in receipt of income support; belonging to a family of Asian origin; or living with a Muslim family where the mother speaks little English (Rayner et al. 2003). Other risk factors include substance misuse or having a chronic medical condition (Valuing people's oral health: A good practice guide for improving the oral health of disabled children and adults, Department of Health 2007).

The oral health of local populations may be improved by providing evidence-based community oral health promotion programmes and interventions. These aim to improve diet, improve oral hygiene, increase access to fluoride and increase access to dentists.

## *The role of local authorities in improving oral health*

Since April 2013, NHS England (previously the NHS Commissioning Board) has been working with local authorities and Public Health England to develop and deliver oral health improvement strategies and commissioning plans specific to the needs of local populations (Securing excellence in commissioning primary care, NHS Commissioning Board 2012). Oral health needs assessments are required to inform joint strategic needs assessments. Local authorities have the responsibility for commissioning surveys of dental health, dental screening and improving the oral health of their populations.

## *Delivering better oral health*

**Box 1 Summary guidance for primary care dental teams: Advice for patients**

This is an extract from: Delivering better oral health: an evidence-based toolkit for prevention (Department of Health and British Association for the Study of Community Dentistry 2009). This toolkit provides practical, evidence-based guidance to help dentists and their teams promote oral health and prevent oral disease among their patients. The 3rd edition of the toolkit is expected in May 2014 and will include some changes to the 'advice for patients'.

| **Prevention of caries in children aged 0–6 years** |
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| Children aged up to 3 years<br><br>• Breastfeeding provides the best nutrition for babies<br>• From 6 months of age infants should be introduced to drinking from a cup, and from age 1 year feeding from a bottle should be discouraged<br>• Sugar should not be added to weaning foods<br>• Parents should brush or supervise toothbrushing<br>• Use only a smear of toothpaste containing no less than 1000 ppm fluoride<br>• As soon as teeth erupt in the mouth brush them twice daily<br>• The frequency and amount of sugary food and drinks should be reduced and, when consumed, limited to mealtimes. Sugars should not be consumed more than 4 times per day<br>• Sugar-free medicines should be recommended |
| All children aged 3–6 years<br><br>• Brush last thing at night and on one other occasion<br>• Brushing should be supervised by an adult<br>• Use a pea-sized amount of toothpaste containing 1350–1500 ppm fluoride<br>• Spit out after brushing and do not rinse<br>• The frequency and amount of sugary food and drinks should be reduced and, when consumed, limited to mealtimes. Sugars should not be consumed more than 4 times per day<br>• Sugar-free medicines should be recommended |
| Children giving concern (for example, those likely to develop caries, those with special needs). All advice as above, plus:<br><br>• Use a smear or pea-sized amount of toothpaste containing 1350–1500 ppm fluoride<br>• Ensure medication is sugar free<br>• Give dietary supplements containing sugar and glucose polymers at mealtimes when possible (unless clinically directed otherwise) and not last thing at night. Parents should be made aware of the cariogenicity of supplements and ways of minimising risk |
| **Prevention of caries in children aged from 7 years and young adults** |
| All children and young adults<br><br>• Brush twice daily<br>• Brush last thing at night and on one other occasion<br>• Use fluoridated toothpaste (1350 ppm fluoride or above)<br>• Spit out after brushing and do not rinse<br>• The frequency and amount of sugary food and drinks should be reduced and, when consumed, limited to mealtimes. Sugars should not be consumed more than 4 times per day |

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| Those giving concern (for example, those likely to develop caries, those undergoing orthodontic treatment, those with special needs). All the above, plus:<br><br>• Use a fluoride mouthrinse daily (0.05% NaF) at a different time to brushing |
| **Prevention of caries in adults** |
| All adult patients<br><br>• Brush twice daily with fluoridated toothpaste<br>• Use fluoridated toothpaste with at least 1350 ppm fluoride<br>• Brush last thing at night and on one other occasion<br>• Spit out after brushing and do not rinse<br>• The frequency and amount of sugary food and drinks should be reduced and, when consumed, limited to mealtimes.<br>• Sugars should not be consumed more than 4 times per day |
| Those giving concern to their dentist (for example, with obvious current active caries, dry mouth, other predisposing factors, those with special needs). All the above, plus:<br><br>• Use a fluoride mouthrinse daily (0.05% NaF) at a different time to brushing |
| **Prevention of periodontal disease – to be used in addition to caries prevention** |
| All adolescents and adults<br><br>• Brush teeth systematically twice daily with either:<br>– a manual brush with a small head and round end filaments, a compact, angled arrangement of long and short filaments and a comfortable handle<br>**or**<br>– a powered toothbrush with an oscillating/rotating head<br>• Do not smoke<br>• Consider using toothpastes containing:<br>– triclosan with copolymer, or<br>– triclosan with zinc citrate<br>– to improve levels of plaque control<br>• Toothpastes with stannous fluoride may reduce gingivitis<br>• Clean interdentally using interdental brushes or floss<br>• Maintain good dietary practices in line with The balance of good health[1] |

[1] The 3rd edition of 'Delivering better oral health' (expected May 2014) will refer to The eatwell plate

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| Children with difficulty maintaining oral hygiene; with relevant medical conditions; wearing orthodontic appliances<br><br>• Brush systematically twice daily with either:<br>– a manual brush with a small head and round end filaments, a compact, angled arrangement of long and short filaments and a comfortable handle<br>**or**<br>– a powered toothbrush with an oscillating/rotating head<br>• Maintain good dietary practices |
| **Prevention of oral cancer** |
| All adolescents and adults<br><br>• Do not smoke<br>• Do not use smokeless tobacco (such as, paan, chewing tobacco, gutkha)<br>• Reduce alcohol consumption to moderate (recommended) levels<br>• Maintain good dietary practices in line with The balance of good health[2]<br>• Increase fruit and vegetable intake to at least 5 portions per day |

# 4 Considerations

This section describes the factors and issues the Public Health Advisory Committee (PHAC) considered when developing the recommendations. Please note: this section does **not** contain recommendations. (See Recommendations.)

