Keywords Oral health/Assessment/Dental care/Paediatric nursing

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In this article...

- A guide to the most common oral health problems
- How to carry out an oral health assessment in children
- Resources that can help with oral health assessment and management

The nurse's role in oral assessment and care of children in hospital

Key points

Oral health affects general health, with links between gum disease and serious problems, such as cardiovascular disease and diabetes

In 2017-2018, only 58% of children in England visited a dentist, meaning 42% received no professional oral health advice

Hospital may be a child's first contact with health professionals and nurses are well placed to teach good oral health behaviours

A national survey showed paediatric nurses lacked skills and confidence in oral health assessment

Free training and resources are available to help nurses with oral health assessment and management

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Abstract Good oral health is vital for overall health and it is especially important to reinforce this with children to establish positive health behaviours from an early age. In 2017-2018, only 58.4% of children in England visited a dentist, which means nearly 42% received no advice on oral health. For some children, a hospital admission could be their first contact with health professionals, so nurses have an important role in oral health assessment and management. This article discusses the role of children's nurses in oral health, including encouraging good oral behaviours, and outlines tools and free training resources for assessment, management and referral of oral health problems, including dry mouth, dental decay, gum disease and oral thrush.

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Good oral health is an integral part of overall health in both adults and children (Public Health England and Department of Health, 2017). Primary care settings rely on the general dental practitioner to provide oral health assessments and prevention advice to children and their carers, with the onus on patients to ensure this preventative advice is followed. Although the UK has seen improvements in paediatric oral health over the last 40 years, the *Child Dental Health Survey 2013, England, Wales and Northern Ireland* showed 46% of 15-year olds and 34% of 12-year olds had obvious decay in their teeth, suggesting vast improvements are still needed to significantly reduce dental disease in children (NHS Digital, 2015).

In 2017-2018, only 58.4% of children in England visited a dentist, which means nearly 42% received no professional advice on how to prevent dental disease (NHS Digital, 2018). Poor oral health can negatively affect a child's ability to function (eating and drinking) as well as their psychological and social wellbeing. If children are not making contact with a general dental practitioner, alternative ways are needed to make every contact count (makingeverycontactcount.co.uk) in the fight against poor oral health in children. Hospital admissions could possibly be a child's first contact with a health professional, so paediatric nurses are in a unique position to assess and provide good oral health advice to children and their carers.

As well as the health impact, poor child dental health has significant economic impact. In 2015-2016, £50.5m was spent on hospital dental extractions for children under 19 years of age and children suffering with tooth pain missed an average of three days at school (PHE, 2017). As 41% of the children's parents were employed, it can also be assumed that working days

Box 1. **Resources**

DerbySmiles www.derbysmiles.info
Mini Mouth Care Matters
Bit.ly/MiniMCM
Ward based mouth care for paediatric inpatients Youtu.be/SAI31HegNxY
British Society of Paediatric Dentistry
www.bspd.co.uk
National Autistic Society
www.autism.org.uk

were lost, placing a huge financial burden on our economy and the NHS.

Previous initiatives emphasising the nurse's role in oral care have been extremely effective in adult services – for example Health Education England's Mouth Care Matters (mouthcarematters.hee.nhs.uk). Following this success, HEE and Great Ormond Street Hospital are rolling out a similar paediatric initiative, Mini Mouth Care Matters (Mini MCM); all trusts can sign up for the free training and resources offered through this excellent programme (Box 1).

In 2017, Derbyshire Children's Hospital established an innovation clinical fellow in paediatric dentistry role within the paediatric team, in collaboration with Derbyshire Community Health Services and HEE. The innovation clinical fellow works with other health professionals to improve the oral health of children and ensure oral health and mouth care is an integral part of standard nursing care. In this article, we discuss the nurse's role in the oral and dental care of children in hospital, including assessment, management, referral and signposting to relevant services.

Paediatric oral health problems

The first baby tooth usually erupts at around six months of age and most children begin to lose their baby teeth at 6-12 years old. When teeth erupt, plaque bacteria begin to form on the surface and must be removed by brushing or the child is at higher risk of developing dental decay and gum disease.

