National Collaborating Centre for
Women's and Children's Health

When to suspect child maltreatment

Clinical Guideline

July 2009

Funded to produce guidelines for the NHS by NICE

When to suspect child maltreatment

National Collaborating Centre for Women's and Children's Health

Commissioned by the National Institute for Health and Clinical Excellence

Evidence tables

July 2009

RCOG Press

Evidence tables should be read in conjunction with the full guideline.

Published by the **RCOG Press** at the Royal College of Obstetricians and Gynaecologists, 27 Sussex Place, Regent's Park, London NW1 4RG

www.rcog.org.uk

Registered charity no. 213280

First published 2009

This guideline has been fully funded by NICE. Healthcare professionals are expected to take it fully into account when exercising their clinical judgement. However, the guidance does not override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient.

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ISBN 978-1-906985-15-8

NCC-WCH Editor: Andrew Welsh
Original design: FiSH Books, London

Contents

Abbreviations

A&E	accident and emergency department
ADE	Adolescent Dissociative Experiences
ADHD	attention deficit hyperactivity disorder
ALTE	apparent life-threatening event
BMI	body mass index
CBCL	Child Behaviour Checklist
CDC	Child Dissociative Checklist
CI	confidence interval
CrI	credible interval
CSA	child sexual abuse
CSBI	Child Sexual Behaviour Inventory
EL	evidence level (level of evidence)
ENT	ear, nose and throat
FII	fabricated or induced illness
GCI	General Cognitive Index
GDG	Guideline Development Group
GORD	gastro-oesophageal reflux disease
GP	general practitioner
HTA	Health Technology Assessment
MSBP	Münchausen syndrome by proxy
MVC	motor vehicle crash
NAPAC	National Association for People Abused in Childhood
NCC-WCH	National Collaborating Centre for Women's and Children's Health
NHS	National Health Service
NICE	National Institute for Health and Clinical Excellence
NSF	National Service Framework for Children, Young People and Maternity Services
NSPCC	National Society for the Prevention of Cruelty to Children
NSSI	non-suicidal self-injury
PCT	primary care trust
PPIP	Patient and Public Involvement Programme
OR	odds ratio
RCPCH	Royal College of Paediatrics and Child Health
RCT	randomised controlled trial
RR	relative risk
SD	standard deviation
SIDS	sudden infant death syndrome
SIGN	Scottish Intercollegiate Guidelines Network
STI	sexually transmitted infection

4 Physical features

4.1 Injuries

4.1.1 Bruises

Bibliographic details	Study type and evidence level	Study details	Patient characteristics	Intervention and comparisons	Comments
Maguire S; Mann MK; 2005 [14]	Study Type: Systematic Review/Meta-Analysis Evidence Level: 2+	23 studies	All papers that defined patterns of bruising in non-abused or abused children aged less than 18 year of age.	Papers about bruising in non-abused children: 2 case–control studies 4 cross-sectional studies 3 case series Papers about bruising in abused children: 2 case–control studies 1 cross-sectional study 13 case series	Source of Funding: Supported by the NSPCC (funding?) 11 study populations were located in the USA, 7 in the UK, 2 in Australia, 1 in Canada, 1 in South Africa and 1 Germany.

4.1.2 Bites

Bibliographic details	Study type and evidence level	Study details	Patient characteristics	Intervention and comparisons	Comments
[16,17]	Systematic review Evidence level: 2+	Systematic review of inflicted bites in children.	5 case studies: 4 children <30 months, 1 in her teens.	n/a	

4.1.3 Lacerations (cuts), abrasions and scars

No literature identified.

4.1.4 Strangulation and suffocation

See Section 5.3 on apparent life-threatening events.

4.1.5 Thermal injuries

Bibliographic details	Study type and evidence level	Study details	Patient characteristics	Comparisons	Comments
Maguire S;Moynihan S;Mann M;Potokar T;Kemp AM; 2007 Jan 12 [18] Country: USA and UK	Study Type: Systematic Review/Meta-Analysis Evidence Level: 2+	26 studies 587 children	One case–control study, eight cross-sectional studies and 17 case series and case studies	Whether a scald was intentional or accidental. (neglectful scalds excluded) **Intentional scalds:** immersion injuries, caused by hot tap water, affecting the extremities, buttocks or perineum or both symmetrical with clear upper margins, associated with old fractures and unrelated injuries. **Unintentional scalds:** due to spill injuries of other hot liquids, affecting the upper body with irregular margins and depth.	Source of Funding: NSPCC Narrative review
CORE-INFO; 2006 [19]	Study Type: Systematic Review/Meta-Analysis Evidence Level: 2+	28 studies (1 case–control, 27 case series) 255 children of which 76 were abused	Children < 14 years of age	Contact burns most common non-scald injury. Injuries with demarcated edges in shape of implement (e.g. cigarette, iron) Age not a factor in intentional non-scald burns.	Limitations of the review: Small numbers of children No comparative studies of cigarette burns Lack of comparative data for contact burns

4.1.6 Cold injury

No literature identified.

4.1.7 Hair loss

No literature identified.

4.1.8 Fractures

Bibliographic information	Study type and evidence level	Aim of study	Number of patients and patient characteristics	Population characteristics	Outcome measures	Results and comments	Study summary	Reviewer comment
Hui C;Joughin E;Goldstein S;Cooper N;Harder J;Kiefer G;Parsons D;Howard J; 2008 Apr [26]	Study Type: Other Evidence Level: 4	Comparison: Non-accidentally injured children versus accidentally injured children	127	Children under 3 years with femoral fracture	Abuse categorised as: definite – multiple recent fractures, fractures of various ages, eyewitness, multiple internal injuries, physical findings, abuse of sibling, definite act causing physical harm to child, suspicious injury with definite later abuse likely abuse – previous injury diagnosed as abuse AND inconsistent history questionable abuse – inconsistent history	14 categorised as non-accidental injury mechanism of injury was unwitnessed or with an inconsistent or absent explanation in 10/14 compared with 3/113. No specific fracture type or location. Multiple injuries in 6/14 abused children compared with 13/113 in accidental injuries group.		Possible neglect cases are included in 'accidental' injury cases.
Kemp, A; Dunstan, F; Harrison, S; Morris, S; Mann, M; Rolfe, K; Datta, S; Thomas; D. P.; Sibert, J; Maguire, S; 2008 [20]	Systematic review (search date 1950 – April 2007) EL = 2+	Which fractures are indicative of abuse?	Included 32 comparative studies of children <18 years old that described the distribution of fractures identified on radiographs, in which the fractures resulting from physical abuse were compared with those from other causes.			Rib fractures		
Day et al, 2006[22]	Retrospective case series EL = 3	Describe characteristics of children who had skeletal surveys for suspected NAI	70 children with suspected NAI (siblings of index cases not included here)	49% male 79% < 12 months		17 children had positive skeletal survey 42 occult fractures were identified: 22 rib fractures, 8 tibia, 4 femur, 3 metatarsal and one each of radius, ulna, humerus, clavicle and skull. Nine children had only one fracture and three children had at least five. Distribution of obvious fractures similar between those with +ve and those with –ve skeletal survey.		

Bibliographic information	Study type and evidence level	Aim of study	Number of patients and patient characteristics	Population characteristics	Outcome measures	Results and comments	Study summary	Reviewer comment
Carty, 2002 UK[24]	Retrospective case series EL = 4		*n* = 467 with suspected NAI 61% male 91%<2 years at time of presentation *n* = 435 confirmed diagnosis of NAI			Fractures found in 408 children 268 children had multiple fractures 140 had solitary fractures. Locations of fractures were: Multiple fractures Skull = 88 Metaphyseal = 134 Long bone = 215 Ribs = 154 Ribs Unilateral – neck = 24, shaft = 51, both = 8 Bilateral – neck = 5, shaft = 39, both = 27 Skull Single = 86 Multiple bilateral = 29 Unilateral = 11 Isolated Long-bone Femur = 25 Tibia = 14 Humerus = 27 Forearm = 9 Clavicle = 2 Rib = 11		
Loder; Feinberg. USA 2007[23]	Retrospective case series EL = 4		2500000 paediatric (age 0–20) hospitalisation cases including 1794 musculoskeletal injuries caused by NAI.			Fractures 49% (875) < 1 year: skull 202, ribs = 159, femoral neck/femur – 150, tibia/ankle/fibula – 98, Humerus = 74 19% (345) 1 to 2 years : skull 56, ribs = 16, femoral neck/femur – 26, radius – 17, Humerus = 28 18% (316) 3 to 12 years: skull 12, ribs = 4, femoral neck/femur – 12, radius – 13, Humerus = 6 14% (258) 13 to 20 years: skull 19, ribs = 1, tibia/ankle/fibula – 3, carpal – 3, Humerus = 3 **Other injuries** **Age<1** Internal injuries: 44, Wounds: 48,		

Bibliographic information	Study type and evidence level	Aim of study	Number of patients and patient characteristics	Population characteristics	Outcome measures	Results and comments	Study summary	Reviewer comment
						Contusions: 280, Burns: 22 **Age 1–2** Internal injuries 54 Wounds: 40 Contusions: 243 Burns:111 **Age 3–12** Internal injuries:30 Wounds: 44 Contusions:172 Burns: 47 **Age: 13–20** Internal injuries:8 Wounds: 54 Contusions: 73 Burns: 6		
Krishnan, J; Barbour, PJ; Foster, B 1990 Australia [25]	Retrospective case series Evidence level: 4		*n* = 108 children referred to child protection services			Location of fractures Clavicle = 5 Humerus = 29 Radius and ulna = 18 Hand = 1 Ribs = 24 Vertebra = 1 Femur= 29 Tibia/fibula = 29 Foot = 1 Skull = 33 Pelvis = 1 Multiple fractures 1 = 41 2 = 12 3 = 23 4+ = 18		

4.1.9 Intracranial injuries

Bibliographic information	Study type and evidence level	Number of patients	Patient characteristics	Comparison	Follow-up and outcome measures	Effect size	Reviewer comments
CORE-INFO [29]	Study type: Systematic review Evidence level: 2+	14 studies 18 studies	779 abused (mean age <1 year in all studies) 876 non-abused mean age ranged from 4.8 months to 35.5 months.		8 studies showed age of children with abusive head injury was significantly younger than non-abused children 2 studies found no difference. Intracranial injuries considered were subdural haemorrhage, subarachnoid haemorrhage and traumatic brain injury. Inclusion criteria for the comparison groups varied across studies. 8 studies recorded whether there was an explanation of trauma and they all noted a significantly greater number of children in the abuse group with no explanation of trauma. 7 studies recorded minor trauma (a fall under 4ft): - 3 were general head injury studies and showed no difference between groups. 4 studies of children with traumatic brain injury or subdural haemorrhage - 3 showed that more children in the abuse group gave a history of minor injury 7 studies found that a history of major trauma was reported significantly more often in non-abused compared with abused children. 5 studies recorded cases of 'admitted assault'. **Neuroimaging** *Subdural haemorrhage:* 14 comparative studies reported number of children with subdural haemorrhage - subdural haemorrhage significantly more prevalent in abuse than non-abuse. Multiple haemorrhages, those over the convexity and in the interhemispheric fissure were more common in abuse than non-abuse. Abusive subdural haemorrhages were more likely to be of different or mixed attenuation on magnetic resonance imaging or computed tomography scan. *Subarachnoid haemorrhage* 10 studies compared subarachnoid haemorrhage in abuse and non-abuse; - 9 showed no difference between the prevalence of subarachnoid haemorrhage in either group - 1 showed it was more common in abusive head injury. *Extradural haemorrhage* 11 studies compared extradural haemorrhage in abused and non-abused children. Four studies noted that they were significantly more prevalent in non-abuse and the remainder found no significant difference. *Hypoxic ischaemic injury* 1 good quality magnetic resonance imaging study showed that hypoxic ischaemic injury was		

Bibliographic information	Study type and evidence level	Number of patients	Patient characteristics	Comparison	Follow-up and outcome measures	Effect size	Reviewer comments
					more common in abusive head trauma than non abusive head trauma. **Associated features** *Retinal haemorrhages* 10 studies compared retinal haemorrhages in abused and non-abused children. 6 studies stated the number of non-abused children who were examined and all noted that a significantly higher number of children with abuse had associated retinal haemorrhage. In studies of children with subdural haemorrhage or traumatic brain injury, the prevalence of retinal haemorrhage in the abuse group ranged from 50–86% but not all cases had an ophthalmological examination. In one study, all cases were known to be examined and 77% of the NAHI group had retinal haemorrhage compared with 20% in the non-abused group. *Skull fracture* 13 studies that addressed skull fractures. - 2 studies showed that abused children with intracranial injury had higher rates of fractures than non-abused children. The comparison groups were biased towards non traumatic causes in one study and excluded MVC in the second study. - 4 studies showed no significant difference between abused and non-abused children. Five studies showed a highly significant correlation of skull fracture and intracranial injury with non-abuse. *Skeletal fractures* 8 studies addressed coexisting rib and/or long bone fractures with NAHI, of which seven found more fractures in abuse than non-abuse. However, non-abused cases were incompletely investigated with respect to skeletal survey. Fractures coexist with 46% to 70% of NAHI that includes intracranial injury. *Seizures and apnoea* 7 studies were identified and all showed that there was a greater association of seizures with abuse in children with traumatic brain injury than without traumatic brain injury. Two studies showed that apnoea was more strongly associated with abuse than non-abuse **Impaired consciousness** 6 studies addressed impaired consciousness at presentation, of which five showed no significant difference between abused and non-abused children. One study showed that impaired consciousness was significantly more prevalent in abuse than non-abuse.		

4.1.10 Eye trauma

Bibliographic information	Study type and evidence level	Number of patients	Patient characteristics	Comparison	Follow-up and outcome measures	Effect size	Reviewer comments
Vinchon M;foort-Dhellemmes S;Desurmont M;Dhellemmes P; 2005 May [32]	Study Type: Cohort Evidence level: 2+	150 head-injured children, of which 129 were assessed for retinal haemorrhage.	69% male mean age 5.3 months, median age 3.6 months children <24 months hospitalised for craniocerebral traumatic lesions.			42/56 abused children had RH 5/73 accidental trauma children had RH sens=75%, spec=93%.	High level of confirmation of abuse.

Bibliographic information	Study type and evidence level	Aim of study	Number of patients and patient characteristics	Population characteristics	Outcome measures	Results and comments	Study summary	Reviewer comment
Adams G;Ainsworth J;Butler L;Bonshek R;Clarke M;Doran R;Dutton G;Green M;Hodgkinson P;Leitch J;Lloyd C;Luthert P;Parsons A;Punt J;Taylor D;Tehrani N;Willshaw H; 2004 [31]	Study Type: Other Consensus statement Evidence Level: 4	Comparison:	NA	NA	NA		In children under 2 years, retinal haemorrhage is highly unlikely to be caused by rough play or an attempt to arouse an apparently unconscious child	

4.1.11 Spinal injuries

Bibliographic information	Study type and evidence level	Number of patients	Patient characteristics	Comparison	Follow-up and outcome measures	Reviewer comments
Welsh Child Protection Systematic Review Group 2008 [29]	Study Type: Systematic review – meta-analysis Evidence level: 2+	15 studies, 33 abused children	median age 6 months (range 1.2 to 48 months). >50% younger than 6 months.	n/a	26 children died due to injuries, 2 survivors had quadriplegia. Diagnosis delayed in 7 cases. 25/33 had cervical injuries 17/25 had significant head trauma 23/25 had retinal haemorrhage Other presenting features: focal neurological signs, apnoea, signs of raised intracranial pressure, general neurological deterioration. 17/33 had thoracolumbar injuries (median age 14m, range 9–16m) ➔ 3 thoracic, one lumbar and 3 thoracolumbar injuries. Presenting features: focal neurological signs and orthopaedic deformity,	Abusive spinal injury is rare. Major accidental trauma must be excluded.