## *Background*

4.1 There is a lack of good quality evidence on the effectiveness and cost effectiveness of community oral health programmes in England. Generally, studies do not provide enough detail about local service delivery or the frequency or intensity of particular interventions within programmes. Reported outcomes are confounded by poorly designed community studies implemented over a short timeframe, and longitudinal studies (carried out over long periods of time) that rarely take into account changes in the broader national and local policy context.

[2] The 3rd edition of 'Delivering better oral health' (expected May 2014) will refer to The eatwell plate

4.2 Despite improvements in oral health in England over recent decades, marked inequalities persist. A clear sociodemographic gradient is associated with poor oral health outcomes for children, young people and adults. Risk factors for dental caries (tooth decay) may include: living in a deprived area; experiencing socioeconomic deprivation, social exclusion or isolation; belonging to a particular minority ethnic group; experiencing mental health problems; having impaired physical mobility; or having a chronic medical condition. Those with complex needs, such as older people who are frail or people who misuse alcohol or drugs are also at higher risk of poor oral health and longer-term oral conditions including oral cancer.

4.3 The PHAC agreed that, for the purposes of this guideline, groups of people at higher risk of poor oral health could be described as 'vulnerable' populations. Members also agreed that it was important to recognise the general factors that lead people to be vulnerable. This includes socioeconomic deprivation, physical disability and some cultural factors (the latter includes not having English as a first language).

4.4 The risk factors for poor oral health – diet, smoking, alcohol use, hygiene, stress and trauma – are the same as those for many chronic conditions. The PHAC therefore took a 'common risk factor approach' (Sheiham and Watt 2000). As a result, many of the recommendations are relevant not only to improving oral health, but to improving health in general. Members also noted that several pieces of existing NICE guidance are relevant to oral health, including those on maternal and child nutrition, breastfeeding and smoking cessation.

4.5 The effect of sugar on oral health is influenced by when and how often it is consumed, as well as the amount consumed. The PHAC also noted that the level of acidity in the diet affects oral health. For example, fruit juices can be part of a healthy diet, but would be bad

for oral health if drunk frequently over a long period of time because they contain natural acids.

4.6 The PHAC noted that the easy availability of sugary drinks and snacks in most environments (school, work and leisure) presents a risk to oral health. Members also noted that it is not always clear which foods and drinks are high in sugar. For example, sports drinks are usually associated with health but often contain a lot of sugar.

4.7 Dietary changes can help reduce the risk of dental caries, but the PHAC noted that periodontal disease and oral cancers are also an oral health issue. Risk factors for periodontal disease and oral cancers include alcohol and smoking.

### *Overarching strategy*

4.8 The PHAC adopted a 'life course' approach, examining the evidence on oral health for a defined sequence of events that people are expected to pass through as they progress from birth to death. The aim was to examine the effectiveness of community-based oral health interventions at key 'life course' stages determined by age, common life events (such as getting a job or becoming a parent) and social changes that affect people's lives.

4.9 The PHAC identified whether an intervention should be delivered to everyone (universal) or to particular high-risk groups (targeted). This is in line with the notion of proportionate universalism: interventions are delivered to everyone, with the intensity adjusted according to the needs of specific groups. This approach was used because it can help to reduce the social gradient and benefit everybody.

4.10 The PHAC decided that some interventions are likely to have a beneficial effect on groups only if poor oral health is prevalent in that group. They were unlikely to be cost effective for other groups.

The PHAC also noted that an oral health needs assessment was an important way to determine where investment should be focused.

4.11 The PHAC considered partnership working and how current roles, capacity and resources could be used to promote evidence-based oral health.

4.12 The PHAC noted that children and adults with mobility difficulties, or learning or physical disabilities may need help brushing their teeth and may need to use aids such as electric toothbrushes or other methods of getting fluoride onto their teeth (such as fluoride varnish).

### *Oral health needs assessment*

4.13 The PHAC acknowledged that undertaking an oral health needs assessment that reflects the effect of poor oral health on quality of life can be hampered by the available evidence and the type of surveys commissioned. It noted that most evidence is based on counting cavities in teeth, rather than measuring quality of life outcomes such as pain and suffering and the ability to eat.

4.14 PHAC discussed how often an oral health needs assessment should be repeated. Members agreed this would vary, depending on factors such as the data available, population covered in original assessment and changes to services. The PHAC noted the importance of having criteria in place to decide when and why another assessment should be undertaken.

### *Early years*

4.15 The PHAC agreed that working with families to establish healthy dietary patterns (including a diet low in sugar) is important for both oral and general health. Establishing good oral health routines early in life is also crucial. Members noted that health professionals, including the dental team and early years workers, can play a key

part, by creating a welcoming environment and providing evidence-based information and advice. Members also noted the importance of dental appointments for babies from when the first tooth erupts, or from 6 months onwards. The PHAC discussed the potential use of this time to educate parents, carers and other family members as well – and thus improve their oral health.

4.16 The PHAC discussed the feasibility of using established parenting programmes (that teach parents behavioural management techniques) to reinforce good oral health care. Although it may not be feasible to add oral health education to the programme, the PHAC agreed that it might be possible to include tooth brushing as an example of how to improve children's general routines.

