Oranga niho – Te wero
Oral Health – The Challenge

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Mā te huruhuru te manu ka rere, mā te niho ora ka ora te tangata

With feathers the bird will fly, with good oral health, the person will thrive

Key concepts:

- Major inequalities exist in the oral health of New Zealanders and urgent action is required
- Rates of dental caries in children are increasing
- Poor oral health is preventable but prevention must start early
- Cost is one of the major barriers

Why do patients go to a GP rather than a dentist?

There are many reasons why a patient may present to general practice rather than a dentist. Some of these reasons are: [1, 2, 3]

- A GP may be viewed as more accessible – patients can usually be seen on the same day
- There may be financial considerations – a GP consultation is likely to be less expensive than a dentist
- The patient may not have a regular dental provider and therefore views the GP as the first person to see when a problem arises
- There may be a lack of co-ordinated after hours dental care, or this care may exist, but patients may not be aware of it
- The patient may be seeking treatment that will give immediate relief of symptoms rather than definitive treatment of the underlying dental issue
- A patients past experiences (e.g. fear, pain) and those of family and friends may influence the choice of practitioner
- The patients may have limited knowledge of the specific roles of dental and medical practitioners
- Oral health is a part of general health – people may not consider a dental origin for their health problem e.g. bacterial endocarditis

How can GPs help improve oral health?

There are three easy actions to take which will improve the oral health of patients.

1. Ask about oral health
2. Examine the teeth and gums
3. Be aware of what services are available

1. Ask about oral health

It is good practice to ask patients about oral health. For example, when children present for immunisations (particularly at the 15 month immunisation visit), ask "Is your child enrolled with the School Dental Service?" Other opportunities may present during the "B4 School Check", when new patients enrol in the practice, and during consultations where poor oral health is apparent (e.g. while examining a sore throat).

Best Practice tip: Make it a practice wide task to record enrolment status with the School Dental Service for all children aged under 18 years. Have enrolment forms for the School Dental Service in the practice and encourage parents to enrol their children. Place a recall to check when they next present that they have enrolled the child. If the child is already enrolled, check that they have attended appointments.

Most DHBs have information, downloadable enrolment forms and lists of local school dental clinics on their website.

2. Examine the teeth and gums

This applies not only when there are symptoms but also opportunistically when examining a patient's throat or mouth. Encourage parents to look in their child's mouth for signs of dental decay (e.g. obvious cavities or chalky white patches). If one whānau member has dental problems it is likely that others may have similar problems. Promoting good preventative behaviour needs to be targeted at the whole whānau.[1]

The "Lift the Lip" message, a joint venture from the Ministry of Health and the New Zealand Dental Association, is a nationally consistent phrase used to encourage parents to look in their child's mouth. Instructional videos showing how to detect decay in young children can be viewed online. These videos are aimed at Well Child providers, B4 School Check providers and general practices. Available from:
www.healthysmiles.org.nz/default,120,lift-the-lip-.sm

3. Be aware of what services are available

Be aware of what services are available in the area such as Māori health providers, mobile units, contracted and private dentists. Be familiar with the options for dental

Oral healthcare funding in New Zealand

Publicly funded dental care in New Zealand is targeted at people under the age of 18. The aim is to promote good oral health from an early age so that the benefits flow on into adulthood. Dental care for adults is provided by private dental practitioners and in most cases the cost of treatment is the responsibility of the individual. However there are some publically funded targeted services.

Oral health care is funded for the following groups in New Zealand;

- Children from birth to Year 8 (age ~ 12 years)
- Adolescents from Year 9 (age ~ 13 years) to age 18 years
- Low-income adults
- Special needs and medically compromised patients

Children from birth to Year 8

All children need to be enrolled with the School Dental Service to receive free oral health care. The age of enrolment varies by region, but the majority are enrolled by age two and a half years. Dental care is provided by dental therapists in school, community or mobile dental clinics until the end of Year 8. Children can be referred to a dentist for further treatment, which is free if accessed under the Combined Dental Agreement.

Adolescents from Year 9 to 18th birthday

Adolescents can access free dental care under the Combined Dental Agreement. Year 8 students are provided with an enrolment form, usually from a dental therapist via the School Dental Service. They then select a contracted dentist for their care who will sign the form to access funding. Adolescents can be enrolled at any age up until their 18th birthday.

The treatment covered under this agreement includes regular examinations, preventive services (fissure sealants, fluoride treatments), fillings and extractions. A fee may apply for other services such as larger tooth coloured fillings in back teeth. Other specialised services such as orthodontic and cosmetic work (e.g. tooth whitening) are not covered.