4.1.12 Visceral injuries

Bibliographic details	Study type and evidence level	Number of patients	Patient characteristics	Comparison	Outcome measures, follow-up and effect size	Comments
Wood J; 2005 Nov [35] Country: USA	Study Type: Cohort Study Evidence Level: 2–	Total number of patients = 121	Children less than 6y, Abbreviated Injury Scale score >= 2, sustained abdominal injuries, Exclusions: associated neurological injury, abdominal injury secondary to severe thoracic injury, abused children because of trauma denial, also where injuries could be not be classified as accidental or inflicted.			Source of Funding: Not stated Non-accidental trauma was defined as suspicion being established by clinicians and formal evaluation completed by child protection service. No significant differences between number of abdominal injuries due to non-accidental trauma and accidental trauma. Significantly more thoracic injuries due to accidental trauma.
DiScala C; 2000 Jan [33] Country: USA	Study Type: Cohort Study Evidence Level: 2–	Total number of patients = 18828 Child abuse N = 1997 Unintentional injury N = 16831	Children aged <5 y hospitalised between 1988 and 1997. Data from National Pediatric Trauma Registry.			Source of Funding: Not stated Patient databases often produce biased results. Unclear whether public and private hospitals covered. Children were identified as abused in the treating hospital. It is not clear how these decisions were reached. Cases of 'suspected abuse' were excluded.
Roaten JB; 2006 Dec [34] Country: USA	Study Type: Cohort Study Evidence Level: 2–	Total number of patients = 6186 Accidental trauma patients N = 5733 Non-accidental trauma patients as identified by admitting clinician and evaluation by child advocacy and protection service. N = 453	Children aged under 18y attending trauma centre.			Source of Funding: Not stated
Trokel, M 2004 [36] Country: USA	Study type: Cohort Evidence Level: 2–	927 cases of blunt abdominal trauma	Children aged <5 y between 1995 and 2001. Data from National Pediatric Trauma Registry. 46% female Median age 34 months MVA 63% Abuse 16% Fall 14% Other 8%		Excluding MVAs, abuse accounted for 79% of injuries in children <12 mo 61% in 13mo – 24mo 39% in 25mo – 36mo 25% in 37mo – 48mo	No description of differences in presentation between unintentional and abusive injuries.

4.1.13 Oral injury

Bibliographic information	Study type and evidence level	Number of patients	Patient characteristics	Comparison	Follow-up and outcome measures	Effect size	Study summary	Reviewer comments
Maguire S;Hunter B;Hunter L;Sibert JR;Mann M;Kemp AM; 2007 [37]	Study Type: Systematic review – meta-analysis Evidence level: 2+	19 studies (case studies, case series and one case–control study) 603 children 27 abused children with torn labial frenum	children aged 0–18 with intra-oral injuries due to physical abuse and torn labial frena with any cause	Are intra-oral injuries indicative of maltreatment? Comparison: n/a	Follow-up period: n/a Outcome Measures:	27 abused children had torn labial frena (7 case series, 1 case–control study,1 case study) 22 were <5y Non-abusive torn frenum found in two children. Torn frenum not regularly documented as it is considered a trivial injury. Other abusive intra-oral injuries were found in 580 children, namely: lacerations or bruising to the lips, mucosal lacerations, dental trauma, tongue injuries, gingival lesions		Oral injuries not specific to abuse.

4.2 Anogenital symptoms, signs and infections

4.2.1 Genital and anal symptoms

Bibliographic information	Study type and evidence level	Aim of study	Number of patients and patient characteristics	Population characteristics	Outcome measures	Results and comments	Study summary	Reviewer comment
DeLago C;Deblinger E;Schroeder C;Finkel MA; 2008 Aug 1 [38]	Study Type: Other Retrospective chart review of girls who disclosed sexual abuse. Evidence Level: 3	n/a Comparison: n/a	161 girls who had disclosed sexual abuse by direct genital contact.	Median age 10.5 y (range 3.1–17.8y)		% of girls reporting genital symptoms: genital pain/soreness 53 dysuria 37 genital bleeding 11		Study took place at child abuse referral centre. Only charts reviewed were those written by a doctor with a standard method for eliciting information.
Klevan JL;De Jong AR; 1990 Feb [39]	Study Type: Other Evidence Level: 3	NA Comparison:	428 CSA victims seen at sexual assault health centre based in a hospital.	mean age 8.6 years (range 1–16), 84% female		85 (20%) of sample had GU symptoms at 1–3 weeks after first report of CSA. Recent onset of enuresis in 24 (6% of total series) Vaginal pain 43 (10%) Dysuria 21 (5%) Increased urinary frequency 20 (5%)		Cohort of sexually abused children. No data on non-abused children.

4.2.2 Genital and anal signs

Bibliographic information	Study type and evidence level	Number of patients	Patient characteristics	Comparison	Follow-up and outcome measures	Effect size	Study summary	Reviewer comments
Royal College of Paediatrics and Child Health; 2008 6	Study Type: Systematic review – meta-analysis Evidence level: 2+			Observational studies Comparison:	Follow-up period: Outcome Measures:	**Genital signs in girls** *Genital erythema* Prepubertal girls, genital erythema found in sexual abuse cases (7/20) and non-abused controls (2/195) (separate studies). Pubertal girls Proportions of sexually abused pubertal girls with erythema ranged from 13% (*n* = 204) to 32% (*n* = 214) in two case series. Prepubertal and pubertal girls, erythema reported in 34% (*n* = 119) of the CSA group, 68% (*n* = 59) of girls with genital complaints and 13% (*n* = 127) of girls undergoing routine examination. Abuse not rigorously excluded from the comparison groups. Timing of examination after the alleged incident and skin pigmentation influence the finding of erythema. *Oedema* No studies found that reported prevalence of oedema in non-abused girls. Oedema noted in 19% (*n* = 214) of pubertal sexually abused girls. Timing of examination after the alleged incident influences the finding of oedema. *Bruising* Comparative study, bruising noted in 1/192 girls with history of vaginal penetration and 0/200 girls who had not been abused. In the abuse cases, examination took place on average 42 days after the abusive event. Case series (*n* = 43) of prepubertal girls with a history of vaginal penetration, 13 haematomas were found (unclear how many girls were involved). No genital bruising was reported in one study of prepubertal girls selected for non-abuse. Case series (*n* = 204) of pubertal girls with history of penile vaginal penetration, 4% had bruising.		The review suffers from a lack in evidence but is methodologically rigorous. The limitations of the study relate to the very thin evidence base. This results of this review are mainly expert consensus based.

Bibliographic information	Study type and evidence level	Number of patients	Patient characteristics	Comparison	Follow-up and outcome measures	Effect size	Study summary	Reviewer comments
						Case series (*n* = 155) of sexually abused prepubertal and pubertal girls examined within 72 hours of abusive event reported 3% with genital bruising. *Genital abrasions* Reported in one study of healing in sexually abused girls with a history of penile and/or digital vaginal penetration. No genital abrasions were reported in a study of non-abused prepubertal girls (*n* = 195). Abrasions were reported in 17% (*n* = 214) of pubertal sexually abused girls. The majority of the cohort reported penile vaginal penetration and had been examined within 72 hours of the incident. In a comparative study of prepubertal and pubertal sexually abused girls, 3/119 had abrasions; no abrasions were reported in the genital complaints group (*n* = 59) or the routine health check group (*n* = 127). Abrasions have been reported in one study of prepubertal girls with straddle injury. Abuse was not rigorously excluded from this group. *Lacerations/tears* There was inconsistency of definitions of genital lacerations and tears to the hymen across the studies identified by the authors. Hymenal lacerations were reported in 33% (*n* = 205) of prepubertal sexually abused girls in a case series. The authors reported difficulty in distinguishing small lacerations from notches. Partial hymenal tears were reported in 2/24 girls reporting penile vaginal penetration and 4/19 reporting digital vaginal penetration. In a study of non-abused prepubertal girls, no hymenal lacerations reported. In two studies of pubertal girls, hymenal lacerations/tears were reported in 3% (*n* = 204) and 6% (*n* = 214) where more than 90% of study participants reported penetrative abuse. Posterior fourchette/fossa tears were reported in 14/24 prepubertal sexually abused girls. No genital lacerations were reported in the study of prepubertal non-abused girls (*n* = 195). Posterior fourchette/fossa tears were reported in 40% of pubertal sexually abused girls examined less than 72 hours after the incident and in 2% examined more than 72 hours after the incident (*n* = 204). In a study of prepubertal and pubertal sexually abused girls, 1/155 had a vaginal laceration (poor definitions used in this study). *Healing/healed genital injuries* There was inconsistency of definitions of hymenal transection in the studies. Hymenal transections In prepubertal girls, 1/192 of sexually abused girls had evidence of a hymenal transection compared with 0/200 non-abused girls. In a study		

Bibliographic information	Study type and evidence level	Number of patients	Patient characteristics	Comparison	Follow-up and outcome measures	Effect size	Study summary	Reviewer comments
						of 175 non-abused prepubertal girls, there was no report of hymenal transections. In pubertal girls with a history of vaginal penetration (*n* = 204), 8% had hymenal transections. Prepubertal and pubertal girls 3% (*n* = 155) had complete hymenal transections, all examined <72 hours after incident *Scars* Prepubertal girls No report in non-abused girls Pubertal girls No evidence Pubertal and prepubertal girls 11/119 (CSA) versus 1/127 (routine health check) versus 3/59 (genitourinary complaints) 8/116 CSA cases had posterior fourchette scars Lacerations and tears can heal without scarring Tears to the posterior fourchette and/or fossa navicularis can heal with non-specific labial fusion. *Clefts/notches* Neonates examined before hospital discharge 131/372 girls with an annular hymen had clefts. Prepubertal girls 13/192 (history of digital or penile vaginal penetration) versus 10/200 (non-abuse) had superficial notches. 8% (*n* = 202) non-abused girls had superficial notches 1% (*n* = 175) non-abused girls had superficial notch that disappeared in the kneww-chest position. 2/192 girls with history of vaginal penetration versus 0/200 (non-abuse).		

Bibliographic information	Study type and evidence level	Number of patients	Patient characteristics	Comparison	Follow-up and outcome measures	Effect size	Study summary	Reviewer comments
						None reported in 175 non-abused girls Pubertal girls 50/204 girls with history of penile vaginal penetration had notches (non-comparable definition). Posterior deep notches or complete clefts reported in in 33% (*n* = 27) of girls with history or consensual sexual intercourse versus 2% (*n* = 58) in girls denying sexual intercourse) *Hymenal bumps/mounds* There was inconsistency of definitions in the studies but overall, bumps were found to be a normal variant. Vaginal discharge in prepubertal girl **Anal signs** **Genital signs in boys and girls**		

4.2.3 Sexually transmitted infections

Bibliographic information	Study type and evidence level	Number of patients	Patient characteristics	Comparison	Follow-up and outcome measures	Effect size	Study summary	Reviewer comments
Royal College of Paediatrics and Child Health; 2008 [6]	Study Type: Systematic review – meta-analysis Evidence level: 2+	Neisseria gonorrhoeae *n* = 17 studies Chlamydia trachomatis *n* = 10 studies Bacterial vaginosis *n* = 6 studies Genital Mycoplasmas *n* = 6 studies Syphilis *n* = 9 studies Anogenital warts *n* = 10 studies Oral warts *n* = 1 study Genital herpes simplex *n* = 5 studies Hepatitis B *n* = 4 studies Hepatitis C *n* = 2 studies HIV *n* = 4 studies Trichomonas vaginalis *n* = 10 studies	Newborn and children aged 0 to 18 years with an STI for which CSA had been confirmed or actively excluded.	Observational studies Comparison:	Follow-up period: Outcome Measures: Prevalence of sexual abuse in children with the STI Prevalence of the STI in sexually abused children	Neisseria gonorrhoea: Gonorrhoea is not often seen in sexually abused prepubertal and pubertal children. A significant number of children with gonorrhoea who have been evaluated for sexual abuse were found to have been abused. This suggests that sexual contact was the mode of transmission. Sexual abuse is the most likely mode of transmission in pubertal and prepubertal children. The evidence does not help to establish the age at which the possibility of vertical transmission can be excluded. Chlamydia trachomatis: Chlamydia infection is not often seen in sexually abused children. A significant number of children with chlamydia trachomatis who have been evaluated for sexual abuse were found to have been abused. This suggests that sexual contact was the mode of transmission. Chlamydia is more frequent in pubertal than prepubertal sexually abused girls. This result may have been confounded by consensual sexual activity and/or younger children less likely to disclose abuse. The evidence does not help to establish the age at which the possibility of vertical transmission can be excluded. Bacterial vaginosis: There is insufficient data in children to determine the significance of bacterial vaginosis in relation to CSA. Genital Mycoplasmas: The evidence does not help establish whether or not genital mycoplasmas are sexually transmitted children.	CSA should be strongly considered in children with Neisseria gonorrhoeae, Chlamydia trachomatis and anogenital warts. A high prevalence of abuse was also found in studies on Trichomonas vaginalis, genital herpes and HIV, although population numbers were small. For syphilis, Hepatitis B and C was too limited to offer information on the association between the presence of the infection and sexual abuse. Attributing infection to perinatal transmission or sexual abuse is difficult in very young children who are preverbal and cannot disclose abuse. For Neisseria gonorrhoea, Chlamydia trachomatis, anogenital warts and Trichomonas vaginalis, the likelihood of sexually transmitted infection in sexually abused children increased with the child's age. This is complicated by a lack of consideration of consensual sexual activity in adolescents, difficulties in obtaining disclosure of abuse in young children and incomplete information about how other modes of transmission were excluded. Penetrative sexual contact is associated with an increased risk of infection by Neisseria gonorrhoea, Chlamydia trachomatis, Trichomonas vaginalis and HIV.	The review suffers from a lack in evidence but is methodologically rigorous. The limitations of the study relate to the very thin evidence base. The results of this review are mainly expert consensus based.

