

Healthy Smile, Healthy Child

ORAL HEALTH GUIDE FOR WELL CHILD PROVIDERS



This publication was prepared in conjunction with



Healthy Smile, Healthy Child

ORAL HEALTH GUIDE FOR WELL CHILD PROVIDERS

ACKNOWLEDGEMENTS

Healthy Smile, Healthy Child: Oral Health Guide for Well Child Providers has been developed by the New Zealand Dental Association in conjunction with the Ministry of Health.

New Zealand Dental Association wishes to express thanks and extend our appreciation to:

- Deepa Krishnan, NZDA / Colgate Oral Health Educator, primary author of this guide
- Dr Robin Whyman, Ministry of Health
- Dr Pat Tuohy, Ministry of Health
- Dr Geoff Lingard, Dr Martin Lee, Dr John Dalton, Dr Satha Kanagaratnam, Kate Garland, Jo Burgi, Susan Cook, Lily Neumegen, Jasmine Hoetjes, Allison Hussey, Diane Pevreal, Justine Cowie and all other health professionals who provided expert opinion on this document
- NZDA Executive
- Dr Dorothy Boyd, Dr Bernadette Drummond, Dr Kathryn Ayers, Dr Martin Lee and Jo Clarke for helping us with the images and photographs
- Oral Health program, Division of Community and Public Health, Missouri Department of Health and Senior Services for allowing us to use the two illustrations on page 4

David Crum
Executive Director

Citation: New Zealand Dental Association. 2008. *Healthy Smile, Healthy Child: Oral Health Guide for Well Child Providers*. Auckland: New Zealand Dental Association.

First published in May 2008
Second edition November 2008
Third edition April 2010

by the New Zealand Dental Association
PO Box 28084, Remuera, Auckland 1541, New Zealand
www.nzda.org.nz

ISBN 978-0-478-35948-0 (Print)
ISBN 978-0-478-35949-7 (Web)

This document is available on the New Zealand Dental Association's oral health information website:
www.healthysmiles.org.nz

©2008 New Zealand Dental Association. All rights reserved.

Permission is given to photocopy this publication for educational purposes only. Any other use of all or part of the content contained in this publication requires prior written approval from the New Zealand Dental Association.

CONTENTS

INTRODUCTION	1
■ MODULE 1: DENTAL CARIES	3
Tooth Decay	
Bacteria and Dental Plaque	
Time	
Nutrition and Snacking	
The Role of Saliva	
The Role of Fluoride	
■ MODULE 2: EARLY CHILDHOOD CARIES	9
Characteristics of ECC	
Risk Factors for ECC	
Direct and Indirect Effects of ECC in Children	
■ MODULE 3: ORAL HYGIENE PRACTICES AND PREVENTIVE MEASURES	13
The Importance of Baby Teeth	
Prevention of ECC in Children	
Dietary Measures	
Cleaning	
Fluoride	
Dental Visits	
■ MODULE 4: LIFT THE LIP SCREENING AND RISK ASSESSMENT FOR ECC	19
Screening	
Risk Assessment	
Dental Enrolment	
■ MODULE 5: COMMON DEVELOPMENTAL ISSUES RELATING TO ORAL HEALTH	23
Teething	
Non-Nutritive Sucking	
Eruption Cysts	
Fluorosis	
Natal or Neonatal Teeth	
■ MODULE 6: ANTICIPATORY GUIDANCE ABOUT PREVENTING ECC	27
Anticipatory Guidance	
■ GLOSSARY, REFERENCES AND APPENDICES	31

INTRODUCTION

This training curriculum and Guide is prepared for New Zealand Well Child / Tamariki Ora providers (Well Child services) who have specific training in child health. Well Child services encompass health education and promotion, health protection and clinical support, and family / whanau support.¹ The Well Child Tamariki Ora framework and Well Child Schedule offers 12 health checks to children from 0 to 5 years of age.¹ The Guide aims to reduce oral health inequality by offering Well Child service providers information and understanding to provide early anticipatory guidance about the prevention of Early Childhood Caries (ECC). The Guide will enable Well Child services to raise awareness, educate and promote oral health by providing clear and consistent oral health messages to parents and families of children at highest risk of developing dental caries. ECC can be prevented and, if detected soon enough, its progress can be halted and quality of life 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 will provide 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 caries.



The Early Childhood Oral Health Toolkit developed by the Ministry of Health, recommends that Well Child 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 Well Child services are key to reducing ECC. The Guide is divided into six modules consisting of information on the most significant issues in preschool children, with learning objectives and key messages.

The six modules in the Guide 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.



