Developed in partnership with:

MINISTRY OF HEALTH
MANATŪ HAUORA

New Zealand Dental Assoc.

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Oral health guide for: Well Child providers

Healthy Smile = Healthy Child

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Content

Introduction

This training curriculum and guide is prepared for New Zealand Well Child Tamariki Ora (WCTO) providers who have specific training in child health. WCTO services encompass health education and promotion, health protection and clinical support, and family / whānau support.[1]

The Well Child Tamariki Ora framework and Well Child Schedule offers twelve health assessments to children from 0 to 5 years of age.[1] The guide aims to reduce oral health inequality by offering WCTO service providers information and understanding to provide early anticipatory guidance about the prevention of Early Childhood Caries (ECC). The guide will enable WCTO services to continue to raise awareness, educate and promote oral health by providing clear and consistent oral health messages to all parents and caregivers and particularly families of children at risk of developing ECC. ECC can be prevented and, if detected soon enough, its progress can be halted and quality of life and wellbeing can be improved for the child.[2] Good oral health is part of general well-being and children who experience ECC are at increased risk of developing subsequent caries in later life. This training includes effective strategies for identifying and preventing dental decay in children including 'Lift the Lip' a quick and easy technique for screening the teeth of infants, toddlers and preschool children for dental decay.

The Early Childhood Oral Health Toolkit developed by the Ministry of Health, recommends that WCTO providers are linked to early childhood dental services in all DHBs, so children with early dental changes or overt dental caries are identified and referred for treatment.[3] WCTO services are key to the early identification of decay and enabling timely access to oral health services.

This guide is divided into six modules consisting of information on the most significant issues in preschool children, with learning objectives and key messages.

These six modules are:

— Dental caries
— Early childhood caries
— Oral hygiene practices and preventive measures
— Lift the Lip screening and risk assessments for ECC
— Common developmental issues relating to oral health
— Anticipatory guidance about preventing ECC

The basic structure of a tooth and the eruption schedule for primary and permanent teeth are explained in Appendices 1 and 2. Appendix 3 explains the stages of dental decay and Appendix 4 provides the contact details of all the Community Oral Health Services in New Zealand.

Module 1

Dental caries

Learning objectives

- To understand the process of tooth decay.
- To describe the factors involved in tooth decay.
- To describe the role of fluoride in preventing dental decay.

Plaque + Sugar + Tooth = Decay

Tooth decay

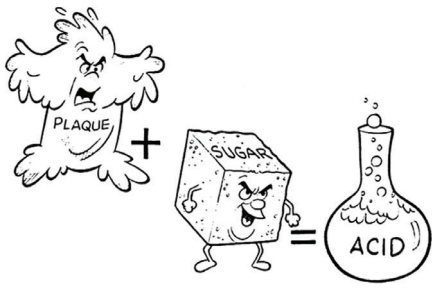
Dental caries or tooth decay, are terms for the process of gradual destruction of tooth tissue (enamel and dentine) in the presence of sugars and bacteria. Dental plaque is a soft, sticky and invisible film of bacteria that forms on teeth.

Damage to the tooth begins when the bacterial plaque comes in contact with foods high in sugars and other carbohydrates. The bacteria use sugars as their source of energy and produce acid as a by-product.

The acid lowers the pH in the mouth for about 20-minutes and promotes loss of minerals from the tooth surface. This attack starts with the first exposure to sugar and lasts until 20-minutes after the last exposure. When the neutral pH is restored (after acid attacks), minerals in the oral cavity are redeposited on the tooth surface by a dynamic process.[4] The tooth surface remains intact as long as these minerals are replaced. However, repeated acid attacks and prolonged pH drops cause a net loss of minerals[4] eventually resulting in enamel breakdown or a 'cavity'.

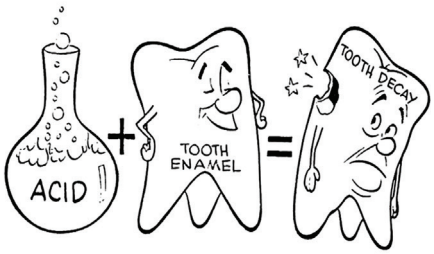
Thus, tooth decay is actually an active process of tooth destruction resulting from the interaction of the tooth with plaque, sugar and the tooth enamel.

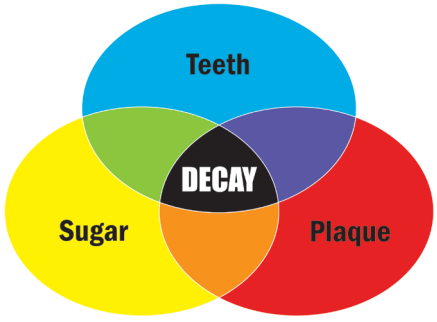
If the decay is not stopped and the cavity is not restored, the cavity may increase in size and spread deeper through the enamel into the dentine and pulp. Once the pulp is involved, infection can develop and spread to the jaw bone and other parts of the face and body.



Plaque + Sugar = Acid

Acid + Tooth = Decay





Plaque + Sugar + Tooth = Decay

A model for tooth decay

Bacteria and dental plaque

Studies indicate that the bacteria mutans streptococci (MS) is involved in the development of dental caries.[4] The factors associated with MS colonisation in children include frequent exposure to sugar, frequent snacking, taking sweetened drinks to bed, sharing foods with adults, and high levels of maternal MS.[4] High levels of MS in the mother's mouth can play a significant role in the transmission of these bacteria to the child.[4]

Time

Frequent intakes of sugary foods and drinks are harmful to teeth as each time these foods or drinks are consumed, the acid content in the mouth is affected. Any sugar sweetened beverage and sweet foods which stick to teeth for a long time, such as dried fruits and chocolates, or those which are in the mouth for a long time, such as lollipops, are particularly detrimental to oral health. The frequency of sugar consumption and the form in which sugar is consumed, are suggested to be just as important in the development of dental caries as the total amount of sugar consumed.[5] Sugary foods and drinks should be taken at meal times instead of as snacks.[6] Teeth need a rest between meals (see role of saliva).

A normal mouth has a pH of 6.2 to 7, and at a critical pH of about 5.5 is the point the minerals begin to dissolve from the tooth enamel.[7] Figure 1 shows the effects of frequent consumption of sugar. The arrows represent sugar intakes during the day that are followed by acid attacks which drop the pH below the critical level.

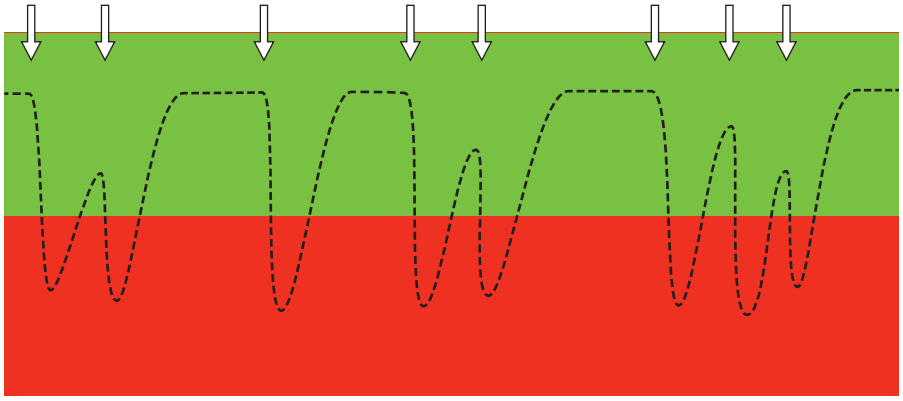


Figure 1: The effects of frequent sugar intakes

Nutrition and snacking

Some carbohydrates, especially sugars, interact with bacteria to produce acids.