### *Children, young people and adults*

4.17 The PHAC noted that tooth brushing programmes can establish life-long habits that will benefit oral health, whereas fluoride varnish programmes do not. It agreed, therefore, that tooth brushing programmes are preferable. However, members were also aware of a number of implementation issues for tooth brushing programmes, such as parents' or carers' concerns that children may inadvertently use each other's toothbrushes. Members noted that lessons can be learnt from existing programmes such as Childsmile.

4.18 The PHAC recommended tooth brushing schemes and fluoride varnish programmes in areas where children were identified as being at very high risk of poor oral health. This is because there is some evidence that fluoride varnish programmes are effective in reducing tooth decay among children at very high risk.

4.19 There is limited and inconclusive evidence about the effectiveness of schemes that provide primary schoolchildren with milk containing added fluoride to improve their oral health ('fluoride milk schemes'). The PHAC also discussed the fact that these schemes do not

establish good lifelong oral health practices in the same way as tooth brushing schemes.

4.20 Fissure sealant is a thin plastic, protective film painted on the chewing surfaces of back teeth. The aim is to make the pits and grooves (fissures) of the teeth into a smooth surface to prevent plaque accumulating. There is limited evidence on the effectiveness and cost effectiveness of using fissure sealants for children and young people in a community setting. Most comes from clinical settings, where it has been shown to reduce dental decay. This is difficult to extrapolate to a community setting where, as a minimum, a mobile dental clinic and dental hygienist would be needed.

4.21 The PHAC was aware of ongoing research investigating the fluoride varnish acceptability, effectiveness and cost-effectiveness of fluoride varnish compared with fissure sealants in improving oral health when delivered in community settings.

4.22 The PHAC agreed that young people aged 16 to 24 may need help and encouragement to eat a healthy, balanced diet to promote oral health and to maintain oral hygiene. This includes those leaving care. (Oral hygiene includes regular dental check-ups.) Members acknowledged that this is a period of change – leaving school, leaving home, starting further education or looking for work – and appears to coincide with a decrease in visits to the dentist among this group. The PHAC noted that young adults not in education, employment or training were particularly vulnerable to poor oral health and in particular need of encouragement and support.

4.23 There was limited evidence on the effectiveness and cost effectiveness of community-based oral health promotion programmes among adults in the UK, particularly among vulnerable populations.

4.24 The PHAC noted that pregnant women are at a slightly increased risk of oral health problems and are therefore entitled to free dental treatment. Members highlighted that this might be an opportune time to encourage families to use dental services and establish good oral health routines that will benefit both them and their children.

4.25 The PHAC agreed that dental caries is seen as a particular problem among children, but most new incidences now occur in adults. Members discussed the use of both traditional promotional materials and social marketing to get the key oral health messages across to adults. However, evidence is lacking on whether or not the latter would be effective.

### *Economic analysis*

4.26 The PHAC noted that the 16 relevant studies identified in the systematic review all had methodological weaknesses and limited applicability to England. Therefore a new economic model was developed.

4.27 Because of a lack of evidence on two of the main health outcomes – oral cancer and periodontal disease – the PHAC accepted that the model should focus on the effects of interventions on dental caries.

4.28 As with any modelling exercise undertaken during NICE guideline development, the results are subject to uncertainty and numerous assumptions. For this topic, some members of the PHAC expressed serious concerns about a number of inputs to the model, in particular, the lack of data on the effect of tooth decay on quality of life. The lack of health-related utility scores for tooth decay meant that these had to be estimated using a regression analysis, which mapped oral health impact profile (OHIP-14) scores to utility scores (EQ-5D). However, some members felt that neither of these measures captured the effect of different aspects of oral health on

quality of life. (For example, they did not capture the effect of the stage and severity of decay, or the effect in terms of the number of teeth affected and where in the mouth.)

4.29 The PHAC was concerned that most interventions identified in the studies were for children. Generally, it is considered difficult to accurately measure the quality of life associated with oral health in this group.

4.30 Some committee members felt that the lack of suitable oral health data to input into the model severely limited the conclusions about cost effectiveness. In addition, the use of some non-UK based data was considered to limit the transferability of the findings. Nevertheless, some committee members felt that the scenarios in the sensitivity analyses could be used to determine whether future interventions might be cost effective.

This section will be completed in the final document.

# 5 Recommendations for research

The Public Health Advisory Committee (PHAC) recommends that the following research questions should be addressed. It notes that ‘effectiveness’ in this context relates not only to the size of the effect, but also to duration of effect and cost effectiveness. It also takes into account any harmful or negative side effects.

An important focus of research should be to identify differences in effectiveness among groups, based on characteristics such as socioeconomic status, age, gender and ethnicity.

5.1 What community based interventions are effective and cost effective in reducing oral health inequalities, and overcoming barriers to accessing care for groups at higher risk of poor oral health? This should include comparing the difference between

groups at higher-risk of poor oral health (including adults) and the general population.

5.2 What types of study design can best determine the effectiveness, cost effectiveness and acceptability of community-based interventions that form part of a multi-component study? How can complex, multi-component studies of community oral health be used to identify the resources and cost of implementation in the 'real world'?

5.3 What outcome measures are important to people who use community oral health services? And which ones are useful for measuring the effect of oral health on the quality of people's health and wellbeing? Importantly, how do all of these outcomes relate to clinical outcomes and measures of cost effectiveness?

5.4 What effect do supervised school-based tooth brushing schemes have on a family's oral health behaviour – in the home and elsewhere outside school? How can healthy habits that promote oral health be supported and encouraged in families where children are vulnerable to high levels of tooth decay?

5.5 What types of community-based oral health interventions are cost effective and reduce the number of children admitted to hospital to have their teeth taken out?

5.6 What are the wider health effects and consequences of poor oral health for populations at higher risk of poor oral health?