Dry mouth

Saliva is formed mainly from three major salivary glands in the mouth. It is constantly present in small amounts, but increases in response to olfactory, masticatory or pharmacological stimuli. Saliva is extremely important in preventing oral disease as it provides lubrication, is antimicrobial, maintains oral pH and remineralises tooth structure affected by dental decay (Dodds, 2009). Certain medications can cause a dry mouth, so nurses should ask carers/patients about this. A few common symptoms of dry mouth are thirst, burning mouth, and difficulty speaking and swallowing (Mohammed, 2014). Nurses should actively identify and manage children with a dry mouth, as if it goes undetected, it will predispose them to problems such as dental decay, gum disease and oral thrush (Dodds, 2009). In children over seven years of age, sugar-free gum (Bit.ly/SalivaGum) can be used to help stimulate salivary flow and relieve a dry mouth (Claxton et al, 2016). Oral gels to help relieve dryness are also available, but must only be used following medical advice (Otukoya and Doshi, 2018).

Dental decay

Dental decay is a completely preventable disease and is a multifactorial process that requires four key components to progress: a tooth surface, bacteria, carbohydrates and time. When sugar-containing foods are consumed, plaque bacteria in the mouth break down the sugar for energy, producing acid as a by-product, which breaks down the surface of the teeth. It is not uncommon on paediatric wards for carers to bring in 'comfort foods' for their children, which are often high in sugar. Nursing staff on the wards must be encouraged to challenge this behaviour, to help combat dental decay and other health issues such as obesity and diabetes. Bottle-feeding should also be discouraged after one year of age and bottles should not contain sugary liquids, as this can increase the risk of developing dental decay (PHE and DH, 2017).

"Dry mouth, if undetected, predisposes children to problems such as dental decay, gum disease and oral thrush"

Gum disease

Gum disease (periodontal disease) affects the gums surrounding the teeth. If plaque bacteria are not effectively removed by tooth brushing, the gums can become inflamed, appear red and bleed readily. In its early stages this is known as gingivitis (Fig 1). As gum disease progresses it starts to involve the underlying bone and at its worst can cause tooth mobility, pain or even loss of teeth (Bit.ly/NHSGums).

Gum disease progression has been linked to a multitude of health problems, such as cardiovascular disease and diabetes (Nazir et al, 2018; Dhadse et al, 2010). If glycaemic control is poor, it can affect patients' periodontal health and vice versa (Nazir et al, 2018), so it is extremely important to encourage good oral health and disease prevention to prevent it negatively affecting overall health.

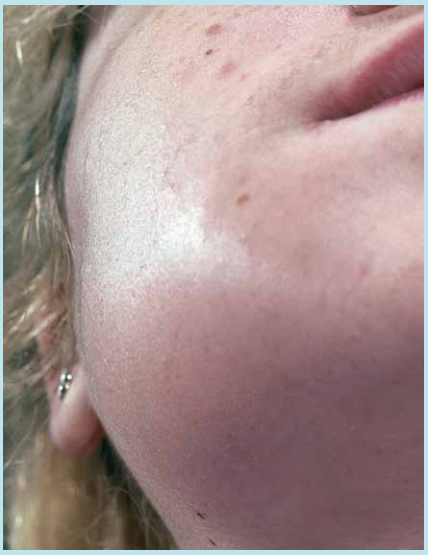
Fig 1. **Evidence of gingivitis in an adolescent**

ALAMY

Fig 2. **Pictorial depiction of child's risk status based on oral health**

2a. Low risk: good oral health

2b. Medium risk: multiple decayed teeth



2c. High risk: facial swelling associated with dental infection

ALAMY

Oral thrush

Candida is a group of fungi present in healthy individuals. In certain circumstances (such as in patients who are immune compromised, are taking steroids/antibiotics or have a dry mouth) the fungi take advantage and can cause infection known as oral thrush. This usually presents as thick white or red patches on the palate, tongue or other areas of the mouth but is rarely painful (Williams and Lewis, 2011). To reduce the risk, any patients using corticosteroids for respiratory problems should be encouraged to use a spacer device (a tube-like device attached to an inhaler to help ensure as much of the medicament is inhaled as possible) and to rinse their mouth with water after use (Bit.ly/InhalerSteroids). If oral thrush is detected, this must be referred to the medical team, as it may require anti-fungal treatment.

The nurse's role

Adams (1996) highlighted the importance nurses place on good oral care in the holistic care of patients, but also the apparent gaps in nurses' knowledge and confidence in oral health matters. Over 20 years on, a national survey of paediatricians and paediatric nurses showed a lack of confidence with oral health assessment and inadequacy of training provided (Ong et al, 2018).