Bibliographic information	Study type and evidence level	Number of patients	Patient characteristics	Comparison	Follow-up and outcome measures	Effect size	Study summary	Reviewer comments
						Syphilis: The literature cannot help in establishing whether sexual contact is a likely route of transmission in children with syphilis. Anogenital warts: A significant proportion of children with anogential warts have been sexually abused. Sexual abuse is more likely to be confirmed in older prepubertal children. The evidence does not help to establish the age at which the possibility of vertical transmission can be excluded. Oral warts: There is insufficient evidence to determine the significance of oral warts in relation to CSA at the current time. Genital herpes simplex: There are very few published studies to inform whether sexual abuse is likely to be the mode of transmission. Where infected children had been evaluated 1/2 and 6/8 were found to have been abused. Hepatitis B: There is insufficient evidence to determine the significance of Hepatitis B in relation to sexual abuse in children. Despite the lack of evidence, in view of the fact that Hepatitis B can be sexually transmitted in adults, sexual abuse should be considered in a child with Hepatitis B if vertical, perinatal or blood contamination has been excluded. A positive diagnosis in the mother does not exclude CSA. Hepatitis C: There is insufficient evidence to determine the significance of Hepatitis C in relation to sexual abuse in children. Despite the lack of evidence, in view of the		

Bibliographic information	Study type and evidence level	Number of patients	Patient characteristics	Comparison	Follow-up and outcome measures	Effect size	Study summary	Reviewer comments
						fact that Hepatitis C can be sexually transmitted in adults, sexual abuse should be considered in a child with Hepatitis C if vertical, perinatal or blood contamination has been excluded. A positive diagnosis in the mother does not exclude CSA. HIV: Published studies suggests that sexual abuse is a likely source of infection in children with HIV in whom the possibility of mother-to-child transmission or blood contamination has been excluded. In a child with HIV with an uninfected mother, the possibility of sexual abuse is highly likely. HIV infection in the mother of a child with HIV does not exclude the possibility of sexual transmission. Trichomonas vaginalis: Published studies suggests that sexual abuse is a likely source of infection in girls. The evidence does not help to establish the age at which the possibility of vertical transmission can be excluded. Consensual sexual activity should be considered.		

5 Clinical presentations

5.1 Pregnancy

No literature identified.

5.2 Dehydration

No literature identified.

5.3 Apparent life threatening events

Reference	Author	Year	Study design	Population	Outcome	Evidence level	Description and findings
[47]	Altman	2003	Prospective case series	243	6 had head injuries	3	A prospective case series (*n* = 243) of infants under 12 months of age admitted to one tertiary unit in the USA examined the diagnosis given to cases of ALTE. The study found that a total 35 diagnoses were made: 80 were infection, 69 were gastrointestinal, 32 were neurological (including 6 (2.5% of total) abusive head injuries within this group), 7 were airway obstruction, 6 were congenital or birth related problems, 39 were unknown, 6 were normal or benign. The study concluded that a wide spectrum of diseases and disorders can precipitate an ALTE. In relation to maltreatment the study concluded that 'Among them, abusive head injury, a recently recognized cause, occurs frequently enough to obligate its inclusion in the differential diagnosis.' (EL = 3)
[49]	Cote	1997	Retrospective case series	73	abuse not reported	3	A retrospective case series (*n* = 73) of infants (mean age 7.4 weeks) who were seen at a single apnoea program in USA. The results were that 47 had negative investigation, 17 recurrent events but no diagnosis, 5 respiratory infection, 2 had GORT, 1 had pallid syncope and 1 had tracheal stenosis. (EL = 3)
[51]	Ward	1986	Survey	11 of 31 apnea programmes and 4 of 10 vendors	13 SIDS, 4 non-accidental trauma, 6 sudden unexpected death at home, 1 subarachnoid haemorrhage, 1 cardiac disease	3	A survey of 11 apnoea monitoring programs and 4 apnoea monitoring device vendors in USA was undertaken examined reports of infant deaths. Over a 5-year period 1841 children were monitored. There were 25 reported deaths in this group: 13 due to SIDS, 4 due to non-accidental trauma (0.2% of total), 6 due to sudden unexpected death at home, 1 due to subarachnoid haemorrhage, and 1 caused by cardiac disease. The study no specific conclusions relating to maltreatment (EL = 3)
[52]	Johnson	1995	Retrospective case series	28 infants with non-accidental	57% had history of apnea	3	A retrospective case series (*n* = 28) from the USA of children who suffered proven non-accidental head injury examined their presentation and outcome. Of the children examined only 3 older than I year of age. The results showed 16 of 28 presented with apnoea. Of those who presented with apnoea 57% had history of apnoea and 71% had previous seizures

Reference	Author	Year	Study design	Population	Outcome	Evidence level	Description and findings
				head injury			within 24 hours. The study found that 12 were left with severe disability, 4 died, 1 was in vegetative state and 7 survived. The authors concluded that trauma-induced apnoeas is more important to outcome that mechanism of injury. (EL= 3).
[53]	Light	1989	Survey of 127 apnea monitoring programs	20 090	54 had MSBP	3	A survey of 51 of 127 (*n* = 20090) apnoea monitoring programs in USA investigated prevalence of fabricated or induced illness (FII). The results showed that 54 (0.25% of total) cases of FII were reported. The mean age of infants with this diagnosis was 8.2 weeks. Detailed information on 32 of these 54 showed that 18 were re-hospitalised between 1 and 4 times, 13 were re-hospitalised 5 or more and 1 was unknown. The study concluded that FII presents as unexplained multiple, serious apnoea events occurring in the presence of only one person (not witnessed). (EL = 3).
[42]	McGovern	2004	Systematic review	Diagnoses when infants first present with an ALTE	2912 assessed, 8 studies -643 – 227 were GORD, 83 were seizures, 58 were LRTI, 2 were factious	2+	One systematic review (*n* = 8 papers; search undertaken in 2002) assessed the initial diagnosis given when infants presented with an ALTE. The review included 8 studies involving 643 infants seen in Emergency Departments or paediatric units. The study calculated that 0.6% to 0.8% of emergency admissions for infants were for ALTE. A total of 728 diagnosis covering 50 conditions were reported, of these: 227 were gastro-oesophageal reflux disease (GORD), 169 were unknown, 83 were seizures, 58 were Lower Respiratory Tract Infection (LRTI), 26 were ear, nose and throat (ENT) problems, 17 were breath-holding, 11 were metabolic disease, 11 were ingestion of toxin or drugs, 6 were cardiac problems, 8 were Urinary Tract Infection (UTIs), 5 were benign cause, and 2 were fabricated illness (0.3% of children). The study concluded that careful investigation needed of ALTE due to variation in cause. (EL = 2+)
[45]	Pitetti	2002	Prospective case series	128	51 had gerd, 38 apnea, 11 choking episode, 6 infection, 5 bronchiolitis, 5 URI, 4 seizure, 3 abuse, 3 swallowing disorder, 2 breathing spell	3	A prospective case series (*n* = 128) from the USA of children aged less than 24 months presenting at a single Emergency Department examined the diagnosis applied to cases of ALTE. Of the 128 cases of ALTE: 51 were GORD, 38 were apnoea, 11 were choking episode, 6 were infection, 5 were bronchiolitis, 5 were URI, 4 were seizures, 3 were abuse (2.3% of total), 3 were swallowing disorder, and 2 breathing spell. The study concluded that abuse diagnosed in 2.3% of cases of ALTE and this should be considered in patients who present with ALTE. (EL = 3)
[46]	Samuels	1993	Prospective case series	157	80 had no diagnosis; 77 had diagnosis – 2 disturbances in skin perfusion7 fabricated, 18 suffocation, 40 hypoxaemic.	3	A prospective case series (*n* = 157) from the UK of children (aged 1 week to 96 months) presenting once or more in one hospital setting examined the diagnosis applied to cases of ALTE. The study reported that of the 157 reported cases: 80 had no diagnosis; 77 had diagnosis. Of those diagnosed: 2 had disturbances in skin perfusion, 7 had fabricated illness (9% of those diagnosed and 4% of total), 18 suffocation (23% of those diagnosed and 11.5% of total), 40 had hypoxaemic events with no evidence of suffocation or epilepsy, and 10 had hypoxaemia induced by epilepsy. The study concluded that identification of mechanisms is essential to the appropriate management of infants with apparent life threatening events. (EL = 3)
[48]	Stratton	2003	Retrospective case series	60	abuse not reported	3	A retrospective case series (*n* = 60) from the USA examined the diagnosis applied to infants with ALTE. The study setting was a single emergency medical service (EMS) over a 12 month period. The study found that 60 (7.5%) out of 804 infants encountered by met criteria for ALTE (absence of breath, colour change, change in muscle tone). The diagnosis applied to these cases were: 20 (33%) had no diagnosis, 7 (12%) were pneumonia or bronchiolitis, 6 (10%) were GORD, 5 (8%) were seizures, 4 (7%) were sepsis, 4 (7%) were Upper Respiratory infection, 3 (5%) were apnoea episodes 2 (3%) were intracranial haemorrhage, 2 (3%) left against advice, 1 (2%) was bacterial meningitis,1 (2%) was dehydration, and 1 (2%) was severe anaemia. Furthermore, of the 60 infants 35% had diagnosed underlying conditions. The study reported 1 case of intracranial injury caused by maltreatment, but highlighted the in 20 cases no diagnosis was made and in 2 the parents left against medical advice. The study concluded that 'An apparent life-threatening event in an infant can present without signs of acute illness and is commonly encountered in the EMS setting. It is often associated with significant medical conditions, and EMS personnel should be aware of the clinical importance of an apparent life-threatening event. Infants

Reference	Author	Year	Study design	Population	Outcome	Evidence level	Description and findings
							meeting criteria for an apparent life-threatening event should receive a timely and thorough medical evaluation' (EL = 3)
[43]	Kiechl-Kohlendorer	2004	Prospective case series	44184		3	A prospective cohort study (*n* = 44184) undertaken in Austria investigated the epidemiology of ALTE. The study identified 164 cases of ALTE or 2.46 per 1000 live births. An underlying cause was identified 91 of 164 cases (55%) and of these: 29% were respiratory, 22% were digestive tract, 2% were congenital cardiac malformation, 1% were inborn metabolic errors, and 1% were convulsions. The study made no conclusions in relation to child maltreatment. (EL = 3)
[44]	Rahilly	1991	Prospective case series	340		3	A prospective cohort study (*n* = 340) undertaken in Australia examined the diagnosis of ALTEs 289 of 340 had a diagnosis: 211 were GORD, 17 airway pathology, 25 fits/seizures, 2 brain-stem tumours, 2 hypoglycaemia, 8 respiratory syncytial virus, 5 FII (1.7% of those diagnosed, 1.5% of total), 27 abnormal pneumograms (11 with reflux). 51 had no abnormal finding. The study made no conclusions in relation to child maltreatment. (EL = 3)
[54]	Paranjothy	2009	Systematic review and case–control study	Papers on association between nasal bleeding and deliberate suffocation in infants		2+	6 studies identified that reported on facial bleeding, - 4 of children who were dead on presentation C-C study of ALTE - 9 deliberate suffocation patients with nasal bleeding (*n* = 30) - 0 children with nasal bleeding in the group suffering ALTE from medical causes (*n* = 46). Case series of children with recurrent ALTE reported 12 of 138 children with facial bleeding.

5.4 Poisoning

No literature identified.

5.5 Non-fatal submersion injury (near drowning)

Bibliographic information	Study type and evidence level	Study aims/objectives	Number of patients	Patient characteristics	Outcomes	Comments
Gillenwater JM; 1996 [56] Country: USA	Study Type: Other Evidence Level: 3	To improve characterization and recognition of inflicted paediatric submersions.	Total No. of Patients = 205 were judged as being inflicted N = 16 were classified as unintentional submersions N = 186	Children younger than 19 years who sustained submersion injury and were hospitalised or autopsied. All children in the inflicted submersion group were below the age of 5years.		The study population is located in the USA.

5.6 Attendance at medical services

Bibliographic details	Study type and evidence level	Study details	Patient characteristics	comparisons	Comments
Spivey 2009 [57]	Cohort Evidence level: 2+	Emergency department data linked to child protective services (CPS) data	All children aged <5y who attended emergency department with an injury in year 2000 Sexual abuse cases excluded. Repeat visits for same injury within 7 days excluded. Children who died excluded. *n* = 50 068 children accounting for 56 364 injury visits	12% of children had a CPS report 2% of total had substantiated report RR of being reported to CPS after 2 injury visits: 1.9 (95% CI 1.8–2.0) RR of being reported to CPS after 4 injury visits: 3.8 95% CI 3.0 – 4.7) RR of substantiated CPS report after 2 injury visits: 2.5 (95% CI 2.1–2.9) RR of being reported to CPS after 4 injury visits: 4.7 (95% CI 2.4 – 9.2) Unadjusted RRs used. Sensitivity analysis suggested age, sex, race or insurance status do not affect results.	Time of CPS report in relation to injury visit taken into account.
Woodman 2008 [7]	Systematic review Evidence level: 2+			Reported repeat attendances at accident and emergency departments (A&E) for injury in physically abused and non-abused injured children attending A&E found no relevant studies. Three studies were identified but excluded because of the way in which abused children were identified. Using a data set on injured children admitted for suspected physical abuse and a separate data set on re-attendance at hospital for injuries regardless of abuse status (both from the UK), estimates of re-attendance were calculated. Of 108 children attending A&E with an injury due to suspected abuse, 22 re-attended at least once with an injury. In a database of injured children regardless of abuse status, between 20% and 49% of pre-school injured children re-attended A&E with an injury within 12 months of the initial visit; 13% to 21% had at least three injury-related visits in a year	

5.7 Fabricated or induced illness

Bibliographic information	Study type and evidence level	Number of patients	Patient characteristics	Comparison	Follow-up and outcome measures	Effect size	Study summary	Reviewer comments
Sheridan MS; 2003 Apr [58]	Study Type: Systematic review – meta-analysis Evidence level: 2++	451 cases of MSBP	52% male (*n* = 415) Mean age at diagnosis: 48.6m (s.d. 49m), range 0–204m (*n* = 404)	Comparison:	Follow-up period: Outcome Measures: Length of time from onset to diagnosis Perpetrator Reported symptoms	Length of time from onset to diagnosis Estimated mean 21.8m, range (0–195m) (*n* = 201) Perpetrator 76.5% mothers 6.7% fathers Reported symptoms (% of case reports) Apnoea (26.8%) Diarrhoea (24.6%) Seizures (17.5%) Behaviour [not defined] (10.4%) Asthma (9.5%) Allergy (9.3%) Fevers (8.6%) Unspecified pain (8.0%) Unspecified infection (7.5%) Injury (6.4%) Unspecified bleeding (6.4%) Developmental delay (5.7%) Lethargy, fatigue (5.7%) Otitis (5.1%) Respiratory tract infection (5.1%) …64 other symptoms occurring in fewer than 5% of the case reports. Mean number of medical problems per victim: 3.25 (range 0–19) Symptoms were produced in 57.2% of cases; of these, 48.8% produced while in hospital. 74 cases of suffocation, 43 cases of giving drugs and 22 cases of poisoning.		Update of review by Rosenburg (1987). Comparisons made between reviews. Includes cases from articles published 1972–1999. Reporting bias from case reports and case series. Possible replication of cases as anonymity to be preserved.
Feldman MD;Brown RM; 2002 May	Study Type: Systematic review – meta-analysis	122 cases of MSBP		NA Comparison: NA	Follow-up period: NA Outcome Measures:	Perpetrator (*n* = 93) Mother in 86% of cases Father in 4% Spouses unrelated to cases in 4%		Some cases appear in [59].