Sucrose, the common table/white sugar, is significantly more cariogenic (agents causing caries) than other sugars as it can be readily absorbed and converted into acid. However, other sugars such as glucose (e.g. pasta and bread), fructose (e.g. sugar within fruit) and maltose (e.g. breakfast cereals and confectionery) are also highly cariogenic.

Snacking

Young children have relatively high energy requirements and limited stomach capacity. Ensuring that children are eating morning tea and afternoon tea in addition to three meals a day is essential for energy production. However, maintaining a period between each meal and snack is key for resting the teeth and allowing the saliva within the mouth to restore its protective barrier. Outside of regular mealtimes, water and plain milk should be the only drink available for children.

High sugar foods and drinks, such as soft drinks, fruit drinks and confectionery (includes fruit pouches, muesli bars, fruit leathers and dried fruit) are readily available and tend to be considered as snacks. These foods and drinks have been associated with the development of dental caries.[8,9] Soft drinks, sports drinks and citrus fruit drinks contain added sugar and/or acids (such as phosphoric acid in soft drinks), which lower the pH in the mouth and can contribute to tooth surface demineralisation leading to tooth decay. Highly processed carbohydrate snacks, such as potato chips and pretzels, are also cariogenic.[10,11]

Sugary foods and drinks not only contribute to tooth decay but often provide children with excess energy (kilojoules), while providing limited nutritional value and contributing to the development of obesity.[12] Snacks containing protein appear less damaging to teeth, while raw vegetables are thought to promote the flow of saliva which counteracts acid attacks on the teeth. Cheese is not only a nutritious food for toddlers, it is also non-cariogenic and may be actively protective against caries.[6]

Tooth-friendly snacks should be nutritious, non-sticky and low in sugar. Tooth-friendly foods and drinks are also those recommended for overall general health, and help the prevention of obesity and related co-morbidities such as diabetes, elevated cholesterol and blood pressure.

Nutrition tips for healthy teeth

- Choose mostly foods which do not stick to the teeth and are low in sugar
- Small children need small meals and two to three nutritious snacks each day. Give teeth a break between meals by only giving water for thirst until the next meal.
- Sweet foods or drinks should be occasional (once a week or fortnight). Have them with a meal
- Choose protein-rich snacks such as cheese or yoghurt
- Consume plenty of fluids
- Water and plain whole milk are best *
- Avoid consuming soft drinks, sports drinks, fruit drinks and undiluted fruit juice **
- Choose foods which stimulate saliva flow
- Fresh fruits ***
- Vegetables ***

* Cow's milk should not be given before a child is 12-months old. During that year breastmilk or infant formula are baby's milk. If babies are not breast feed, whole milk is recommended for children aged one to two years old.[5] Reduced-fat and low-fat milks can be introduced from two years of age and should not be consumed prior

** Sweet drinks such as fruit drinks and juice, cordials and soft drinks, are not recommended.[5]

*** Young children are at an increased risk of choking on food. Do not give small hard foods such as whole nuts or raw hard fruits and vegetables (e.g. apple or carrot) until children are at least 5-years old. Altering food texture may be helpful, for example grating, cooking, mashing or puréeing foods. Please view further details in the Well Child Tamariki Ora My Health Book developed by the Ministry of Health and Health Promotion Agency.

The role of saliva

Saliva protects the teeth from dental decay by neutralising acids produced by bacteria and sugars. Saliva helps flush food and debris away from the mouth. The rate at which food is cleared from the mouth increases with the salivary flow rate. Foods, such as raw vegetables, can be useful for promoting the flow of saliva and counteracts acid attacks on teeth. It is important to brush the teeth before bedtime, as the salivary flow is low during nighttime. Due to salivary flow being lower while baby sleeps, it can be assumed that teeth are in a less protected state with reduced saliva. It is Ministry of Health advice that babies should not be encouraged to fall asleep with milk in their mouths as the milk can cause damage to the teeth.[19]

Saliva also helps heal the tooth surface by moving the minerals (calcium and phosphate) back to the tooth enamel after being removed during an acid attack. This is why it is very important to rest the teeth between regular meal and ensuring water is the only drink option during this period. Frequent consumption of sugar (found in most beverages) removes more minerals from the tooth enamel than are deposited back, leading to a gradual mineral loss and the eventual enamel breakdown creating a hole or 'cavity'.

The role of fluoride

Fluoride helps prevent dental decay by both strengthening (systemic) and protecting (topical) the teeth.[4]

- Fluoride strengthens baby teeth by building fluoride into the tooth's structure and making it more resistant to demineralisation.[4] Fluoride is most effective when teeth get exposed to small levels of fluoride as they erupt through the gums (0.7 to 1.0 parts per million). Fluoride replaces the ions (hydroxyl, carbonate and bicarbonate) in the mineral component (hydroxyapatite) of enamel and forms another mineral known as fluorapatite that is stronger and less soluble than hydroxyapatite.[10]
- Fluoride helps protect both child and adult teeth by binding with tooth enamel to repair the early stages of dental decay. Fluoride replaces the minerals lost on the surface of the teeth during demineralisation.

  The most significant sources of fluoride are fluoridated water and fluoride toothpaste. Children of all ages should use a toothpaste that has at least 1000ppm fluoride (smear for under 5-years old and pea size for over 5-years old). Other sources of fluoride include supplements that are applied directly on teeth by a dental professional.

See Module 3 for more information on these sources of fluoride.

Early childhood caries [ECC]

Learning objectives

- To understand the characteristics of ECC.
- To understand the risk factors and risk behaviours associated with ECC.
- To describe the direct and indirect effects of ECC in children.

Key messages

Early childhood caries:

- affects the teeth of infants and young children
- affects their growth, development and quality of life
- impacts on the family as a whole.

Characteristics of ECC

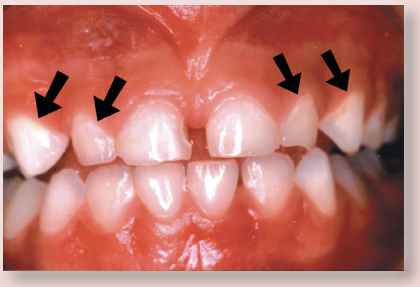
ECC is the term used to describe the form of dental caries that affects the teeth of infants and young children. ECC impacts on the family as a whole and has been identified as an important health problem affecting the growth, development and quality of life of many preschool children.[3]

Severe ECC is a particularly virulent form of dental caries that is characterised by an overwhelming infectious challenge from the bacteria in the mouth, supported by dietary practices that provide frequent and high levels of refined carbohydrates (sugars).[3] Severe ECC can develop quickly, causing major destruction of tooth tissue, pain and sepsis before a child even reaches school age.

Teeth are at risk of dental decay from the time they start to appear in the mouth.[3] Early identification of this decay can help prevent or stop the progression of this disease and improve the child's quality of life.

The decay starts as chalky, white spots (areas of demineralisation) on the surface of the tooth near the gum line. This is followed by yellow or brownish discolouration and, as the decay progresses, the spots become continuous patches to form a black or dark brown collar around the tooth. The tooth may appear rough or pitted at this stage. As the condition advances, the breakdown continues towards the chewing surface of the tooth. Eventually the tooth breaks off, leaving only the decayed root stump. Refer below for different stages of ECC.

Healthy teeth and gums. No signs of decay and only a little plaque.

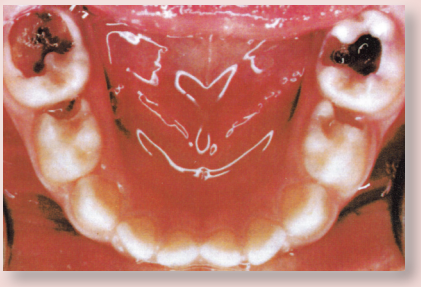


Chalky patches (arrows) and also an enamel breakdown on the side of one of the front teeth.