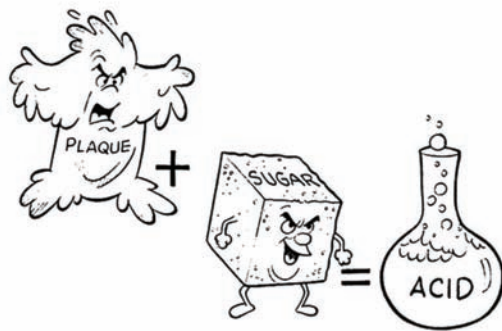
Key Message

- Plaque + Sugar + Tooth = Decay.

Tooth Decay

Dental caries, tooth decay, or a dental cavity is the gradual destruction of a tooth that develops in the presence of sugars and bacteria. Dental plaque is a soft, sticky and invisible film of bacteria that forms on teeth.

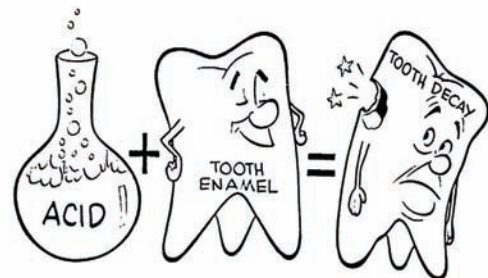
Damage to the tooth begins when the bacterial plaque comes in contact with foods high in sugars and other carbohydrates. The bacteria use sugars as their source of energy and produce acid as a by-product.



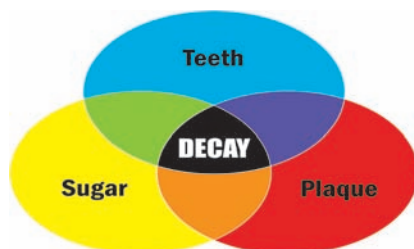
Plaque + Sugar = Acid

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, prolonged pH drop cause and frequent net loss of minerals⁴ eventually result in enamel breakdown or a 'cavity'.

Acid + Tooth = Decay



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



A MODEL FOR TOOTH DECAY

Plaque + Sugar + Tooth = Decay

If the decay is not stopped and the cavity not restored, the cavity may increase in size and spread deeper 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.

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 colonization 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.

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. 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. Thus 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

A normal mouth has a pH of 6.2 to 7, and at a critical pH of about 5.5 at which 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.

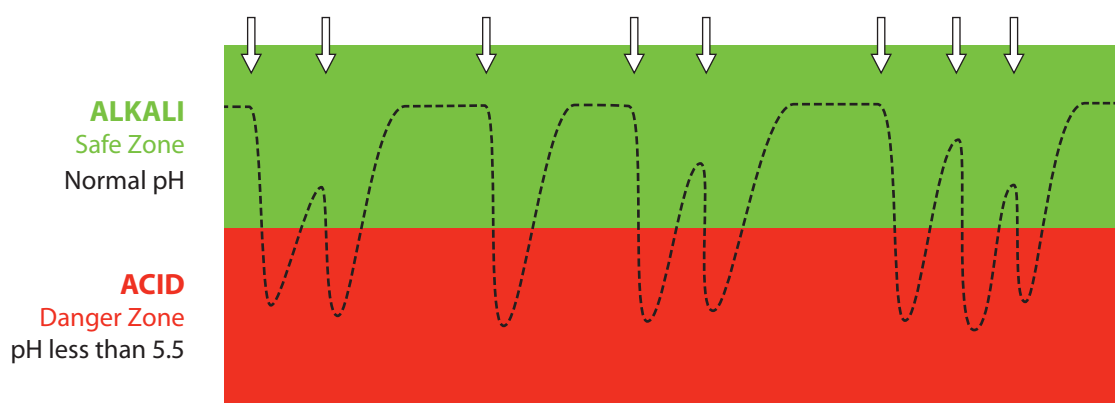


FIG 1: THE EFFECTS OF FREQUENT SUGAR INTAKES

Nutrition and Snacking

Some carbohydrates, especially sugars, interact with bacteria to produce acids. Sucrose, the common table 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, fructose and maltose are also highly cariogenic.

Snacking

Young children have relatively high energy requirements and limited stomach capacity. Snacking in small amounts at regular intervals, in addition to three meals, is important to ensure the child's energy and nutrient requirements are met.

High sugar foods and drinks, such as soft drinks, fruit drinks and confectionery 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 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 / kilocalories), 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 good high energy 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 added 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
- Children need small meals and two to three nutritious snacks each day
- If having sweet foods or drinks, have them with a meal
- Choose protein-rich snacks
- Consume plenty of fluids
 - Water and plain, reduced-fat 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. 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.

*** Any whole pieces of food can cause children to choke. 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 pureeing foods.

The Role of Saliva

Saliva protects the teeth from dental decay by neutralizing 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. It is important to brush the teeth before bedtime, as the salivary flow is low during night time. Foods, such as raw vegetables, can be useful for promoting the flow of saliva and counteracts acid attacks on teeth.