Bibliographic information	Study type and evidence level	Number of patients	Patient characteristics	Comparison	Follow-up and outcome measures	Effect size	Study summary	Reviewer comments
[60]	Evidence level: 2++					Grandmother in 2% Age (*n* = 76) 26% <3y 52% between 3y and 13y 12%≥13y 9% involved adult 54% male (*n* = 81) Data not given on presentations but said to be similar to presentations in UK and USA data; comment made that induced apnoea more infrequent than in other data.		
Awadallah N;Vaughan A;Franco K;Munir F;Sharaby N;Goldfarb J; 2005 Aug [64]	Study Type: Systematic review – meta-analysis Evidence level: 2–	42 children from literature review (1966–2002) 9 children from local clinic (2001–2003)	Children older than 6 years with MSBP. Mean age in lit review cases (*n* = 32): 8.8 years (range 6–17years) Mean age in clinic cases (*n* = 9): 11.3 years (range 9–16years)	NA Comparison: NA	Follow-up period: NA Outcome Measures:	Lit review cases 48% male False reporting in 62% Falsification of records or sample in 14% Induced illness in 57% Chronic subjective pain in 31%. Induced illnesses included poisoning, inappropriate medication, injection-related infections, starvation, seizures from medication overdoses, suffocation and induced ALTE. Clinic case series 2 males False reporting in 9 Fabrication of records or samples in 1 Induced illness in 2 Diagnoses: rash, aches and fever after surgery, chronic pain, juvenile rheumatoid arthritis, neurological complaints, seizures, corneal abrasions.		Overlap of many cases in [58].
Korpershoek M;Flisher AJ; 2004 [61]	Study Type: Systematic review – meta-analysis Evidence level: 2++	Literature review	NA	NA Comparison: NA	Follow-up period: NA Outcome Measures:	Section on presentations of MSBP details results from [58], [178] and [59] Folks(1995) found two patterns of presentation: apnoea, seizures and cyanosis or d&v, nausea, bone and joint problems. Most common forms of assault were suffocation, giving drugs and poisoning..		

Bibliographic information	Study type and evidence level	Number of patients	Patient characteristics	Comparison	Follow-up and outcome measures	Effect size	Study summary	Reviewer comments
						Noted wide variety in fabricated illnesses. History of multiple hospitalisations and repeated medical investigations also mentioned.		
de Ridder L.;Hoekstra JH; 2000 Aug 63	Study Type: Systematic review – meta-analysis Evidence level: 2−	NA	Cases of MSBP involving gastroenterology.	NA Comparison: NA	Follow-up period: NA Outcome Measures:	Manifestations of MSBP in paediatric gastroenterology. Chronic diarrhoea, failure to thrive, vomiting, abdominal pain, haematemesis, gastric erosions, Mallory-Weiss tears, colitis, haematochezia, constipation, cystic fibrosis, central line complications, ingestion of foreign bodies, creating aphthous ulcers in the mouth.		
Feldman KW;Stout JW;Inglis AF; 2002 May 65	Study Type: Other Case series Evidence Level: 3	NA Comparison: paediatric condition falsification (PCF) children with history of allergy, asthma, sinopulmonary infections, ENT surgery or drug sensitivity compared with PCF children without these attributes.	104 children identified with paediatric condition falsification	71 children with PCF history of allergy, asthma, sinopulmonary infections, ENT surgery or drug sensitivity compared 33 PCF children without these attributes.		Of 99 children with data, presenting complaints (reason that PCF was brought to HCP's attention) were: Asthma: 4 Sinopulmonary disease: 8 Hearing loss: 2 CNS disease/seizure: 23 Apnoea: 17 GI symptoms: 15 Other infections:8 Failure to thrive: 5 Sexual abuse: 2 Immune dysfunction: 1 Other: 3 Mother was perpetrator in all cases. Associated falsified or induced conditions. PCF children with history of allergy, asthma, sinopulmonary infections, ENT surgery or drug sensitivity versus other PCF patients Haematologic bleeding 27% versus 27% Undifferentiated sepsis 14% versus 3% Catheter sepsis: 13% versus 0% UTI 11% versus 6% Vomiting 46% versus 36% Past pH probe study for reflux: 28% versus 18% Diarrhoea: 34% versus 27% Failure to thrive: 35% versus 27%		Cases identified over 24 years (1974–1998) through author's practice. Evidence that carer intentionally falsified history of non-existent illness, exaggerated history of legitimate illness, fabricated medical signs and symptoms or induced illness in the child. Siblings included in study so correlations present.

Bibliographic information	Study type and evidence level	Number of patients	Patient characteristics	Comparison	Follow-up and outcome measures	Effect size	Study summary	Reviewer comments
						Apnoea: 46% versus 39% Past apnoea study: 21% versus 24% Seizures: 45% versus 24% ADHD 29% versus 6% etc Median age of onset: 4 months versus 1 month Median age at diagnosis: 48m versus 7m		
Light MJ;Sheridan MS; 1990 Mar [53]	Study Type: Other Survey Evidence Level: 3	NA Comparison: NA	20090	Infants in apnoea monitoring programs		54 children with MSBP and apnoea detailed information available for 32 children; mean age at presentation 8.4 weeks presenting diagnoses: prematurity (*n* = 4), ALTE/infantile apnoea (*n* = 25), subsequent sibling of a SIDS case (*n* = 2) family history of apnoea (*n* = 1)		Survey of apnoea monitoring programs

6 Neglect – failure of provision and failure of supervision

6.1 Provision of basic needs

6.1.1 Provision within the home

Bibliographic information	Study type and evidence level	Aim of study	Number of patients and patient characteristics	Population characteristics	Outcome measures	Results and comments	Study summary	Reviewer comment
Strathearn L;Gray PH;O'Callaghan F;Wood DO; 2001 Jul [67]	Study Type: Other Evidence Level: 2+	NA Comparison: Children referred for maltreatment versus all others Substantiated maltreatment cases versus all others	352 children - 52 referred for maltreatment - 21substantiated for neglect	Extremely low birthweight children followed from birth to 4 years.	Child General Cognitive Index (normative mean=100 sd 15)	GCI at 4 years (*n* = 269) Referred children versus non referred children 83 versus 98 (*P* < 0.001) Substantiated referrals versus all others 82 versus 98 (*P* < 0.001) Physical abuse referrals versus all others 83 versus 97 (*P* = 0.004) not significant when using only substantiated cases Emotional abuse referrals versus all others 81 versus 98 (*P* < 0.001) – similar for substantiated referrals versus all others Neglect referrals versus all others 77 versus 98 (*P* < 0.001) – similar for substantiated referrals versus all others		Some participants lost to follow up. After four years, only 269 children in study, of these 21 substantiated referrals of maltreatment. Wide confidence intervals (because of small numbers in groups of interest)

Bibliographic information	Study type and evidence level	Aim of study	Number of patients and patient characteristics	Population characteristics	Outcome measures	Results and comments	Study summary	Reviewer comment
						Difference in GCI score at 4 years accounting for risk factors: Physical abuse referrals: 5 (95% CI -6.9–16.8) Emotional abuse referrals: -3 (95% CI -16.8–10.9) Neglect referrals: -17.6 (95% CI -31.9 – -3.3) Substantiated neglect referrals had increasingly worse outcomes over time than all other study participants.		

6.1.2 Malnutrition (over- and under-nutrition)

Ref	Year	Country	Study type	Population	Outcome	Conclusion	Evidence level
[70]	1988	UK	cohort study	*n* = 260. Growth patterns of maltreated children (diagnosis based on case conference and social services intervention) based on remaining at home or entering foster care.	The study found that of the 260 children 39 had height greater than 2 Standard Deviations (SD) below mean for the cohort, and 21 had weight greater than 2 SD below mean for cohort. The study reported that 10 of 11 children in foster care compared with 4 of 28 children who remained at home showed 0.5 SD increase in height (*P* = 0.001). However, 8 of 16 who remained at home compared with 4 of 4 who were in foster care showed a 0.5 SD increase in weight (not statistically significant).	Study concluded maltreated children should not be rehabilitated at home.	EL = 3
[71]	1989	USA	case–control study	*n* = 196. Growth patterns of children who had been maltreated (*n* = 53 – 64.2% female, 86.5% non-Caucasian, 84% less than 5 years old) or not (*n* = 143 – 51% female, 59.3% non-Caucasian, 87% less than 5 years old).	The study reported low weight for height in 16.35% of abused and 0.7% of non-maltreated (OR 16.6, 95% CI 1.9 to 145.0, *P* < 0.05). The study found a low height for age in 11.6% of abused and 5.6% of non-maltreated (OR = 2.2, 95% CI 0.61 to 7.9). All the figures were adjusted for age, sex, and ethnicity.	The study concluded that malnutrition was found more among abused children than among non-abused.	EL = 2+
[72]	2007	USA	cohort study	*n* = 2412. Assessed the association between obesity (on or above 95th centile on USA BMI growth reference for age and sex) and maltreatment (based on parent–child conflict tactics scale – neglect, physical punishment, psychological aggression) in children (aged 3 years, 48.2% female, 19.4% Caucasian).	The study found that 23.6% of neglected children were obese compared with 17.5% of children who were not neglected (OR = 1.56, 95% CI 1.14 to 2.14, adjusted for maternal BMI and other covariates). For physical punishment the study found that 19.8% of children whose parents reported 0 to 2 incidents per year were obese, 19.8% for those that reported 2 to 6, 18.4% for those that reported 7 to 14, 15% for those that reported 15 to 30, 17.8% for those that reported 31 to 104 (OR = 0.94, 95% CI 0.72 to 1.24). For psychological aggression the study found that 19.7% of children whose parents reported 0 to 5 incidents per year were obese, 18% for those that reported 6 to 16, 17.5% for those that reported 7 to 29, 17.4% for those that reported 30 to 49, 18% for those that reported 50 to 125 (OR = 0.90 to 1.18).	The study concluded that neglect was associated with obesity.	EL = 3
[73]	2007	USA	case–control study	*n* = 173. Examined the link between childhood sexual abuse (based on child protection services, *n* = 84, 39% minority) or not (*n* = 89, 51% minority) and obesity (on or above 95th centile on USA BMI growth reference for age and sex) from childhood to adulthood in females.	The study found that as children (aged 6 to 14) 25.42% of abused compared with 21.88% of non-abused were obese (OR = 1.25, 95% CI -0.05 to 3.00, *P* = 0.52). As adolescents (aged 15 to 19) the figures were 27.87% versus 15.49% (OR 2.03, 95% CI 0.54 to 4.60, *P* = 0.09). As adults (aged 20 to 27) the figures were 42.25% versus 28.4% (OR = 2.85, 95% CI 1.06 to 4.64, *P* = 0.009).	The study concluded that identification of high-risk growth trajectories may improve health outcomes for victims.	EL = 2+

Ref	Year	Country	Study type	Population	Outcome	Conclusion	Evidence level
[74]	2002	USA	community-based prospective cohort study	*n* = 782 mothers and off-spring. Examined link between childhood adversity (abuse based on referral to child protection services) and weight problems during adolescence and early adulthood. Children were interviewed three times over a ten year period. The study was 91% white and 385 of 782 were female.	The study found that 5 of 24 who reported neglect were obese compared with 36 of 711 who did not report neglect (OR = 4.66, 95% CI 1.65 to 13.16). The figures for recurrent weight change and physical abuse were 10 of 24 compared with 117 of 711 (OR = 3.63, 95% CI 1.58 to 8.36). For recurrent weight change and sexual abuse the figures were 9 of 22 compared with 120 of 644 (OR = 3.02, 95% CI 1.26 to 7.24). The figures for strict dieting and physical abuse were 9 of 24 compared with 120 of 711 (OR = 2.96, 95% CI 1.26 to 6.91). The study also undertook subgroup analysis on females. For females the study found that low body weight and physical abuse 4 of 24 compared with 13 of 319 (OR = 4.71, 95% CI 1.41 to 15.76). The figures for obesity and physical neglect were 3 of 14 compared with 14 of 356 (OR = 6.66, 95% CI 1.67 to 26.59).	The study reported that parental relationship factors were the most significant for eating disorders and weight problems.	EL = 2+

Bibliographic information	Study type and evidence level	Aim of study	Number of patients and patient characteristics	Population characteristics	Outcome measures	Results and comments	Study summary	Reviewer comment
Whitaker RC;Phillips SM;Orzol SM;Burdette HL; 2007 [72]	Study Type: Other Evidence Level: 2−	NA Comparison: Ever neglected in last year versus never neglected (as measured by Parent–child Conflicts Tactics Scales and items) Corporal punishment (frequency per year) Psychological aggression (frequency per year)	2412 children and their mothers	Age of children 3.2 years.		OR for obesity if neglected adjusted for maternal BMI and other covariates including birthweight. 1.56 (1.14 – 2.14): OR for obesity if experienced corporal punishment adjusted for maternal BMI and other covariates including birthweight. 0.94 (0.72 – 1.24) OR for obesity if experienced psychological aggression adjusted for maternal BMI and other covariates including birthweight. 0.90 (0.70 – 1.18)		11% of mothers reported ever doing one of the items on the neglect subscale 18% of children in the study were obese as measured by having BMI>=95th percentile on Centers for Disease Control and Prevention 2000 growth reference.

6.2 Supervision

Bibliographic information	Study type and evidence level	Aim of study	Number of patients and patient characteristics	Population characteristics	Outcome measures	Results and comments	Study summary	Reviewer comment
Chester DL;Jose RM;Aldlyami E; 2006 Mar [76]	Study Type: Other Evidence Level: 3	Comparison: Burns in neglect cases (*n* = 41) versus accidental burns (*n* = 395)	440 patients including 41 with burns due to neglect and 4 with burns due to inflicted injury.	Admissions to burns unit <16 yrs.		% of cases presenting after 24hours: neglect 49% versus accidental 14% (*P* < 0.0001) % of cases where first aid performed neglect 22% versus accidental 70% (*P* < 0.0001) % with presence of deep burns: neglect 71% versus accidental 54% (*P* = 0.49) % with skin grafting performed: neglect 76% versus accidental 41% (*P* < 0.0001) Mean age neglect 4.2 versus accidental 4.0 (not significant) Gender – not significant Anatomical site – not significant Mechanism of injury – not significant. Mean body surface area affected neglect 7.1% versus accidental 6.4% (not significant)		Concern about circumstances of injury in 178 children. These children were investigated by family support team including home assessment. Definition of neglect based on these investigations. Study in burns unit, so more severe cases?

6.3 Ensuring access to appropriate medical care or treatment

6.3.1 Immunisation

Stockwell MS;Brown J;Chen S;Vaughan RD;Irigoyen M; 2008 [77]	Study Type: Other Comparative case series Evidence Level: 2−	Immunisation status at 3 months and 7 months of age. Comparison: confirmed abuse cases versus ruled out abuse cases	285 children evaluated at a child advocacy centre with reliable immunisation data.	mean age 24.4m, SD 14m 63% female confirmed abuse 17% suspected 11% ruled out 66% indeterminate 6%	Does underimmunisation predict maltreatment status?	Odds ratio of being a confirmed maltreatment case if: underimmunised at 3 months 4.0 (95% CI 1.7–9.5) underimmunised at 7 months 4.8 (95% CI 1.5- 15.7) (comparison is underimmunised versus not) Neglect not addressed separately.	Only immunisations that happened before first contact with child advocacy centre used in analysis. Biased sample because non-abuse cases come from original 'suspected abuse', therefore not general population.

