



Community Paediatric Review

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Dental health for children

Introduction

Good dental health is essential to a child's general health and well-being. This article addresses several aspects of child oral health from birth to around the time they enter school. More specifically this article will review the stages of normal dental development, dental decay and how to prevent it and some of the common non-nutritive oral habits such as thumb sucking and dummy use.

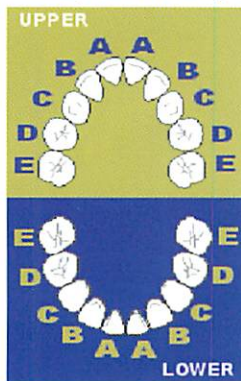
Dental Development

At the time of birth most children will have all their primary teeth already present but the first primary or baby tooth usually erupts from 4 months of age. The timing and order of eruption of the teeth is primarily genetically determined and can vary among children with girls usually ahead of boys in dental eruption. Most children will have all their 20 primary teeth by the age of three.

Primary teeth are generally whiter and smaller than permanent teeth. It is very important to

have healthy primary teeth not only for aesthetic reasons, but also because this is a good predictor of a healthy adult dentition. Furthermore maintenance of intact primary teeth preserves space in the dental arch, supports good speech development and promotes overall quality of life. Wide variation in timing of eruption exists for the primary dentition. The first teeth can start to appear any time from 4 months onwards but some infants are very delayed. In general there is little to worry about if the primary teeth do not come through over the first 12 – 18 months. There are a few quite rare conditions (syndromes) that may be associated with missing teeth but most children will develop their teeth at some point. Of more concern is when the teeth erupt in a sporadic fashion, the order of eruption being more important than the actual timing. Should there be a concern regarding the time or pattern of eruption of the primary dentition then a referral to a specialist paediatric dentist would be appropriate. Such a specialist will decide on the need for further investigations.

Primary teeth usually erupt in the following order:



	<i>Erupt (in months)</i>	<i>Shed (in years)</i>
Upper Jaw		
A) Central incisor	8-12	6-7
B) Lateral incisor	9-13	7-8
C) Canine	16-22	10-12
D) First molar	13-19	9-11
E) Second molar	25-33	10-12
Lower Jaw		
A) Central incisor	6-10	6-7
B) Lateral incisor	9-16	7-8
C) Canine	17-23	9-12
D) First molar	14-28	9-11
E) Second molar	23-31	10-12

(Texas Department of State Health Services – Healthy Mouths, 2006)

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Dental Caries

Dental caries is an infectious disease that is modified by diet. For caries to develop three elements are necessary:

1. bacteria (*Streptococcus mutans*),
2. susceptible host (tooth), and
3. a fermentable carbohydrate (sugar and refined flour).

Streptococcus mutans (*S. mutans*) bacteria is the major bacteria implicated in dental caries. Its presence in the oral cavity (in the form of soft white debris known as plaque) leads to the conversion of fermentable carbohydrates (mainly sucrose) into acid which then proceeds to demineralisation of the hard tooth tissues which eventually cavitate, causing a hole or decay in the tooth.

Children are not born with *S. mutans* but their mouths can be colonised by them from as early as 6 months of age. Research shows that the earlier the bacterial colonisation, the higher the risk for dental caries (van Houte et al. 1981). Transmission and inoculation of an infant's mouth with *S. mutans* occurs mainly from the primary caregiver (usually the mother). If the caregiver has high *S. mutans* counts themselves then sharing spoon, cups and other utensils, kisses on the mouth and cleaning the dummy in the mother's mouth all promote transmission. Contamination by *S. mutans* can be delayed by reducing plaque levels in the carer's oral cavity and minimising the opportunity to share bacteria. Consequently, it is important for mothers to maintain a caries-free mouth and good oral hygiene.

Dental caries can occur as soon as the first tooth erupts but the dentition remains susceptible throughout life. However during the first 12 months post eruption the enamel surfaces of the teeth are immature and consequently susceptibility is high.

Sugars, mostly sucrose and its metabolites, provide ideal substrate for the bacteria to adhere to the tooth surface and produce the acids that can then dissolve the tooth enamel leading to decay.

Literature shows that the frequency of sugar intake is more important in predicting caries risk than the amount of sugar consumed. The more often the tooth is exposed to acid attacks, the longer the substrate is available in contact with the surface of the teeth, the higher the chance for decay to occur (Gussy et al. 2006).

One of the first signs of decay are small white lesions running along the gum line (Figure 1). These lesions represent the early signs of decay as the enamel is being demineralised but the surface remains intact. At this stage it is possible to reverse the process by promoting remineralisation and preventing cavitation.