The Nursing and Midwifery Council outlines the importance of the nurse's role in oral care, and says a nurse should "assess needs for and provide appropriate oral, dental…care and decide when an onward referral is needed" (NMC, 2018). To ensure nurses are equipped to undertake excellent oral care, they must have:

- Knowledge of how to achieve good oral health and how poor oral health is associated with other healthcare problems;
- Skills in oral health assessment gained through oral health training;
- Resources to help with oral health assessment and management;
- Support from doctors, dentists, oral health advocates and mouth care leads (HEE, 2016).

Trusts that do not meet these criteria for nursing staff will fail to achieve even the basic standards for paediatric mouth care.

QUICK FACT **46%** 16-year-olds with obvious tooth decay

Mouth care assessment tool

Queenie Ong created a Paediatric Mouth Care Assessment Tool (PMCAT) in her year as innovation clinical fellow at Derbyshire Children's Hospital, working alongside nursing colleagues. This tool is used for every paediatric admission and is currently undergoing a post-implementation audit to assess its effect on patient care. It includes a series of exploratory questions, allowing nurses to signpost unregistered patients to local dental services. In elective admissions, most children will bring in their own oral health products, but as emergencies make up 65% of hospital admissions, all wards must be able to provide a toothbrush/toothpaste as required (Otukoya and Doshi, 2018). The PMCAT concludes with a risk assessment tool, which provides advice based on the patient's risk level (Fig 2). This must be reviewed periodically in case of changes and is particularly important in children with longer inpatient stays, with clinical concerns referred to the correct team as indicated (HEE, 2016).

Many trusts will not have a dedicated PMCAT in place, and so, other methods are needed to systematically assess and maintain patients' oral health. A helpful alternative shown in Box 2 is Derbyshire Children's Hospital's own variation of the 5 As (Ask, Assess, Advise, Assist and Arrange) programme, commonly used in smoking cessation programmes (Lawson et al, 2009).

Oral assessment

To assess the oral cavity with confidence, nurses must have a working knowledge of its normal anatomy. This should be through individual trust's training, but a useful training video, 'Ward-based mouth care for paediatric inpatients', can be accessed on YouTube (Box 1). Good clinical assessment is not only important for preventing oral disease; the oral cavity can also reveal safeguarding issues, such as

Box 2. **The 5 As approach to oral health assessment and management**

Ask
- Does the child have teeth?
- Has the child brought along his/her own oral health products?
- Does the child have a regular dentist?
- Can the child undertake oral hygiene independently or with carers' help?
- Does the child have any oral health issues, including pain and/or infection?

Assess
- Undertake an oral assessment, including allocating a risk and making a referral if clinically necessary

Advise
- Advise the patient on how to achieve good oral health, actively involving carers, as in most cases they will be giving care

Assist
- Assist with oral hygiene procedure if required

Arrange
- Upon discharge, signpost the child/carers to relevant services, and include information on 111 or NHS Choices if the child was not registered with a dentist on admission

Box 3. **Essential equipment for assessment and mouth care**

- Personal protective equipment (PPE)
- Paediatric Mouth Care Assessment Tool or patient's clinical notes
- Clean disposable tray
- Pen torch
- Gauze
- Tongue depressor
- Freshly drawn tap water
- Small soft-headed toothbrush (patient's own or provided by the hospital)
- Fluoride toothpaste (for correct age – patient's own or provided by the hospital)
- Vaseline

Source: Health Education England (2016)

Box 4. **Guidance on when to seek further advice**

Urgent (requires immediate management)
- Oral thrush (medical)
- Painful ulcers or non-healing ulcers that have been present for more than two weeks (medical)
- Facial swelling, dental infection, severe dental pain (dental/maxillofacial)
- Bleeding from the mouth (dental/maxillofacial/ear nose throat)
- Dental trauma (dental/maxillofacial)
- Severe dry mouth (medical)

Non-urgent (signpost to general dental practitioner at discharge)
- Broken/decayed teeth not causing pain
- Gum disease
- Cosmetic dental issues

Source: Health Education England (2016)

intra-oral injuries and severe dental neglect, which may indicate abuse. Any concerns should be documented and escalated in line with the trust's safeguarding policy (DH, 2006).

Carers' consent is required for oral assessment and must include the reason and requirement for the assessment. The nurse should assess the child in a comfortable position for patient and nurse. If a child is very young or struggling with compliance, it may be better to assess in the carer's lap, as the carer can assist. Older children can be assessed in a bed or in a chair, but nurses should avoid a position that involves excessive bending, to safeguard against neuromuscular problems. The essential equipment for assessment and mouth care is shown in Box 3.