6.3.2 Oral health

Bibliographic information	Study type and evidence level	Study aims/objectives	Number of patients	Patient characteristics	Outcomes	Comments
Greene P; 1995 Jun [79] Country: USA	Study Type: Case–control Study Evidence Level: 2+	To identify the role of child abuse/neglect on the oral health status in the primary dentition of children.	Total No. of Patients = 864, Cases = 42, Controls = 822	Age range 3–11 years. Recruited from military bases. Controls matched on age, parental education, sponsor's military rank. No other descriptive statistics reported.	Presence of lifetime caries (treated or untreated) in child's primary teeth. No odds ratio reported for cases versus controls. Presence of untreated dental decay in primary teeth. Abused/neglected with non-combatant sponsor versus non-combatant sponsor control OR 5.19 (95% CI 2.04, 13.2) Combatant but non-abused versus non-combatant sponsor control OR 1.33 (95% CI 0.95, 1.87) Cases with combatant sponsor versus non-combatant sponsor control OR 1.04 (95% CI 0.38, 2.85)	Funding: Not stated Maltreated cases stated as 'confirmed cases on the social services registry', controls recruited from general oral health survey from schools in the military bases. The significant findings of this study relate to very specific circumstances that are not applicable to a general UK population. It should be noted that there were no significant differences between cases and controls in presence of lifetime caries.
Greene PE; 1994 Jan [80] Country: USA	Study Type: Case–control Study Evidence Level: 2+	To assess relationship between child abuse/neglect and oral health status.	Total No. of Patients = 903, Cases = 30, Controls = 873	Age 5–13 years Cases and controls from military bases. Controls matched on age, parental education, sponsor's military rank. No other descriptive statistics reported.	Presence of lifetime caries (treated or untreated) in child's permanent teeth. Cases versus controls: OR 2.20 (95% CI 0.90, 5.42) Presence of untreated dental decay in primary teeth. Cases versus controls: OR 8.00 (95% CI 3.90, 17.7)	Funding: Not stated Significant relationship between presence of untreated decay and abuse/neglect, although confidence intervals are wide. Maltreated cases stated as 'confirmed cases on the social services registry', controls recruited from general oral health survey from schools in the military bases. Military setting of study lends a bias to the results.

Bibliographic information	Study type and evidence level	Aim of study	Number of patients and patient characteristics	Population characteristics	Outcome measures	Results and comments	Study summary	Reviewer comment
Valencia-Rojas N;Lawrence HP;Goodman D; 2008 [81]	Study Type: Other Retrospective chart review Evidence Level: 3	a) prevalence of early childhood caries in abused/neglected children b)compare prevalence in maltreated with general c)Is untreated decay associated with different types of maltreatment Comparison: dmft index in abused versus neglected children	66 children in care of Children's Aid Society of Toronto	80.3% neglected 19.7% physical or sexual abuse mean age 4.1y (sd 1.16)	dmft index (decayed, missing, filled teeth) Early Childhood Caries (ECC) = dmft index>=1 Severe Early Childhood Caries (S-ECC) =dmft >=4 Dental trauma Mean dmft and components (dt, mt, ft)	No children had missing or filled teeth at first dental visit so dmft=dt in these children. 58% of maltreated group had ECC versus 30% of general population No significant differences between physical/sexual abuse group and neglect group Mean dt		Dental records not independent of knowledge of maltreatment status.

Bibliographic information	Study type and evidence level	Aim of study	Number of patients and patient characteristics	Population characteristics	Outcome measures	Results and comments	Study summary	Reviewer comment
		comparisons between study children and general population data (3185 5- year old school children in city of Toronto)				3.78 (se 0.73) in abused/neglected 4–6y olds 0.42 (se 0.02) in general population		

7 Emotional, behavioural, interpersonal and social functioning

7.1 Emotional and behavioural states

7.1.1 Demeanour and behaviour

Bibliographic information	Study type and evidence level	Number of patients	Patient characteristics	Comparison	Follow-up and outcome measures	Effect size	Study summary	Reviewer comments
Bolger KE;Patterson CJ; 2001 Mar 88	Study Type: Cross-sectional Evidence level:	107 maltreated children (maltreatment identified before initial participation in study) 107 non-maltreated children matched on age, gender, ethnicity, school and SES.	51% male, 60% white, 40% African-American	Comparison:	Follow-up period: Outcome Measures:			
Holmes WC; 1998 Dec 86	Study Type: Systematic review – meta-analysis Evidence level:	NA		Comparison:	Follow-up period: Outcome Measures:		Compared with nonabused males, abused males were reported to have greater difficulty controlling sexual feelings, were hypersexual and more likely to perpetrate coercive sexual acts against others.	Narrative review. Search dates were 1985–1997
Inderbitzen-Pisaruk H;Shawchuck CR;Hoier TS; 1992 Mar 161	Study Type: Case–control Evidence level: 2−	17 CSA cases 17 controls	CSA cases validated by Child Protection Department, child protected from perpetrator, age 5 – 15 Controls matched on	Number of validated questionnaires administered, including CBCL. The 6 sex behaviour problems were combined to give a sex-problem score.	Follow-up period: Outcome Measures: Sex-problem score	Mean (SD) CSA: 1.47 (1.84) Controls: 0.41 (1.23) *P* = 0.05		Small study. Large span of ages in this context.

Bibliographic information	Study type and evidence level	Number of patients	Patient characteristics	Comparison	Follow-up and outcome measures	Effect size	Study summary	Reviewer comments
			age, sex, socio-economic status and current living situation recruited from community. Sexual abuse excluded.	Comparison: CSA versus controls.				
Kendall-Tackett KA;Williams LM;Finkelhor D; 1993 Jan 87	Study Type: Systematic review – meta-analysis Evidence level: 2−			Comparison:	Follow-up period: Outcome Measures:		Non-clinical samples Demeanour or behaviour and the number of studies in which CSA children were more symptomatic than non-cases. Anxiety: 5/8 studies Fear: 5/5 studies Depressed: 10/11 studies Withdrawn: 11/11 studies Poor self-esteem: 3/6 studies Aggressive antisocial: 10/11 studies Cruel: 2/2 studies Delinquent 6/6 studies School/learning problems: 5/6 studies Regression/immaturity: 2/2 studies Running away: 1/1 studies Percentage of CSA cases who were displayed each symptom ranged from 0% to 70%	

Bibliographic information	Study type and evidence level	Number of patients	Patient characteristics	Comparison	Follow-up and outcome measures	Effect size	Study summary	Reviewer comments
Wolfe DA;Crooks CV;Lee V;Intyre-Smith A;Jaffe PG; 2003 [85]	Study Type: Systematic review – meta-analysis Evidence level: 1-	41 studies	Children exposed to domestic violence	Comparison: Differences in negative emotional and behavioural outcomes between children exposed to domestic violence and children not exposed to domestic violence.	Follow-up period: Outcome Measures:	No significant differences between males and females in terms of negative outcomes due to domestic violence. Small and significant effect of domestic violence on negative outcomes (internalising, externalising and PTSD pooled). Lack of clarity on the effect of age on outcome.		
Evans SE;Davies C;DiLillo D; 2008 [89]	Study Type: Systematic review – meta-analysis Evidence level: 2−	61 studies		Effects of exposure to domestic violence on internalising and externalising behaviours. Comparison:	Follow-up period: n/a Outcome Measures: Internalising behaviour and externalising behaviour as measured by a validated tool (e.g. CBCL).	Internalising All children: 58 studies, *n* = 7602, weighted sample mean= 0.48 (95% CI 0.39 to 0.57), no significant heterogeneity. Boys: 15 studies, *n* = 1697, weighted sample mean=0.44 (*P* < 0.05), no significant heterogeneity. Girls: 14 studies, *n* = 1758, weighted sample mean=0.39 (*P* < 0.05). Externalising All children: 53 studies, *n* = 7200, weighted sample mean=0.47, 95% CI 0.38 to 0.56, significant heterogeneity. Boys: 16 studies, *n* = 1787, weighted sample mean=0.46 (*P* < 0.05), no significant heterogeneity. Girls: 13 studies, *n* = 1570, weighted sample mean=0.23		Some cross-over in studies with [84]. Studies 1990–2006 used here and unpublished data included. Unclear whether included studies were all comparative. Difficulty in interpreting effect size.

Bibliographic information	Study type and evidence level	Number of patients	Patient characteristics	Comparison	Follow-up and outcome measures	Effect size	Study summary	Reviewer comments
						($P < 0.05$). Significant difference between boys and girls' externalising behaviour.		

7.1.2 Challenging antisocial and aggressive behaviour

Bibliographic information	Study type and evidence level	Number of patients	Patient characteristics	Comparison	Follow-up and outcome measures	Effect size	Study summary	Reviewer comments
Maas C;Herrenkohl TI;Sousa C; 2008 90	Study Type: Systematic review – meta-analysis Evidence level: 2+	8 studies		Comparison:	Follow-up period: Outcome Measures:			Authors looked for longitudinal studies on association of child maltreatment with youth violence in 12–21 year olds. Authors conclude: physical abuse more likely to lead to youth violence than other forms of abuse; extreme and/or repeated abuse increases risk for youth violence.

Bibliographic information	Study type and evidence level	Aim of study	Number of patients and patient characteristics	Population characteristics	Outcome measures	Results and comments	Study summary	Reviewer comment
Root C;MacKay S;Henderson J;Del B;Warling D; 2008 91	Study Type: Other Evidence Level: 3	Comparison: maltreated versus non-maltreated firesetters Children defined as maltreated if caregiver confirmed that the child had ever experienced at least one of physical abuse, physical neglect or sexual abuse. 'suspected abuse' cases were excluded	205 caregivers and their children	87% male mean age 11.2y, sd 3.1y) children referred to assessment and treatment programme for juvenile firesetters.	fire-setting frequency, versatility, interest ascertained by Fire Involvement Interview. – semi-structructed interview asking. Frequency = total number of episodes coded 1–10 where 10 represents all numbers above 10 versatility=sum of different ignition materials and target types (out of a possible 7 and 6, respectively) externalising behaviour (CBCL) internalising behaviour (CBCL)	48% maltreated frequency (maltreated versus non-maltreated) 6 versus 5 ($P < 0.05$) versatility 4 versus 3 ($P < 0.05$) fire interest 15 versus 12 (not statistically significant) externalising 71.6 versus 64.7 ($P < 0.05$) internalising 65.8 versus 57.6 ($P < 0.05$)		Maltreatment status validated by cross-referring to child protective services data. maltreatment was as common as non-maltreatment in fire-setting children. frequency and versatility were greater in maltreated children.

7.1.3 Sudden and unexplained behavioural or emotional change

Bibliographic information	Study type and evidence level	Number of patients	Patient characteristics	Comparison	Follow-up and outcome measures	Effect size	Study summary	Reviewer comments
Finzi R;Har-Even D;Weizman A; 2003 Sep [98]	Study Type: Other Descriptive study Evidence Level: 3	Child Suicidal Potential Scales (CSPS) A clinician administered interview schedule consisting of nine sections Comparison: Group 1 (study group) physically abused children (PA) Group 2 (first control group) children neglected by their parents (NEG) Group 3 (second control group) children who were neither abused nor neglected (N-M)	Sample of 114 children divided into three groups on the basis of maltreatment Group 1 (study group) consisted of 41 physically abused children (PA) Group 2 (first control group) consisted of 38 children neglected by their parents (NEG) Group 3 (second control group) consisted of 35 children who were neither abused nor neglected (N-M)	Children aged 6 to 12 years	Ego Defenses- Regression Denial Projection Introjection Reaction-Formation Undoing Displacement Intellectualization Compensation Sublimation Repression	Significant differences between physically abused and the non-abused/ non-neglected (N-M) for all ego defences except displacement. Significant differences between physically abused (PA) and neglected children (NEG) for regression, denial and splitting, projection, and introjection (high scores for physically abused (PA) children) for compensation and undoing (higher scores for the neglected (NEG) children)	Physically abused children should be distinguished as a high-risk population for future personality disorders.	
Wells RD;McCann J;Adams J;Voris J;Ensign J; 1995 Feb [99]	Study Type: Other Descriptive study Evidence Level: 3	Structured Interview for Signs Associated with Sexual Abuse (SASA) Comparison: -Nonabuse group (NA group) -Sexual abuse with perpetrator confession (SA group) -Sexual abuse without perpetrator confession (AA group)	3 matched samples -68 in Nonabuse group (NA group) -68 in Sexual abuse with perpetrator confession (SA group) -68 in Sexual abuse without perpetrator confession (AA group)	Parents of prepubescent females	Generalized signs of disturbance- sleep problems, withdrawal, concentration problems Specific sexualized symptoms- increased masturbation, sexual aggressiveness, increased knowledge	Both SA and AA groups reported increased sleep problems, fearfulness, emotional and behavioural changes, concentration problems, and sexual curiosity and knowledge. Self consciousness, nightmares, and fearfulness of being left alone emerged significantly more frequently in SA group as compared with AA group	The presence of signs and symptoms in sexually abused children should be considered suggestive of abuse although the lack of symptoms does not necessarily confer safety form victimization.	
Dubowitz H;Black M;Harrington D;Verschoore A;	Study Type: Other							Parents or guardians of children suspected of being sexually abused completed the CBCL.

Bibliographic information	Study type and evidence level	Number of patients	Patient characteristics	Comparison	Follow-up and outcome measures	Effect size	Study summary	Reviewer comments
1993 Nov 179	Evidence Level:	Comparison:						Comparisons recruited from primary care clinics. Likelihood of abuse rated by interdisciplinary team.
Slusser MM; 1995 180	Study Type: Systematic review – meta-analysis Evidence level: 2−	NA		Comparison:	Follow-up period: Outcome Measures:		Overt sexual behaviour, inappropriate for age, is an indication of sexual abuse.	Narrative review of 6 studies. Study included if used comparison group, validated assessment tool, structured clinical interviews and systematic clinical record review.
Zolotor A;Kotch J;Dufort V;Winsor J;Catellier D;Bou-Saada I; 1999 Mar 93	Study Type: Cohort Evidence level: 2−	842 primary caregivers predominantly mothers with their infants	Primary caregivers, predominantly mothers eligibility criteria low birthweight (below 2500 g) low maternal age (less than 18 years of age) significant medical problems such as intracranial haemorrhage, meningitis, seizures or respiratory distress syndrome Significant social problems such as single parent without family support problem, or any parent with incapacitating medial or mental handicap or alcohol or substance abuse	Achenbach Teacher Report form and project developed questions regarding peer status. Comparison: for every 4 eligible infants whose mothers agreed to participate, the next mother to deliver an infant without any risk criteria was recruited	Follow-up period: At 6 years (n = 217) and 8 years (n = 181) Outcome Measures: School performance measured by -academic success -peer status -adaptive functioning	Mean academic performance (100–500) at age 6 was 260 (SD=85) at age 8 was 263 (SD=95) Mean Peer status (1–5) at age 6 was 3.5 (SD=0.85) at age 8 was 3.3 (SD=0.96) Total adaptive functioning (4–28) at age 6 was 14.6 (SD=5.16) at age 8 was 14.6 (SD=5.28) Maltreatment associated significantly associated with poorer academic performance (P < 0.01) and poorer adaptive functioning (P < 0.001) but not with peer status	The study concluded that maltreatment is associated significantly with poorer academic performance (P < 0.01) and poorer adaptive functioning (P < 0.001) but not with peer status.	
Antao V;Maddocks A;Street E;Sibert JR; 1996	Study Type: Case–control Evidence level: 2−	107 schoolboys sexually abused (cases) 107 schoolboys not sexually	Majority of boys aged 8 to 10 years	Information from general practice records, school health records, hospital records and the records of consultant child	Follow-up period: Outcome Measures: Somatic and	Somatic and behavioural symptoms uncommon in both cases and controls 83.6% of cases and 76.7% controls did not have	Where somatic symptoms are long standing should be considered as a possible diagnosis for abuse.	