Clearly visible decayed front teeth, both in-between upper front teeth, and along the gumline.

Well-advanced decay. The crowns of the top teeth are breaking down and decay is starting between the bottom teeth.

Only the roots of the top teeth are left.



Deep decay in the lower back teeth (molars).

Refer to Appendix 3 for enlargements of the above images

Risk factors for ECC

1. Bottle-feeding—a child is at increased risk of developing ECC with improper use of a bottle, for example when:
   - put to bed with a bottle
   - put to sleep after feeding without cleaning the teeth
   - drinking non-water beverages for prolonged periods (including milks)
   - the bottle is used for feeding sweetened drinks.
2. Snacking with non-nutrient foods and sugary drinks and food throughout the day.
3. When regular cleaning of the teeth with a fluoridated toothpaste is not started as soon as the teeth erupt through the gums.
4. History of high levels of tooth decay in the family.
5. Those living in non-fluoridated areas are at increased risk.
6. Children from low income families are at increased risk due to reduced enabling factors such as:
   - affordability of nutritious foods
   - inability to attend regular appointments
   - lack of oral health education.
7. Children born prematurely or at lower-than-normal birth weight, and children born with developmental disabilities and disorders are more susceptible to ECC.
8. Some babies that are nursed for long periods of time throughout the day and night may develop ECC.[19] Resting the teeth between meals and avoiding settling a child to sleep whilst feeding (from breast or bottle) are some easy ways to prevent this.

NOTE:
These risk factors apply for bottle-fed, breast-fed and weaned infants/toddlers

These risk factors are not evenly distributed across the population. The Ministry of Health's child oral health data shows a clear disparity between the oral health of Māori and Pacific children and children of other ethnicities:

- Māori five year old children are twice as likely to have decayed, missing or filled teeth than non-Māori children.[13]
- Pacific five year old children are three times more likely to have decayed, missing or filled teeth than non-Pacific children.[13]

Data also reveals that children from communities with non-fluoridated water have higher rates of ECC when compared to children from areas with fluoridated water.[13]

Direct and indirect effects of ECC in children

ECC in children can cause:

- Pain, destruction of teeth, abscess/infections in the mouth and spread of infection to other parts of the face and body
- Sleep disturbance and behaviour changes
- Difficulty in chewing, resulting in nutritional impairment
- Speech development problems
- Lost preschool or school days, difficulty in learning and loss of concentration
- Difficulty sleeping
- Poor self-esteem and social interaction problems
- Reduced quality of life
- Hospitalisation for extractions of decayed teeth under general anaesthesia
- Crooked or crowded permanent teeth
- Increased risk of decay in permanent teeth.

Module 3

Oral hygiene practices and preventive measures

Learning objectives

- To become familiar with appropriate feeding and oral hygiene practices for infants, toddlers and preschool children.
- To become familiar with significant sources of fluoride that can be used for preventing ECC.

Key messages

- Baby teeth are important and tooth decay is almost completely preventable.
- Inadequate exposure to fluoride leads to increased risk of developing ECC.

The importance of baby teeth

Baby teeth are important and need proper care. Teeth not only help to chew food, they are important in saving the space for adult teeth and may help in the prevention of crowding. Baby teeth are important for the proper growth of the face and jaw. They also boost the child's self-esteem by giving a nice appearance, smile and proper speech.

Prevention of ECC in children

It is important to take care of baby teeth as they may cause lots of problems if they are not looked after carefully. ECC can be prevented and, if detected soon enough, its progress can be halted and quality of life improved for the child.[2] ECC can be prevented by promoting appropriate feeding / dietary measures, regular tooth brushing and correct use of fluorides.

Dietary measures

Infant feeding

The Ministry of Health *Food and Nutrition Guidelines for Infants and Toddlers* advise that breast milk is the best form of nutrition for infants.[5] In fact, breast milk is the only source of nutrition that an infant requires for about the first six months of its life. However, whole cow's milk can be offered after 1-year. Drinking fruit juices and sweetened drinks may cause sugary fluids to pool in the mouth and coat the teeth which develops a favourable environment for bacteria to produce the acids that cause tooth decay. Sweetened drinks such as fruit juices, cordials, flavoured milks, soft drinks, energy and sports drinks **are not** recommended for infants and toddlers.[5]

Tips for parents to help prevent dental decay in infants:

- Exclusively breastfeed infants until around six months of age and continue to breastfeed until the infant is at least one year of age, or beyond.[14]
- If not breastfeeding, use a cup or a bottle with either expressed breast milk or infant formula.
- Water, breast milk or infant formula is the only drink that infants need. Always offer water or their milk instead of sweetened drinks.
- Hold baby while bottle-feeding and avoid propping or putting baby to bed with a bottle.
- If bottle-feeding, avoid using a bottle after 12-months of age and offer an open cup instead.

Toddlers and preschool children

Advise families to encourage their child to eat healthy, nutritious, sugar-free snacks, such as fresh fruit pieces, cheese, crackers, vegetables and sandwiches. Children should snack at regular intervals, such as at morning and afternoon tea, and avoid having other snacks throughout the day to prevent frequent acid attacks. Eating habits begin to develop early, and children should be influenced positively by their families.

Discourage parents from introducing sweetened drinks to their young children and instead, encourage them to role model drinking water and eating foods that have lower risk in the development of ECC. See Table 1 for healthy food options for toddlers and preschool children.

Table 1: Healthy food options for toddlers and preschool children

Tooth and health-friendly	Best to avoid
■ Vegetables *	■ Dried fruits
■ Cheese	■ Dried fruit leathers / fruit roll-ups
■ Yoghurt	■ Sweets / lollies and lollipops / chocolates
■ Sandwiches *fillings: peanut butter, tuna fish, cheese, cottage cheese, lean meat slices, baked beans, egg, vegetables*	■ Sweet biscuits and cakes
■ Plain popcorn	■ Soft drinks ***
■ Plain crackers *i.e. rice crackers or water crackers*	■ Fruit drinks ***
■ Water	■ Sports drinks ***
■ Raw nuts *	■ Powdered drinks / cordial ***
■ Plain whole or reduced-fat milk **	■ Fruit juices ***
■ Savoury muffins	■ Muesli bars
■ Cottage cheese	■ Potato chips / pretzels
■ Hard-boiled eggs*	**These foods are best avoided but if eaten they should be consumed with main meals to reduce damage to teeth.**

* Young children have an increased risk of choking. Do not give small hard foods such as whole nuts until children are at least 5-years old. Altering food texture may be helpful, for example grating, cooking, mashing or puréeing foods. For more information please view the Ministry of Health guidelines regarding food related choking.

** Cow's milk should not be given before a child is 12-months old. Whole milk is recommended for children aged one to two years. Reduced-fat and low-fat milks can be introduced from two years of age.

*** Sweet drinks such as fruit drinks and juice, cordials and soft drinks, are not recommended.

Cleaning

Regular brushing should be started as soon as the first tooth comes through the gum. The first tooth can erupt between four and eight months of age.

- Teeth should be brushed twice daily with fluoride toothpaste, one of these brushings should be last thing at night time before bed.
- During the day time, avoid eating directly after brushing to help prevent fluoride being washed away from the mouth too early.
- For children aged five years and under, a smear of fluoride toothpaste (1000ppm) is recommended.
- A small, soft-bristled brush is ideal for children.
- After brushing, encourage the child to spit the toothpaste out and not to rinse the mouth.
- An adult should assist the child with brushing until they are eight or nine years old.
- Proper positioning is important while brushing the child's teeth. The infant can be seated in the adult's lap, both facing the same direction. Similarly, the adult should position themselves behind a seated or standing toddler, both facing the mirror, and reach around to brush the child's teeth. Make sure that all surfaces (outer, inner and chewing) of all teeth and the gums are cleaned for effective plaque removal. Lift the lip to brush the upper front teeth, especially near the gum line.
- Resting the teeth between main meals and snacks is important for maintaining a clean mouth throughout the day and preventing acid attacks to the tooth surfaces.