Low-income adults

For people with a Community Services Card (CSC), funding for dental care up to $300 per annum is available through Work and Income New Zealand.

Some public hospitals provide limited services (pain relief and infection control) for people who are unable to access private care due to their financial circumstances. Patients accessing this service must have a CSC and are usually required to pay some of the cost of treatment.

In many areas hospital emergency departments only provide dental care if it is trauma related. Other after hours care is usually provided by private dentists working on an on-call roster. The cost of this care is the responsibility of the individual.

Special needs and medically compromised patients

Specialised dental care is available from hospital based services for people with medical conditions, intellectual or physical disabilities, mental illness or severe dental disease that prevents them from using private dental services. A part charge may often apply to these services. Criteria for referral varies by region, check with the local DHB.

Treatment secondary to trauma is covered by ACC

In circumstances where teeth are damaged in an accident, the cost of treatment for all age groups is usually covered in part by ACC.

care for all age groups and have information available on funding and resources. Contact your local DHB if you don't know where to start.

Establish good working relationships and referral processes with dental health teams. Dental care has tended to be relatively isolated from the rest of primary health care and often there may be limited communication between doctors and dentists.[3]

What action can GPs take when confronted by poor oral health?

Don't ignore oral health

There are known links between periodontal (gum) disease and diabetes, smoking, oral cancers and poor maternal oral health and pre-term or low-birth weight babies.

Oral health encompasses both physical and psychosocial aspects which can have a major impact on the way an individual functions in their day to day life. Missing, damaged or diseased teeth and the pain and self-consciousness arising from this can have a marked effect on quality of life. Poor oral health can affect personal relationships, self esteem, general health and work.

"Promoting oral health is not simply a matter of reducing caries levels. It is also about promoting the overall health of society and its individuals."– Ministry of Health[4]

Initiate treatment and refer

If a patient presents with an oral health problem, treatment may be initiated if appropriate, followed by referral for dental treatment.

See page 14 for management of common oral health conditions seen in general practice.

Provide education to promote good oral health for all

In addition to education about immediate care, use the opportunity to provide ongoing education about preventative care. This may include advice on:

- Good oral hygiene (see page 20)
- A healthy diet, in particular avoidance of sugary foods
- Giving teeth a rest – encourage food and drink free periods between snacks and regular meals (ideally 1½ to 2 hours)
- Regular dental examinations (annually if good oral health, three to six monthly if problems exist)
- A smoke free environment
- The use of mouth guards in sport

How to enrol in the School Dental Service

Practices are encouraged to have enrollment forms available. Otherwise the parent or caregiver should contact the dental clinic at the school closest to their home address (listed in the phone book under school name) or ask their Plunket nurse. Primary school aged children who have not previously enrolled will receive an enrolment pack when they start school.

For information on adolescent dental care, call 0800 ITS FREE (0800 4873733)

The status of oral health in New Zealand

Oral health in New Zealand has improved in general over the last few decades, mainly attributed to the introduction of fluoride toothpaste and the fluoridation of the water supply in some areas.[4] However, significant inequalities remain for some groups. The state of oral health varies widely with age, ethnicity, socio-economic status and access to fluoridated water.[5]

Child oral health statistics in New Zealand are worse than countries with similar oral health systems such as Australia and the United Kingdom.[5] In New Zealand until the early 1990s, dental caries rates among children were declining. However in recent years these rates have become static or even slightly increased.[6] Figure 1 shows the percentage of five year old children that are free of tooth decay, clearly demonstrating ethnic inequalities.

Primary health care has an important role in improving oral health.

> "The vision is for an environment that promotes oral health, whether through fluoridated water, a healthy diet or publicly funded services staffed by a multidisciplinary workforce that actively addresses the needs of those at greatest risk of poor oral health. In this future, oral health is recognised as an important part of general good health. Links between oral health services and other health care ensure that oral health is promoted, improved, maintained and, where necessary, restored at the earliest opportunity."
>
> – Ministry of Health[5]

Oral health inequalities in New Zealand

Good oral health relies on success in four important areas – enrolment, attendance, good oral health behaviour and treatment. Significant inequalities have been identified amongst children in New Zealand. Higher rates of decayed, missing and filled teeth are found amongst Māori and Pacific children, those in low socio-economic groups and children living in rural areas.[4,7,8] There are many reasons for these inequalities including;