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. However, frequent consumption of sugar 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. Other sources of fluoride include supplements that are applied directly on teeth by a dental professionals and fluoride tablets.

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

MODULE 2

EARLY CHILDHOOD CARIES

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 characterized 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 develops very quickly and teeth may be destroyed within six months of its onset.

Teeth are at risk of dental decay from the time they start to appear in the mouth, therefore children from approximately six months of age onwards are at risk of dental caries.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 discoloration 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 to figures 2 - 7 below for different stages of ECC.



Fig 2: Healthy teeth and gums. No signs of decay and only a little plaque.



Fig 3: Chalky patches (arrows) and also an enamel breakdown on the side of one of the front teeth.



Fig 4: Clearly visible decayed front teeth, both in-between upper front teeth, and along the gumline.



Fig 5: Well-advanced decay. The crowns of the top teeth are breaking down and decay is starting between the bottom teeth.



Fig 6: Only the roots of the top teeth are left.



Fig 7: 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
 - the bottle is used for prolonged periods
 - the bottle is used for feeding sweetened drinks.
2. Snacking with sugary foods and drinks 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. Children from low-income families and those living in non-fluoridated areas are at increased risk.
6. Children born prematurely or at lower-than-normal birth weight, and children born with developmental disabilities and disorders are more susceptible to dental decay.
7. Breastfeeding – breast milk is the best form of nutrition for infants and breastfeeding is associated with a lower risk of developing dental decay when compared with bottle-feeding. However, some babies who nurse for long periods of time throughout the day and night may develop ECC.

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 Maori and Pacific children and children of other ethnicities:

- Less than half the proportions of Maori and Pacific five-year-olds were decay-free when compared with children of all other ethnicities.¹³
- Maori and Pacific caries severity was twice that of children of all other ethnicities.¹³

The data also reveals that children from non-fluoridated areas have higher rates of dental decay when compared to children from fluoridated areas.

Direct and Indirect Effects of ECC in Children

ECC in children can cause:

- extreme pain, destruction of teeth and spread of infection to other parts of the face and body
- difficulty in chewing, resulting in nutritional impairment
- speech development problems
- lost 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 dental caries.



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, but also boost the child's self-esteem by giving a nice appearance, smile and proper speech. They are important in saving the space for adult teeth and may help them from being crooked. They are also important for the proper growth of the face and jaw.

Prevention of ECC in Children

It is important to take care of baby teeth as they may cause lots of problems if neglected. 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

Breast milk is the best form of nutrition for infants. If bottle-feeding, only expressed milk or infant formula should be used. Bottle-feeding fruit juices and sweetened drinks may cause sugary fluids to pool in the mouth and create a favourable environment for bacteria to produce the acids that cause tooth decay. Sweet drinks are not recommended for infants and toddlers.

■ 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.
- Do not put sweet drinks in the bottle or cup.
- Hold the baby while bottle-feeding and avoid propping or putting the baby to bed with the bottle.
- If bottle-feeding, avoid using a bottle after 12 months of age.

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 grazing throughout the day. Eating habits begin to develop early, and children should be influenced positively by their families. Parents should be discouraged from introducing sugary and acidic drinks to their young children. Sweet drinks such as fruit drinks and juice, cordials and soft drinks, including sports drinks, are not recommended.

Snacking in small amounts at regular intervals, in addition to three meals, is important to ensure the child's energy and nutrient requirements are met. However, frequent intake of sugary foods or drinks leads to frequent acid attacks. Hence, it is important snack choices for young children are nutritious, non-sticky and low in added sugar. See Table 1 for healthy snack ideas for toddlers and preschool children.

TABLE 1: HEALTHY SNACK IDEAS FOR TODDLERS AND PRESCHOOL CHILDREN

Tooth and Health-Friendly <i>Yes – Go for it</i>	Best to Avoid <i>But if wanted, eat / drink at meal times instead of as snacks</i>
• Fresh fruits * • Vegetables * • Cheese • Yoghurt • Sandwiches <i>fillings: peanut butter, tuna fish, cheese, cottage cheese, lean meat slices, baked beans, egg, vegetables</i> • Plain popcorn • Plain crackers <i>i.e. rice crackers or water crackers</i> • Water • Raw nuts * • Plain or reduced-fat milk ** • Savoury muffins • Cottage cheese • Hard-boiled eggs	• Dried fruits • Dried fruit leathers / fruit roll-ups • Sweets / lollies and lollipops / chocolates • Sweet biscuits and cakes • Soft drinks *** • Fruit drinks *** • Sports drinks *** • Powdered drinks / cordial *** • Fruit juices *** • Muesli bars • Potato chips / pretzels

* Any whole pieces of food can cause children to choke. 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 pureeing foods.

