



Deposited via The University of Sheffield.

White Rose Research Online URL for this paper:

<https://eprints.whiterose.ac.uk/id/eprint/127889/>

Version: Accepted Version

Article:

Harris, J.C. (2018) The mouth and maltreatment: safeguarding issues in child dental health. *Archives of Disease in Childhood*, 103 (8). pp. 722-729. ISSN: 0003-9888

<https://doi.org/10.1136/archdischild-2017-313173>

Reuse

Items deposited in White Rose Research Online are protected by copyright, with all rights reserved unless indicated otherwise. They may be downloaded and/or printed for private study, or other acts as permitted by national copyright laws. The publisher or other rights holders may allow further reproduction and re-use of the full text version. This is indicated by the licence information on the White Rose Research Online record for the item.

Takedown

If you consider content in White Rose Research Online to be in breach of UK law, please notify us by emailing eprints@whiterose.ac.uk including the URL of the record and the reason for the withdrawal request.

LEADING ARTICLE

The mouth and maltreatment: safeguarding issues in child dental health

Jenny C Harris^{1,2}

¹Charles Clifford Dental Services, Sheffield Teaching Hospitals NHS Foundation Trust

²School of Clinical Dentistry, University of Sheffield

jenny.harris@nhs.net

Keywords: child abuse, child neglect, oral injury, dentistry, dental caries

ABSTRACT

A wide range of issues in child dental health are relevant to safeguarding children. The mouth plays a key role in health and development but sometimes becomes the focus of abuse or neglect. Oral signs include dental caries, as a potential indicator of dental neglect, and oral injury. Dental professionals can contribute to safeguarding by recognising signs of maltreatment in children and young people receiving dental care, can assist with assessing children's needs when child protection concerns have been raised and can provide dental rehabilitation of dental neglect or oral injury. There is potential for greater interdisciplinary working to better use the combined skills of paediatricians and paediatric dentists.

From the first cry of a newborn baby, the first smile, first tooth, first word, the mouth plays a key role in children's health and development. It benefits from a whole team of dental health professionals dedicated to maintenance of its essential and lifelong functions in communication and feeding. Sometimes the mouth becomes the focus of abuse or neglect. In the context of safeguarding and promoting welfare, both dental *health* and dental *care* are recognised as notable aspects of children's needs.[1, 2] Nevertheless it is uncommon for paediatricians and dental professionals to work sufficiently closely together to ensure that oral health is fully included in multi-agency assessment and planning for children experiencing maltreatment.

The aim of this article is to outline the scope of safeguarding issues in child dental health. It will consider the interpretation of oral findings as indicators of maltreatment, discuss the arguably underused contribution that dental professionals

can make to child protection and will explore the potential for enhancing working together with paediatricians. The intention is to stimulate discussion and debate.

ORAL SIGNS OF CHILD MALTREATMENT

Examination of the mouth *'should be part of every child protection assessment that the paediatrician undertakes.'*[3] Anything less should be recognised as an incomplete examination of the child. However it is acknowledged that doctors may not recognise oral signs of maltreatment as readily as those affecting other parts of the body.[4, 5] If there is obvious dental decay or other pathology the child should be referred for a dental opinion.[3] Whilst dental decay (caries) as a potential indicator of neglect is the most obvious sign, signs of physical abuse, sexual abuse and conditions associated with emotional harm may all be observed in the oral cavity.

Dental caries and dental neglect

Dental caries is one of the commonest diseases of childhood both in the UK and worldwide. In the Child Dental Health Survey 2013, 31% of 5-year-olds in England, Wales and Northern Ireland had obvious decay experience in their primary teeth and 46% of 15-year-olds in their permanent teeth. Despite access to free NHS treatment, disease in 28% of 5-year-olds and 21% of 15-year-olds remained untreated, and was classed as severe or extensive in 13% and 15% respectively.[6] UK trends since the 1970s indicate a falling prevalence overall but this preventable disease is now concentrated in a minority of children,[7] being strongly associated with social deprivation. Higher than average levels of decay are also reported internationally in various vulnerable groups, including children maltreated, looked after, with a history of adverse childhood experiences and those of substance-using parents.[8-13]

Amongst these some suffer dental neglect, defined in the UK as *'the persistent failure to meet a child's basic oral health needs, likely to result in the serious impairment of a child's oral or general health or development'*.^[14]

The sequelae of untreated dental caries include acute or chronic pulpitis or periapical periodontitis (all of which can cause toothache of varying severity), dental abscess, facial swelling, discharging sinus (whether intra-oral or on the face) or spreading, and occasionally life-threatening, oro-facial infection.^[15] Children complain of stopping playing, difficulty eating and sleeping and of not going to school^[16] or being tired at school.^[17] Further adverse impacts include unsightly dental appearance, and, particularly in pre-school children, failure to thrive and reduced quality of life.^[18] If awaiting treatment, for example general anaesthesia for tooth extraction or restoration, repeated antibiotics may be needed as an interim measure. A now significant body of evidence shows that receiving appropriate dental treatment results in catch up growth and improved quality of life.^[18]

Dental caries has a complex aetiology. Caries risk status is determined by a large number of physical, biological, environmental, behavioural and lifestyle-related factors. These include high numbers of cariogenic bacteria, inadequate salivary flow, insufficient fluoride exposure, poor oral hygiene, frequent dietary sugar consumption, method of infant feeding and poverty.^[19] Parental influences are known to be important, particularly in younger children.^[20, 21] Night-time bottle-feeding and between-meal snacking are associated with increased decay rates. In contrast, lower rates of decay are observed in families with supervised tooth brushing habits and regular dental attendance, but some factors lie outside parental control. Therefore differentiating dental caries from dental neglect is difficult, not least because it lacks precise clinical findings or thresholds to aid the distinction.^[22]