Bibliographic information	Study type and evidence level	Number of patients	Patient characteristics	Comparison	Follow-up and outcome measures	Effect size	Study summary	Reviewer comments
[92]		abused (controls)		psychiatrists Comparison: Boys sexually abused (cases) and boys not abused (controls)	behavioural symptoms	symptoms. No significant difference between the numbers of cases and controls who had presented with somatic and behavioural complaints (18 cases versus 25 controls). Significant difference between cases and controls with symptoms lasting over a year ($P < 0.05$).		
Eckenrode J;Laird M;Doris J; 1993 Jan [95]	Study Type: Other Comparative study Evidence Level: 3	Iowa test scores Comparison: Maltreated children compared with nonmaltreated children	420 maltreated children 420 nonmaltreated children The 2 groups matched on the following variables: gender, school, grade level, residential neighbourhood, and classroom.	Children in kindergarten through grade 12	Academic performance- Test scores in reading and math- Iowa tests Final grades Grade repetitions Discipline referrals and suspensions	Comparable percentile scores in math 49.5 for maltreated children and 60.03 for nonmaltreated children t(411)=4.4, $P < 0.001$ Reading/ English mean grade 2.0 for maltreated children 2.3 for nonmaltreated children Overall percentage of repeating a grade in entire sample 28.6% Likelihood of repeating much higher in maltreated children X2 (1, N=773)=32.3, $P < 0.001$ Maltreated children are 2.5 times more likely to repeat a grade than nonmaltreated children OR= 2.53 (.606/.239) 95% CI 1.8–3.4 Discipline Referrals for entire sample 29.2% had at least one discipline referral Among maltreated children 34.3% had one or more referrals Among nonmaltreated	The study concluded that maltreated children performed significantly below nonmaltreated children in standardized tests and grades and were more likely to repeat a grade. Maltreated children also had significantly more discipline referrals and suspensions.	

Bibliographic information	Study type and evidence level	Number of patients	Patient characteristics	Comparison	Follow-up and outcome measures	Effect size	Study summary	Reviewer comments
						children 24.1% had one or more referrals *P* < 0.01 Suspensions for entire sample 25.1% had been suspended at least once Among maltreated children 1.2 Among nonmaltreated children 0.4 *P* < 0.01		
Rowe E;Eckenrode J; 1999 94	Study Type: Other Comparative study Evidence Level: 3	Survival analysis used to investigate the timing of risk of experiencing an academic difficulty. Comparison: Maltreated children compared with non-maltreated children.	300 maltreated children 300 non-maltreated children	Children (aged 5–18 years) in grades K-12 enrolled in public schools	Grade repetitions Poor English grades Poor math grades	Maltreated children at higher risk than non-maltreated children of repeating kindergarten and first grade. No difference in the risk of repeating grade for the first time. Absolute risk of receiving a poor English or mathematics grade changed across elementary years whereas the relative risk by maltreatment status did not.	The risk changed across time for grade repetitions but not for the first occurrence of a poor English or mathematics grade.	
Quas JA;Goodman GS;Jones D; 2003 Jul 96	Study Type: Other Descriptive study Evidence Level: 3	Sexual Assault profile Child behavior checklist Social adjustment scale Comparison: NA	218 victims of sexual abuse	Victims of sexual abuse aged 4 to 17 years	Child characteristics Characteristics of the abuse Maternal support following disclosure of the abuse	Child having these factors had increase attributions of self blame -close relationship with the perpetrator -severe sexual abuse -perceiving sexual abuse as disgusting -coping with abuse by pretending it never happened These factors did not predict internalising behaviour problems.	Self-blame attributions and behaviour problems need to be distinguished as separate outcomes in children who are sexually abused.	

Bibliographic information	Study type and evidence level	Number of patients	Patient characteristics	Comparison	Follow-up and outcome measures	Effect size	Study summary	Reviewer comments
Reyome ND; 1994 Oct 97	Study Type: Other Descriptive study Evidence Level: 3	Class room behaviours linked with school achievement Hahnemann Elementary school behavior rating scale used Comparison: Maltreated compared with non-maltreated (receiving public assistance and lower middle class)	33 maltreated children 33 non-maltreated children receiving public assistance 33 non-maltreated lower middle class children	Maltreated and non-maltreated (on public assistance and lower middle class) children from 5 to 12 years of age	Achievement related classroom behaviours.	Maltreated children exhibited less classroom behaviour positively linked with academic achievement as compared with non-maltreated children (receiving public assistance). Maltreated children did not differ significantly from children receiving public assistance in most behaviours negatively linked with academic achievement (except withdrawn behaviour) but clearly engage in less academically oriented classroom behaviours. Maltreated children significantly engaged in less classroom behaviour positively linked to academic achievement and significantly more classroom behaviour negatively related to academic achievement as compared with non-maltreated children of lower middle class.	Maltreated children exhibited less classroom behaviour positively linked with academic achievement as compared with non-maltreated children (receiving public assistance) and non-maltreated children of lower middle class.	

7.1.4 Selective mutism

Bibliographic information	Study type and evidence level	Number of patients	Patient characteristics	Intervention and comparison	Follow-up and outcome measures	Effect size	Study summary	Reviewer comments
MacGregor R;Pullar A;Cundall D; 1994 101	Study Type: Case–control Evidence level: 2–	52 (18 each of selectively mute, speech or language problems, no speech or language problem)	Children >=6years, mute in school for >1y but able to speak normally in other circumstances. Age 6–14years, controls matched by age and sex from same class at school.	Intervention: Does maltreatment lead to s/elective mutism? Comparison:	Follow-up period: n/a Outcome Measures: Abuse status derived from community paediatrics database.	Selectively mute children – 5 definitely abused, 3. possibly Speech or language problems – 1 possibly abuse Controls – no abuse		

7.1.5 Disturbances of attachment

Baer J;Martinez CD; 2006 [102]	Study Type: Systematic review – meta-analysis Evidence level: 2+	791 children from 8 studies	Studies selected if maltreated children were <48 months old, studies used 'Strange Situation' tool, included comparison groups, reported sufficient data.	Comparison: Insecure versus secure attachment style in maltreated versus nonmaltreated children.	Follow-up period: Outcome Measures: Odds of showing insecure attachment and having been maltreated versus not being maltreated.	Odds of having insecure attachment in abused group compared with nonabused group 6.5 (95% CI 3.7–11.6)	Maltreated children under 2 years of age are more likely to have insecure or disorganized attachment than their non-maltreated peers.	The results of the study reflect a composite score and do not provide key information for healthcare professionals who may observe one-off interactions.
van Ijzendoorn MH;Schuengel C;Bakermans-Kranenburg MJ; 1999 [103]	Study Type: Systematic review – meta-analysis Evidence level:2+	For question of interest 323 children from 5 studies		Attachment disorganisation as measured by a validated tool. Comparison: Attachment styles in maltreated and nonmaltreated children under 2 years of age.	Follow-up period: NA Outcome Measures:	Across all studies, 48% of maltreated children had disorganised attachment compared with 17% of nonmaltreated children. Pooled effect size (standardised correlation coefficient): 0.41	Maltreatment (including failure to provide adequate nourishment) is associated with disorganised attachment.	At least 3 of the samples used in the meta-analysis are used in [102].

7.1.6 Emotional dysregulation

No literature identified.

7.1.7 Repeated nightmares in the absence of an obvious cause

No literature identified.

7.1.8 Compliance

No literature identified.

7.1.9 Role reversal

No literature identified.

7.1.10 Dissociation

Bibliographic information	Study type and evidence level	Aim of study	Number of patients	Population characteristics	Outcome measures	Results and comments	Study summary	Reviewer comment
Lansford JE;Dodge KA;Pettit GS;Bates JE;Crozier J;Kaplow J; 2002 USA 104	Study Type: Prospective longitudinal study Evidence Level: 2+	To determine whether child physical maltreatment early in life has long-terms effects on psychological (including dissociation), behavioural and academic problems	*n* = 585 children	Participants were randomly recruited from two cohorts of children in 1987 and 1988 from kindergarten in public schools. The sample was 52% male and 48% female. The ethnic profile was 82% European American, 16% African American and 2% other. No ages given	Detailed interviews of developmental history with mothers in home before entrance to kindergarten including details on child misbehaviour, discipline practices and whether child has ever been harmed by an adult. At this point, Investigators also rated whether maltreatment had occurred as 0= definitely no physical maltreatment and 1= physical maltreatment probably having occurred. This interview also used the Retrospective Infant Characteristics Questionnaire. Children's official school records were available from 9th to 11th grades At 11th grade, mothers completed 113-item Child Behaviour Checklist (CBCL) On completion of 11th grade adolescents completed Youth Self-report form of the CBCL.	CBCL dissociation subscales results: (mother reports) Unadjusted analysis *not maltreated (*n* = 392) maltreated (*n* = 52) Not maltreated 1.68 SD 0.11 Maltreated 3.38 SD 0.43 F= 28.63 *P* < 0.001 Covariates adjusted analysis (socio-economic status, single-parent status, family stress, maternal social support, child's exposure to violence, child temperament, child health and harsh parental treatment during adolescence) Not maltreated 1.58 SD 0.16 Maltreated 2.8 SD 0.37 F=10.01 *P* < 0.01 *presence or absence of maltreatment was determined at the initial interview by two interviewers independently. Agreement was 90% (kappa 0.56)	There was a significant association between suspected child physical maltreatment in pre-kindergarten children and the presence of dissociation later in school life (11th grade).	This study was rated EL = 2− The strengths of this study were that it was it was conducted over a 12 year period in a normative setting with a suitable control group. The weaknesses were that the presence of child maltreatment at the start of the study was assessed in the home by an interviewer. No details given but presumably a psychology professional Random sampling was not described Only physical abuse was considered The number of abused children was small *n* = 52. Details of dropouts were not described This study was funded by the Child Development Project from the National Institute of Mental Health Bethesda, USA
Macfie J;Cicchetti D;Toth SL; 2001 Sep	Study Type: Case–control series Evidence Level: 2−	To investigate a) the link between child maltreatment and pre-school children and b) to examine which subgroups of maltreated	n= 198 pre-school children	Pre-school children mean age 5 yrs SD 6 months (range 3 yrs 7 months to 6 years). 62% ethnic minorities: 35% African American, 7% Hispanic, 20% other. Recruited from families referred to social	Child Dissociative Checklist (CDC)	Using ANOVA there was a significant overall effect for maltreatment sub-types on dissociation F(3, 194)=21.05 *P* < 0.00001 mean dissociation scores per group (no SD given, p value compared with	Child maltreatment is a factor in pre-school aged children. Sexually abused, physically abused and neglected groups each	This study was rated EL = 2− Small study control group comprised of children who were referred to social services i.e. not general

Bibliographic information	Study type and evidence level	Aim of study	Number of patients	Population characteristics	Outcome measures	Results and comments	Study summary	Reviewer comment
USA 105		preschoolers are likely to present with dissociation.		services and classified as physically abused, sexually abused, neglected or non-maltreated no numbers given per group		non-maltreated group) Physical abuse 8.91 Sexual abuse 7.27 Neglected group 5.52 Non-maltreated group 1.88 All clinical groups demonstrated greater dissociation than the non-maltreated group, *P* < 0.001 for all. Further analysis (Pearson r correlations) between the three maltreatment subgroups showed physical abuse and neglect were significantly related to dissociation (*P* < 0.001 for both) but sexual abuse was not (*P* > 0.1).	demonstrated more dissociation than the non-maltreated group. Dissociation within the three clinical groups was associated greatest with physical abuse.	population 62% were of minority status Therefore external validity is limited. The funding of this study was undeclared.
Kisiel CL;Lyons JS; 2001 Jul USA 106	Study Type: Case–control series Evidence level: 2−	To investigate the role of dissociation as a mediator of mental-health outcomes in children with a history of sexual abuse	*n* = 114 children and adolescents	Children aged 10 to 18 years old, 52% male and 48% female. The majority were African American (69%), 24% Caucasian and 5% Hispanic who were recruited from a group who were wards of the social services Inclusion criteria were 1) removed from family 2) placed in residential treatment 3) suitable age 4) from the city area 5) agreed to participate They were classified into no abuse, sexual abuse, physical abuse, sexual and physical abuse	Outcome Measures: Adolescent Dissociative Experiences (ADE) scale or Child Dissociative Checklist (CDC) depending on age	8/114 had incomplete data as the children/caregiver was unwilling to complete certain items. 97% of the study group had a history of some type of abuse and 84% had an abuse history that was considered moderate to severe. Results from ADE and CDC reported by type of abuse: no abuse (*n* = 27),sexual abuse (*n* = 25), physical abuse (*n* = 18) and sexual & physical abuse (*n* = 44) ADE No abuse 2.4 SD 4.7 Sexual abuse 3.4 SD 2.6 Physical abuse 2.4 SD 1.8 Sexual & physical abuse 3.7 SD 2.1 Children with sexual abuse reported significantly higher levels of dissociation *P* < 0.01	The authors conclude that the findings of this study suggest a unique relationship between sexual abuse and dissociation.	This study is rated EL = 2− Study is small All participants recruited from social services including the control group. This study was supported in part by a grant from the Philanthropic Education Organization

Bibliographic information	Study type and evidence level	Aim of study	Number of patients	Population characteristics	Outcome measures	Results and comments	Study summary	Reviewer comment
						CDC No abuse 4.7 SD 2.0 Sexual abuse 6.0 SD 4.8 Physical abuse 6.2 SD 6.1 Sexual & physical abuse 10.4 SD 6.9 Children with a history of sexual and physical abuse had higher levels of 'perceived' dissociation($P < 0.05$ for each)		
Eisen ML;Qin J;Goodman GS;Davis SL; 2002 Nov USA [107]	Study Type: Case–control series Evidence level: 2−	To assess children's memory and suggestibility in the context of ongoing maltreatment investigations	*n* = 189 children who were stratified into three age groups: 3–5 years *n* = 51 6–10 years *n* = 64 11–17 years *n* = 31 they were also divided into three abuse-status groups: 1. Abused physical *n* = 101 sexual *n* = 55 both physical and sexual *n* = 22 2.Neglected neglected *n* = 27 children with documented evidence of parental addiction but not abuse *n* = 16 3. Non-abused control group *n* = 40 who had no history of abuse, neglect or	Children (107 females and 82 males), predominantly low socio-economic status (77% African American , 9% Hispanic American, 10% European American, 4% other) mean age 7.3 years (range 3–17) years old. Approximately 38% were siblings. Referred to a child abuse evaluation unit in a hospital for a five day physical and psychological assessment	Relevant outcome Measures: Child Dissociative Checklist (CDC) Children's Perceptual Alteration Scale (CPAS) The Adolescent Dissociation Experiences (ADE) Scale	Results given for CDC, CPAS and A-DES (measures of dissociation). Results presented by age : CDC Age 3–5: 9.7 SD5.6 (*n* = 31) Age 6–10: 6.8 SD6.2 (*n* = 35) Age 11–15: 4.6 SD3.8 (*n* = 14) CPAS Age 3–5: n/a Age 6–10: 54.8 SD 11.4 (*n* = 84) Age 11–15: 51.2 SD9.8 (*n* = 22) ADE Age 3–5:n/a Age 6–10: n/a Age 11–15: 76.5 SD 52.5 (*n* = 41) Results presented by abuse status: CDC Abused 7.6 SD 5.5 (*n* = 40) Neglect 7.9 SD 6.9 (*n* = 18) Control 6.8 SD 5.7 (*n* = 20)	Dissociation findings extracted from text. There was no significant association between prior history of abuse in any of the groups with any of the dissociation measures.	This study was rated EL = 2− A case–control study although the controls were also potentially abused children. The aim of the study was to assess memory and suggestibility in maltreated children as opposed to finding a relationship between dissociation and abuse. Assessment was undertaken in the artificial (intense) environment. The funding of this study was undeclared