5.7 Which community-based oral health interventions can help to prevent or diagnose oral cancer?

5.8 What are the training needs of frontline staff involved in promoting oral health (and preventing ill-health) in community settings?

More detail identified during development of this guideline is provided in Gaps in the evidence.

# 6 Related NICE guidance

## *Published*

- Behaviour change: individual approaches. NICE public health guidance 49 (2014).
- Smokeless tobacco cessation - South Asian communities. NICE public health guidance 39 (2012).
- Maternal and child nutrition. NICE public health guidance 11 (2008)
- Community engagement. NICE public health guidance 9 (2008).
- Behaviour change: the principles for effective interventions. NICE public health guidance 6 (2007).
- Mini/micro screw implantation for orthodontic anchorage. NICE Interventional procedure guidance 238 (2007).
- HealOzone treatment for tooth decay. NICE technology appraisal guidance 92 (2005).
- Postnatal care: Routine postnatal care of women and babies. NICE clinical guideline 37 (2006).
- Dental recall. NICE clinical guideline 19 (2004).
- Guidance on the extraction of wisdom teeth. NICE technology appraisal guidance 1 (2000).

## *Under development*

- Oral health promotion approaches for dental practitioners. NICE public health guideline. Publication expected October 2015.
- Oral health - in nursing and residential care. NICE public health guideline. Publication date to be confirmed.

# 7 Glossary

**Fluoride varnish**

Fluoride varnish is a golden gel applied to a dried tooth surface to help prevent tooth decay by strengthening the teeth.

**Formative evaluation**

A formative evaluation is any evaluation that takes place before or during a project. The aim is to improve the design and performance of a project on an ongoing basis.

**Parenting programmes**

Parenting programmes teach parents and carers how to set effective boundaries and how to reward and praise children and young people in a way that promotes positive relationships and self-esteem. The aim is to improve children and young people's behaviour.

# 8 References

Davies GM, Jones CM, Monaghan N et al. (2011) The caries experience of 5 year-old children in Scotland, Wales and England in 2007–2008 and the impact of consent arrangements. Reports of co-ordinated surveys using BASCD criteria. Community Dental Health 28: 5–11

Grossi SG, Genco RJ (1998) Periodontal disease and diabetes mellitus: a two-way relationship. Annals of Periodontology 3: 51–61

Humphrey LL, Fu R, Buckley DI et al. (2008) Periodontal disease and coronary heart disease incidence: a systematic review and meta-analysis. Journal of General Internal Medicine 23: 2079–86

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Mathews D (2008) Is there a relationship between periodontal disease and coronary heart disease? Evidence-Based Dentistry 9: 8

Ortiz P, Bissada NF, Palomo L et al. (2009) Periodontal therapy reduces the severity of active rheumatoid arthritis in patients treated with or without tumor necrosis factor inhibitors. Journal of Periodontology 80: 535–40

Rayner J, Holt R, Blinkhorn F et al. (2003) British Society of Paediatric Dentistry: A policy document on oral health care in preschool children. International Journal of Paediatric Dentistry 13: 279–85

Sheiham A, Watt RG (2000) The common risk factor approach: a rational basis for promoting oral health. Community Dentistry and Oral Epidemiology 28: 399–406

Stewart JE, Wager KA, Friedlander AH et al. (2001) The effect of periodontal treatment on glycaemic control in patients with type 2 diabetes mellitus. Journal of Clinical Periodontology 28: 306–10

Taylor GW (2001) Bidirectional interrelationships between diabetes and periodontal disease: an epidemiological perspective. Annals of Periodontology 6: 99–112

Xiong X, Buekens P, Fraser WD et al. (2006) Periodontal disease and adverse pregnancy outcomes: a systematic review. British Journal of Obstetrics and Gynaecology 113:135–43

# 9 Summary of the methods used to develop this guideline

## *Introduction*

The reviews, commissioned reports and economic modelling report include full details of the methods used to select the evidence (including search strategies), assess its quality and summarise it.

The minutes of the Public Health Advisory Committee (PHAC) meetings provide further detail about the Committee's interpretation of the evidence and development of the recommendations.

## *Guideline development*

The stages involved in developing public health guidelines are outlined in the box below.

1. Draft scope released for consultation

2. Stakeholder comments used to revise the scope

3. Final scope and responses to comments published on website

4. Evidence reviews and economic modelling undertaken and submitted to PHAC

5. PHAC produces draft recommendations

6. Draft guideline (and evidence) released for consultation (and for fieldwork)

7. PHAC amends recommendations

10. Final guideline published on website

11. Responses to comments published on website

### *Key questions*

The key questions were established as part of the scope. They formed the starting point for the reviews of evidence and were used by the PHAC to help develop the recommendations. The overarching questions were:

**Question 1:** What are the most effective and cost-effective programmes and interventions to promote, improve and maintain the oral health of a local community? In particular, what are the most effective and cost-effective approaches for groups of people who are disadvantaged and at high risk of poor oral health?

**Question 2:** What methods and sources of information will help local authorities identify the oral health needs and severity of oral health problems in their local community?

These questions were made more specific for each review.

## *Reviewing the evidence*

### Effectiveness reviews

One review of effectiveness was conducted:

- Review 1: review of evidence of the effectiveness of community-based oral health improvement programmes and interventions.

#### *Identifying the evidence*

Several databases were searched in May 2013 for papers published since May 1993 that related to the effectiveness of programmes and interventions aiming to promote, improve and maintain the oral health of a local community. The review included studies from May 2003, with older studies (May 1993–May 2003) used to inform any gaps in the evidence. In addition, the grey literature was searched and supplemental searching was undertaken. See review 1.