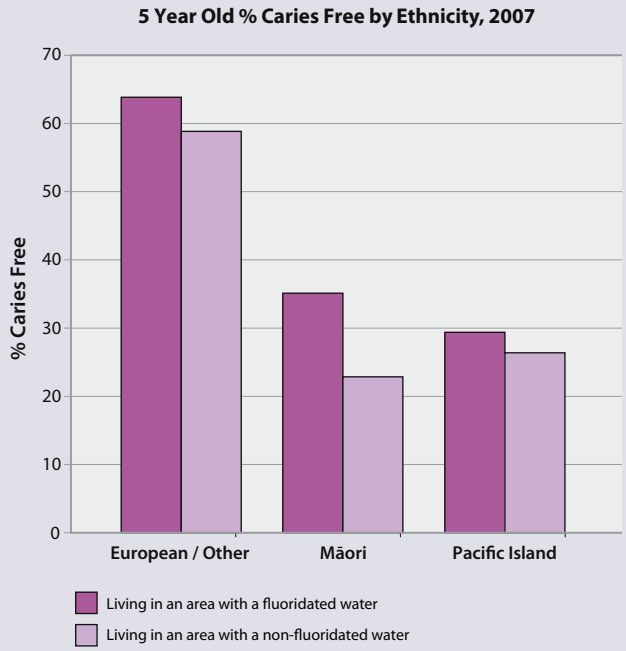

Figure 1: % five-year-old children in New Zealand caries free by ethnicity (School dental service data. Ministry of Health, 2009).[9]

- Access to and delivery of dental care services
- Availability of a fluoridated water scheme
- Socio-economic status
- Transient population
- Cultural barriers

Access to and delivery of dental care services

Māori and Pacific children in particular have low rates of enrolment in the School Dental Service.[4] If children can be enrolled early it provides a good opportunity, not only to detect early tooth decay but also to educate whānau about good practices and behaviours, that promote oral health. Once children are at primary school, the majority are enrolled but use of the service declines in adolescence.[9]

Dental therapists are no longer permanently based at every school, therefore access is reliant on ability to contact the service, transport and parental responsibility. In many areas community based clinics or mobile services

have been developed to overcome these barriers. These clinics may operate from a non-traditional setting e.g. marae, work place or recreational venue.[1]

Availability of a fluoridated water scheme

More than half New Zealand's population lives in areas that have fluoridated community water supplies, a factor known to improve dental health. The remainder live either in areas with non-fluoridated water supplies or areas reliant on rainwater. Water fluoridation has been shown to reduce dental caries by up to 50%. It is also effective in reducing socioeconomic and ethnic disparities in dental caries.[10]

Socio-economic status

Socio-economic factors can have a major impact on oral health. Costs can limit access to services. Families on tight budgets with competing priorities may struggle to provide a good healthy diet (e.g. cost of soft drink vs. milk). They may also have limited resources to cover other costs such as toothbrushes, fluoridated toothpaste and dental floss.

Transient population

Māori and Pacific families are more likely to be transient and therefore are more likely to miss appointments for ongoing dental care and less likely to re-enrol in each new area.[7]

Cultural barriers

As the majority of oral health workers are non-Māori and non-Pacific, this may contribute to cultural barriers. There are a number of Māori oral health services operating in New Zealand (see side bar). Māori providers have adopted a whānau ora approach and have been very effective in improving Māori oral health where they operate.[8] Barriers such as language, negative attitudes from whānau towards dental treatment and differing beliefs about dental care itself, can also contribute to poor oral health.

Māori health providers

Māori health providers currently operate successful community based oral health care services throughout New Zealand. An example is Te Manu Toroa.

Te Manu Toroa provides a Kaupapa Māori model of health care for Māori in the Tauranga and Te Puke areas. Te Manu Toroa provides dental health services for Māori children and also Māori mothers (under 18) who attend the Bay of Plenty Polytechnic. The most recent addition to the dental service, was the acquisition of a fully equipped mobile dental facility, which allows Te Manu Toroa to have onsite access to the majority of its patients.

For provision of services the following two significant barriers needed to be addressed:

1. Changing Māori attitudes and beliefs about dental health services

Māori views on dental health services were traditionally reactionary: "If you had a bad enough tooth ache, pull it out. If you pull one out, pull them all out so you don't have to come back again". The cost of accessing a dentist was also an issue, hence the simple rationale that no teeth meant no ongoing costs.

Te Manu Toroa provides a proactive whānau ora approach. A caregiver is required to accompany their tamariki (children) and rangatahi (teenagers) to the dental service. This approach has not diminished the levels of access. The message is stressed to whānau that the service is free until a child turns 18. Simple interventions will, save money in the future.