Dental neglect may occur alone and act, when recognised, as a potentially valuable indicator prompting referral of a family to receive early help[23] or it may be one indicator of broader or more serious neglect requiring assessment and intervention.[24] Dentists, whether working in hospital, community or general practice settings, recognise dental neglect as a common problem[25, 26] which affects children of all ages.[27, 28]

So how can we distinguish between dental caries - the disease - and dental neglect - the sign of maltreatment? Failure to seek, or delay seeking, dental care (whether for caries or other significant oral pathology) with adverse dental consequences are highlighted as cause for concern,[4 ,14, 29] guidance now evidenced by the first systematic review.[22] In the UK, where NHS dental care is available free-of-charge for children, complaint of difficulty finding a dentist should never be accepted as an excuse without careful enquiry. Some simple diagnostic pointers to be used as a 'rule of thumb' are shown in Table 1. For further discussion, differential diagnoses and a glossary of dental terminology the reader is referred to an illustrated article written specifically for a medical audience.[30]

Intra-oral injuries

Accidental injuries to the mouth are very common, particularly in the first 10 years of life.[31] When considering injuries to the teeth alone, worldwide population-based surveys show that that one third of all preschool children suffer a traumatic dental injury involving the primary dentition. A quarter of all school children suffer trauma to the permanent dentition, rising to almost one third of adults, with variation both within and between countries.[31]

Repeated accidents in childhood may give cause for concern about neglect to provide adequate supervision but the type of maltreatment usually associated with intraoral injuries is physical abuse. The head and neck region is frequently the target of abuse, with injuries occurring in 59-76% of physically abused children.[32-37] Intraoral injuries are far less commonly observed, making up 2-7% of all recorded injuries in children assessed for physical abuse (see Table 2),[32-38] leading many to suggest it is likely that abusive intra-oral injuries often go undetected.[32, 34, 35, 39] Several factors are probably involved: bleeding stops quickly after minor oral soft tissue trauma, injury to the inside of the mouth remains hidden from view of the casual observer and the oral mucosa heals quickly, often without active treatment and usually without obvious scarring. Furthermore, the oral cavity is possibly not always fully explored or the examining doctor may lack training in how to conduct an optimal examination.[5, 40] Standard dental techniques use additional bright lighting, a mouth mirror and soft tissue retraction, record findings on an expanded mouth map[41] and dental chart, and use calibrated examiners in research. In a study in Brazil, where forensic dentists contributed to expert medical reports, a much higher prevalence of intraoral injury was recorded at 12.4% of confirmed cases of physical abuse (Table 1).[37]

Types of abusive injury to the soft tissues of the mouth include bruising, petechiae, lacerations, swelling and burns.[39] The commonest site is the lips, in one study accounting for 80.4% of 133 confirmed abusive intra-oral injuries,[37] but injury can occur anywhere in the mouth and no site is specific to abuse. Fractures and luxation injuries of the dental hard tissues (broken or loose teeth) accounted for 5.2% of intra-oral injuries in the same study: mainly fractured maxillary incisors,[37] also the commonest teeth to be injured accidentally.[31] Bizarre cases of intra-oral

injury have also been reported: examples being an adult bite to an infant's tongue and three siblings with missing teeth where forcible tooth extraction had been used as a punishment.[39]

Detection of 'sentinel injuries', defined as minor abusive injury occurring some time prior to serious abuse, importantly represent an opportunity to protect a child before abuse escalates. A case-control study found that 27.5% of 200 abused infants under 12-months-old had a previous sentinel injury, of which intraoral was the type of injury in 11%, second only to bruising in 80%.[42] In contrast oral injury in non-abused control infants was rare, leading to the recommendation that a history of any oral injury in a 'pre-cruising' child of this age evaluated for abuse should heighten the level of suspicion. The latest evidence from a large multi-centre study found high rates of occult injuries in children under 10 with oral injury evaluated for abuse with risk persisting beyond infancy.[38]

A torn upper labial frenum has attracted particular attention in the literature because, although a trivial injury in itself, it has been observed in association with high level of concern or severe or fatal abuse, usually in children aged under 5.[38, 43, 44] Other than a direct blow to the mouth, proposed mechanisms of abusive injury, such as forced feeding, are unsubstantiated by evidence. Frenal tears also result from a range of accidental causes but the supporting literature is sparse.[39] Neither is there any evidence regarding children presenting outside of hospital settings: a gap in the literature. Of note, interpretation of upper labial frenum injury must take account of morphological variation both between individuals and as the dentition matures; its alveolar insertion continues to migrate away from the gingival margin into adolescence.[45]

As with any injury, an oral injury must never be interpreted in isolation but must always be assessed in the context of medical and social history, developmental stage, explanation given, full clinical examination and relevant investigations.[39] If then still unexplained it must prompt a full investigation to exclude the presence of other occult injuries. Healthcare providers should be cautious of blanket acceptance of normal accidental events in ambulatory children as explanation and must refer if concerned.[38]

Oral signs of sexual abuse

Oral signs of sexual abuse, whether as trauma or sexually transmitted infection, are said to be rarely obvious on examination.[4] Specific information about examining for oral manifestations of sexual abuse and interpreting any findings is conspicuously absent from authoritative guidance documents,[3, 29] the primary focus being on ano-genital signs and infections.[46]

Published evidence is mainly in the form of individual case reports. Unexplained injury or petechiae at the junction of the hard and soft palate may be evidence of forced oral sex.[4] Reported in less than 1% of sexually abused children,[46] the characteristic oral lesions of syphilis are chancre in primary syphilis, mucous patches or snail-track ulcers in secondary syphilis and leukoplakia or gumma in tertiary syphilis.[47] Oral gonorrhoea may manifest as pharyngitis or gingivitis but is usually asymptomatic.[47] Oral findings are common manifestations of HIV infection in children, particularly oral candidosis, herpes simplex virus infection, linear gingival erythema, parotid enlargement and recurrent aphthous ulcers.[48] In pre-pubertal children where there is no clear evidence of vertical transmission these infections would be alerting features to suspect sexual abuse.[29]