#### *Selection criteria*

Studies were included in the effectiveness reviews if they covered:

- community based oral health promotion programmes and interventions that aimed to reduce and prevent dental and periodontal disease, oral cancer or other oral disease and promote oral health
- programmes and interventions aimed at children, adults or older people living in the community, including people from disadvantaged populations such as homeless people.

Studies were excluded if they were conducted:

- in a non-Organisation for Economic Cooperation and Development (OECD) country
- with children or adults not living independently in the community, such as those living in residential care, prisons, or hospitals.

See review 1 for details of the inclusion and exclusion criteria.

### Other reviews

One review of the barriers and facilitators to implementing community-based oral health programmes was conducted. See Review 2: qualitative evidence review of barriers and facilitators to implementing community-based oral health improvement programmes and interventions.

#### *Identifying the evidence*

Several databases were searched in May 2013 for qualitative and quantitative studies from May 1993. Studies were included from May 2003, with older studies (May 1993–May 2003) used to inform any gaps in the evidence. In addition, the grey literature was searched and supplemental searching was undertaken. See review 2 for details of the databases searched.

#### *Selection criteria*

Studies were included if:

- they described user or provider views of the barriers or facilitators to the implementation, or uptake, of community-based oral health programmes.

Studies were excluded if they:

- were conducted in a non-Organisation for Economic Cooperation and Development (OECD) country
- focused on children or adults living in residential care, prisons, hospitals or other institutions.

### Quality appraisal

Included papers were assessed for methodological rigour and quality using the NICE methodology checklist, as set out in Methods for the development of NICE public health guidance. Each study was graded (++, +, −) to reflect the risk of potential bias arising from its design and execution.

#### *Study quality*

++ All or most of the checklist criteria have been fulfilled. Where they have not been fulfilled, the conclusions are very unlikely to alter.

+ Some of the checklist criteria have been fulfilled. Those criteria that have not been fulfilled or not adequately described are unlikely to alter the conclusions.

− Few or no checklist criteria have been fulfilled. The conclusions of the study are likely or very likely to alter.

The evidence was also assessed for its applicability to the areas (populations, settings, interventions) covered by the scope of the guideline. Each evidence statement concludes with a statement of applicability (directly applicable, partially applicable, and not applicable).

#### Summarising the evidence and making evidence statements

The review data were summarised in evidence tables (see the reviews in Supporting evidence).

The findings from the reviews were synthesised and used as the basis for a number of evidence statements relating to each key question. The evidence statements were prepared by the external contractors (see Supporting evidence). The statements reflect their judgement of the strength (quality, quantity and consistency) of evidence and its applicability to the populations and settings in the scope.

## *Commissioned reports*

#### Oral health needs assessments

A structured review and survey of oral health needs assessments was conducted:

- Report 1: An overview of oral health needs assessments.

#### *Identifying the evidence*

A mixed method approach was undertaken to identify the evidence relating to oral health needs assessment. This included a survey of public health consultants and a structured literature review. For the literature review, a

range of databases was searched in June 2013 for studies from June 1946. See report 1 for details of the databases searched.

#### *Selection criteria*

Studies were included if they described how oral health needs assessment was carried out among vulnerable groups from a population perspective.

Studies were excluded if they focused on care provision or attitudes to specific treatments.

See report 1 for details of the inclusion and exclusion criteria and quality appraisal methods.

#### Overview of systematic reviews

An overview of relevant systematic reviews was undertaken to supplement and contextualise the effectiveness review:

- Report 2: Commentary on selected systematic reviews.

Relevant systematic reviews were identified by the searches undertaken for the effectiveness reviews and by topic experts on the PHAC. These papers were appraised and summarised by a topic expert and described in a short report. See report 2 for details.

#### Expert papers

Two expert papers were commissioned:

- Expert paper 1 ‘Working with vulnerable adults and older people at greater risk of poor oral health’.
- Expert paper 2 ‘Overview of the Childsmile programme’.

### *Cost effectiveness*

There was a review of economic evaluations and an economic modelling exercise. See ‘Literature review of economic evaluations on oral health improvement programmes and interventions’ and ‘RX058: Economic analysis of oral health improvement programmes and interventions’.

### Review of economic evaluations

The search strategy developed for the effectiveness review (review 1) was adapted to identify research for the cost effectiveness review.

Eight databases were searched from 1993 onwards. In addition, reference lists of reviews and studies selected for inclusion in the review were scanned to identify any further relevant studies. Citation searches and named author searches were also carried out to identify other publications by the authors of studies selected for inclusion.

Studies were included if they met the inclusion criteria for review 1 and reported on a full economic evaluation with the same populations and interventions (see above). Included studies were then quality-assessed.

### Economic modelling

Due to a paucity of data from the review of economic evaluations, an economic model was constructed. This was used to undertake a sensitivity analysis to help identify which parameters are the key drivers of cost effectiveness and to assess the effect that changes in a certain parameter will have on outcomes. The assumptions made could underestimate or overestimate the cost effectiveness of the interventions (see economic modelling report for further details).

In addition to the sensitivity analysis, a probabilistic approach was undertaken to estimate the probability that an intervention is cost effective for each of the scenarios in the sensitivity analysis.

The results are reported in RX058: Economic analysis of oral health improvement programmes and interventions.

## *Fieldwork*

This section will be completed in the final document.

### *How the PHAC formulated the recommendations*

At its meetings between July 2013 and January 2014, the Public Health Advisory Committee (PHAC) considered the evidence, expert testimony and cost effectiveness to determine:

- whether there was sufficient evidence (in terms of strength and applicability) to form a judgement
- where relevant, whether (on balance) the evidence demonstrates that the intervention, programme or activity can be effective or is inconclusive
- where relevant, the typical size of effect
- whether the evidence is applicable to the target groups and context covered by the guideline.