Fluoride

Apart from a good, varied diet and effective cleaning, another important thing that will keep teeth healthy is fluoride. Fluoride is a natural mineral that occurs in the earth's crust and is found in many foods we eat and drink, and in all drinking water. The amount of fluoride in the water varies between areas. The most significant sources of fluoride are fluoridated water and fluoride toothpaste. Other sources of fluoride include supplements that are applied directly on teeth by an oral health professional and fluoride tablets.

Water fluoridation

Water fluoridation is the process of adjusting the natural level of fluoride in the water supply to the optimal level of between 0.7ppm to 1ppm (parts per million).[15] The optimum level is the level of fluoride in water supplies that provides protection against tooth decay without any side effects. The amount added is monitored to make sure that the levels stay within that range.[15] Annual data reflecting the differences in dental decay in communities with and without water fluoridation proves that water fluoridation is an effective public health measure in reducing decay.[13]

Fluoride toothpaste

Brushing twice daily with fluoride toothpaste is an effective method of reducing dental caries. In areas where the water supply is fluoridated, fluoride toothpaste gives extra protection to teeth. In non-fluoridated areas, brushing twice daily with fluoride toothpaste is the best method of preventing dental decay.[15] The Ministry of Health recommends that a smear of at least 1000ppm fluoride toothpaste be used for children five years and under. Children should also be discouraged from swallowing or eating toothpaste as this can cause tooth enamel fluorosis.[15]

When choosing the appropriate toothpaste, it is important to know that there are toothpastes that do not contain fluoride. These toothpastes are not effective in protecting teeth and should be avoided.

Fluoride tablets

Fluoride tablets are not recommended by the Ministry of Health as a population public health measure but can be used by children/families when recommended by a dental therapist, oral health therapist or a dentist. Fluoride tablets are usually only recommended where fluoridated water is not available and for children aged three and over at high risk of dental caries. This is a restricted product due to safety reasons.

Fluoride varnish

This is a topical fluoride that is simply painted onto the susceptible surfaces of teeth. Fluoride varnish contains a high level of fluoride and is only applied by oral health professionals. The Ministry of Health *Guidelines for the Use of Fluorides* recommend a minimum of twice yearly fluoride varnish application that is reapplied at regular intervals.[20] Professionally applied high concentration fluoride varnishes may be used for children over 12-months who are at high risk of dental caries.

Refer to page 25 for information about tooth enamel fluorosis.

Dental visits

Regular dental visits are vital to provide dental health messages, assess the child's teeth and preventing potential dental problems. This is important for preventing the considerable amount of stress, infection, pain and complications associated with dental decay. Other preventive measures like brushing, use of fluoride toothpaste and healthy diet, should be combined with regular dental check-ups for the early detection of dental diseases and provision of preventive treatments, such as topical fluoride applications and fissure sealants where required.

Fissure sealants

Fissure sealants are thin plastic coatings applied to back teeth to prevent decay. Molars have irregular chewing surfaces with pits and fissures that can trap food and debris. Dental sealants, applied by the dental professional, flow into and coat these grooves so that bacteria cannot multiply and cause dental decay.

Molar fissures

With fissure sealant

Lift the Lip screening and risk assessment for ECC

Learning objectives

- To become familiar with oral health screening techniques.
- To become familiar with risk and protective factors that affect a child's ability to develop ECC.

Key messages

- Lift the lip at every Well Child visit to check for chalky white patches or cavities, and demonstrate the technique to whānau.
- Undertake caries risk assessment between nine and twelve months of age.

Screening

Oral health screening aims to rapidly examine a child's teeth and identify early or more severe dental decay. It is not a full clinical examination and does not involve making diagnoses that lead to treatment plans.[16] An oral health screening only takes 2- 3 minutes and 'Lift the Lip' is a quick and easy technique that can be learnt by non-oral health practitioners for identifying visible decay. Health practitioners performing oral health screening should be aware that lack of visible decay does not mean that no decay is present, or the child does not need to go to a dental clinic. Advise parents to enrol their child with the Community Oral Health Service in the first six months of their life and take their child to a dental clinic regularly for a full clinical examination by a dental therapist, oral health therapist or a dentist.

Lift the Lip screening

Infants and Toddlers

Knee-to-Knee Examination—This technique is useful for infants, as they are sitting on their parent's lap and does not require a dental chair. The parent and the screener should sit face to face with their knees touching. Position the child in the parent's lap, preferably facing the parent as the child may feel more secure this way.[17] Then slowly lower the child's head onto the screeners lap. Secure the child's head against the screeners abdomen and with gloved hands lift the lip.[17]

Alternatively, a toddler can sit in front of the parent, both facing the screener. The parent can position and steady the child around the chest during screening. It is important to support the head of the toddler to ensure safe, secure and successful screening.[17]

Preschool Children

Preschool children can lie flat on an examination table or sit in front of the parent, with both the child and the parent facing the screener so that the parent can help position and steady the child.[17] When a parent's assistance is not available, the health practitioner can have the child sit on a chair in front of them. The child should be calm and steady while screening. A tongue depressor or toothbrush can be used to move the tongue and view the teeth.[16] While screening, the screener should lift the lip with gloved hands and view the front and back of the upper front teeth, and then the entire mouth. If available, a flashlight, tongue depressor and dental mirror can be used for better viewing and more thorough screening.

During 'Lift the Lip' screening

- Look around the neck of the upper front teeth—near the gum line—then on all the teeth as decay can occur on any tooth surface. Look for chalky, white spots or patches, yellow or brownish discolouration, or a clearly visible cavity. When decay is observed, refer the child to a dental therapist, oral health therapist or dentist promptly.
- Check for visible plaque and food debris.
- Check if the tooth eruption is proceeding as expected—incisors at or about six months, first molar about one year, canines between one and two years, and second molar around two years.
- This is an opportunity to educate the parent on how to lift the lip themselves. Get them involved in the screening by communicating with them throughout the appointment. Let the parent know what you are doing, why you are doing it, what you are looking for, and what you notice during the screening.

After 'Lift the Lip' screening

- Encourage parents to lift the lip regularly to look at their child's teeth.
- Explain that this is a check for visible decay, not a thorough clinical examination, and emphasise that they still need to take their child regularly to a Community Oral Health Service clinic for thorough examinations.
- If decay is observed, or if in doubt, the child should be referred to a dental clinic promptly.
- Emphasise the need for regular dental check-ups at a Community Oral Health Service clinic even if there is no visible decay.
- Emphasise the importance of correct oral hygiene, nutrition and care for their child's teeth. Using a tooth model to give examples of brushing techniques and how to reach the easily missed surfaces is beneficial. It will also be great showing parents the decay indication pictures in the back of this book to assist them in their own lift the lip examinations.

Refer to Appendix 2 for both primary and permanent teeth eruption charts.

Refer to Appendix 3 for images on the progression of decay.

Risk assessment

Not all children are equally likely to develop ECC. Caries risk assessment involves identifying risk or protective factors that may impact on a child's ability to develop dental caries.[16] The Ministry of Health recommends that a caries risk assessment is undertaken by Well Child and other non-oral health providers between nine and twelve months of age.[3]

Factors to consider when doing risk assessments are dietary habits, oral hygiene / plaque control, fluoride use and presence of caries among family members and the child.