There is a significant difference in attendance at the clinic between primary school (99%) and secondary school (55%) students. Lack of motivation of rangatahi to attend the dental service appears to stem from teenage culture rather than Māori culture. The goal of Te Manu Toroa is to increase attendance amongst rangatahi.

2. Developing a good working relationship between the providers of primary health care and dental health services

Te Manu Toroa have worked to develop a collaborative professional approach to the provision of health services with local primary care. Patients have benefited through improved access to oral health care.

To find out who the Māori health providers are in your area, contact your local DHB.

Acknowledgement:

Thank you to Associate Professor John Broughton, Ngāi Tahu, Ngāti Kahungunu, Director Ngāi Tahu Māori Health Research Unit, Dunedin School of Medicine, University of Otago, for guidance in this article.

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He mate niho ka kitea e te Rata

Management of common oral health problems seen in general practice

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Ka kata a Kae – Kae laughs.

This is from the story of Tinirau and Kae, where Kae eats Tinirau's pet whale. Tinirau sends some women to exact revenge. In order to identify Kae, they have to make him laugh to see his crooked teeth.

www.bpac.org.nz keyword: oralproblems

Patients may present to their GP with oral health problems. When necessary, treatment may need to be initiated followed by appropriate referral to a dental service. Good oral health behaviours should be emphasised (see page 20).

Poor oral hygiene and gum disease

Halitosis or bad breath can indicate a number of oral health and general medical conditions. Check the mouth (teeth, gums and tongue) for an obvious dental cause such as bacterial buildup on the tongue and consider other factors such as diet. Some medical conditions associated with halitosis include sinus infection (post nasal drip), tonsillitis, respiratory infection, diabetes and oral cancers.

Figure 1: Gingivitis in a child. Note the redness around the gingival margin of the upper incisor teeth. (Source: D. Boyd)

Gingivitis is localised inflammation of the gums (Figure 1). Symptoms include swollen bleeding gums with brushing or flossing, erythema and halitosis but not usually pain.[1] For treatment and prevention, good oral hygiene should be followed. Appropriate use of an antiseptic mouth wash such as chlorhexidine gluconate 0.2% (Orion brand fully subsidised) may also assist (see page 22 for appropriate use). If applicable, smoking cessation should be advised.

Periodontitis is the loss of supportive bone structure around the root of the teeth caused by chronic gingivitis.[1] Symptoms include receding gums that bleed easily on contact and subgingival dental plaque. Referral for mechanical debridement and ongoing dental care is required. Periodontal disease is rarely a feature of systemic disease.

Kawakawa for dental pain

Kawakawa (*Macropiper excelsum*, Māori Pepper Tree) is a traditional Rongoā Māori treatment used for toothache. The leaves, which have a spicy taste, are chewed and retained in the mouth, while the saliva is swallowed.

Kawakawa is related to the black pepper tree and kava. The leaves contain the essential oil myristicin, which is also the predominant psychoactive ingredient in nutmeg, although kawakawa is not used for psychotropic purposes.

There have been no scientific studies on the biological activity or toxicology of kawakawa, however no adverse effects or interactions have been recorded.

Medical problems associated with oral health problems

- Dry mouth (xerostomia) – e.g. from Sjögren's syndrome or from adverse effects of medication, head and neck radiotherapy
- Gingival hyperplasia (hypertrophic gums) can be an adverse effect of calcium channel blockers or cyclosporin and some antiepileptic medications.
- Oral cancers
- Poor nutrition
- Mental health problems, visual impairment or lack of knowledge leading to poor oral hygiene and inadequate diet
- Parkinson's disease leading to difficulties with chewing and dental hygiene
- Eating disorders e.g. Bulimia – associated with erosion of tooth enamel particularly of the palatal (roof of mouth) surface of upper teeth
- Poorly controlled diabetes may result in oral health problems
- Osteonecrosis of the jaw related to bisphosphonate therapy

Other causes of "dental" pain

Trigeminal neuralgia

Herpetic neuralgia

Referred pain from tempo-mandibular joints

Salivary gland disorders

Sinusitis

Jaw pain referred from mycocardial tissue or temporal arteritis

Neoplasia e.g. breast secondaries in jaw

Pericoronitis is an acute localised infection under the gum flaps of a partially erupted tooth or impacted tooth. This most commonly affects the wisdom teeth.[1] Initial treatment is irrigation of the area to remove debris (e.g. trapped food particles), chlorhexidine mouthwash and adequate analgesia. If the infection involves the wisdom teeth bilaterally and the swelling is marked, there can be airway compromise, requiring urgent hospital referral. If there is significant swelling or evidence of cellulitis or systemic disease, amoxycillin (500 mg three times per day, for five days) or metronidazole (400 mg three times per day, for five days), may be prescribed.