The PHAC developed recommendations through informal consensus, based on the following criteria:

- Strength (type, quality, quantity and consistency) of the evidence.
- The applicability of the evidence to the populations/settings referred to in the scope.
- Effect size and potential effect on the target population's health.
- Effect on inequalities in health between different groups of the population.
- Equality and diversity legislation.
- Ethical issues and social value judgements.
- Cost effectiveness (for the NHS and other public sector organisations).
- Balance of harms and benefits.
- Ease of implementation and any anticipated changes in practice.

Where possible, recommendations were linked to evidence statements (see The evidence for details). Where a recommendation was inferred from the evidence, this was indicated by the reference 'IDE' (inference derived from the evidence).

# 10 The evidence

## *Introduction*

The evidence statements from 2 reviews and a report are provided by external contractors (see Supporting evidence).

This section lists how the evidence statements and expert papers link to the recommendations and sets out a brief summary of findings from the economic analysis.

## *How the evidence and expert papers link to the recommendations*

The evidence statements are short summaries of evidence, in a review, report or paper (provided by an expert in the topic area). Each statement has a short code indicating which document the evidence has come from.

**Evidence statement number 1.1** indicates that the linked statement is numbered 1 in the review 1. **Evidence statement ER 1** indicates that the linked statement is numbered 1 in the expert report 1. **EP 1** indicates that expert paper 1 is linked to a recommendation.

Where a recommendation is not directly taken from the evidence statements, but is inferred from the evidence, this is indicated by IDE (inference derived from the evidence).

**Recommendation 1:** evidence statements ER 1.1, 1.2, 1.5; expert paper 1

**Recommendation 2:** evidence statements ER 1.1, 1.2, 1.4; expert paper 1

**Recommendation 3:** evidence statements ER 1.2, 1.3, 1.4, 1.6; expert paper 1; expert paper 2

**Recommendation 4:** evidence statements ER 1.6

**Recommendation 5:** evidence statements 2.1, 2.2, 2.9a, 2.9b, 2.11b, 2.12a, 2.12b; expert paper 1; expert paper 2

**Recommendation 6:** expert paper 2

**Recommendation 7:** evidence statements 1.6; 2.3, 2.4, 2.5, 2.6, 2.9c; expert paper 1; expert paper 2

**Recommendation 8:** evidence statements 1.6, 1.19; 2.3, 2.4, 2.5, 2.6., 2.7, 2.11a, 2.11b, 2.12b, 2.16; expert paper 2

**Recommendation 9:** evidence statements 1.3, 1.4, 1.5, 1.6; 2.3, 2.4, 2.5, 2.6, 2.7, 2.11a, 2.11b, 2.12a, 2.12b, 2.16; expert paper 2

**Recommendation 10:** evidence statements 1.3, 1.4, 1.5, 1.19, 1.22, 1.24, 1.25; 2.3, 2.4, 2.5, 2.6, 2.9a, 2.11a, 2.12a, 2.12b; expert paper 2

**Recommendation 11:** evidence statements1.2, 1.4, 1.25; 2.9a, 2.9b, 2.9c, 2.11b, 2.12b; expert paper 2

**Recommendation 12:** evidence statements 1.8, 1.14, 1.24; 2.9a, 2.9b, 2.9c, 2.11b, 2.12a, 2.12b, 2.16; expert paper 2

**Recommendation 13:** 1.2, 1.4, 1.8, 1.14, 1.24, 1.25; 2.9a, 2.9b, 2.9c, 2.11b, 2.16; expert paper 2

**Recommendation 14:** evidence statement 1.13, 1.14; 2.8, 2.11b, 2.12a, 2.12b; expert paper 2

**Recommendation 15:** evidence statements 1.13, 1.14, 1.16, 1.18, 1.25; 2.7, 2.8, 2.11b, 2.12a, 2.12b; expert paper 2

**Recommendation 16:** evidence statements 1.12, 1.13, 1.14, 1.15, 1.16, 1.18, 1.19; 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9c, 2.11b, 2.12a, 2.12b, 2.13; expert paper 2

**Recommendation 17:** evidence statements 1.11; 2.9a, 2.9b, 2.9c, 2.11a, 2.11b, 2.12a, 2.12b, 2.13; expert paper 2

**Recommendation 18:** evidence statements 1.8, 1.14, 1.24; 2.9a, 2.9b, 2.9c, 2.11b, 2.16; expert paper 2

**Recommendation 19:** evidence statements 1.8, 1.11, 1.14, 1.24; expert paper 2

**Recommendation 20:** evidence statements 1.13, 1.16, 1.18; 2.5, 2.6; expert paper 2

**Recommendation 21:** evidence statements 1.20, 1.21, 1.22; 2.3, 2.4, 2.5, 2.6, 2.8, 2.9c, 2.10, 2.11a, 2.12a; expert paper 1

**Recommendation 22:** evidence statements 1.21, 1.22; 2.3, 2.4, 2.5, 2.6, 2.9c, 2.10, 2.11a, 2.12a; expert paper 1

**Recommendation 23:** evidence statements 1.21, 1.22; 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9b, 2.10, 2.11a, 2.12a, 2.16; expert paper 1

**Recommendation 24:** evidence statements 2.3, 2.4, 2.5, 2.6, 2.9c, 2.10, 2.11a, 2.12a, 2.13, 2.14, 2.16; expert paper 1

## *Cost effectiveness*

### Review of economic evaluations

The searches returned 4162 unique records. Sixty-three papers were included after title and abstract screening, with 61 retrieved. After applying the eligibility criteria 17 papers were included and 16 were judged partially applicable.