High Risk	Factors to Consider	Low Risk
Frequent intake of sugary foods and drinks	**Dietary habits**	Infrequent intake of sugary foods and drinks
Non-fluoridated area Not using fluoride toothpaste	**Fluoride**	Fluoridated area Use of fluoride toothpaste
Visible plaque Infrequent or lack of brushing	**Oral hygiene**	Regular brushing No visible plaque
Active untreated decay Previous experience of decay Presence of decayed teeth in family members	**Dental caries**	Few or no filled teeth No active decay Good family oral health

Dental enrolment

The exact enrolment age for Community Oral Health Services varies between District Health Boards. However, WCTO providers have the opportunity to ensure children have undertaken a caries risk assessment and are enrolled with their Community Oral Health Service by twelve months old. All resulting documents can be sent to the District Health Board's Community Oral Health Service.[3] Early enrolment with the Community Oral Health Service will provide the best opportunity of meeting the needs of children identified at highest risk of developing ECC, as they may need more complex preventive measures and treatment than others. In some regions of New Zealand, this enrolment occurs soon after birth. WCTO providers can obtain the enrolment forms from their District Health Board's Community Oral Health Services. Therefore, it is important to be familiar with the enrolment process for your region, ask parents if their child has been enrolled and is attending regular check-ups. Remember to remind parents that they can enrol their child by calling 0800 TALK TEETH.

Refer to Appendix 4 for a list of contacts from all the Community Oral Health Services in New Zealand.

For information about the Community Oral Health Service:

Please call
0800 TALK TEETH
[0800 825 583]

or search for 'publicly funded dental care' on **health.govt.nz**

Module 5

Common developmental issues relating to oral health

Learning objectives

- To understand the most common developmental issues related to oral health in early childhood.
- To be familiar with the signs and symptoms associated with these conditions.

Key messages

- Teething **does not** cause high fever, vomiting, diarrhoea or ear infection.
- Fluorosis can be avoided by:
  — limiting the amount of toothpaste used for brushing, and
  — making sure that children are not eating or swallowing toothpaste.

Teething

Teething is the time when a baby's teeth begin to come through the gums. Often, when the teeth break through the surface, the gums will swell and become tender. Teething may also be associated with restlessness, crying, low-grade temperatures, cheek redness, disrupted eating and sleep habits, drooling and the desire to bite something hard.

These simple tips may help to ease the symptoms of teething:

- Gently massage the gums with ice cubes wrapped in a cold cloth.
- Gently massage the gums with a clean finger.
- Safe teething rings can be used. It's best to avoid teething rings with liquid inside as the liquid may not be safe if the ring breaks.
- The effect of teething gel is likely to be limited as it will be washed away quickly due to baby's drooling. Applying teething gels before feeding may be effective in pain relief. Always follow the directions for use on the packaging.
- Anti-inflammatory medicine such as paracetamol (Pamol) may be used following the dosage instructions supplied.
- Bleeding, excessive pain, pus or swelling from the gums is not usual and should be assessed by a health practitioner.

Teething does not cause serious health problems. High fever, vomiting, diarrhoea, and ear infection are not symptoms of teething, and if a child has these symptoms parents should contact their health practitioner promptly or call Healthline on 0800 611 116.

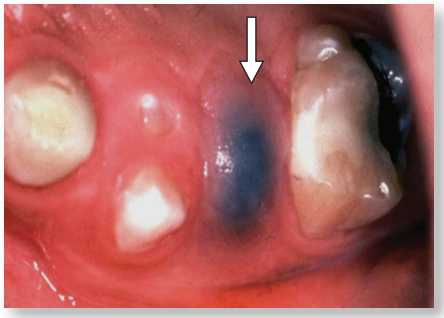
Non-nutritive sucking

Sucking is a natural reflex in infants, necessary for nourishment. Some children may also suck to satisfy their emotional needs.[16] This type of sucking (thumb, finger or pacifier sucking) is known as 'non-nutritive sucking' and helps children to calm down and self regulate.

If parents choose to offer their infant a pacifier, advise them not to dip the pacifier in sugar, honey or other sweetened drinks as this increases the risk of ECC.[5]

Most children discontinue the non-nutritive sucking habit between the ages of two and four.[18] The effects of these habits on developing teeth are minor for children under age five, but may cause dental problems if the habit persist beyond that as the permanent teeth may be affected.[18] Parents can talk to their child's dental therapist / oral health therapist or dentist about the long term impacts of nutritive sucking.

Eruption cysts



Eruption cysts are associated with teeth eruption and results from fluid accumulation within the space surrounding the erupting tooth. Eruption cysts may be seen in both primary and permanent teeth eruption. The cyst appears as a bluish and translucent dome-shaped soft tissue lesion overlying an erupting tooth.[18] When the fluid in the cyst is mixed with blood, the cyst is referred to as an eruption haematoma.[17] This may disappear once the tooth erupts through the lesion and no treatment is needed. However, if it does persist, the parent may need to seek advice from a dental therapist / oral health therapist or dentist.

Fluorosis

Dental fluorosis is a type of enamel defect that appears as white, usually symmetrical mottling on permanent teeth. It is caused by ingesting excessive amounts of fluoride during tooth development. The defect can be mild, moderate or severe, but in most cases is seen in mild form. Fluorosis can be avoided by making sure that only a smear of toothpaste is used for under five year olds and a pea-sized amount of fluoride toothpaste is used for children older than five. Only a parent or caregiver should dispense the toothpaste onto the brush, and children should not be allowed to eat or swallow the toothpaste.[15]

Natal or neonatal teeth

At birth (natal) or shortly after (neonatal), tooth-like objects or calcified tissue may be noted in the mouth. These are more common in the lower jaw, but can occur in other parts of the mouth. They are usually poorly formed; ninety percent of the teeth are normal primary teeth, not extra teeth. They may need to be removed if they interfere with feeding or are quite mobile.

Module 6

Anticipatory guidance about preventing ECC

Learning objectives

- To be able to deliver appropriate anticipatory guidance to parents for preventing ECC.
- To be able to modify anticipatory guidance based on development stages and risk assessment.

Key messages

- Well Child providers are well-positioned to provide oral health intervention.
- Anticipatory guidance will prepare the families well for current and subsequent developmental stages of the child.
- Oral health anticipatory guidance will prepare parents to care for their children's teeth to prevent ECC.

Anticipatory guidance

Anticipatory guidance refers to the information that is given to the child and family to promote health, prevent disease and increase awareness about what to expect as the child transitions between developmental phases.[18] By this oral health intervention, parents can help prevent dental decay in children. The learning materials from other modules in this guide can be used to develop age-specific, consistent and appropriate anticipatory guidance. WCTO providers should also be able to modify the guidance and support they offer based on the caries risk assessment and in response to the needs of the family.

Birth to six months

- Encourage mothers to exclusively breastfeed infants until six months of age, and to continue to breastfeed until at least one year of age, or beyond
- If a mother is temporarily unable to breastfeed, expressed breast milk can be given to the infant by cup feeding
- If bottle-feeding, advise parents to use only expressed breast milk or infant formula
- Advise parents to hold the baby while bottle-feeding and not to prop to feed or put baby to bed with a bottle
- If a pacifier is used, advise parents not to dip the pacifier in anything. It is harmful to use sugar, honey or any other sweetened drinks to assist in latching on to the pacifier.