The significance of oral warts in relation to sexual abuse is unclear.[4] Adult women survivors of childhood sexual abuse self-report higher prevalence of a range of dental conditions, including bruxism (tooth clenching and grinding) and temporomandibular dysfunction.[49]

When sexual abuse is suspected, children should always be promptly referred to specialist centres with the expertise to conduct forensic examination according to accepted evidence-based standards including, when appropriate, mouth swabs for semen and DNA.[3, 46]

Other oral and dental signs of maltreatment

Certain oral conditions are recognised as potential alerting features of emotional distress in children and young people, and deserve brief mention because maltreatment should be included in the differential diagnosis of underlying causes. Examples are: oral ulceration or 'gingivitis artefacta' due to self-harm; extremely poor oral hygiene in self-neglect; symptoms of temporomandibular dysfunction, tooth grinding or clenching; and perhaps orthodontic (tooth position) abnormalities exacerbated by persistent digit sucking (a habit of concern only if persisting well beyond the age considered developmentally appropriate).

DENTISTS AS CONTRIBUTORS TO SAFEGUARDING CHILDREN

The role of dental professionals as contributors to safeguarding children falls into three areas:

- recognition and response to signs of maltreatment in children and young people receiving dental care

- contribution to diagnosis, assessment of children's needs and planning when child protection concerns have been raised
- dental rehabilitation of neglect or oral injury.

Recognising and responding to signs of maltreatment

Dental professionals are generally considered to be in a good position to recognise signs of maltreatment and to safeguard and promote children's welfare. Dental treatment is carried out in close personal contact and takes time. Injuries to the head and neck, and to other parts of the body visible in a clothed child, are readily observed. As encouraged in the current British Society of Paediatric Dentistry (BSPD) 'Dental Check by One' (DCby1) campaign, regular dental prevention visits are advised, starting by a child's first birthday.[50-52] This means that otherwise healthy children who have no need for appointments with other healthcare providers may nonetheless be well-known to their dentist. General dental practitioners (GDPs) often treat several members of a family, so may be aware of information relevant to parenting capacity, such as parental chronic illness or mental health condition. Furthermore, the visit provides an opportunity to observe interaction between children and parents: usually a caring parent comforting an anxious child but occasionally, when children are unable to cooperate with treatment due to anxiety or other reason, a frustrated parent provoked such that emotional or physical abuse is witnessed in the dental surgery. Occasionally a child discloses maltreatment to a trusted dental professional.

Children with complex dental problems and those with medical, developmental or behavioural needs may be under the care of specialist or consultant paediatric dentists, who in the UK are mainly based in hospitals or the

community dental service. Children with disabilities are more likely than their non-disabled peers to experience maltreatment, especially neglect,[53] and are recommended to have more frequent dental care,[50] giving particular opportunity to recognise a range of safeguarding concerns as demonstrated in Table 3.

In 2005, 67% of UK paediatric dentists self-reported previously suspecting maltreatment of a child in their care,[54] almost double that reported by GPs[55] and the highest recorded in a summary of similar surveys internationally between 1998 and 2010.[56] Those with previous child protection training were more likely to have suspected maltreatment (71% v 47%) and made a referral to social services (33% v 8%).[54] In relation to dental neglect, which 81% reported seeing at least weekly, multiagency communication was more commonly undertaken by those with training.[25] In Sweden a study of reasons for 147 dental referrals to social care showed that neglect and missed appointments were the underlying concerns in 145 cases.[28] Missed healthcare appointments are consistently a common finding in Serious Case Reviews (SCRs)[57] but in dentistry, as in other fields of healthcare, only recently are they being fully considered from the perspective of safeguarding the child.[58, 59]

All dental professionals have a responsibility to refer children to social care when they have concerns about maltreatment[60] yet lack of knowledge or confidence, barriers to action and shortcomings in practice are regrettably common.[5, 22, 55, 56, 61] Even amongst paediatric dentists a gap is evident between 67% ever having recognised and 29% ever having referred concerns.[54] These gaps reflect dentists' dilemmas about their contradictory roles of supporting or reporting families, differentiating compromised wellbeing from significant maltreatment and perceived shortcomings of the child protection system.[62] Lessons learned in a number of

SCRs indicate that harm might have been avoided had dental professionals raised concerns earlier.

An insightful qualitative study in the North East of England explored inhibitors and facilitators to dentists' involvement in child protection.[61] Isolation of dentistry in relation to other healthcare providers was identified as a major barrier which, despite a revolution in communication and information technology, remains to this day. In other respects significant advances have been made, notably with raising dentists' awareness. Whereas the UK and much of Europe previously lagged behind the USA, training and guidance is now readily available. A Department of Health funded educational resource, *Child protection and the dental team*, [63] was distributed to every NHS dental practice in England and Scotland in 2006 and updated online in 2013. Evidence regarding the profession's learning needs [25, 54, 61] was used in developing its key messages. Tackling the greatest barriers to referral, it reassured dentists that, firstly, they should refer concerns rather than wait to be certain maltreatment had occurred and, secondly, they would never be solely responsible for making the diagnosis but could rely on the advice and support of experienced child protection professionals. Written educational materials typically only have a small beneficial effect yet reported usage and change in professional practice was unusually high, [55, 64] perhaps reflecting dentists' hunger for advice; 93% of those who remembered receiving the document had used it, with many attributing improved knowledge, confidence and actions to a direct result of following its guidance. [64]

Whilst professional and statutory guidance [63, 65] makes it clear that frontline health professionals with concerns should themselves make direct referrals to social care, child protection paediatricians may yet receive requests from dentists

for advice: for assistance with interpreting the significance of observed injuries, the dental findings in relation to a child's general welfare or judging the level of harm. Case examples and opportunities to pool expertise are detailed in Table 4.