Figure 1. White spot lesions
www.pc.maricopa.edu

It is recommended that child health nurses conduct mouth inspections as part of regular health assessments at 2-week, 6-8 months, 12 months, 18-21 months, 2 and 3 year olds and 4-5 year olds visits. The population under 2 years of age is the most vulnerable, because very few children of this age will ever see a dentist (Slack-Smith 2003). Therefore this population may not be routinely exposed to dental health education.

The recommended approach to look at the infant or toddlers mouth is the lap-to-lap position (see Figure 2.). In all visits it is important to look for a healthy oral cavity with pale pinky, moist gums, that do not bleed on brushing and that are free of unusual ulcers and/or sores. After the eruption process starts (around 6 months of age), it is important to observe the presence of plaque, white spot lesions (Figure 1.) and dental decay.

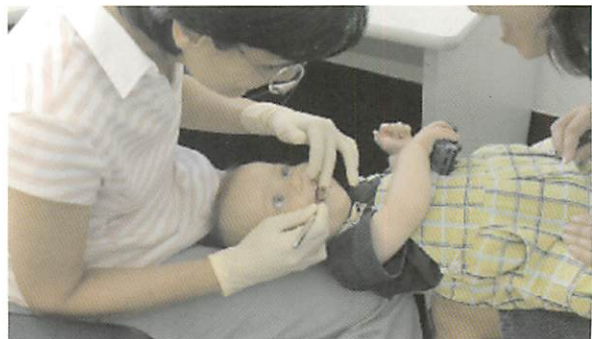


Figure 2. Lap-to-lap position
(Country Kids, 2004)

Fluoride

Fluoride is very effective in preventing and slowing the decay process. Fluoride exposure is important from the moment the tooth first erupts in the oral cavity because enamel is still immature and therefore more susceptible to acid produced by bacteria. Fluoride becomes incorporated into the enamel crystals making them more resistant to acid demineralisation. People exposed to fluoridated water (i.e., metropolitan Melbourne) have better oral health when compared to residents in a non-fluoridated community (DHS, 2004a). Data from Dental Health Services Victoria (DHSV) show a 45% reduction in caries activity in the primary dentition in six-year olds and a 38% reduction in caries lesions in twelve-year old children living in a fluoridated community (DHS, 2004). At a public health level, water fluoridation is a cost-effective, inexpensive method of preventing dental caries but not all children are exposed to the benefits of fluoridated water supply.

Apart from the water supply, fluoridated toothpaste is the main source of fluoride in Australia. Parents should wipe their infants teeth with a smear of a Junior (low fluoride) toothpaste as soon as the first teeth come in to the mouth using a gauze or clean face cloth. A smear of toothpaste should be applied twice daily to an infant's teeth.

Families living in remote areas or who use tank water may not be exposed to the benefits of fluoride. In this case, adult fluoridated toothpaste may be appropriate. It is the best way to deliver fluoride to the teeth.

The use of fluoride supplements (in the form of drops or tablets) is no longer routinely recommended. This source of fluoride is essentially taken systemically and it is now recognised that fluoride is most effective topically, with teeth being exposed regularly to low doses such as in the water supply or with twice daily toothpaste applications.

As the child gets older he/she can be encouraged to brush their own teeth. However toothbrushing should be supervised by the parent until around the age of 8 years of age. It is important that toothbrushing is a "fun and interesting time" for both parents and children.

Diet

Given that it is frequency of sugar intake rather than volume that is important in predicting decay risk, sugars and any other sweeteners should not be added to an infant bottle which they may then hold and suck on in a prolonged fashion. Only three things should go into the baby's bottle: water, breast milk and infant formula.

An infant should not be put to bed with a bottle. It is recommended that bottle feeding itself be discontinued by 12 months of age and replaced by a sipping cup. Should a child prefer to take the sipping cup to bed, it should contain only water.

Healthy snacks include milk, dry biscuits, yoghurts and fresh fruits that contains low amount of sugars. Foods such as fruit bars, fruit strips, dried fruits, and many breakfast cereals contains high amount of sugars. Sugary foods, in particular sweet sticky items, should be eaten at main meal times and not as snacks, several times during the day. It is important to encourage parents to read the label for sugar content. (See Figure 3.).

Plain milk, tap water – because of fluoride content, fruit smoothies are delicious healthy drinks. Fresh fruits have higher vitamin content and are a better choice when compared to fruit juices and cordials that are acidic and high in sugar. Soft drinks and particularly artificially flavored carbonated drinks should also be avoided.

Dummies should not be dipped in honey or any other sweet drink.