Six to 12 months

- Encourage mothers to breastfeed infants until at least one year of age, or beyond
- If not breastfeeding, expressed breast milk or formula can also be provided by cup feeding
- If bottle-feeding, advise parents to use only expressed breast milk or infant formula
- Reinforce the message to hold the baby while bottle-feeding and not to prop them up or put baby to bed with a bottle
- Advise parents that fruit drinks and juice, cordials and other sweetened drinks (including soft drinks and sports/energy drinks) are not recommended. Always chose water or plain milk
- Remind parents to start brushing the baby teeth as soon as they start to emerge through the gums
- Emphasise the importance of baby teeth
- Emphasise using a smear of fluoride toothpaste on a small soft-bristled brush
- Advise parents to brush twice daily and emphasise the need to brush before bedtime
- Discuss teething and ways to soothe gums, such as teething rings or cold wash-cloths
- Teach the parent how to lift the lip to check for signs of early or severe decay
- Do caries risk assessment
- Enrol all children by 12-months with their District Health Board's Community Oral Health Service

12 to 24 months

- Reinforce brushing twice daily with a smear of fluoride toothpaste.
- Lift the lip to check for signs of early or severe decay.
- For babies that have been bottle fed, encourage the use of an open cup at one year with milk or water.
- Encourage parents not to settle their child to bed with a bottle as it increases the risk of ECC.
- If a pacifier is used, encourage parents to discontinue its use by age two
- Discuss healthy eating and remind parents to choose nutritious and tooth-friendly food and snacks (see page 15 for examples).
- Remind parents that if sugary and sticky foods are eaten, they should be taken at meal times instead of as snacks.
- Advise parents that fruit drinks and juice, cordials and other sweetened drinks (including soft drinks and sports drinks) are not recommended.
- Advise parents on how they can read and understand the nutritional value on food packaging, more specifically the sugars, carbohydrate and energy content.
- Emphasise that water and whole cow's milk should be the child's first drink of choice and this needs to be encouraged.
- Ensure the child is enrolled with their District Health Board's Community Oral Health Service and a caries risk assessment should be completed by 12-months.

Age two to five

- Reinforce brushing twice daily with a smear of fluoride toothpaste
- Advise parents to make sure that the child is not using too much toothpaste, or eating it
- Encourage the child to spit out the toothpaste after brushing and not to rinse with water
- Remind parents to continue to assist with tooth brushing until the child is eight or nine years old
- Lift the lip to check for signs of early or severe decay
- Discuss healthy eating and remind parents to choose nutritious and tooth-friendly snacks (see page 15 for examples)
- Remind parents to choose foods and drinks low in sugar
- Remind parents that if sugary and sticky foods are eaten, they should be taken at mealtimes instead of as snacks
- Emphasise that water and reduced fat cow's milk should be the child's first drink of choice and this needs to be encouraged.
- Talk to the parents about how to support their child to consume nutritious foods and drink.
- Reinforce regular visits to the dental clinic

For further information and advice refer to:

Food and Nutrition Guidelines for Healthy Infants and Toddlers (Aged 0-2 years)[5]

health.govt.nz > publications

Glossary, references and appendices

Glossary

Acid attack	The process of mineral loss (demineralisation) from the tooth surface due to the presence of acids in the mouth.
Cariogenic	Agents causing caries.
Crowding	Discrepancy in tooth and jaw size resulting in misalignment of teeth along the jaw.
Demineralisation	Loss of minerals from the tooth surface is known as demineralisation.
Dental caries	Active destruction of the tooth surface due to interaction of the tooth with plaque and sugar. This is also known as dental or tooth decay.
Dental plaque	Soft, sticky and invisible film of bacteria that forms on teeth.
Diabetes Mellitus	Diagnosed when levels of glucose are abnormally elevated in the blood. It is usually caused either by a lack of insulin or by the body's inability to use insulin efficiently. The two most common types of diabetes mellitus are type 1 (T1DM) and type 2 (T2DM).
Early childhood caries (ECC)	Term is used to describe the form of dental caries in infants and young children.
Exclusive breastfeeding	The infant takes only breast milk and no additional food, water or other fluids with the exception of medicines prescribed under the Medicines Act 1981.
Oral health professionals	This includes registered dental providers such as dentists, dental specialists, dental therapists, oral health therapists, dental hygienists and dental technicians.

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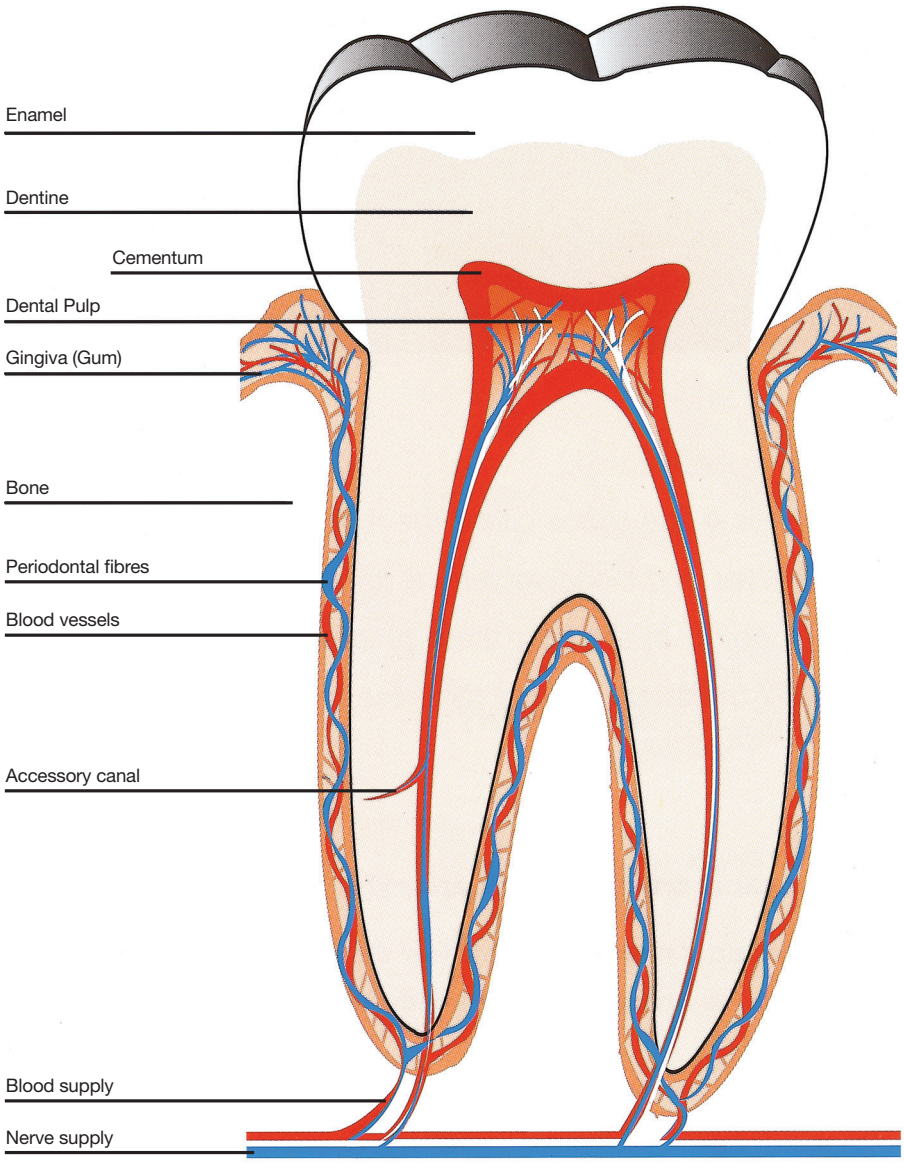
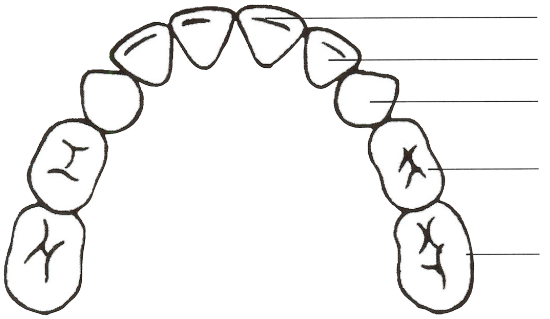
Appendix 1