With effective local leadership and stakeholder involvement, improvements in information sharing can be achieved. In a recent published example of good practice, a Named Doctor for Safeguarding Children led developments related to a general anaesthetic dental extraction service.[66] Better integration of dentistry into patient administration and record keeping systems would be a further step forward. Simple changes such as adding a field to hospital electronic records for the GDP's address would enable such basics as exchanging copies of relevant clinical correspondence.

Contributing to diagnosis and assessment of children's needs

When invited to do so, a child's usual GDP or paediatric dentist can contribute a report for case conference or care proceedings, including the dental history, any previous concerns, any observed strengths and an outline of the child's dental needs. Inexperienced dentists may require assistance to contribute. Such input is usually valued by other professionals (see brief case examples in Table 4, Role 2) but at the present time in the UK is rarely requested.

Several authors cited in Table 1 concluded that specialist paediatric dentists should *routinely* examine all children being assessed for suspected physical abuse. It is anticipated that this would both increase detection of abusive oral injuries and also alert paediatricians to oral diseases and developmental conditions that might be mistaken for maltreatment. In Glasgow since 2009 oral assessments by a dentist have been successfully integrated into comprehensive medical assessment pathways for children with varied safeguarding concerns, mainly neglect.[67] This generates a

standardised dental appendix to the paediatrician's medical report for a child protection case conference, including an oral care plan and targets agreed with parents. Case examples illustrate the potential benefits of this innovation.[67] Long term evaluation, particularly if reporting additional diagnostic yield and improved outcomes for children, could provide compelling evidence for wider adoption of this practice.

One circumstance when paediatricians must always seek advice is in relation to bite marks. An abusive human bite is unique among physical injuries since its pattern can potentially identify or exclude a specific perpetrator.[68] Occasionally certainty is enhanced by DNA retrieval. Early referral of suspicious injuries to forensic dentists (forensic odontologists) is essential.[69]

Rehabilitation of oral injury or neglect

Maltreated children and young people have a right to enjoy *'the highest attainable standard of health and to facilities for the treatment of illness and rehabilitation of health'*[70] yet are twice as likely to have poor self-perceived oral health than their non-abused peers, increased to 23-fold for those with multiple forms of abuse.[11] They should be supported to receive necessary dental care.

Treatment of dental caries improves quality of life.[18, 71] Evidence-based preventive treatments such as fluoride varnish and fissure sealants[50] are free-of-charge on the NHS, simple to provide and easily accepted by children, with the benefits of disease reduction lasting to old age. Advice on smoking, alcohol and healthy eating is given alongside dental recommendations, using a common risk factor approach, with potential for wider health gains and for empowering the recovering child.

Restoration of traumatic dental injuries (fractured and loosened teeth) is essential because of the importance of front teeth in facial appearance. Poor dental appearance affects quality of life,[72] exposes children to adverse social judgements by their peers[73] and affects life opportunities. Successful treatment often requires both careful emergency management and long-term specialist treatment, with prognosis strongly influenced by promptness and quality of care. For those with malocclusion, orthodontic treatment (straightening teeth with braces) in adolescence leads to improvement in emotional and social wellbeing.[74] As treatment takes many months, young people require support to maintain scrupulous oral hygiene, motivation and attendance which are essential to treatment success, a particular challenge for those without parental support or a stable home life, for example if moving between residential placements.

Past maltreatment may affect a child's ability to cope with dental treatment, necessitating additional anxiety management with behavioural techniques or sedation. In particular, sexual abuse can cause long-lasting dental fear extending into adulthood[75] but this can be successfully managed by access to appropriately adjusted or special care dental services.[76]

Regrettably inclusion of a requirement to address dental needs is commonly overlooked in child protection plans so the opportunity to intervene while the family is receiving social services support and monitoring is missed. All families should be asked if they have a dentist and, if not, paediatricians must not hesitate to refer them. It is possible to achieve high levels of subsequent attendance, 81% in one study.[9, 77] Development of local interagency networks facilitates referral and ensures that children receive care from appropriately skilled staff, whether GPs or specialists, at a convenient location. Looked after children, for example, have higher treatment

needs and poorer access to dental health services than the general population[78] and may benefit from designated care pathways.[79]

POOLING OUR EXPERTISE

This review shows that safeguarding in child dental health has a much wider scope than is often realised - recognising, responding and rehabilitating. To make good decisions for maltreated children and young people, we all need the best possible research evidence, training and leadership. There is great potential to develop new ways of interdisciplinary working that make better use of the combined skills of paediatricians and paediatric dentists.

Some important research questions remain to be addressed, falling through the gap between medicine and dentistry. Clinical implications for practising clinicians are sometimes unclear or not generalizable between settings. Strategic direction is needed to build strong interdisciplinary collaborations that pool our expertise.

The UK dental profession has moved a long way in the past decade and its specialist and professional societies have actively encouraged educational developments.[14, 63] Medicine and dentistry must learn from each other by reciprocal input to training at undergraduate to specialist level, fostering an understanding of each other's roles and making opportunities for paediatric dentists and doctors to train side-by-side.[80]

Unfortunately dentistry in the UK has no statutory requirement for safeguarding clinical leadership, falling under the already stretched remit of Designated and Named Doctors. This means that current progress is largely reliant on the goodwill of enthusiasts. It is now time to move beyond these *ad hoc*

arrangements to commissioned dental leadership working to ensure that our two disciplines collaborate to better meet the needs of vulnerable children and young people.

REFERENCES

1. Department of Health, Home Office, Department for Education and Employment. *Working Together to Safeguard Children*. London: The Stationery Office, 1999. p105, p106.
2. Jenny C, American Academy of Pediatrics Committee on Child Abuse and Neglect. Recognizing and Responding to Medical Neglect. *Pediatrics* 2007;120:1385-9.
3. Royal College of Paediatrics and Child Health. *Child protection companion*. 2nd edn. London: Royal College of Paediatrics and Child Health 2013:90,104-105.
4. Fisher-Owens SA, Lukefahr JL, Tate AR, American Academy of Pediatrics, American Academy of Pediatric Dentistry. Oral and dental aspects of child abuse and neglect. *Pediatrics* 2017;140:e20171487. Published Online 31 July 2017. doi:10.1542/peds.2017-1487
5. Olive S, Tuthill D, Hingston EJ, et al. Do you see what I see? *Br Dent J* 2016;220:451-7.
6. Health and Social Care Information Centre. Children's dental health survey 2013. Executive summary: England, Wales and Northern Ireland.

