

Speech Pathology and Oral Health guideline: Oral hygiene in children with feeding difficulties

Oral hygiene is an important part of the overall health care of a child. It is integral to good general health status¹, and is the shared responsibility of all health professionals².

Why is oral hygiene so important?

Good oral care improves child health in the following ways.

- Remove bacteria from the mouth, which can develop within 12 hours.
- Remove food debris/dental plaque without damaging the gingiva.
- Keep the oral mucosa clean, soft, moist and intact, thus preventing infection.
- Decrease the risk of oral and systemic infection.
- Alleviate pain/discomfort, to support regular or improved oral intake.
- Prevent halitosis.
- Increase general well-being^{3,4}.

Good oral hygiene

General guidelines

Where possible, follow the general guidelines for good oral hygiene in children:

- Encourage regular tooth brushing twice a day, with full parental supervision/support until the child is at least 8 years old, to clean teeth and remove plaque.
 - o **Infants:** As soon as the first teeth appear, parents should clean the teeth using a soft moist cloth or a soft baby toothbrush if the baby accepts it.
 - o **From 12 months:** Use a small headed, soft nylon toothbrush with a small pea size amount of fluoride toothpaste^{5,6}.
 - o Children should spit out toothpaste after brushing but not rinse. If children are not able to spit (typically not until 3½ to 4 years of age) then only use a smear of toothpaste.
 - o If tooth brushing can only occur once a day, the priority is for tooth brushing before bed after the last incidence of oral intake (including milk drinks or bottles before bed).
- Manual or electric toothbrushes may be used.
- Encourage flossing daily, using dental floss or a [flossette](#), to prevent decay and gum disease.
- Discourage prolonged bottle feeding/prop feeding and introduce a cup around six months.
- Avoid sugary foods and drinks (including bottle/sipper cup containing juice or carbonated beverages).
- Toothbrushes should be changed every three months, or earlier if the bristles become splayed^{5,7}.

- The tooth brush should be for the sole use of the child. It should be changed following an oral infection⁷.
- Parents and carers should be encouraged to be aware of and avoid transfer of oral bacteria to their child by:
 - o maintaining good oral health themselves
 - o avoiding sharing of food, utensils, dummies or teats with their child.

At-risk population: Children with feeding difficulties

Children with feeding difficulties and/or cognitive impairments are at a greater risk of having poor oral hygiene¹ and greater risk of poor oral health overall⁸. This includes:

- Children with poor oromotor skills and/or oropharyngeal dysphagia⁸ due to:
 - o pocketing of food or fluids
 - o increased incidence of reliance on purees
 - o repeated acid exposure to the teeth from gagging or choking.
- Children with oropharyngeal dysphagia who are nil-by-mouth have increased risk of respiratory complications if they are acutely or chronically aspirating their oral secretions^{9, 10}.
- Children with oral aversion or with oral sensory processing disorders where there is difficulty adhering to the recommended oral hygiene guidelines (refusal of tooth brushing).
- Children who are reliant on carers for their self-care activities.
- Children with structural or anatomical abnormalities, including:
 - o craniofacial abnormalities
 - o those requiring intra-oral devices
 - o lingual ankyloglossia (tongue tie).
- Children with reduced saliva production, or an overproduction of saliva.

Modifications for children with feeding difficulties

An oral health care plan is essential for all children with feeding difficulties to optimise their oral hygiene, which in turn reduces their risk of respiratory complications from aspiration of oral secretions or plaque. Even if a child is NOT eating and drinking regularly, there is still a need for regular tooth brushing.

Referral to an oral health care practitioner is recommended early in the child's life for an individualised plan.

Follow the general guidelines for oral hygiene (above) where possible. If the general guidelines are unable to be applied, the modifications outlined below may be appropriate.

If the child does not tolerate generic paediatric tooth brushing products:

- Tooth brushing with a [soft toothbrush](#) dipped in [diluted sodium bicarbonate](#).
- Apply [chlorhexidine gel or mouthwash](#). Please note, this is usually not suitable for use beyond a 2 week course, therefore it is not intended as a long term option.
- Tooth brushing with a [soft toothbrush](#) dipped in cold sterile water, which will still manually remove plaque and reduce the bacterial load.

If the child has difficulty opening their mouth:

- Tooth brushing with a [double/triple-headed toothbrush](#) and either toothpaste, diluted sodium bicarbonate or cold sterile water.
- A [bite stick](#) can help keep a child's mouth open during tooth brushing.
- A [flossette](#) can make flossing an easier task, especially for harder to reach places.

If there is a high risk of aspiration of secretions and/or thin fluids, and the child is unable to safely spit out toothpaste/secretions:

- Tooth brushing with fluoride or [low-foaming toothpaste](#).
- Ensure the child is positioned as safely as possible if they are at risk of aspiration during mouth cares – e.g. in side lying or in their most supportive seating with head tilted forward.
- Tooth brushing with a [suction toothbrush system](#). Please note, this system will require access to a portable or home suction system.