Structure of the tooth

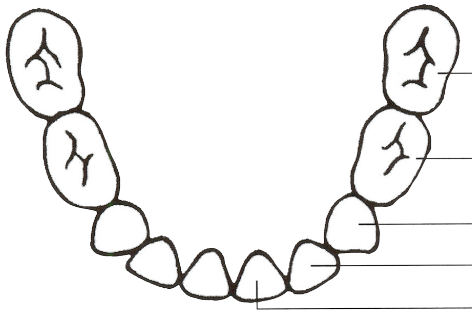


The healthy tooth

Primary tooth development

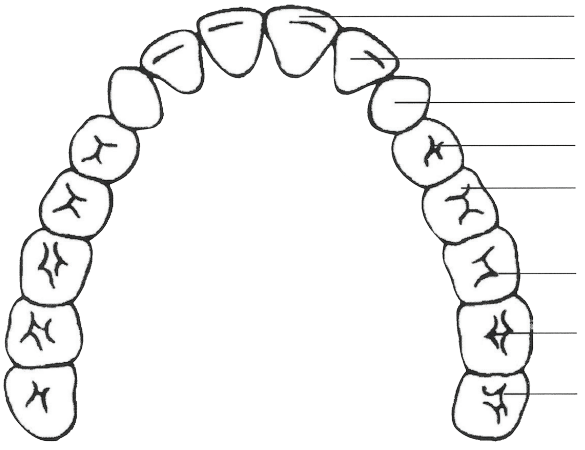


Upper Teeth	Erupt	Shed
Central incisor	8-12 mos.	6-7 yrs.
Lateral incisor	9-13 mos.	7-8 yrs.
Canine (cuspid)	16-22 mos.	10-12 yrs.
First molar	13-19 mos.	9-11 yrs.
Second molar	25-33 mos.	10-12 yrs.

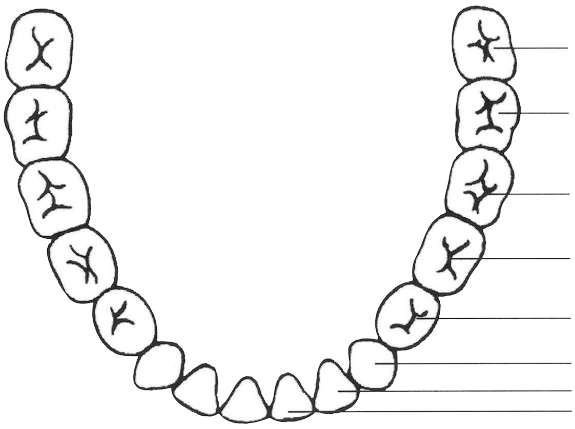


Lower Teeth	Erupt	Shed
Second molar	23-31 mos.	10-12 yrs.
First molar	14-18 mos.	9-11 yrs.
Canine (cuspid)	17-23 mos.	9-12 yrs.
Lateral incisor	10-16 mos.	7-8 yrs.
Central incisor	6-10 mos.	6-7 yrs.

Primary tooth development



Upper Teeth	Erupt
Central incisor	7-8 yrs.
Lateral incisor	8-9 yrs.
Canine (cuspid)	11-12 yrs.
First premolar (first bicuspid)	10-11 yrs.
Second premolar (second bicuspid)	10-12 yrs.
First molar	6-7 yrs.
Second molar	12-13 yrs.
Third molar (wisdom tooth)	17-21 yrs.



Lower Teeth	Erupt
Third molar (wisdom tooth)	17-21 yrs.
Second molar	11-13 yrs.
First molar	6-7 yrs.
Second premolar (second bicuspid)	11-12 yrs.
First premolar (first bicuspid)	10-12 yrs.
Canine (cuspid)	9-10 yrs.
Lateral incisor	7-8 yrs.
Central incisor	6-7 yrs.

Appendix 3

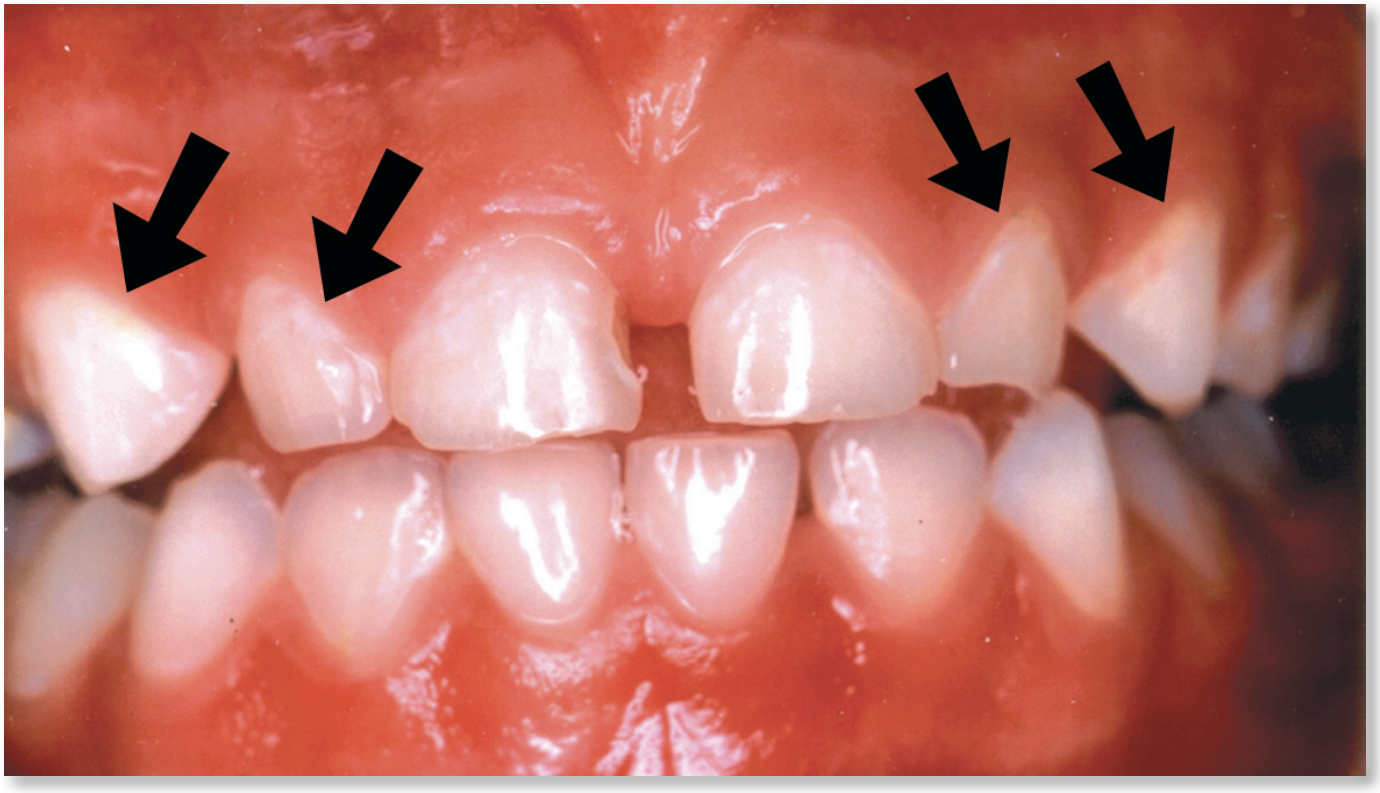
The progression of decay

1 > 2 > 3 > 4 > 5 > 6

Healthy teeth and gums. No signs of decay and only a little plaque.