2015. <http://digital.nhs.uk/catalogue/PUB17137> (accessed 20 October 2017).
7. Murray JJ, Vernazza CR, Holmes RD. Forty years of national surveys: An overview of children's dental health from 1973-2013. *Br Dent J* 2015;219:281-5.
 8. Valencia-Rojas N, Lawrence HP, Goodman D. Prevalence of early childhood caries in a population of children with history of maltreatment. *J Public Health Dent* 2008;68:94-101.
 9. Keene EJ, Skelton R, Day PF, et al. The dental health of children subject to a child protection plan. *Int J Paediatr Dent* 2015;25:428-35.
 10. Duda JG, Biss SP, Bertoli FM, et al. Oral health status in victims of child abuse: a case-control study. *Int J Paediatr Dent* 2017;27:210-6.
 11. Kvist T, Annerback EM, Sahlqvist L, et al. Association between adolescents' self-perceived oral health and self-reported experiences of abuse. *Eur J Oral Sci* 2013;121:594-9.
 12. Bright MA, Alford SM, Hinojosa MS, et al. Adverse childhood experiences and dental health in children and adolescents. *Community Dent Oral Epidemiol.* 2015;43:193-9.
 13. Kivistö K, Alapulli H, Tupola S, et al. Dental health of young children prenatally exposed to buprenorphine. A concern of child neglect? *Eur Arch Paediatr Dent* 2014;15:197-202.

14. Harris JC, Balmer RC, Sidebotham PD. British Society of Paediatric Dentistry: a policy document on dental neglect in children. *Int J Paediatr Dent* Published Online: 14 May 2009. doi:10.1111/j.1365-263X.2009.00996.x
15. Otto M. How can a child die of toothache in the US? *The Guardian*, 13 June 2017. Extracted from: *Teeth: the story of beauty, inequality and the struggle for oral health in America*. New York: The New Press 2016.
16. Shepherd MA, Nadanovsky P, Sheiham A. The prevalence and impact of dental pain in 8-year-old school children in Harrow, England. *Br Dent J*. 1999;187:38-41.
17. Gilchrist F, Marshman Z, Deery C, et al. The impact of dental caries on children and young people: what they have to say? *Int J Paed Dent* 2015;25:327-38.
18. Sheiham A. Dental caries affects body weight, growth and quality of life in pre-school children. *Br Dent J* 2006;201:625-6.
19. Selwitz RH, Ismail AI, Pitts NB. Dental caries. *Lancet* 2007;369:51-59.
20. Hooley M, Skouteris H, Boganin C, et al. Parental influence and the development of dental caries in children aged 0–6 years: A systematic review of the literature. *J Dent* 2012;40:873–885.
21. Seow WK. Environmental, maternal, and child factors which contribute to early childhood caries: a unifying conceptual model. *Int J Paediatr Dent* 2012;22:157-68.
22. Bhatia SK, Maguire SA, Chadwick BL, et al. Characteristics of child dental neglect: a systematic review. *J Dent* 2014;42:229-39.
23. Brandon M, Glaser D, Maguire S, et al. Missed opportunities: indicators of

neglect – what is ignored, why, and what can be done? Research report.
Department for Education, 2014.

24. Bradbury-Jones C, Innes N, Evans D, et al. Dental neglect as a marker of broader neglect: a qualitative investigation of public health nurses' assessments of oral health in pre-school children. *BMC Public Health* 2013;13:370. doi:10.1186/1471-2458-13-370
25. Harris JC, Elcock C, Sidebotham PD, et al. Safeguarding children in dentistry: 2. Do paediatric dentists neglect child dental neglect? *Br Dent J* 2009;206:465-70.
26. Al-Dabaan R, Newton JT, Asimakopoulou K. Knowledge, attitudes, and experience of dentists living in Saudi Arabia toward child abuse and neglect. *Saudi Dent J* 2014;26:79–87.
27. Sarri G, Evans P, Stansfeld S, et al. A school-based epidemiological study of dental neglect among adolescents in a deprived area of the UK. *Br Dent J* 2012;213:E17. doi:10.1038/sj.bdj.2012.1042
28. Kvist T, Cocozza M, Annerbäck EM, et al. Child maltreatment – prevalence and characteristics of mandatory reports from dental professionals to the social services. *Int J Paed Dent* 2017;27:3-10.
29. National Collaborating Centre for Women's and Children's Health. National Institute for Health and Clinical Excellence (NICE) clinical guideline 89: When to suspect child maltreatment. 2009, updated October 2017.
<http://guidance.nice.org.uk/CG89> (accessed 20 October 2017).
30. Harris J. Dental neglect in children. *Paediatr Child Health* 2012;22:476-82.

(Updated: Harris J, Whittington A. *Paediatr Child Health* 2016;26:478-84.)