** 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 erupts about six to 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 under six years of age, a smear of fluoride toothpaste 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.



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 a dental 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 Water fluoridation is the proven public health measure to reduce dental caries.

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 it is the prime method of preventing dental decay.¹⁵ Special children's toothpaste with low fluoride is not as effective as toothpaste containing 1000ppm (adult strength) of fluoride. The Ministry of Health recommends that 1000ppm toothpaste be used, but only a smear of fluoride toothpaste should be used for children under six years of age. Children should also be discouraged from swallowing or eating toothpaste as this can cause tooth enamel fluorosis.¹⁵

● *Refer to page 25 for information about tooth enamel fluorosis.*

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 dentist or dental therapist. Fluoride tablets are usually recommended where fluoridated water is not available and for children aged three and over at high risk of dental caries.

Fluoride varnish

This is a type of 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* do not recommend fluoride varnishes for people at low risk of dental caries. Professionally applied high concentration fluoride varnishes may be used for children over 12 months who are at high risk of dental caries.

Dental Visits

Regular dental visits are vital not only to prevent potential dental problems, but also to reduce the considerable amount of time, stress and pain associated with dental decay. Other preventive measures like brushing, use of fluoride supplements 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

MODULE 4

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 dental caries.



Key Messages

- Lift the lip at every Well Child visit to check for chalky white patches or cavities.
- Undertake caries risk assessment between nine and 12 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 professionals for identifying visible decay. Health professionals 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. All children should be enrolled with the Community Oral Health Service and parents should be informed that they need to take their child to a dental clinic regularly for a full clinical examination by a dental therapist or a dentist.

Lift the Lip Screening

■ Infants and Toddlers

Knee-to-Knee Examination – This technique is useful for infants and does not require a dental chair. The parent and the health professional 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 health professional's lap. Secure the child's head against the health professional's abdomen and with the gloved hand lift the lip.¹⁷



Alternatively, the 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 health professional so that the parent can help position and steady the child.¹⁷ When a parent's assistance is not available, the health professional 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 a gloved hand 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 discoloration, or a clearly visible cavity. When decay is observed, refer the child to a dental therapist or dentist promptly.

- Check for visible plaque and food debris.
- Check if the tooth eruption is proceeding as per the schedule – incisors at or about six months, first molar about first year, canines between one and two years, and second molar around two years.

■ 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.

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

● *Refer to page 10 for different stages of decay.*

Risk Assessment

Not all children are equally likely to develop dental decay. 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 12 months of age.³ But presently there isn't any standardised risk assessment tool available in New Zealand.

However, the 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, the Early Childhood Tool Kit recommends that the caries risk assessment and enrolment process is undertaken between nine and 12 months by Well Child providers, and the resulting documents sent to the District Health Board's Community Oral Health Service.³ Early enrolment with a 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. Well Child providers can obtain the enrolment forms from their District Health Board's Community Oral Health Services.

To find out more about the Community Oral Health Services, please visit www.letstalkteeth.co.nz or just ring 0800 TALK TEETH (0800 825 583).

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

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

This is the time when a baby's first few 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, constant crying, low-grade temperatures, cheek redness, disrupted eating and sleep habits, drooling and the desire to bite something hard.

■ Advise parents to follow these simple tips to ease the symptoms of teething:

- Apply a cold cloth wrapped in ice cubes.
- Gently massage the gums.
- 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.
- Consider using systemic analgesics, such as Pamol.
- If there is excessive bleeding, pain, pus or swelling, get help from a health care provider.



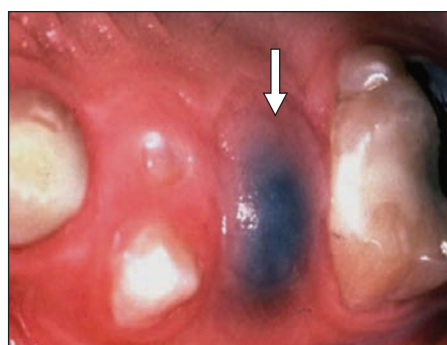
Teething does not cause serious health problems. High fever, vomiting, diarrhoea, and ear infection are not symptoms of teething, and if a child has these symptoms parents should contact their health care provider promptly.

Non-Nutritive Sucking

Sucking is a natural infant reflex that is used for nourishment. Some children may require additional sucking known as 'non-nutritive sucking' to satisfy their emotional needs.¹⁶ This type of sucking (thumb, finger or pacifier sucking) helps children to calm down and the habit decreases as the child ages. If parents choose to have their infant suck a pacifier advise them not to dip the pacifier in sugar, honey or other sweetened drinks.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 persists beyond that as the permanent teeth may be affected.¹⁸

Eruption Cysts

Eruption cysts are associated with teeth eruption resulting from fluid accumulation within the space surrounding the erupting tooth, and can 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 or dentist.