Dental caries is a disease caused by bacteria which damage hard tooth structure (also known as tooth decay or cavity). It is asymptomatic in the initial stages. If left untreated, the patient will usually start to notice temperature sensitivity and mild pain. Preventative education and dental treatment is required.

Sensitive teeth may be caused by periodontal disease, caries, trauma, toothbrush abrasion, erosion or attrition, age, smoking and medical conditions (e.g. radiation therapy). Patients often experience acute localised pain while eating and drinking cold foods/liquids. Toothpastes specially formulated for sensitive teeth can be used. Several applications may be required before sensitivity is reduced. Dentists can also apply desensitising agents. It is also important to eliminate any possible etiological disease.

Dental infection or abscess

All people with dental abscess require referral for further dental care such as root canal treatment or extraction (Figure 2). Treatment of acute symptoms can be managed in general practice.

If pain is significant, prescribe adequate and regular analgesia – begin with paracetamol or ibuprofen which can be taken together if pain relief, with either alone, is insufficient. If pain relief is still not adequate, add codeine. Patients can be advised to consume cool, soft foods.

Figure 2: Treatment for buccal abscess in a child, requiring general anaesthesia. Note the raised swelling buccal to the lower right first primary molar. This child was four years old and had a total of ten teeth restored or extracted. When small children have large amounts of work required, a general anaesthetic can be necessary. (Source: D. Boyd)

Figure 3: X-ray showing the relationship of the permanent teeth to the primary teeth. This demonstrates how trauma to primary teeth can cause damage to permanent teeth. (Source: D. Boyd)

If there are signs of severe infection (cellulitis, diffuse, tense, painful swelling of the infected tissues) or the patient is systemically unwell, prescribe amoxycillin (500 mg three times per day, for five days) or metronidazole (400 mg three times per day, for five days).[2,3]

If the patient has severe cellulitis, they may require hospital admission for intravenous antibiotics and fluids, or emergency referral if swelling poses a serious risk to general health (e.g. a compromised airway). In rare cases, cavernous sinus thrombosis may be a late complication of dental abscess or infection.

If there is marked swelling, the patient is in extreme discomfort or if dental care is not able to be accessed straight away (e.g. over a weekend), the abscess may be lanced and drained, using topical anaesthesia (or freezing with ethyl chloride spray). Incisions usually epithelialise rapidly, causing the abscess to fill with pus again, so it is important to follow-up with a hot, salty mouthwash to encourage continued drainage.

Toothache without abscess

Pulpitis is inflammation of the dental pulp. This usually arises from caries but can be caused by dental erosion or trauma. In the early stages pulpitis can be reversible after appropriate dental treatment (removal of carious tissue or protection of the pulp and restoration). The pain is usually moderate and the episode that results in the patient presenting for care may be preceded by other less acute episodes, pain on chewing and temperature sensitivity. If the inflammation continues without appropriate dental treatment, the pulp can be irreversibly damaged and root canal therapy or extraction may be required. The pain of irreversible pulpitis becomes severe, spontaneous, and persistent and often poorly localised. Prescribe adequate analgesia (see previous) and refer for dental care. Antibiotics are not indicated in the absence of cellulitis.[2,4]

Trauma

Trauma to teeth

Trauma causing tooth loss is common, especially in children and can result in fracture of teeth (or jaw), tooth

loosening or tooth loss (avulsion). All patients with tooth trauma require dental referral and radiography.[2] Tetanus injection may be required in some circumstances. Prophylactic antibiotics (amoxycillin) are only required in some cases of tooth avulsion.

Ensure that ACC information is completed. In the case of non-accidental trauma, injuries need to be appropriately documented and history recorded (see side bar). Injuries to primary teeth may cause damage to permanent successor teeth.

Non-accidental trauma

Oro-facial injuries occur commonly in cases of non-accidental injury. Reports of suspected child abuse can be made to the Child Youth and Family Service – 0508 FAMILY (0508 326459). Alternatively, and for suspected abuse in adults, contact the police.

The role of the doctor (or dentist) in this situation is to observe, document and report the injuries. Support should be offered, but an in-depth interview of the victim to confirm whether or not abuse has occurred should not be attempted, as this is the responsibility of the social worker or police officer.