31. Glendor U. Epidemiology of traumatic dental injuries – a 12 year review of the literature. *Dent Traumatol* 2008;24:603–11.
32. Becker DB, Needleman HL, Kotelchuck M. Child abuse and dentistry: orofacial trauma and its recognition by dentists. *J Am Dent Assoc* 1978;97:24-28.
Erratum:97:447.
33. da Fonseca M, Feigal R, ten Bensel R. Dental aspects of 1248 cases of child maltreatment on file at a major county hospital. *Pediatr Dent* 1992;14:152-7.
34. Jessee SA. Physical manifestations of child abuse to the head, face and mouth: a hospital survey. *ASDC J Dent Child* 1995;62:245-9.
35. Naidoo S. A profile of the oro-facial injuries in child physical abuse at a children's hospital. *Child Abuse Negl* 2000;24:521-534.
36. Cairns AM, Mok JY, Welbury RR. Injuries to the head, face, mouth and neck in physically abused children in a community setting. *Int J Paediatr Dent* 2005;15:310-8.
37. Cavalcanti AL. Prevalence and characteristics of injuries to the head and orofacial region in physically abused children and adolescents – a retrospective study in a city of the Northeast of Brazil. *Dent Traumatol* 2010;26:149–153.
38. Dorfman MV, Metz JB, Feldman KW, et al. Oral injuries and occult harm in children evaluated for abuse. *Arch Dis Child* 2017;(in press).
39. Royal College of Paediatrics and Child Health. Child Protection Evidence. Systematic review on oral injuries. 2017, last updated June 2014.

<https://www.rcpch.ac.uk/improving-child-health/child-protection/child-protection-evidence/oral-injuries/child-protection-evidence> (accessed 20 October 2017).

40. Kalkani M, Ashley P. The role of paediatricians in oral health of preschool children in the United Kingdom: a national survey of paediatric postgraduate specialty trainees. *Eur Arch Paediatr Dent* 2013;14:319–24.
41. Mouth map. In: Speight P, Warnakulasuriya S, Ogden G, eds. Early detection and prevention of oral cancer: a management strategy for dental practice. Occasional paper. British Dental Association, 2010:19,36.
42. Sheets L K, Leach M E, Koszewski I J, et al. Sentinel injuries in infants evaluated for child physical abuse. *Pediatrics* 2013;131:701–7.
43. Thackeray JD. Frenum tears and abusive head injury. A cautionary tale. *Pediatr Emerg Care* 2007;23:735-7.
44. Lopez MR, Abd-Allah S, Deming DD, et al. Oral, jaw, and neck injury in infants and children from abusive trauma or intubation? *Pediatr Emerg Care* 2014;30:305-10.
45. Boutsis EA, Tatakis DN. Maxillary labial frenum attachment in children. *Int J Paed Dent* 2011;21:284-8.
46. Royal College of Paediatrics and Child Health, American Academy of Pediatrics, Royal College of Physicians of London, Faculty of Forensic and Legal Medicine. *Physical signs of child sexual abuse: an evidence-based review and guidance for best practice*. London: Royal College of Paediatrics and Child Health 2015.

47. Scully C. *Oral and maxillofacial medicine. The basis of diagnosis and treatment.* 3rd edn. Edinburgh: Churchill Livingstone Elsevier 2013.
48. Ramos-Gomez FJ, Folayan MO. Oral health considerations in HIV-infected children. *Curr HIV/AIDS Rep.* 2013;10:283-93.
49. Hays KF, Stanley SF. The impact of childhood sexual abuse on women's dental experiences. *J Child Sex Abus* 1996;5:65-74.
50. Public Health England. Delivering better oral health: an evidence-based toolkit for prevention. 3rd edn, 2014 (updated March 2017). Publication no: 2016224. pp6-8. www.gov.uk/government/publications/delivering-better-oral-health-an-evidence-based-toolkit-for-prevention
51. Royal College of Paediatrics and Child Health. Chapter 3. Early years. In: *State of Child Health Report 2017.* pp41-52. www.rcpch.ac.uk/state-of-child-health (accessed 20 October 2017).
52. Murphy J, Moore R. Maximising paediatricians' roles in improving children's oral health: lessons from Leicester. *Arch Dis Child* 2018;103:181-185. doi:10.1136/archdischild-2017-312726
53. Stalker K, McArthur K. Child abuse, child protection and disabled children: a review of recent research. *Child Abuse Rev* 2012;21:24-40.
54. Harris JC, Elcock C, Sidebotham PD, et al. Safeguarding children in dentistry: 1. Child protection training, experience and practice of dental professionals with an interest in paediatric dentistry. *Br Dent J* 2009;206:409-14.
55. Harris C, Welbury R, Cairns AM. The Scottish dental practitioner's role in managing child abuse and neglect. *Br Dent J* 2013;214:E24.

56. Laud A, Gizani S, Maragkou S, et al. Child protection training, experience, and personal views of dentists in the prefecture of Attica, Greece. *Int J Paed Dent* 2013;23:64-71.
57. Sidebotham P, Brandon M, Bailey S, et al. 2016. Pathways to harm, pathways to protection: a triennial analysis of serious case reviews 2011 to 2014 (Vol. DFE-RR545). London: Department for Education.
58. Powell C, Appleton JV. Children and young people's missed healthcare appointments: reconceptualising 'Did Not Attend' to 'Was Not Brought' a review of the evidence for practice. *J Res Nurs* 2012;17:181-92.
59. Roe MFE, Appleton JV, Powell C. Why was this child not brought? *Arch Dis Child* 2015;100:511-2.
60. General Dental Council. *Standards: Standards for the Dental Team*. London: General Dental Council, 2013. www.gdc-uk.org
61. Welbury RR, MacAskill SG, Murphy JM, et al. General dental practitioners' perception of their role within child protection: a qualitative study. *Eur J Paediatr Dent* 2003;4:89-95.
62. Kvist T, Wickström A, Miglis I, et al. The dilemma of reporting suspicions of child maltreatment in pediatric dentistry. *Eur J Oral Sci* 2014;122:332-8.
63. Harris J, Sidebotham P, Welbury R, et al. *Child Protection and the Dental Team: an introduction to safeguarding children in dental practice*. Sheffield: Committee of Postgraduate Dental Deans and Directors (COPDEND)UK, 2006 (updated 2013). www.cpdent.org.uk www.bda.org/childprotection (accessed 20 October 2017).
64. Harris JC, Bradbury J, Porritt J, et al. NHS dental professionals' evaluation of a