Bibliographic information	Study type and evidence level	Aim of study	Number of patients	Population characteristics	Outcome measures	Results and comments	Study summary	Reviewer comment
			maltreatment but who were referred due to suspicions. For *n* = 5 children there was no abuse status information			CPAS Abused 54.1 SD 10.3 (*n* = 68) Neglect 51.6 SD 11.2 (*n* = 31) Control 55.2 SD 11.8 (*n* = 22) ADE Abused 79.1 SD 51.2 (*n* = 2) Neglect 86.1 SD 63.4(*n* = 9) Control 63.3 SD 50.1(*n* = 9) No statistical analysis given.		
Collin-Vezina D;Hebert M; 2005 Jan Canada [108]	Study Type: Case–control series Evidence level: 2−	To assess and contrast dissociation and posttraumatic stress disorder symptoms in a group of sexually abused school aged girls compared with a matched group	*n* = 67 girls with a history of sexual abuse *n* = 67 girls as a comparison	Sexually abused (SA) group French-speaking, Canadian girls referred for evaluation to child protection clinic after alleged sexual episode within the previous six months. (Age mean =9.0 SD 1.4 range 7–12 yrs) 65.6% cases were classed as very serious 68.7% cases involved family or extended family 46.9% abuse was chronic over months or years Comparison group was girls recruited from three public schools. There were no sexual abuse cases. Mean age 9.2 SD 1.7	Relevant outcome Measures: Child Dissociative Checklist (CDC) in French	CDC scores SA group (no penetration) 7.14 SD 6.36 SA group (penetration) 8.48 SD 5.34 SA group (no intrafamilial abuse) 9.11 SD 7.01 SA group (Intrafamilial abuse) 7.63 SD 5.45 SA group (no chronic abuse) 7.51 SD 6.37 SA group (chronic abuse) 8.67 SD 5.68 Comparative group 3.43 SD 3.95 20/67 of the SA (29.9%) and 3/67 of the comparative group (4.5%) presented with clinical levels of dissociation.	These results indicate that sexual victimisation of school aged girls significantly increases the odds (eight-fold) of presenting with a clinical level of dissociation. Degree/type of sexual abuse did not prove to be predictive of dissociation symptoms.	This case–control study was given an EL = 2− Small study SA population was narrow (attending clinic). Comparison group was suitable but although similar on age and socio-economic factors differed in terms of family structure and parental level of education The funding of this study was undeclared

Bibliographic information	Study type and evidence level	Aim of study	Number of patients	Population characteristics	Outcome measures	Results and comments	Study summary	Reviewer comment
						After correcting for confounding factors e.g. parent's education, the odds of presenting with a dissociative tendencies was 8-fold in the SA group compared with the control group		
Atlas JA;Hiott J; 1994 Feb USA 109	Study Type: Case–control series Evidence level: 2−	To assess the extent of dissociative experience and possible differences in amount of dissociation related to type of abuse (physical , sexual and both)	*n* = 57 of which *n* = 34 girls *n* = 23 boys	Adolescents with a history of abuse admitted into an acute adolescent inpatient unit Age range (11 years 3 months to 17 years 8 months) Minority backgrounds (African-American and Hispanic) lower middle class homes mean IQ 70 (Peabody picture vocabulary test) *n* = 23 physical abuse (PA) *n* = 24 sexual abuse (SA) *n* = 10 physical and sexual abuse (PA & SA)	Outcome Measures: Adolescent Dissociative Experiences Scale (ADE)	Mean ADE score PA = 28.1 SD 25.1 SA = 34.7 SD 31.7 PA & SA= 34.9 SD 22.9 No statistically significant differences between groups but combined group mean of 32 reflects moderate to severe dissociation. Authors quote a 'control' group from a separate paper of adolescents 13–17 yrs with a variety of diagnoses and abuse backgrounds with a mean ADE 19.2 SD 15.00 Two-tailed t-test between the two group $P < 0.005$	In this study adolescent inpatients with histories of abuse showed moderate to severe dissociation as measured by the ADE scale. Adolescents with a history of sexual abuse had a higher ADE score than physical abuse but this was not statistically significant	This study was rated EL = 2− A small case series with historical control group. This control group was not a 'normal' population High chance of bias as no confounding factors was considered. Select population of inpatients Population was of low socio-economic class i.e. these factors affect the external validity of the results The funding of this study was undeclared
Friedrich WN;Jaworski TM;Huxsahl JE;Bengtson BS; 1997 Apr USA 110	Study Type: Case–controlled series Evidence level: 2−	Authors hypothesised that longer duration and greater severity , earlier age of onset of abuse and a history physical abuse would result in greater level of dissociative and sexual symptoms	*n* = 350 of which *n* = 75 nonpsychiatric *n* = 165 psychiatric nonabused *n* = 72 psychiatric abused *n* = 38 psychiatric suspected abuse	Four groups of children aged 7–18 years Non-psychiatric comparative sample recruited from two local mainstream protestant religious education groups mean age 11.96 SD 2.25 56% female Psychiatric nonabused recruited from consecutive inpatient admissions to a child psychiatric inpatient unit or consecutive outpatient evaluations (by	Relevant outcome measures: Child completed the Trauma Symptom Checklist – children (TSC-C) Parents completed the CDC	Dissociation Subscale total score from the TSC-C Psychiatric abused 7–11 years 8.83 SD 4.47 12–14 years 9.94 SD 4.86 15–18 years 14.85 SD 6.56 Psychiatric suspected abused 7–11 years 7.57 SD 4.88 12–14 years 9.69 SD 4.87 15–18 years 10.14 SD 6.04 Psychiatric non-abused	The authors concluded that a combination of child and parent related reports were very useful in understanding symptoms of sexually abused children. A correlation was noted between all the clinical groups and dissociation but no statistical testing was reported	This study is rated as EL = 2− However the aim of the study was not primarily to demonstrate the association of sexual abuse and dissociation. The funding of this study was undeclared

Bibliographic information	Study type and evidence level	Aim of study	Number of patients	Population characteristics	Outcome measures	Results and comments	Study summary	Reviewer comment
				author) mean age 12.56 SD 2.74 42% female Psychiatric abused children with a documented history of sexual abuse from in and out patients settings mean age 12.05 SD 2.84 80% female Psychiatric suspected abuse children with suspected sexual abuse from in and out patient settings mean age 12.05 SD 2.84 68% female		7–11 years 9.18 SD 6.39 12–14 years 7.96 SD 5.76 15–18 years 10.49 SD 6.51 Non-psychiatric 7–11 years 1.11 SD 1.73 12–14 years 1.2 SD 1.58 15–18 years 3.43 SD 3.26 'Significant differences' were found between all three clinical groups and the nonpsychiatric group for dissociation but there were no differences between the three clinical groups for dissociation although the psychiatric abused group scored highest. No details of tests were given In a foot note post-hoc analysis using the TSC-C subscale DIS1 Overt Dissociation showed there was a significant difference between the psychiatric abused and psychiatric nonabused for the 12–14 and 15–18 year old groups. CDC reporting was brief. The authors stated that post hoc analysis for the CDC found that the clinical groups differed significantly from the non psychiatric comparison group but not from each other (no further details given)		
Nilsson D;Svedin CG; 2006 Sweden	Study Type: Retrospective questionnaire validation study Evidence Level:	To investigate a) the psychometric properties of the Dissociation Questionnaire (DIS-Q) in Swedish in a	*n* = 74 adolescents with known experiences of trauma (clinical group) *n* = 449 normal	Clinical group Adolescents who had been patients at a child and adolescent psychiatric clinic. All had a history of sexual and or physical abuse self reported and confirmed by	DIS-Q in Swedish	Prevalence of dissociation 2.3% in the control group 50% in the clinical group	The prevalence of dissociative symptoms was greater in a group of adolescents with a history of abuse compared	This study was rated EL = 2− This was a retrospective study. The main aim of it was to investigate the validity of the

Bibliographic information	Study type and evidence level	Aim of study	Number of patients	Population characteristics	Outcome measures	Results and comments	Study summary	Reviewer comment
[111]	2–	normative adolescent population and b) dissociative symptoms associated with trauma including sexual and physical abuse.	adolescents (control group)	authorities. Mean age 16.03 (range 12–19)years *n* = 64 girls, *n* = 10 boys Control group Adolescents recruited from within schools in the same city and of different socio-economic backgrounds mean age 15.07 SD 1.92 no range given *n* = 210 boys *n* = 190 girls (remainder were dropouts)		Chi-square test *P* < 0.001 Total scores of DIS-Q 1.42 SD 0.43 control group 2.52 SD 0.8 clinical group *P* < 0.001	with a control group of adolescents	DIS-Q-Sweden and not to look at the prevalence of dissociation with sexual and physical abuse. Although they endeavoured to match control and clinical group there was no analysis to detect any differences in confounding factors There were significant dropouts from the control group.

7.2 Behavioural disorders or abnormalities either seen or heard about

7.2.2 Recurrent abdominal pain

Bibliographic information	Study type and evidence level	Number of patients	Patient characteristics	Comparison	Follow-up and outcome measures	Effect size	Study summary	Reviewer comments
Rimsza ME; 1988 [145]	Study Type: Case–control Evidence level: 2–	67 girls who reported sexual abuse and 5 who had abuse confirmed on clinical examination 68 controls of similar age, sex and initial clinic visit date	Cases: female children who were evaluated at a medical centre because of sexual abuse Mean age 10 years (range 2 years to 17 years) Controls: females identified from the general clinic admission records.	Comparison: Sexual abuse versus controls	Follow-up period: mean = 24 months (range 9 mo – 48 mo) Outcome Measures: Skeletal muscle tension (including sleep problems), gastrointestinal irritability (including chronic abdominal pain), Genitourinary symptoms (including dysuria and vaginal discharge), 'Emotional reactions' (including suicide attempt), Runaway behaviour, School problems, 'Other behaviour problems', Early pregnancy	Sexually abused versus controls Muscle tension: 26% versus 7%, $P < 0.01$ Gastrointestinal irritability: 31% versus 10%, $P < 0.01$ [Chronic abdominal pain: 26% versus 7%, no analysis] Genitourinary symptoms: 40% versus 10%, $P < 0.001$ Emotional reactions: 18% versus 3%, $P < 0.001$ Runaway behaviour: 8% versus 0%, $P < 0.05$ School problems:10% versus 10%, p= not statistically significant Other behavioural problems: 28% versus 4%, $P < 0.001$ Early pregnancy: 8% versus 12%, p= not statistically significant	Cases are more likely than controls to display somatic or behavioural difficulties after a period of sexual abuse has ended.	This study is a review of medical records, confirmation was ascertained by patient history or medical examination (in 5 cases). This study reports somatic and behavioural difficulties after abusive period. It is not clear how long this is.

7.2.3 Disturbances in eating and feeding behaviour

Bibliographic information	Study type and evidence level	Number of patients	Patient characteristics	Comparison	Follow-up and outcome measures	Effect size	Study summary	Reviewer comments
Chandy JM;Blum RW;Resnick MD; 1996 Dec 149	Study Type: Cross-sectional Evidence level: 2−	370 males, 2681 females	adolescents who reported sexual abuse in a large school survey	NA Comparison:	Follow-up period: Outcome Measures:	Evaluates self as overweight f=52.3%, m=21.3% (*P* < 0.001) V satisfied with present weight: f=8.1%, m=26.0% (*P* < 0.001) V proud of body f=6.9%, m=28.4% (*P* < 0.001) Binge-eating: f=40.8%, m=22.3% (*P* < 0.001) Non-stop eating: f=22.7%, m=8.1% (*P* < 0.001) Dieting during last year: f=69.6%, m=26.8% (*P* < 0.001) Self-induced vomiting: f=19.9%, m=10.4% (*P* < 0.001) Use of diuretics: f=3.7%, m=1.4% (*P* < 0.05) Use of laxatives: f=3.0%, m=1.6% (not statistically significant) Use of ipecac: f=1.4%, m=1.1%		Sexual abuse=someone in your family, or someone else, touches you in a place you did not want to be touched, or does something to you sexually which they shouldn't have done.
Hernandez J; 1995 148	Study Type: Case–control Evidence level: 3	6224 children (10% subsample of Minnesota study)	3238 males, 2986 females 318 females who reported eating disorder and abuse 84 males who reported eating disorder and abuse	Comparison:	Follow-up period: Outcome Measures:	Eating disorders more commonly reported in abused than non-abused whether abuse was physical or sexual.		Eating disorder defined as two of the following true: out-of-control eating, using laxatives and vomiting 10% randomly selected subsample of Minnesota study. 9th and 12th graders only

Bibliographic information	Study type and evidence level	Aim of study	Number of patients and patient characteristics	Population characteristics	Outcome measures	Results and comments	Study summary	Reviewer comment
Perkins DF;Luster T; 1999 Apr 150	Study Type: Other Evidence Level: 3	Comparison:	7903 female adolescents	Mean age 14.5y (sd 1.6)		Physically abused girls more likely to purge than non-physically abused girls: OR=1.81 (*P* = 0.0014) (from logistic regression model) No significant relationship found between sexual abuse and purging behaviour.		Survey questionnaire. Stat modelling fairly simple. Opportunity for multilevel modelling (with school as one of the levels). Abuse = Have you ever been sexually abused? Have you ever been physically abused by an adult (that is, where an adult caused you to have a scar, black and blue marks, welts, bleeding or a broken bone? Purging = How often do you vomit on purpose after eating? Study suggests physical abuse is associated with purging behaviour but sexual abuse is not. No info on past or current abuse.
Chandy JM;Blum RW;Resnick MD; 1996 Dec 147	Study Type: Other Evidence Level: 3	Comparison:	1011 girls with history of CSA, 1011 comparison subjects	Female adolescents mean age 15.28 versus 14.92		Abuse versus no abuse Thinks of self as overweight 55.6 versus 43.7% Binge-eating 40.3% versus 31.7% Nonstop eating 24.6% versus 16.7% 10+ dieting episodes in last year 17.9% versus 12.3% Use of diuretics 4.4% versus 2.7% Self-induced vomiting 1+ times per week 4.4% versus 2.7% Use of laxatives 3.7% versus 2.2%		Simple proportions presented. No accounting for confounders. Multiple comparisons. Time between 'abuse' and eating behaviours unclear.