Two of the 16 studies were judged to have minor methodological limitations, (++), 11 to have potentially serious limitations (+) and 3 to have very serious limitations (−). No study adopted the appropriate perspective for public health studies.

### Economic modelling

Originally the economic model was to assess the cost effectiveness of interventions identified in review 1. The main oral health outcomes to be included were oral cancer, periodontal disease and dental caries. However, due to a paucity of evidence on the first two outcomes, the model focused on the effect of interventions on dental caries.

Once built, it became apparent that there were not enough data to inform inputs into the model and that expressing the results as single incremental cost effectiveness ratios (ICERs) would be of limited value. Instead, the model was used to explore a likely range of results arising from placing different values on the main inputs: intervention costs, baseline risk of dental caries, intervention effectiveness (measured as a reduction in relative risk for dental caries), loss in quality-adjusted life years (QALYs) from each case of dental caries, and cost of treating each case of dental caries.

The values used for each input are shown below:

- intervention cost per person: £20, £40, £60, £80 and £100.
- baseline risk of dental caries: 10%, 20% and 50%.
- intervention effectiveness: 0%, 10%, 20%, 30% and 40%.
- QALY loss from dental caries: −0.025, −0.05 and −0.1.
- cost of treating dental caries: £75, £100 and £125.

The sensitivity analysis demonstrated that varying the cost of treating dental caries between £75 and £125 does not significantly affect the cost effectiveness. However, varying the QALY losses associated with dental caries, the cost and effectiveness of the intervention and the baseline risk of dental caries – within the ranges given above – had a large effect. So the likelihood that an intervention might fall below NICE's £20,000 threshold for cost effectiveness depends on the combination of values used as inputs to the model.

As an example, if we assume a QALY loss of −0.025, a relative risk reduction for the intervention of 30%, a baseline risk of 10%, treatment costs of £75 and a cost per person of £20 for the intervention, the ICER would be less than £20,000 and thus the intervention would be considered cost effective. However, if the cost is increased to £40 per person but all other values are held constant, the ICER would be about £40,000, well above the cost effectiveness threshold.

The specific scenarios considered and the full results can be found in RX058: Economic analysis of oral health improvement programmes and interventions.

# 11 Gaps in the evidence

The Public Health Advisory Committee (PHAC) identified a number of gaps in the evidence related to the programmes under examination based on an assessment of the evidence. These gaps are set out below.

1. There is a lack of evidence on the effectiveness or cost-effectiveness of community based oral health improvement programmes that aim to promote, improve, and maintain the oral health of adult populations.

2. There is a lack of evidence on the effectiveness or cost-effectiveness of community based oral health improvement programmes that aim to promote, improve, and maintain the oral health of groups of people considered at high risk for poor dental health such as people who are homeless, gypsies and travellers, people with mobility difficulties and people with learning disabilities.

3. There is a lack of evidence on the effectiveness or cost-effectiveness of individual intervention components within effective multi-component community oral health promotion interventions; and a lack of research on what combinations of components can best improve oral health.

4. There is a lack of primary research evaluating the impact of oral health needs assessments on service delivery, whether actions identified in them become part of an oral health strategy and so lead to changes in service delivery and/or practice.

5. There is a lack of data on the oral health needs of people at higher risk of poor oral health to inform oral health needs assessments.

6. There is a lack of evidence on the effect of supervised tooth-brushing schemes for children on the tooth-brushing behaviour of other family members.

7. Research on UK community-based oral health programmes and interventions tend not to provide outcome measures that include periodontal health outcomes or measures that reflect oral health related quality of life.

8. There is a lack of longitudinal research exploring the effectiveness of community-based oral health programmes and interventions on preventing oral cancers.

9. There is a lack of information provided on the set-up and delivery costs of community-based oral health improvement programmes that aim to promote, improve, and maintain the oral health of local communities.

# 12 Membership of the Public Health Advisory Committee and the NICE project team

## *Public Health Advisory Committee B*

NICE has set up several Public Health Advisory Committees (PHACs). These standing committees consider the evidence and develop public health guidelines. Membership is multidisciplinary, comprising academics, public health practitioners, topic experts and members of the public. They may come from the NHS, education, social care, environmental health, local government or the voluntary sector. The following are members of PHAC B:

**Chair**

**Alan Maryon-Davis**

Honorary Professor of Public Health, Kings College London

**Core members**

**Rachel Johns**

Deputy Director of Service Delivery, Public Health England

**Jo Cooke**

Programme Manager, National Institute for Health Research, Collaboration for Leadership in Applied Health Research and Care, for South Yorkshire

**Daniela DeAngelis**

Programme leader, Medical Research Council

**Richard Watt**

Professor in Dental Public Health, University College London

**Brendan Collins**

Research Fellow in Health Economics, University of Liverpool

**Jakki Cowley**

Community core member

**Topic members**

**Rebecca Harris**

Professor of Dental Public Health, University of Liverpool

**Sabrina Fuller**

Head of Health Improvement, NHS England

**Elizabeth Kay**

Foundation Dean, Peninsula Dental School

**Mandy Murdoch**

Senior Public Health Strategist, Camden & Islington Public Health, London Borough of Islington

**Peter Sims**

Medical Practitioner

**Martin Landers**

Topic community member

**Expert co-optees to PHAC**

**Ben Atkins**

General Dental Practitioner

**Expert testimony to PHAC**

**Graham Ball**

Consultant in Dental Public Health, NHS Director Childsmile Programme

**Carole Hill**

Assistant Health Improvement Manager, Tameside & Glossop Health Improvement Service

## *NICE project team*

**Mike Kelly**

CPH Director

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**Susie Burlace** and **Susannah Strong**
Editors

# About this guideline

## *What does this guideline cover?*

The Department of Health (DH) asked the National Institute for Health and Care Excellence (NICE) to produce this guideline on oral health needs assessments and community oral health promotion programmes, in particular, for vulnerable groups at risk of poor oral health (see the scope).