- child protection learning resource. *Br Dent J* 2011;210:75–9.
65. HM Government. *Working Together to Safeguard Children. A guide to inter-agency working to safeguard and promote the welfare of children*. London: Department for Education 2015. Ref:DFE-00130-2015
66. Jameson R. Working together to share the dental neglect. *Br Dent J* 2016;221:755-6.
67. Park CM, Welbury R, Herbison J, et al. Establishing comprehensive oral assessments for children with safeguarding concerns. *Br Dent J* 2015; 219;231-6.
68. Royal College of Paediatrics and Child Health. Child Protection Evidence. Systematic review on bites. 2017, last updated June 2014.
<https://www.rcpch.ac.uk/improving-child-health/child-protection/child-protection-evidence/bites/child-protection-evidence-bi> (accessed 20 January 2018).
69. British Association for Forensic Odontology. Forensic odontologist list. 2018.
<https://www.bafo.org.uk/forensic-odontologist-list/> (accessed 20 January 2018).
70. Office of the High Commissioner for Human Rights. *United Nations Convention on the Rights of the Child*. Article 24. Geneva, Switzerland. 1989.
www.ohchr.org/EN/ProfessionalInterest/Pages/CRC.aspx (accessed 20 October 2017).
71. Knapp R, Gilchrist F, Rodd HD, et al. Change in children's oral health-related quality of life following dental treatment under general anaesthesia for the

- management of dental caries: a systematic review. *Int J Paediatr Dent* 2017;27:302-12.
72. Rodd HD, Marshman Z, Porritt J, et al. Oral health-related quality of life of children in relation to dental appearance and educational transition. *Br Dent J* 2011;211:E4. doi: 10.1038/sj.bdj.2011.574.
73. Rodd HD, Barker C, Baker SR, et al. Social judgements made by children in relation to visible incisor trauma. *Dent Traumatol* 2010;26:2-8.
74. Javidi H, Vettore M, Benson P. Does orthodontic treatment before the age of 18 years improve oral health-related quality of life? A systematic review and meta-analysis. *Am J Orthod Dentofacial Orthop* 2017;151:644-55.
75. Willumsen T. Dental fear in sexually abused women. *Eur J Oral Sci* 2001;109:291-6.
76. Dougall A, Fiske J. Access to special care dentistry, part 6. Special care dentistry services for young people. *Br Dent J* 2008;205:235-49.
77. Keene E. Research note: Preventing dental neglect. In: Skelton R (Ed). *Tackling Child Neglect: Research, policy and evidence-based practice*. London: Jessica Kingsley Publishers 2016.
78. McMahon AD, Elliott L, Macpherson LMD, et al. Inequalities in the dental health needs and access to dental services amongst looked after children in Scotland : a population data-linkage study. *Arch Dis Child* 2018;103:39-43. doi:10.1136/archdischild-2016-312389
79. Williams A, Mackintosh J, Bateman B, et al. The development of a designated dental pathway for looked after children. *Br Dent J* 2014;216:E6. doi:10.1038/sj.bdj.2014.51

80. NSPCC, Royal College of Paediatrics and Child Health, British Society of Paediatric Dentistry, Advanced Life Support Group. CPRR Child Protection: Recognition and Response course factsheet.

www.rcpch.ac.uk/system/files/protected/education/CFactsheet.pdf

(accessed 20 October 17).

81. Harris JC, Ford A, Smith M, Barnes P. A reassuring experience. *Br Dent J* 2006;201:189.

Table 1. Diagnosing dental neglect: a ‘rule of thumb’

Features of particular concern
1. Obvious dental disease: untreated dental disease, particularly that which is obvious to a layperson or non-dental health professional.
2. Significant impact on the child: evidence that dental disease has resulted in a significant impact on the child.
3. Failure to obtain dental care: parents or carers have access to but persistently fail to obtain treatment for the child.

Excerpt from table first published in Harris (2012)[30] used with permission of Elsevier

Table 2. Intra-oral injury in child maltreatment

Author	Setting	Years of study	Number of children	Type/s of abuse	Confirmation of abuse	Proportion of children with injury to head, neck, face & mouth (HNFMM)	Intra-oral injuries as a proportion of all injuries (or cases)	Children examined by dentist
Becker et al[32]	Massachusetts, USA	1970-75	260	Physical	Diagnosed	65%	6% n=14	No
da Fonseca et al[33]	Minnesota, USA	1985-89	1248	All types	Suspected	37.5%	2% n=42	Not stated
			502 in subset	Physical	Suspected	75.5%		Yes, general practice or oral surgery resident available, plus 24hr paediatric dentistry resident backup
Jessec[34]	Texas, USA	1993-94	266	Physical	Suspected	66.2%	2.1% n=11 (2.6% of cases)	No
Naidoo[35]	South Africa	1992-96	300	Physical with orofacial trauma	Proven	Not applicable (all had HNFMM injuries)	7% n=41	Not stated
Cairns et al[36]	Scotland, UK	1998-2003	230	Physical	Suspected	59%	(0.5% of cases) (n=1 case)	Yes, 24-hr on-call maxillofacial registrar available
								No
								Implied that specialist or consultant paediatric dentist was available
Cavalcanti[37]	Joao Pessoa, Brazil	2003-06	1070	Physical	Confirmed	56.3%	(12.4% of cases) (n=133 cases)	Yes
Dorfman et al[38]	Multi-centre (20 sites), USA	2010-11	2890	Physical	Level of concern scale 1 to 7 (definitely not to definitely inflicted)	Not stated	(3.3% of cases) (n=96 cases)	Forensic dentist contributed to expert medical reports
								Not routinely requested

Table 3. Ten selected examples of safeguarding concerns observed in specialist paediatric dental practice