Documentation should be specific and objective and should include:

- The time and date and who was present
- A verbatim account of the incident, including child/parent/caregiver statements
- A description of injuries, including diagrams if appropriate
- A note of any physical or behavioural anomalies
- An account of any advice sought on the matter e.g. from colleagues
- An account of subsequent action taken e.g. call to Child Youth and Family Services
- Planned follow-up and management of injuries

Treatment of an avulsed tooth[2,4]

The preferred emergency treatment of an avulsed permanent tooth is immediate re-implantation, ideally within five minutes (and up to 15 minutes). If rinsing is needed, use normal saline and also flush out any clot from the socket before the tooth is re-implanted. Touching, rubbing or cleaning of the root should be avoided as this reduces the likelihood of successful re-implantation. Hold the tooth by the crown. Look at the adjacent teeth to gauge the line/angle of the replaced tooth. The tooth can be held in place by gently biting on a piece of gauze. The patient should then be immediately referred to a dentist. Primary (deciduous) teeth should not be re-implanted as doing so may damage the permanent tooth above (Figure 3).

If the tooth is unable to be put back in, the patent should be referred immediately to a dentist and the tooth transported in the patient's mouth, under the top lip (but the risk of swallowing the tooth must be considered, especially in children), or placed in a container with fresh, cold milk or saline (do not use water).

Post dental procedures

"Dry socket" – acute alveolar osteitis is seen in patients who have a history of extraction in past 24 – 48 hours, and present with severe, persistent throbbing pain that is localised to the socket. The socket is usually very tender to palpation and there is no blood clot visible. There may be associated halitosis. A dry socket is more frequently seen in people who smoke, especially if they have not abstained since extraction. Initial treatment is to examine the socket for debris and then irrigate with sterile saline. Antibiotics are not indicated but analgesics may be required.[4,5] The patient can be referred to a dentist for packing of the socket.

Post extraction haemorrhage is usually able to be stopped with a few minutes of local pressure on the bleeding socket with a gauze swab or pack.[4,6] This also applies to patients who may be taking aspirin or NSAIDs.[4] If the bleeding continues then refer for further dental care. Ideally this type of problem should be dealt with by the dentist who

performed the procedure, and the patient would normally be provided with written instructions on post extraction care.[6] A thorough review of the patient's medical history should be taken to rule out a haematological disorder.

Lip bite post local anaesthetic is commonly seen in children. Significant trauma may be caused by a child chewing on a numb lip.

Teething in infants

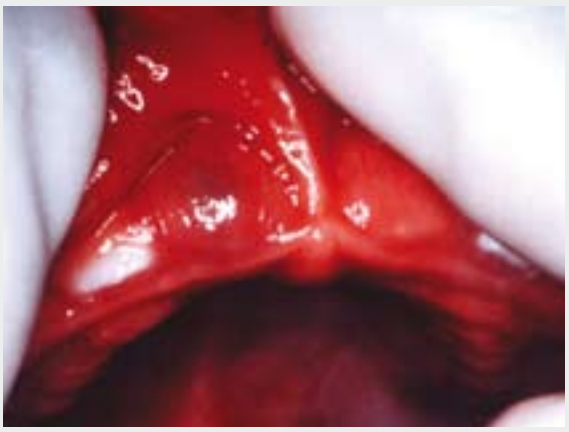

Figure 4: This is an eruption cyst, seen reasonably commonly in infants who are teething. It does not require treatment. (Source: D. Boyd)

Prophylactic antibiotics for prevention of bacterial endocarditis

New Zealand National Heart Foundation guidelines recommend antibiotic prophylaxis should be given to those at highest risk of adverse outcomes, undergoing dental procedures that involve manipulation of either gingival tissue or the periapical region of teeth or perforation of the oral mucosa. The recommended antibiotic is amoxycillin 2 g (child: 50 mg/kg up to 2 g) as a single dose one hour before the procedure.[7]

Cardiac conditions for which endocarditis prophylaxis is recommended:

- Prosthetic heart valves (bio or mechanical)
- Rheumatic valvular heart disease
- Previous endocarditis
- Unrepaired cyanotic congenital heart disease (include palliative shunts and conduits)
- Surgical or catheter repair of congenital heart disease with six months of repair procedure

For people with cardiac conditions, an important goal is prevention of dental caries and periodontal disease. Education and regular dental examination to detect disease, or risk of disease at an early stage, is ideal.

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Oranga niho mō te iwi

Basic oral hygiene: what to tell your patients

Mā mahi ka ora – 'By work one is sustained'
Mahi in this instance is referring to oral hygiene.