(Country Kids, 2004)

Reflection Questions

1. *There is likely to be a formal State policy on oral health for infants and children that will set out the health promotion activities required of your service. Are you aware of this policy?*
2. *Have you considered how health education for oral health could be incorporated into routine interviews with parents or into parent group activities? For example, are you encouraging your families to establish an “oral care routine” and talking about an adequate diet? Are you instructing your families on how to brush? Do you encourage parents to take their infant to the dentist for a first visit at the age of 18 months?*
3. *Do you regularly undertake mouth inspections for children under 2 years?*
4. *Are you aware of the water fluoridation status in your area?*
5. *Do you know where your local dental services are located? Is there a public dental health clinic nearby that you could refer families to?*

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Figure 3

Sugars in food and reading labels

Most people will probably think of cane sugar (sucrose) when someone says “sugar”. Sugar can take many forms including white, raw or brown sugar, honey or corn syrup, but all are essentially sucrose.

There are also other types of sugar in the foods we eat. Sugar can occur naturally in some foods, such as fruit and dairy products. The main sugar in fruit is fructose; and in milk the main sugar is lactose. Other sugars in food include glucose and maltose. All have the same amount of kilojoules and energy.

On food labels added sugar may be listed as:

- Brown sugar
- Corn syrup
- Dextrose
- Disaccharides
- Fructose
- Glucose
- Golden syrup
- Honey
- Lactose
- Malt
- Maltose
- Mannitol
- Maple syrup
- Molasses
- Monosaccharides
- Raw sugar
- Sorbitol
- Sucrose
- Xylitol

If any of these sugar ingredients is listed as one of the first three ingredients, it is likely that the product is high in sugar.

Food labels will provide the total amount of sugars present in the Nutrition Information Panel. The total includes “added sugar” as well as naturally occurring sugars from fresh, dried, canned and frozen fruit and milk components. A product may not have much “added sugar” but still be high in “sugars” if much of the sugars come from fruit or milk components, for example breakfast cereals with dried fruit. In contrast, if a product is high in sugars and it does not contain fruit or milk then most of the sugar is coming from “added sugar”.

Non-nutritive sucking habits

Thumb, finger and dummy sucking are “non-nutritive” sucking habits. Non-nutritive sucking habits are part of the child’s natural development with very little effect to the primary dentition. However if these habits are not discontinued after the first permanent teeth start to erupt they can interfere with dental development and tooth alignment. Research has shown that dummies are easier to discontinue than thumb or finger sucking. The following are some strategies to use when trying to stop a digit sucking habit:

- Offer praise and encouragement for not sucking.
- Distract the child with good humored comments and encouragement.
- Reminders such as a cloth or unpleasant tasting nail painting can help.

Parents need to be patient since the first days without sucking are the most difficult.

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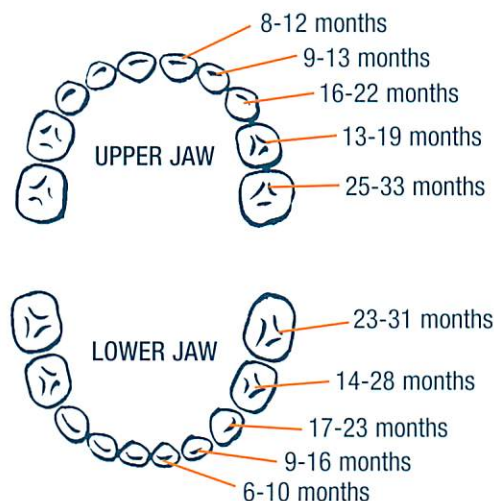
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Baby teeth – 0-5 years

About baby teeth

When your child is born, they generally have all their baby teeth (also known as primary teeth), but you cannot see them yet. The diagram below is a general guide to when baby teeth will appear. The timing for the appearance of teeth can vary greatly. Girls teeth generally appear earlier than boys. Most children will have all of their 20 baby (primary) teeth by the age of three years.



Healthy baby teeth are important because they:

- Help toddlers eat a nutritious diet
- Help toddlers develop good speech
- Maintain the space for the permanent teeth. If baby teeth are lost early this can reduce the space for permanent teeth and will lead to overcrowding.

Good oral hygiene

Did you know that your oral hygiene can affect your baby's teeth? Newborn babies do not have the bacteria (germs) in their mouth that can cause tooth decay (holes). Anyone caring for the baby can pass the bacteria that causes tooth decay. This can happen by sharing spoons or cleaning a dummy or bottle with their own mouth, or kisses on the mouth.

It is important for carers to have good oral hygiene – brushing twice a day with fluoride toothpaste – to reduce or eliminate the chance of passing bacteria to their baby.

Toothbrushing

- Toothbrushing should start as soon as the first tooth appears.
- Use a small, soft toothbrush and a smear of low fluoride toothpaste twice a day. Low fluoride toothpastes, created especially for children under six years of age, are available in most supermarkets. Fluoride helps to protect teeth.
- Children only require a small amount of fluoride toothpaste and should not be allowed to dispense toothpaste themselves. Parents should assist with toothbrushing until children are about 7-8 years old.

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