This guideline does not provide detail on oral health promotion and dental treatment in residential or care settings or preventive information, or cover treatments and advice provided by dentists.

(See Related NICE guidance for other recommendations that may be relevant to oral health).

The absence of any recommendations on interventions that fall within the scope of this guideline is a result of lack of evidence. It should not be taken as a judgement on whether they are cost effective.

## *How was this guideline developed?*

The recommendations are based on the best available evidence. They were developed by the Public Health Advisory Committee (PHAC).

Members of the PHAC are listed in Membership of the Public Health Advisory Committee and the NICE project team.

For information on how NICE public health guidelines are developed, see the NICE public health guideline process and methods guides.

## *What evidence is the guideline based on?*

The evidence that the PHAC considered included:

- Evidence reviews:

  - Review 1 ‘Review of evidence of the effectiveness of community-based oral health improvement programmes and interventions’ was carried out by Bazian Limited.
  - Review 2 ‘Qualitative evidence review of barriers and facilitators to implementing community-based oral health improvement programmes and interventions’ was carried out by Bazian Limited.
- A review of economic evaluations ‘Literature review of economic evaluations on oral health improvement programmes and interventions’, produced by Newcastle Upon Tyne Hospitals and York Health Economics Consortium External Assessment Centre. The principal authors were: Donna Coffin, Joyce Craig, Mick Arber and Julie Glanville.
- Economic modelling ‘RX058: Economic analysis of oral health. improvement programmes and interventions’ was carried out by NUTH and YHEC, External Assessment Centre. The principal authors were: Lindsay Claxton, Matthew Taylor, Michelle Jenks and Alexandra Filby.
- Primary research and commissioned reports:
  - Report 1 ‘An overview of oral health needs assessments’ was carried out by the Dental Public Health Unit, Cardiff University. The principal authors were: Ivor Chestnutt, Maria Morgan, Neil Monaghan, Shelagh Thompson and Lucy Collins.
  - Report 2 ‘Commentary on selected systematic reviews’ was carried out by the Dental Public Health Unit, Cardiff University. The principal author was Professor Ivor Chestnutt.
- Expert papers
  - Expert paper 1 ‘Working with vulnerable adults and older people at greater risk of poor oral health’. The principal author was Carole Hill, Tameside & Glossop Health Improvement Service.
  - Expert paper 2 ‘Overview of the Childsmile programme’. The principal author was Graham Ball, Childsmile Programme NHS Director and Dental Public Health Office Scotland.

Note: the views expressed in the expert papers above are the views of the authors and not those of NICE.

In some cases the evidence was insufficient and the PHAC has made recommendations for future research. For the research recommendations and gaps in research, see Recommendations for research and Gaps in the evidence.

### *Status of this guideline*

This is a draft guideline. The recommendations made in section 1 are provisional and may change after consultation with stakeholders and fieldwork.

This document does not include all sections that will appear in the final guideline. The stages NICE will follow after consultation (including fieldwork) are summarised below.

- The Committee will meet again to consider the comments, reports and any additional evidence that has been submitted.
- After that meeting, the Committee will produce a second draft of the guideline.
- The draft guideline will be signed off by the NICE Guidance Executive.

The key dates are:

- Closing date for comments: 15 May 2014
- Next PHAC meeting: 11 and 12 June 2014

All healthcare professionals should ensure people have a high quality experience of the NHS by following NICE's recommendations in Patient experience in adult NHS services.

All health and social care providers working with people using adult NHS mental health services should follow NICE's recommendations in Service user experience in adult mental health.

The recommendations should be read in conjunction with existing NICE guidance unless explicitly stated otherwise. They should be implemented in light of duties set out in the Equality Act 2010.

NICE produces guidance, standards and information on commissioning and providing high-quality healthcare, social care, and public health services. We have agreements to provide certain NICE services to Wales, Scotland and Northern Ireland. Decisions on how NICE guidance and other products apply in those countries are made by ministers in the Welsh government, Scottish government, and Northern Ireland Executive. NICE guidance or other products may include references to organisations or people responsible for commissioning or providing care that may be relevant only to England.

### *Implementation*

NICE guidelines can help:

- Local health and wellbeing boards to meet the requirements of the Health and Social Care Act (2012) and the Public health outcomes framework for England 2013 to 2016.
- Local authorities, NHS services and local organisations determine how to improve health outcomes and reduce health inequalities during the joint strategic needs assessment process.
- Commissioners and providers of NHS services to meet the requirements of the NHS outcomes framework 2013/14. This includes helping them to deliver against domain 1: preventing people from dying prematurely.

NICE will develop tools to help organisations put this guideline into practice. Details will be available on our website after the guideline has been issued.

### *Updating the recommendations*

This section will be completed in the final document

### *Your responsibility*

This guideline represents the views of the Institute and was arrived at after careful consideration of the evidence available. Those working in the NHS, local authorities, the wider public, voluntary and community sectors and the private sector should take it into account when carrying out their professional, managerial or voluntary duties.

Implementation of this guideline is the responsibility of local commissioners and/or providers. Commissioners and providers are reminded that it is their responsibility to implement the guideline, in their local context, in light of their duties to have due regard to the need to eliminate unlawful discrimination, advance equality of opportunity, and foster good relations. Nothing in this guideline should be interpreted in a way which would be inconsistent with compliance with those duties.

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