Bibliographic information	Study type and evidence level	Aim of study	Number of patients and patient characteristics	Population characteristics	Outcome measures	Results and comments	Study summary	Reviewer comment
						All statistically significant		
Wonderlich SA;Crosby RD;Mitchell JE;Roberts JA;Haseltine B;Demuth G;Thompson KM; 2000 146	Case–control study Evidence level: 2−		*n* = 40 mean age 12.7y (s.d. 1.7) in both groups, matched on age and parental education	Girls aged 10 to 15 years. sexually abused girls in treatment for abuse (abuse defined as unwanted sexual activity or sexual activity that involved a person more than 5 years older) versus non-abused girls recruited through school newsletters	whether multiple forms of abuse increased severity of eating disturbance.	Girls in both groups were asked to fill in the Childhood Trauma Questionnaire (CTQ), the Body Rating Scale for Adolescents, the McKnight Risk Factor Survey and the Kids' Eating Disorder Survey (KEDS). Fifteen items were reported on and the sexually abused girls had significantly greater weight dissatisfaction, reported eating less when they were bored, upset or trying to feel better about themselves, had a lower score on perfectionism and chose a thinner figure that represented how they would like to look than non-abused girls.		

7.2.4 Head-banging and body rocking

Bibliographic information	Study type and evidence level	Number of patients	Patient characteristics	Comparison	Follow-up and outcome measures	Effect size	Study summary	Reviewer comments
Troster H; 1994 Feb [151]	Study Type: Cross-sectional Evidence level: 2−	142 140 included in analysis of interest including 45 with history of suspected abuse	Children in residential care homes, aged 10 mo – 11y,	Comparison: Suspected abuse versus non-abuse.	Follow-up period: Cross-sectional study but data are observations of weekly or daily behaviours. Outcome Measures: Percentage of children in whom behaviours were observed at least once day.	Suspected abuse *n* = 45 Other *n* = 95 Body rocking 11.1% (suspected abuse) versus 6.3% (other) Not significant Head nodding/shaking 4.4% (suspected abuse) versus 4.2% (other) Not significant Head banging 4.4% (suspected abuse) versus 1.1% (other) Not significant		Data collected via caregivers' ratings. Children not living with parents so hard to disentangle cause of stereotyped behaviour. Similarly, non-significance of proportions between suspected abuse and other children is biased by the reason that the children are in residential care. Suspicion of abuse is not described.

7.2.5 Wetting and soiling

Bibliographic information	Study type and evidence level	Aim of study	Number of patients and patient characteristics	Population characteristics	Outcome measures	Results and comments	Study summary	Reviewer comment
Klevan JL;De Jong AR; 1990 Feb 39	Study Type: Other Evidence Level: 3	NA Comparison:	428 CSA victims seen at sexual assault health centre based in a hospital.	mean age 8.6 years (range 1–16), 84% female		85 (20%) of sample had GU symptoms at 1–3 weeks after first report of CSA. Recent onset of enuresis in 24 (6% of total series) Vaginal pain 43 (10%) Dysuria 21 (5%) Increased urinary frequency 20 (5%)		Cohort of sexually abused children. No data on non-abused children.
Mellon MW;Whiteside SP;Friedrich WN; 2006 Feb 155	Study Type: Other Evidence Level: 2+	Comparison: NA	1114 normative children, 577 psychiatric patients, 620 children with confirmed history of CSA mostly in the last 12 months	Children aged 2–12 years.		Prevalence of encopresis Normative versus psych versus abused 2% versus 10.5% versus 10.3% Does encopresis=abuse? Sensitivity 10%, PPP 45% Broken down by age and sex, lowest		PPV depends on prevalence of abuse in the sample. Encopresis defined as a rating of 'sometimes true' or 'often true' on the 'bowel movements outside the toilet' item on the CBCL.

7.2.6 Sexualised behaviour

Bibliographic information	Study type and evidence level	Number of patients	Patient characteristics	Comparison	Follow-up and outcome measures	Effect size	Study summary	Reviewer comments
Cosentino CE;Meyer-Bahlburg HF;Alpert JL;Weinberg SL;Gaines R; 1995 Aug 159	Study Type: Case–control Evidence level: 2+	Sexually abused = 20 Psychiatric controls = 20 Nonpsychiatric controls = 20	Girls aged 6–12 years	Child sexual behaviour inventory Comparison: CSA versus psych. controls and nonpsychiatric controls	Follow-up period: NA Outcome Measures: Child sexual behaviour checklist	Total CSBI mean (sd) CSA 30.6 (20.3) Psych. controls 15.2 (9.9) Non-psych controls 10.8 (9.6) Significant difference found between groups.	Sexually abused girls exhibited more sexualised behaviours than girls who had not been sexually abused.	Cases attended a treatment centre for child abuse, had been referred there within the preceding 2 years and were undergoing treatment.
Slusser MM; 1995 180	Study Type: Systematic review – meta-analysis Evidence level: 2−	NA		Comparison:	Follow-up period: Outcome Measures:		Overt sexual behaviour, inappropriate for age, is an indication of sexual abuse.	Narrative review of 6 studies. Study included if used comparison group, validated assessment tool, structured clinical interviews and systematic clinical record review.
Gordon BN;Schroeder CS;Abrams JM; 1990 Apr 160	Study Type: Cross-sectional Evidence level: 2−	Abused children: *n* = 22 Nonabused children: *n* = 22	Abused children recruited at first contact with psychology clinic. Nonabused children recruited at paediatric clinic and public health clinic. Age not stated but cases and controls matched on age and socio-economic status.	Comparison:	Follow-up period: Outcome Measures: Areas of knowledge: Gender identity Sexual body parts Non-sexual body parts Sexual behaviour Pregnancy Private parts Total knowledge	Abuse versus non-abuse Mean score (s.d) Gender identity 16.6 (2.5) versus 17.4 (4.0) n.s Sexual body parts 9.5 (4.1) versus 9.3 (4.8) n.s Non-sexual body parts 12.6 (2.1) versus 11.4 (2.9) n.s Sexual behaviour 4.9 (2.6) versus 4.0 (2.3) n.s Pregnancy 4.9 (4.3) versus 5.6 (4.2) n.s Private parts 8.1 (5.6) versus 7.1 (6.4) n.s.	No observed differences in sexual knowledge between abused and non-abused children.	Confounders (such as parents' marital status, parental attitude, sex education) not accounted for in analysis.

Bibliographic information	Study type and evidence level	Number of patients	Patient characteristics	Comparison	Follow-up and outcome measures	Effect size	Study summary	Reviewer comments
						Total knowledge 57.0 (15.6) versus 55.0 (19.5) n.s		
Holmes WC; 1998 Dec 86	Study Type: Systematic review – meta-analysis Evidence level:	NA		Comparison:	Follow-up period: Outcome Measures:		Compared with nonabused males, abused males were reported to have greater difficulty controlling sexual feelings, were hypersexual and more likely to perpetrate coercive sexual acts against others.	Narrative review. Search dates were 1985–1997
Inderbitzen-Pisaruk H;Shawchuck CR;Hoier TS; 1992 Mar 161	Study Type: Case–control Evidence level: 2−	17 CSA cases 17 controls	CSA cases validated by Child Protection Department, child protected from perpetrator, age 5 – 15 Controls matched on age, sex, socio-economic status and current living situation recruited from community. Sexual abuse excluded.	Number of validated questionnaires administered, including CBCL. The 6 sex behaviour problems were combined to give a sex-problem score. Comparison: CSA versus controls.	Follow-up period: Outcome Measures: Sex-problem score	Mean (SD) CSA: 1.47 (1.84) Controls: 0.41 (1.23) *P* = 0.05		Small study. Large span of ages in this context.
Kendall-Tackett KA;Williams LM;Finkelhor D; 1993 Jan 87	Study Type: Systematic review – meta-analysis Evidence level: 1+			Comparison:	Follow-up period: Outcome Measures:		Non-clinical samples Demeanour or behaviour and the number of studies in which CSA children were more symptomatic than non-cases. Anxiety: 5/8 studies Fear: 5/5 studies Depressed: 10/11 studies Withdrawn: 11/11 studies Poor self-esteem: 3/6 studies	

Bibliographic information	Study type and evidence level	Number of patients	Patient characteristics	Comparison	Follow-up and outcome measures	Effect size	Study summary	Reviewer comments
							Aggressive antisocial: 10/11 studies Cruel: 2/2 studies Delinquent 6/6 studies School/learning problems: 5/6 studies Regression/immaturity: 2/2 studies Running away: 1/1 studies Percentage of CSA cases who displayed each symptom ranged from 0% to 70%	
Merrick MT;Lutrownik AJ;Everson MD;Cox CE; 2008 162	Study Type: Other Evidence Level: 2−	Are sexualised behaviours related to early (before age 4y) or late (between 4y and 8y) maltreatment. Sexual abuse cases were excluded. Comparison: Binary variables of: early physical abuse y/n early emotional abuse y/n early neglect y/n late physical abuse y/n late emotional abuse y/n late neglect y/n	690	maltreated children and children at risk of maltreatment, age ~8 years at time of interview 47% female	predictors of sexualised behaviours: boundary problems displaying private parts sexual interest sexual intrusiveness sexual knowledge	Boundary problems: Late physical abuse OR: 1.94 95% CI 1.1–3.5 Displaying private parts: Early physical abuse OR 2.4 95% CI 1.1–5.4 Early emotional abuse: OR 0.3 95% CI 0.1–0.8 Late physical abuse OR:2.4 95% CI 1.0–5.6 Sexual interest No significant predictors Sexual intrusiveness: Early neglect OR:0.4 95% CI 0.2–0.9		No normative data. Predictors of sexualised behaviours misleading because of the mix in the 'no' groups

Bibliographic information	Study type and evidence level	Number of patients	Patient characteristics	Comparison	Follow-up and outcome measures	Effect size	Study summary	Reviewer comments
						Late physical abuse OR: 2.6 95% CI 1.3–5.2 Sexual knowledge: Late emotional abuse OR 2.0 95% CI 1.2–3.4		

7.2.7 Runaway behaviour

Study	Number of participants	Percentage maltreated	Sample	Age at interview
Powers (1990)[165] and Powers (1988)[166] USA	223	Sexual abuse: 13% Physical abuse: 42% Neglect: 43%	young people who sought services from runaway and youth homeless services in New York State: 49% runaways, 17% homeless, 13% considering running, 21% in crisis but not on the run	
Stiffman(1989)[167] USA	291	History of physical or sexual abuse: 48%	Youth who sought shelter at one of two homes for runaway youth	12–18 years
Gary (1996)[168], Warren (1997)[169] and Warren (1994)[170] USA	69 (number who gave information about abuse)	Physical: 29% Sexual: 14% Emotional: 1% Combination: 17% Any: 62%	Convenience sample who had been admitted to referral shelter for runaway youth	Mean age: 15 years (range 11–17)
Thompson (2004)[171] USA	156	Physical: 35% Sexual: 12% Emotional: 30% Neglect: 29%	Consecutive entrants to shelter for runaway youth (recorded up to 48 hours after admission)	mean age: 16 years (sd 1.5)
Kufeldt (1987)[172] Canada	474	Physical: 28% Sexual: 7%	Night-time interviews of young people on the street	Mean age ~15 years (all people interviewed<18)
Feitel (1992)[173] USA	150 (different numbers responded to different questions)	Fear of being hit: 55% Being badly beaten: 68% Being sexually molested: 25%	Clients of youth shelter.	Mean age: 18.45 years (range 13 to 22)

Bibliographic information	Study type and evidence level	Number of patients	Patient characteristics	Intervention and comparison	Follow-up and outcome measures	Effect size	Study summary	Reviewer comments
Thompson SJ;Zittel-Palamara KM;Maccio EM; 2004 Dec 171	Study Type: Cross-sectional Evidence level: 2−	156	44% male 79% African-American 40% European-American mean age 16y (sd 1.5y)	Intervention: Comparison:	Follow-up period: Maltreatment status ascertained up to 48 hours after admission to shelter for runaway youth. Outcome Measures:	Physical: 35% Sexual: 12% Emotional: 30% Neglect: 29%		
Craig TK;Hodson S;	Study Type: Cohort	161 homeless 104 domiciled	Young people 16–21 years	Intervention:	Follow-up period:	Reasons for running away:		Runaway=leaving formal care arrangement for at least one night before age 16 without

Bibliographic information	Study type and evidence level	Number of patients	Patient characteristics	Intervention and comparison	Follow-up and outcome measures	Effect size	Study summary	Reviewer comments
1998 Nov UK 181	Evidence level: 2−		modal age 17 in both groups	Comparison:	Outcome Measures:	conflict with parents (most common reason, numbers not stated) 11 people in domiciled group had run away before. Total of 20 cited physical violence or sexual abuse as reason for running.		carer's consent – recruited from inner London accommodation facilities for young homeless people. Domiciled=recruited from inner city GP practice lists.

Bibliographic information	Study type and evidence level	Aim of study	Number of patients and patient characteristics	Population characteristics	Outcome measures	Results and comments	Study summary	Reviewer comment
Feitel B;Margetson N;Chamas J;Lipman C; 1992 Feb 173	Study Type: Other Evidence Level:	Intervention: NA Comparison:	372	Homeless and runaway adolescents 55% male, median age 17 years (range 13–21), 48% white, 22%gay, lesbian or bisexual		47% reported physical abuse as a child		
Janus MD; Archambault FX; Brown SW; Welsh, LA; 1995 Canada 176	Survey Evidence level: 3		*n* = 187 runaway youth	median age 18 years, range 16 to 21 years	Reasons why young people had left home for the first time and the most recent time	Respondents were asked to rate a list of given reasons using a Likert-like scale of importance. Reasons for leaving home the first time were rated as somewhat important, important or very important were physical abuse (40%), sexual abuse (12%), being thrown out (38%), conflict with a male adult (57%), conflict with a female adult (57%) and feeling unloved (56%). 74% of the people surveyed had run away from home more than once; the important reasons for running the most recent time was physical abuse (33%), sexual abuse (9%), being thrown out (55%), conflict with a male adult (56%), conflict with a female adult (55%), feeling unloved (48%). Median age of onset of physical abuse was reported to be 12 years or younger.		
Tyler KA; Cauce AM; 2002 USA[175]	Survey		*n* = 372 homeless and runaway youth, median age 17 years, range 13 to 21 years			47% of responders (*n* = 326) had been physically abused before they left home and 29% of responders had been sexually abused. No difference between males and females in the rates of physical abuse, but more females than males had been sexually abused.		
Noell J; Rohde P; Seeley J; Ochs L;			*n* = 216 homeless female adolescents, mean age 17.7 years, range 13–		.	Sexual abuse (defined as prepubertal sexual contact with an older person) reported by 38% of study participants.		

Bibliographic information	Study type and evidence level	Aim of study	Number of patients and patient characteristics	Population characteristics	Outcome measures	Results and comments	Study summary	Reviewer comment
			20 years					
2001 USA 174						Mean age of the first incident of abuse was 6.7 years (sd 2.9 years) and mean age of becoming homeless was 14.3 years (sd 2.5 years)		

8 Parent–child interactions

No literature identified.

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ISBN 978-1-906985-15-8
9 781906 985158

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