Fluorosis

Dental fluorosis is a type of enamel defect that appears as white bilateral mottling on permanent teeth. This 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 or pea-sized amount of fluoride toothpaste is used for brushing. Only a parent or caregiver should dispense the toothpaste onto the brush, and children shouldn't be allowed to eat or swallow the toothpaste.¹⁵



Natal or Neonatal Teeth

At birth (natal) or shortly after (neonatal), toothlike 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 developmental 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.
- Parents will be better positioned 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 enters the next developmental phase.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. Well Child providers should also be able to modify the guidance 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 around 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 put baby to bed with a bottle
- If a pacifier is used, advise parents not to dip the pacifier in sugar, honey or any other sweetened drinks

Six to 12 months

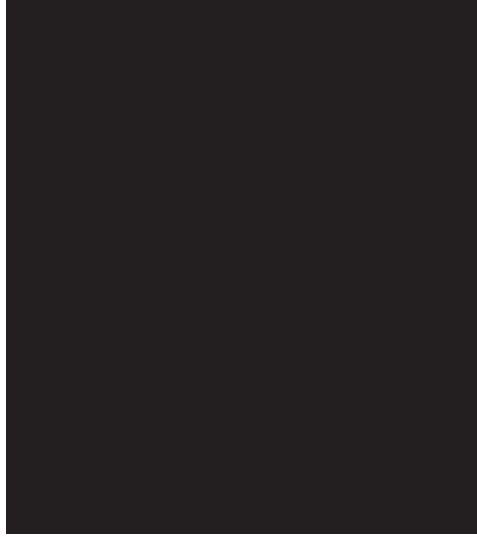
- Encourage mothers to breastfeed infants until at least one year of age, or beyond
- If not breastfeeding, expressed breast milk or formula can also be provided by cup feeding
- If bottle-feeding, advise parents to use only expressed breast milk or infant formula
- Reinforce the message to hold the baby while bottle-feeding and not to put baby to bed with a bottle
- Advise parents that fruit drinks and juice, cordials and other sweetened drinks (including soft drinks and sports drinks) are not recommended.
- 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 washcloths
- 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
- 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 snacks (see page 15 for examples)
- Remind parents to choose foods and drinks low in sugar
- Remind parents that if sugar 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
- Emphasise water/full fat cow's milk as drinks of choice
- Ensure the child is enrolled with their District Health Board's Community Oral Health Service and that 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 sugar foods are eaten they should be taken at meal times instead of as snacks
- Emphasise water/full fat cow's milk as drinks of choice
- Reinforce regular visits to the dental clinic



GLOSSARY, REFERENCES AND APPENDICES

GLOSSARY

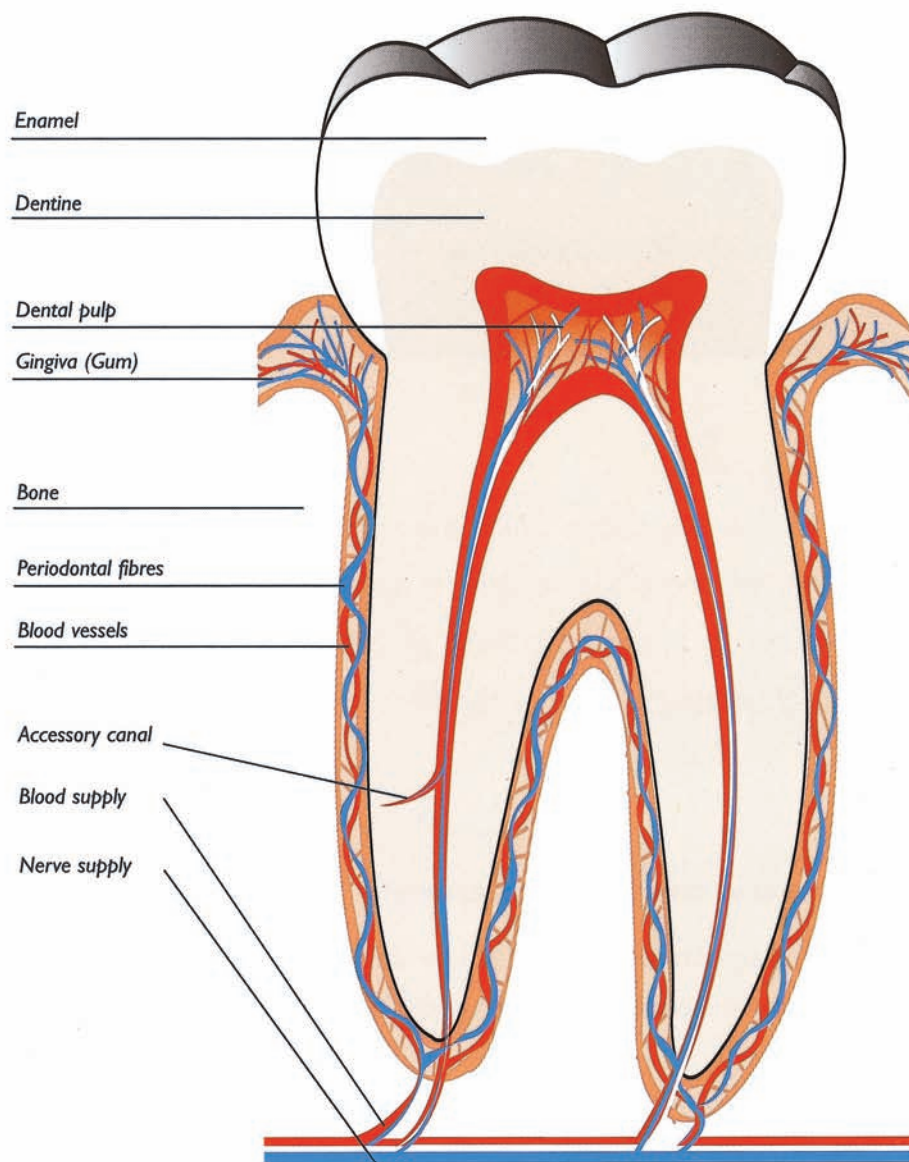
Acid Attack	The process of mineral loss (demineralisation) from the tooth surface due to the presence of acids in the mouth.
Cariogenic	Agents causing caries.
Demineralisation	Loss of minerals from the tooth surface is known as demineralisation.
Dental Caries	Active destruction of the tooth surface due 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, dental hygienists and dental technicians.