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Fluoride supplements and fluoridated water

Fluoride is necessary for promoting repair of the teeth by aiding remineralisation of the surface. It works best when used frequently and in low concentrations. Fluoride may be obtained topically from toothpaste and mouthwash or systemically from the water supply or supplements. Both kinds of fluoride are important.

Fluoridated water

In New Zealand, fluoride occurs naturally in all water supplies, but usually the level is too low to protect against tooth decay. Adjusting the water fluoride level to 0.7–1.0 ppm provides extra protection. Approximately half of the New Zealand population receive fluoridated water. Communities vary on whether they have opted for fluoridation of their water supply – 96% of Wellington residents receive fluoridated water compared with 4% of Canterbury residents. Analysis of dental records in these regions showed that decay rates were 30% lower among five-year-old children receiving fluoridated water and 40% lower among 12-year-olds.[1]

People drinking bottled or filtered water as their primary source of drinking water could be missing the decay preventative effects of optimally fluoridated water that may be available from their community water supply. Boiling water does not reduce the fluoride content.

Fluoride supplementation

Fluoride tablets are no longer recommended as a public health measure in New Zealand, as compliance with the daily regimen is poor and the children who use them are normally from more health conscious families, and are therefore not at high risk of tooth decay.[2]

Fluoride tablets can be considered for at-risk children and adolescents living in communities where the water supply is not fully fluoridated. The effectiveness of this form of supplementation is not as clearly documented as water fluoridation.

Sodium fluoride tablets (1.1 mg) can be purchased at pharmacies or prescribed fully funded. Tablets should be

sucked, chewed or dissolved in drinking water (two 1.1 mg sodium fluoride tablets dissolved in 1 L drinking water).

Dose depends on age and the existing fluoride level in the drinking water supply (Table 1).[2, 3] This does not mean that exactly this dose should be taken per day, but that important anti-cavity benefits may be gained with this amount, without causing any adverse effects on health.

Fluoride supplementation in pregnancy and children less than three years old is not recommended

Fluoride supplementation in pregnancy is not recommended because there is little evidence of benefit for the developing foetus.[4] Tooth enamel, the most caries-susceptible area of teeth, calcifies after birth making fluoride given before birth ineffective in decay prevention.

Fluoride supplementation is not recommended for children younger than three years of age, regardless of the fluoride level of the drinking water, because it is associated with dental fluorosis (white spots on the teeth).[2]

Consumption of fluoridated water (e.g. in formula) causes no adverse health effects for infants.[5, 6]

Accidental fluoride poisoning in children

Fluoride can cause symptoms of toxicity at a level of 3 – 5 mg/kg, resulting in nausea, vomiting, diarrhoea and hypersalivation, due to formation of hydrofluoric acid in the stomach. More serious toxicity (e.g. hypocalcaemia) can occur with ingestions over 5 mg/kg.

"Regular strength" toothpaste contains 1 mg fluoride per gram of toothpaste, therefore, symptoms may occur if a 10 kg child ingested 30 g toothpaste (~ ¼ tube) or more.

Poisoning is less common with ingestion of fluoride tablets. Sodium fluoride 1.1 mg tablets contain 0.5 mg fluoride, therefore a 10 kg child would need to ingest around 60 tablets for toxicity to occur.

With small ingestions, milk may be given to relieve gastrointestinal symptoms (calcium binds with fluoride). More serious toxicity requires immediate medical attention.

For further advice on managing fluoride poisoning, contact the National Poison Centre 0800 POISON (0800 764 766)

Table 1: Dietary fluoride supplement schedule[2, 3]

		Fluoride ion level in drinking water (ppm)*		
		Non-fluoridated (<0.3 ppm)	**Partially fluoridated (0.3–0.6 ppm)**	**Fluoridated (>0.6 ppm)**
Fluoride supplement	**Birth–3 years**	none	none	none
	3–6 years	0.5 mg/day** = 1 sodium fluoride tablet	0.25 mg/day = ½ sodium fluoride tablet	none
	6–16 years	1.0 mg/day = 2 sodium fluoride tablets	0.5 mg/day = 1 sodium fluoride tablet	none

*1.0 ppm= 1 mg/L

**1.1 mg sodium fluoride tablet contains 0.5 mg fluoride ion

Brushing teeth, toothbrushes and toothpaste

Teeth should be brushed for two minutes, two times per day (in the morning and last thing at night). All the surfaces of the teeth should be brushed as well as the top surface of the tongue.