If the child has an oral aversion or sensory defensiveness:

- Ensure you have a routine for brushing and flossing teeth (morning and night), using the same technique and the same setting.
- Use positive reinforcement to reinforce appropriate tooth brushing behaviours.
- Consider using sterile water during tooth brushing at first, and then grade up to mild or unflavoured tooth paste as tolerated.

Refer to [Appendix 1](#) and [Appendix 2](#) for further information about Oral Hygiene Products and Equipment.

At-risk population: Children with specific medical considerations

Some children may have oral health needs related to a specific medical diagnosis, and these needs should be prioritised above any oral hygiene risks associated with feeding difficulties.

Children undergoing chemotherapy or bone marrow transplantation are at high risk of:

- immunodeficiency
- developing oral mucositis with associated inflammation and pain
- xerostomia associated with radiation and some chemotherapy drugs.

Children with some medical conditions, including:

- gastro-oesophageal reflux
- eosinophilic oesophagitis.

Children who require specific medications:

- inhaled corticosteroids¹
- other specific medications may increase the risk of tooth decay, and a clean mouth is crucial for children with special needs or risk of oral candida¹¹.

Children who are intubated via an endotracheal tube (ETT) are at risk of ventilator-associated pneumonia; even if they are not known to have oropharyngeal dysphagia¹²:

- In the intensive care setting, “poor oral hygiene has been associated with increased dental plaque accumulation, bacterial colonization of the oropharynx, and higher nosocomial infection rates, particularly ventilator-associated pneumonia”^{13,14,15}.

Consultation with the treating dentist or oral health therapist should occur prior to recommending an oral health care plan. If the child also has oropharyngeal dysphagia or is nil-by-mouth, the oral hygiene general guidelines and modifications (above) should be combined with the child’s tailored oral health care plan, in consultation with the treating dentist.

At risk population: Children in a palliative care context

- **Full oral intake:** If the child is for full active resuscitation and receiving active treatment, but has a life-limiting condition, the above general oral hygiene guidelines apply.
- **Risk feeding:** If a child has known oropharyngeal dysphagia and is at risk of aspiration, but is following a ‘Risk Feeding’ plan, oral hygiene before and after any oral intake is essential. The above general oral hygiene guidelines and modifications apply.
- **Limited oral intake in end-of-life care:** If the child is receiving end of life care, and is still eating or drinking, consider the safest strategies to reduce the risk of the child choking on any residual food that may be pocketed or partially masticated (particularly if the child is drowsy or has cranial nerve deficits). Maintaining good oral hygiene will also be important for the child’s overall comfort (i.e. avoiding a dry mouth or discomfort from oral thrush developing).

A note on foam sponges

[Toothette oral swabs](#) can be used as a temporary measure, or combined with a toothbrush to remove debris and cleanse the mouth when a child is unable to brush their teeth effectively. However, foam cleaning sponges are ineffective at removing plaque¹⁶. They may be useful:

- when a child has no teeth – moisten sponge with water⁷
- when a child has a platelet count below 20,000 with associated bleeding¹⁷
- when a child has severe mucositis that prevents them from brushing their teeth – foam sponges can be moistened with water or diluted chlorhexidine⁷
- for palliative care situations when comfort is the only intended outcome.

Dentist / Oral Health referrals

General recommendations:

- Children who are non-oral should regularly see a dentist as they are at increased risk of poor oral health.
- Children should see a dentist by their first birthday.

At Lady Cilento Children's Hospital:

- Any children who are identified as being at high risk of, or presenting with, poor oral hygiene, should be referred to the Children's Oral Health Service for review.
- Any children requiring specific prescription of products or equipment should also be referred to COHS to implement an oral health management plan specific to that child.

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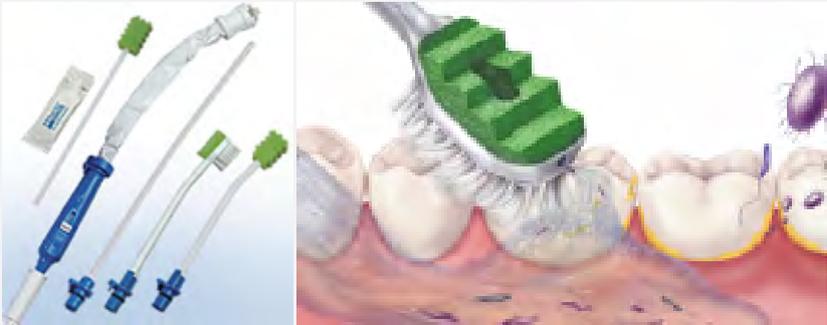
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Appendix 1