REFERENCES

1. Ministry of Health (2002). The Well Child Framework. URL: <http://www.moh.govt.nz/wellchild>.
2. Sheiham A. Dental caries affects body weight, growth and quality of life in pre-school children. *British Dental Journal* (2006). Volume 201 No 10.
3. Ministry of Health (2008). Early Childhood Oral Health: A toolkit for District Health Boards, primary health care and public health providers and for oral health services relating to infant and preschool oral health. Wellington: Ministry of Health.
4. Gussy MG, Waters E, Walsh O, and Kilpatrick NM. Early childhood caries. Current evidence for aetiology and prevention. *Journal of Paediatrics and Child Health* (2006). 42: 37–43.
5. Ministry of Health (2008). Food and Nutrition Guidelines for Healthy Infants and Toddlers (Aged 0-2years): A background paper (4th Ed). Wellington: Ministry of Health.
6. NHS Scotland (2005). Prevention and management of dental decay in the pre-school child. A national clinical guideline. URL: <http://www.sign.ac.uk>.
7. Levine RS, Stillman-Lowe CR (2004). The scientific basis of oral health education. London: British Dental Association.
8. Tinanoff N, Palmer CA. Dietary determinants of dental caries and dietary recommendation for pre-school children. *Journal of Public Health Dentistry* (2000). Summer; 60(3): 197 -206: discussion 207 -9.
9. Marshall TA, Levy SM, Broffitt B, Warren JJ, et al. Dental caries and beverage consumption in young children. *Pediatrics* (2003) Vol.112 September 2003, pp. E184 –e191.
10. Lee M (2000). Lift the Lip: Early identification of tooth decay in infants and children. Christchurch: School Dental Service, Canterbury District Health Board.
11. Lingstrom P, Van Houte J, Kashket S. Food starches and dental caries. *Critical reviews in oral biology and medicine* (2000). 11(3):366-80.
12. Malik VS, Schulze MB, Hu FB. Intake of sugar-sweetened beverages and weight gain: a systematic review. *The American Journal of Clinical Nutrition* 2006; 84:274–88.
13. Ministry of Health (2006). Age 2 and Year 8 oral health data from the School Dental Services 2006. URL: <http://www.moh.govt.nz/oralhealth>.
14. Ministry of Health (2008). Food and Nutrition Guidelines for Healthy Infants and Toddlers (Aged 0-2years) Wellington: Ministry of Health.
15. Ministry of Health. Fluoridation in New Zealand. URL: <http://www.moh.govt.nz/fluoride>.
16. Casamassimo P, Holt K, eds. (2004). Bright Futures in Practice: Oral Health – Pocket Guide. Washington DC: National Maternal and Child Health Resource Centre.
17. National Maternal and Child Oral Health Resource Centre (2006). A health professional's guide to pediatric oral health management. URL: <http://www.mchoralhealth.org>.
18. State of Connecticut Department of Public Health. Open Wide: Oral health training for non-dental health and human service providers. URL: <http://www.ct.gov/dph>.