Case*	Category of maltreatment suspected	Scenario and identified concerns
1.	Neglect	11-year-old boy with autism; delay seeking treatment for severe toothache affecting eating, sleeping and school participation; missed appointment to assess need for dental extractions under general anaesthesia; dental neglect [#]
2.	Neglect	Siblings aged 7 and 6; missed clinic appointments for routine dental care; parental mental health problems; repeated toothache and acute dental infections; dental neglect [#]
3.	Physical abuse	6-year-old boy with neurodisability; fractured front tooth noted by school; had not sought dental care; no explanation for an injury which would have required considerable force
4.	Physical abuse	4-year-old; perplexing presentation; mismatch between reported symptoms and observed oral condition; inappropriate requests for prescription medication; suspected fabricated or induced illness
5.	Emotional abuse	13-year-old girl; concerning parent-child interaction observed at dental appointments; mother blaming child for dental anxiety, making derogatory remarks about child's appearance and scapegoating in comparison to siblings
6.	Emotional abuse	14-year-old boy; recent behavioural change; child and mother disclosed witnessing violent incident in the home and father self-harming
7.	Emotional neglect	7-year-old girl; concerning parent-child interaction observed at dental appointments; parent unresponsive and seemingly indifferent to child's need for comforting and encouragement
8.	Other	10-year-old boy; repeated dental injuries; credible accidental explanations; delayed presentation for treatment but attributed to dental anxiety; mother smelled strongly of alcohol[81]
9.	Other	10-year-old with complex needs missing from education; moved into the area without registering for school; not accessing any other healthcare provision
10.	Other	12-year-old girl; mother unaware of child's daily toothbrushing routine; child lives at a friend's house because mother works nights; undisclosed private fostering arrangement

* Selected from the author's caseload in community clinic (Case 1-9) or dental hospital settings (Case 10) in the period 2003-2016.

[#] Similar scenarios to Cases 1 & 2 are frequently encountered.

Table 4. Paediatric dentists and paediatricians pooling expertise to safeguard children: case examples and opportunities

Role of dentist	Actions undertaken by dentist - case examples	Potential consequences for the child if not done	Role of paediatrician
<p>1. Recognising and responding to signs of maltreatment or other vulnerability concerns</p>	<p>(a) Case 3, Table 3. Discussed concerns with parent and informed of intention to share information; same day appointment given to restore fractured tooth; immediate child protection referral to children's social services regarding suspected physical abuse</p> <p>(b) Case 10, Table 3. Shared information with school nurse via paediatric liaison nurse; school lateness had also been noted; further action taken by school nursing with children's social services to ensure safe and effective care arrangements in place</p>	<ul style="list-style-type: none"> Missed opportunity to support the family at an early stage Signs of maltreatment not identified until a crisis develops Missed opportunity to intervene before the child is seriously harmed or dies, identified later at Serious Case Review 	<ul style="list-style-type: none"> Offer telephone advice for dentists on how to interpret findings Make this offer known and be approachable Encourage dentists to escalate their concerns if met with an inadequate or inconsistent response from social services
<p>2. Contributing to diagnosis and assessment of children's needs when maltreatment is suspected</p>	<p>(a) Report for child protection case conference provided in response to a request from social services regarding 2 siblings: <i>Facts:</i> Sibling A: 9-year-old with autism spectrum disorder (ASD) - dental records indicated limited engagement with public health programmes; untreated decayed primary tooth present at school screening in two successive years; no response to letter offering treatment. <i>Sibling B:</i> 14-year-old - no record of any previous contact with our service. <i>Opinion:</i> very limited evidence but possible emerging pattern of neglect of Sibling A; advised to check if seeing any other dentist/dental service (i.e. GDP or hospital); advised of need for twice daily supervised toothbrushing, limited frequency of dietary sugar, attendance for required dental care. <i>Outcome:</i> both children were placed on a Child Protection Plan.</p> <p>(b) Statement for the court provided in relation to care proceedings: <i>Facts:</i> 10-year-old child with congenital heart defect and ASD; referred by community paediatrician aged 2½; seen since on 15 occasions accompanied by father; recent CPP (category: emotional abuse). <i>Opinion:</i> (i) strengths in relation to regular attendance for preventive care, good parental motivation to support his oral health and (ii) recent concerns related to observations of increasingly anxious and avoidant behaviour including violence and aggression to dental staff. <i>Outcome:</i> interim care order</p>	<ul style="list-style-type: none"> Relevant dental findings (concerns or strengths, or a combination of both) not made available resulting in under- or overestimate of extent of neglect Incomplete health assessment Missed opportunity to include dental treatment as a requirement of a child protection plan, and to monitor progress 	<ul style="list-style-type: none"> Alert social care if child protection medical assessment does not include dental assessment Prompt social services to request a report from child's dentist or make direct referral Set up new referral pathways, routinely requesting specialist paediatric dentistry dental examination or opinion
<p>3. Rehabilitation of dental and oral effects of maltreatment</p>	<p>(a) 10-year-old boy (Case 8, Table 3): dental treatment completed under local analgesia over several visits; fractured teeth restored with adhesive composite resin restorations; carious primary teeth restored; permanent molars fissure sealed; advice on caries prevention given; safeguarding actions completed as previously published[81]</p> <p>(b) Recently adopted siblings, previous CPP (category: neglect): 7-year-old in mixed dentition with multiple carious primary teeth, some adequately restored, others with chronic infection and unrestored; 5-year-old with caries free primary dentition; advice given on caries prevention (diet, toothbrushing, fluoride); older sibling commenced acclimatisation prior to fillings and extractions; treatment ongoing</p>	<ul style="list-style-type: none"> Child suffers impact of prolonged untreated dental disease or injury e.g. pain, infection, tooth loss, poor dental appearance Preventable adverse impacts of maltreatment persist into adulthood 	<ul style="list-style-type: none"> Include dental rehabilitation as a requirement in: <ul style="list-style-type: none"> child protection plans health plans for looked after children who have been maltreated Signpost families to seek regular dental care Consider copying-in dentist to clinic letters regarding significant health issues Support local innovation in dental care pathways for vulnerable groups