After initial preparation and positioning, the nurse should:

1. Inspect the child's face to identify any facial swelling that could indicate an oral infection;
2. Check for any evidence of dry, cracked lips and apply Vaseline as required, but use with caution in patients on oxygen therapy (Bit.ly/MCChildren);
3. Use a torch to inspect inside the mouth, paying particular attention to moisture, hygiene, ulceration, infection or bleeding (NHS Greater Glasgow and Clyde, 2017);
4. Inspect the teeth and gums for signs of dental decay and gum disease, referring on if there are any clinical concerns (Box 4);
5. Use a mouth care assessment tool or document observations in the patient's clinical notes.

Once the assessment is complete, nurses should show the child and carers how to achieve good oral care. This will include use of Vaseline periodically for dry cracked lips and increased fluid intake if the child has a dry mouth. The nurse should also teach child and carer the correct brushing technique and give oral health advice as follows:

- Fluoride toothpaste – no more than a smear of toothpaste containing at least 1,000ppm of fluoride (up to 3 years); a pea sized amount of toothpaste (3-6 years); adult strength toothpaste (over 6 years);
- Carers to supervise tooth brushing until the child is 7 years of age;
- Older children should be encouraged to undertake their own oral care;
- Brush for two minutes every night and at one other time of day;
- Spit out excess toothpaste and avoid rinsing after brushing;
- If the child has no teeth (edentulous) or tooth brushing is not possible due to pain/infection, gauze can be moistened with sterile water to help remove plaque and debris (PHE and DoH, 2017).

The attending nurse should make an assessment of the child's risk and schedule oral health reviews based on this. After initial education the nurse should encourage carers to undertake daily routine care of the hospitalised child. If they cannot achieve this, the patient will require at least twice daily review and maintenance by the nursing team.

Specialist groups

Critical care

Critical care patients are extremely vulnerable as they are reliant on others for their oral care needs. Poor oral hygiene is associated with increased bacteria in the oropharynx, and the presence of an endotracheal/tracheostomy tube in intensive care patients means bacteria can easily progress from the mouth to the child's lungs. This poor oral health increases the risk of ventilator-associated pneumonia, which is the second most common hospital-acquired infection, increasing hospital stay and patient care costs (Gupta et al, 2016). Oral health assessment and maintenance is extremely important to reduce this risk and NHS Greater Glasgow and Clyde has produced excellent guidelines on this topic (NHS Greater Glasgow and Clyde, 2017).

Cancer

Cancer occurs in about one in 500 children aged 0-14 years, according to Cancer Research UK (Bit.ly/CancerChildren). Oral

mucositis is painful inflammation of the mouth and is extremely common in patients undergoing chemotherapy or head and neck radiotherapy. Mucositis can make oral hygiene very painful, and so patients' oral health standards may begin to decline. Mouth opening may be difficult, so triple-headed toothbrushes that simultaneously brush all surfaces of the tooth are useful (Fig 3). Sucking on ice chips and the use of pain-relieving mouthwashes and topical gels are useful in symptomatic relief of mucositis (Mishra and Nayak, 2017; Rastogi et al, 2017).

Cancer treatment also dampens the immune defences, which coupled with a dry mouth, can leave patients vulnerable to developing oral thrush and dental decay (Poulopoulos et al, 2017). Allowing dental decay to progress will have a devastating impact on an already immunocompromised child, so oral hygiene should be a priority when any cancer patient is admitted for treatment or for complications of their disease.

Autism

People with autism often like routine, so it is important to maintain the child's oral health regime while in hospital, explaining it clearly step by step; for example, "I am going to check your teeth with this torch". Some patients with autism may be extremely orally sensitive, meaning they struggle with mint-flavoured toothpastes and equipment in their mouths, so it is important to establish this before commencing the oral health assessment. This subset of patients will also benefit greatly from an unflavoured, non-foaming toothpaste (such as Oranurse).

Behavioural challenges in these patients should be not an excuse to compromise standards of mouth care and similar issues may be encountered in patients with learning disabilities (Bernal, 2005). The National Autistic Society provides guidance on dental care and autism (autism.org.uk) (Box 1).

Conclusion

Nurses need the right tools, resources and training if they are to take an active role in paediatric oral health. Understanding paediatric oral health problems commonly encountered in hospital, and how to help prevent, recognise and manage them, will allow nurses to be better equipped to carry out their vital role of providing effective oral care and advice to children in hospital, including encouraging positive oral health behaviours. **NT**

Fig 3. **Triple-headed toothbrush**

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