APPENDIX 1

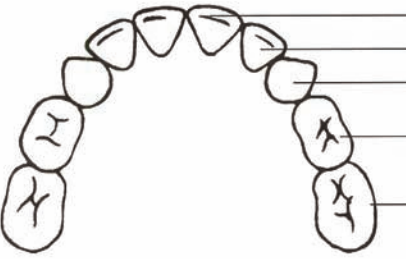
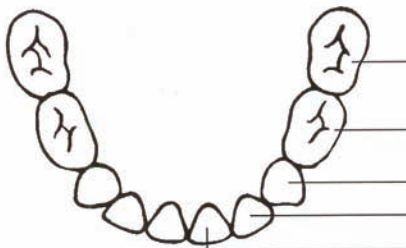
Structure of a Tooth



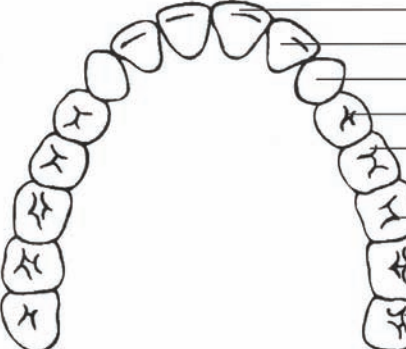
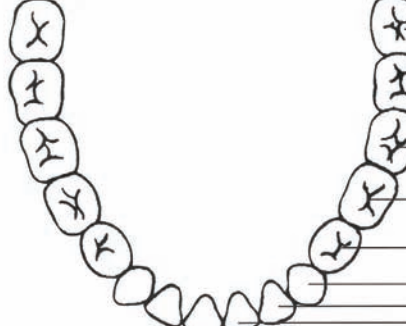
The healthy tooth

APPENDIX 2

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.

Permanent 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



Fig 2: Healthy teeth and gums. No signs of decay and only a little plaque.

THE PROGRESSION OF DECAY

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

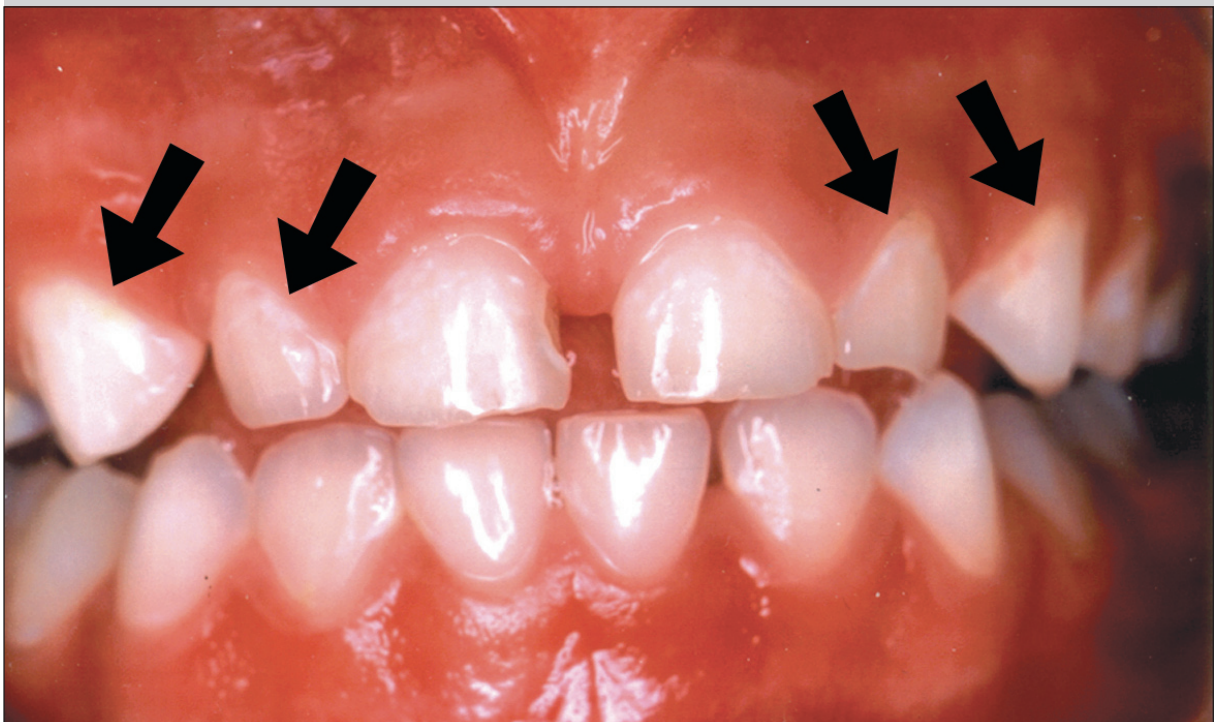


Fig 3: Chalky patches (arrows) and also an enamel breakdown on the side of one of the front teeth.