Powered toothbrushes with oscillating heads are more effective at removing plaque than standard toothbrushes. Otherwise choose a toothbrush with a small head and soft bristles. Toothbrushes should be replaced every three to four months or sooner if the bristles become frayed. This ensures the brush is producing an effective clean and avoids bacteria build-up. Children should use a child-sized brush for ease of use. Children's brushes often need replacing more frequently than adult brushes.

Toothbrushes should not be shared. Brushes should be rinsed with tap water after use and stored upright in an open container or holder to allow air-drying. Ensure that toothbrushes stored together do not touch to avoid cross-contamination. There is no evidence that toothbrush cleaning solutions or storing brushes in mouthwashes has any additional benefit.

Toothpaste containing 1000 ppm fluoride (0.22% w/w sodium fluoride or 0.76% w/w monoflurophosphate) should be used. Lower strength (400 – 450 ppm) fluoride toothpaste is marketed for children, however regular fluoride toothpaste can be safely used as long as the amount is reduced. Adults and children over six years should use a pea-sized amount, younger children need only a smear of toothpaste. After brushing, spit but do not rinse the mouth as fluoride is effective when applied topically.

Tooth brushing in infants

Parents should start brushing their infant's teeth as soon as the first tooth emerges from the gums. The tooth may be wiped with a soft cloth (e.g. a clean handkerchief) with a small smear of fluoride toothpaste. When appropriate change to a soft, small headed toothbrush with a smear of fluoride toothpaste. The child should spit out when they are able to but not rinse their mouth. Try not to let the child swallow the toothpaste.

Other oral health tips for infants include:

- Do not put a baby to bed with a bottle
- Do not put fruit juices or sweetened drinks into the bottle
- Do not dip dummies (pacifiers) into sugar or honey

Flossing

Dental floss should be used daily (or at least three times per week) to help to remove plaque and food particles between teeth. Dentists may also recommend an interdental brush.

Mouthwash

Fluoride mouthwash helps to reduce and prevent tooth decay, providing slightly more protection than using fluoride toothpaste alone.[7] However for people with healthy teeth and gums, fluoride toothpaste is usually adequate. Fluoride mouthwash should not be used by children aged less than six years, due to the risk of swallowing the product, unless under professional instruction.

Antimicrobial mouthwash (e.g. containing chlorhexidine or triclosan) reduces the bacteria count and inhibits bacterial activity in dental plaque. It can be effective in reducing plaque and gingivitis (an early form of gum disease) but it is usually not necessary for people with healthy gums. Chlorhexidine mouthwash should be used intermittently only as it can stain the teeth and tongue. It should not be used straight before or after tooth brushing as the detergents in toothpaste interact with chlorhexidine.

Resources

The New Zealand Dental Association. Your oral health: Oral health topics.

www.healthysmiles.org.nz

The American Dental Association. Oral health topics A–Z.

www.ada.org/public/topics/alpha.asp

Ministry of Health. Oral health education resources. Free patient information can be ordered from:

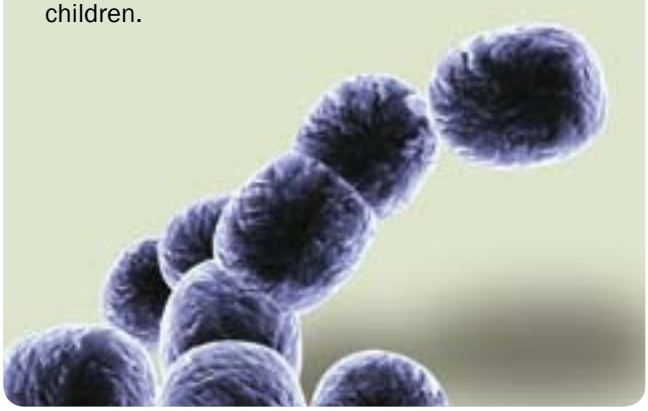
www.healthed.govt.nz/resources
(select category = dental health)

Ministry of Health. Fluoridation in New Zealand.

www.moh.govt.nz/moh.nsf/pagesmh/3578

Transmission of *Streptococcus mutans* from parent to child[8]

The cariogenic bacteria, *Streptococcus mutans* has been shown to be a risk factor for early development of dental caries. These bacteria can be transmitted via the saliva from parent to child in a variety of ways such as sharing spoons, pre-tasting food, putting their infant's dummy into their own mouth and kissing on the lips. There are many other factors involved in the development of caries. These include whether the infant is fed by bottle or breast. If bottle fed, the content and timing of feeds, the overall sugar content of the diet and the frequency and type of snack foods are all factors. An important message for caregivers is that their own oral health impacts on their children.



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