Oral hygiene equipment

Product	Description
Soft toothbrush	<p>A small headed, soft, nylon bristled toothbrush, with round ended filaments should be used to brush/clean teeth ^{5,6}.</p> 
Suction toothbrush system	<p>The suction toothbrush is a tool, with a portable suction unit, that can be used at home or when travelling, if the suction toothbrush is compatible. When brushing, the toothbrush will suck up extra saliva, toothpaste and debris from the mouth, helping to prevent coughing and saliva going the “wrong way” from the over production of saliva.</p> <p>There is a foam swab attached to the back of the toothbrush, so when brushing, it will stimulate and clean the soft tissues and cheeks at the same time.</p> 
Surround toothbrush or Collins Curve toothbrush	<p>Double or triple headed suction brush if the child has trismus or it is difficult to get a regular toothbrush in the mouth to reach all of the teeth. These toothbrushes have 3 rows of bristles that surround the teeth to clean the front, back and biting surface of the teeth at the same time. The 3 parts of the head are able to be adjusted close for a snug fit around the teeth.</p>  <p style="text-align: center;">Surround toothbrush Collins Curve toothbrush</p>
Electric toothbrush	<p>A brush with a rotation oscillation action, if tolerated, can significantly reduce plaque and gingivitis in the short and long term, but there is no statistically significant difference between electric and manual tooth brushes¹⁸. They are not advisable for children with a fragile oral mucosa, however.</p>

Product	Description
<p>Bite stick</p>	<p>A foam bite stick can help keep a child's mouth open when brushing or checking inside.</p> 
<p>Flossette</p>	<p>A tool to make flossing easier. It can reach harder inter-proximal spaces to dislodge food particles, and is less invasive having adult fingers inside the child's mouth.</p> 
<p>Toothette oral swabs</p>	<p>Foam sponges that can either be:</p> <ul style="list-style-type: none"> • Untreated pink or green • Treated with sodium bicarbonate • Treated with Perox-A-Mint solution (hydrogen peroxide) and come with pouch of mouth moisturiser 

Further information regarding oral hygiene products and how to access them:

- Mayo Healthcare: <http://www.mayohealthcare.com.au>
- Australian Society of Special Care in Dentistry Resources: <https://www.asscid.org.au/ASSCID/Resources/ASSCID/Resources.aspx?hkey=8ac2c555-6dbc-40b0-946f-e1db909dc807>
- The Children's Oral Health Service at Lady Cilento Children's Hospital also stocks a small range of suitable products (available to patients accessing their service)

Appendix 2

Oral hygiene products

Product	Details
Low foaming toothpaste	<ul style="list-style-type: none">• Biotene dry mouth toothpaste.• Specific children's toothpastes are typically low-foaming but also low fluoride.
Fluride-containing mouthwashes	<ul style="list-style-type: none">• Colgate Fluoriguard, Sensodyne mouthwash.• This is not recommended for children under 6 years due to the risk of ingestion/accidental swallowing.• The mouthwash reduces dental caries and may be useful in children over 6 at high risk of difficulty with oral hygiene procedures.• Fluoride assists in the prevention of dental caries by promoting remineralisation with fluorapatite and fluoro-hydroxyapatite, thereby increasing enamel resistance to acid attack¹⁹.
Chlorhexidine wash / gel	<ul style="list-style-type: none">• Chlorhexidine is a broad spectrum microbial agent that inhibits growth of gram-positive and gram-negative bacteria, and plaque formation.• It is currently the most effective mouthwash for reducing plaque and gingivitis.• Use of chlorhexidine is not associated with development of resistant organisms.• Use of chlorhexidine mouthwash or gel is not a substitute for effective tooth brushing.• Potential side effects related to long term use include: tooth and restoration staining, soft tissue staining, increased calculus deposition, unpleasant taste, taste alteration, burning sensation, desquamation and mucosal irritation. There is also a risk of superficial burn or desquamation of the oral mucosa given the high alcohol content (can be reduced by diluting 1:1).• Short term use is usually recommended – e.g. a 2 week course.• Chlorhexidine is inactivated by sodium laurylsulphate, and interacts with sodium monofluorophosphate (both often found in toothpaste) and so use of chlorhexidine should occur at 30 minutes – 2 hours before or after tooth brushing²⁰.• Taste can be quite strong for some children (bitter/aniseed type taste).• In an inpatient setting chlorhexidine mouth wash or gel must be prescribed by a doctor.• In an outpatient setting, suitable products can be suggested by the child's oral health practitioner.
Sodium bicarbonate mouthwash	<ul style="list-style-type: none">• A mouthwash can be prepared by dissolving one teaspoon of sodium bicarbonate in a glass of water²¹.• May be useful for patients with xerostomia as it increases salivary pH. It also suppresses growth of some microorganisms, can improve taste, and neutralises acids.• Bland taste and won't irritate the oral mucosa if the patient has mouth ulcers.• Avoid swallowing, as it can produce excessive stomach gas.• Not a substitute for tooth brushing.• No specific information found regarding use in the paediatric population.• Must be diluted correctly in order to avoid superficial burns^{4,14,22}.
Hydrogen peroxide solution	<ul style="list-style-type: none">• This is used to remove oral debris, break down tenacious saliva, and relieve conditions such as gingivitis.• There is insufficient evidence to support use of either ingredients in providing oral cares to critically ill patients²².• Nil evidence was found to support or refute their use in the paediatric population• Hydrogen peroxide is used to break down debris and crusting within the oral cavity; however, it has been reported to cause superficial burns if diluted incorrectly^{22,23}.