THE PROGRESSION OF DECAY

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

Fig 4: 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

Fig 5: Well-advanced decay. The crowns of the top teeth are breaking down and decay is starting between the bottom teeth.

THE PROGRESSION OF DECAY

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



Fig 6: Only the roots of the top teeth are left.

THE PROGRESSION OF DECAY

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

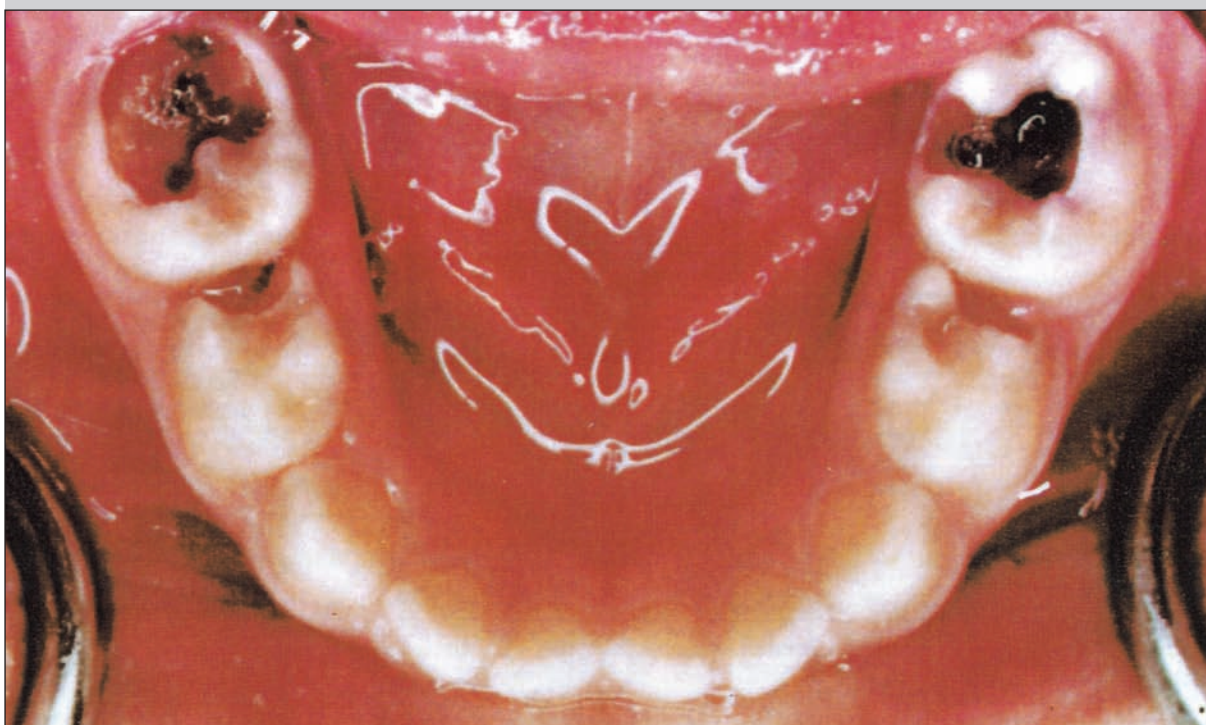


Fig 7: Deep decay in the lower back teeth (molars).

APPENDIX 4

Community Oral Health Services

For enrolment and free dental care, contact the District Health Board's Community Oral Health Service by ringing one of the following numbers in your area (listed North to South):

Northland DHB	0800 MY TEETH / 0800 698 3384
Waitemata DHB	(09) 839 0565
Auckland DHB	(09) 839 0565
Counties Manukau DHB	(09) 839 0565
Waikato DHB	(07) 859 9160
Bay of Plenty DHB	(07) 577 3335
Lakes DHB	(07) 343 7762
Taranaki DHB	(06) 753 7706
Hawke's Bay DHB	(06) 878 8109 ext. 5763
Whanganui DHB	(06) 348 3120
MidCentral DHB	(06) 350 8619
Wairarapa DHB	(06) 946 9857
Capital & Coast DHB	(04) 570 9292
Hutt Valley DHB	(04) 570 9292
Nelson / Marlborough DHB	(03) 546 1286
West Coast DHB	(03) 768 0499
Canterbury DHB	(03) 335 4227
South Canterbury DHB	(03) 335 4227
Otago DHB	(03) 476 9835
Southland DHB	(03) 214 5774

For more information about Community Oral Health Services, please visit www.letstalkteeth.co.nz or ring 0800 TALK TEETH (0800 825 583)

NOTES



NEW ZEALAND
DENTAL ASSOCIATION