The progression of decay

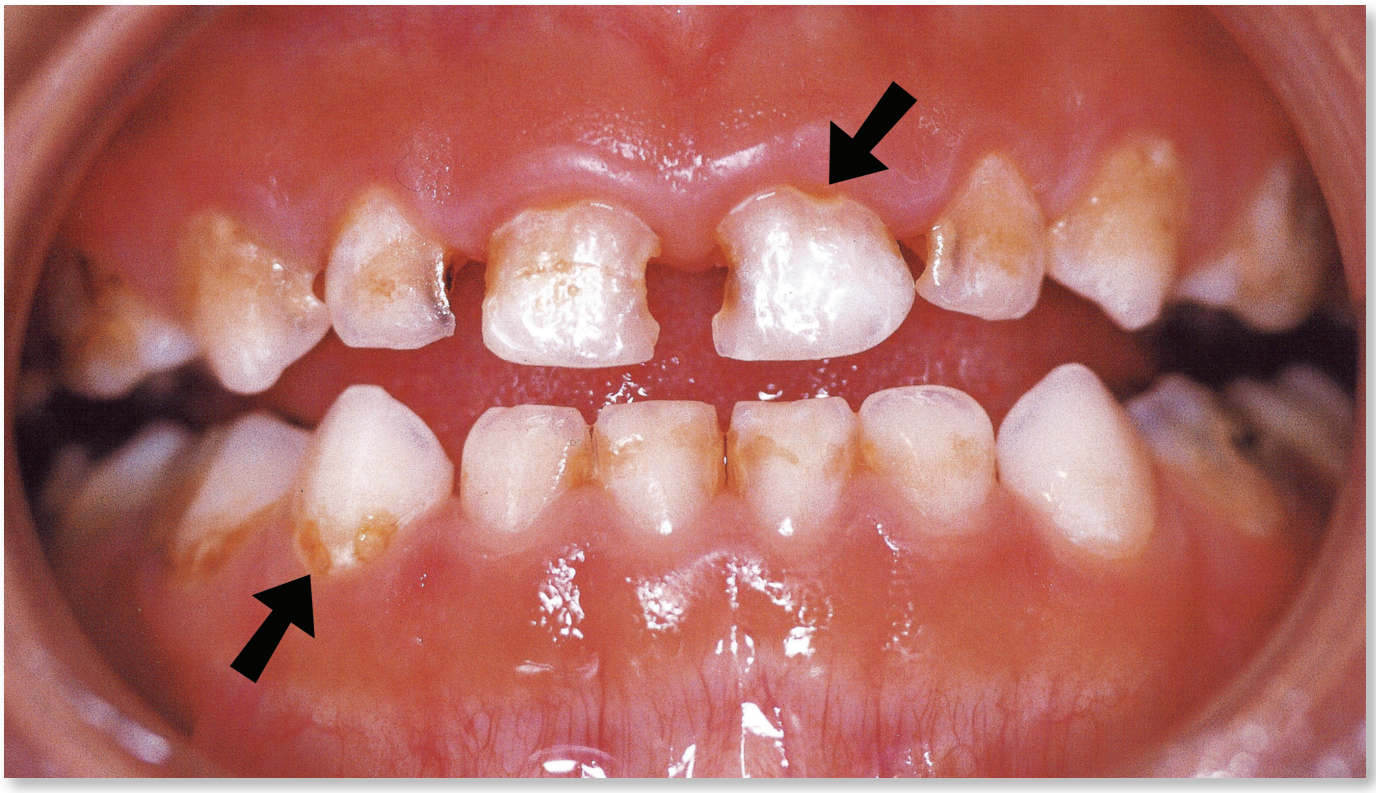
1 > **2** > 3 > 4 > 5 > 6



Chalky patches (arrows) and also enamel breakdown on the side of one of the front teeth.

The progression of decay

1 > 2 > **3** > 4 > 5 > 6



Clearly visible decayed front teeth, both in-between upper front teeth, and along the gumline.

The progression of decay

1 > 2 > 3 > **4** > 5 > 6

Well-advanced decay. The crowns of the top teeth are breaking down and decay is starting between the bottom teeth.

Appendix 3

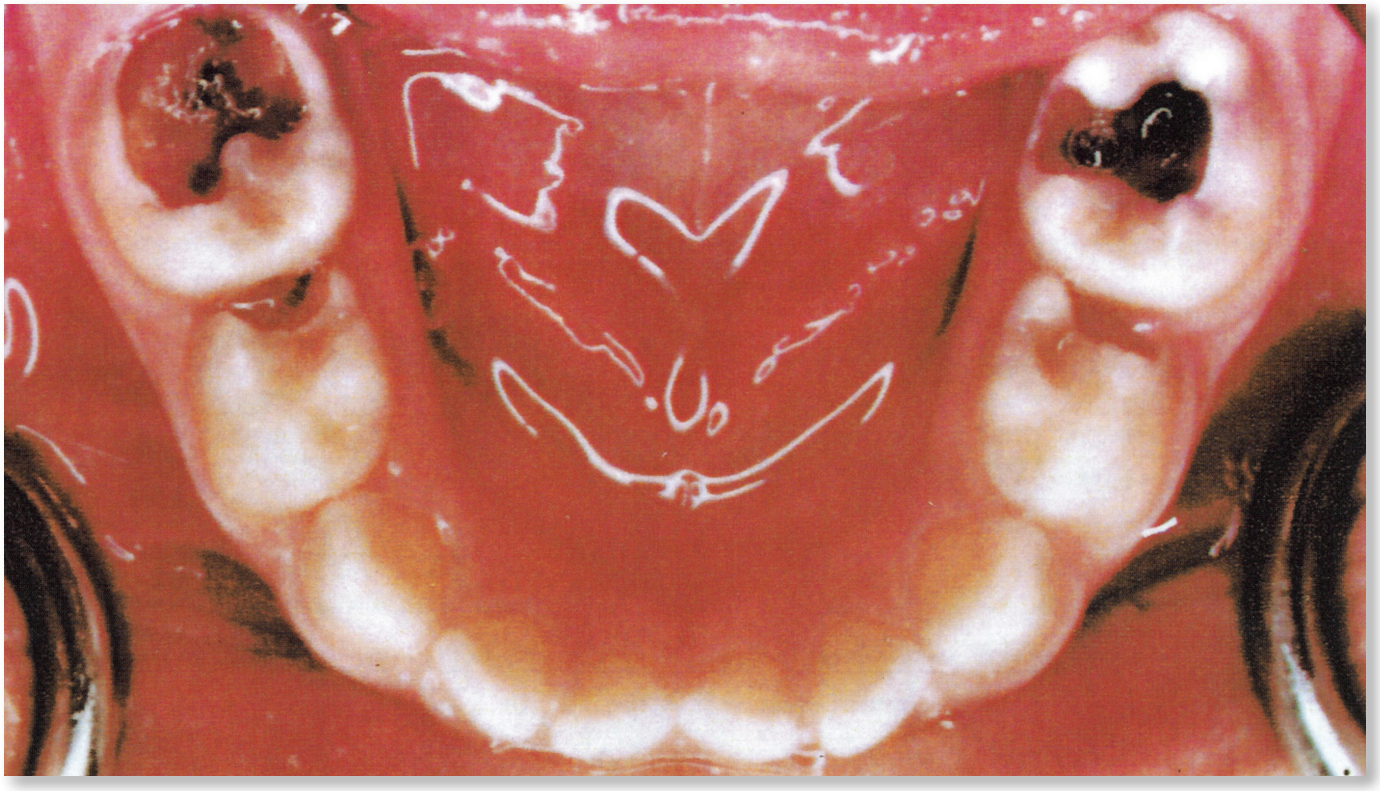
The progression of decay

1 > 2 > 3 > 4 > **5** > 6

Only the roots of the top teeth are left.

The progression of decay

1 > 2 > 3 > 4 > 5 > **6**



Deep decay in the lower back teeth (molars).

Community oral health services

For enrolment and free dental care for your child, you can contact your local District Health Board's Community Oral Health Service by phoning 0800 TALK TEETH (0800 825 583).

For more information about the Community Oral Health Service, you can also ring 0800 825 583 or search for 'publicly funded dental care' on health.govt.nz.

Notes

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David Crum ONZM

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Healthy Smile = Healthy Child

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