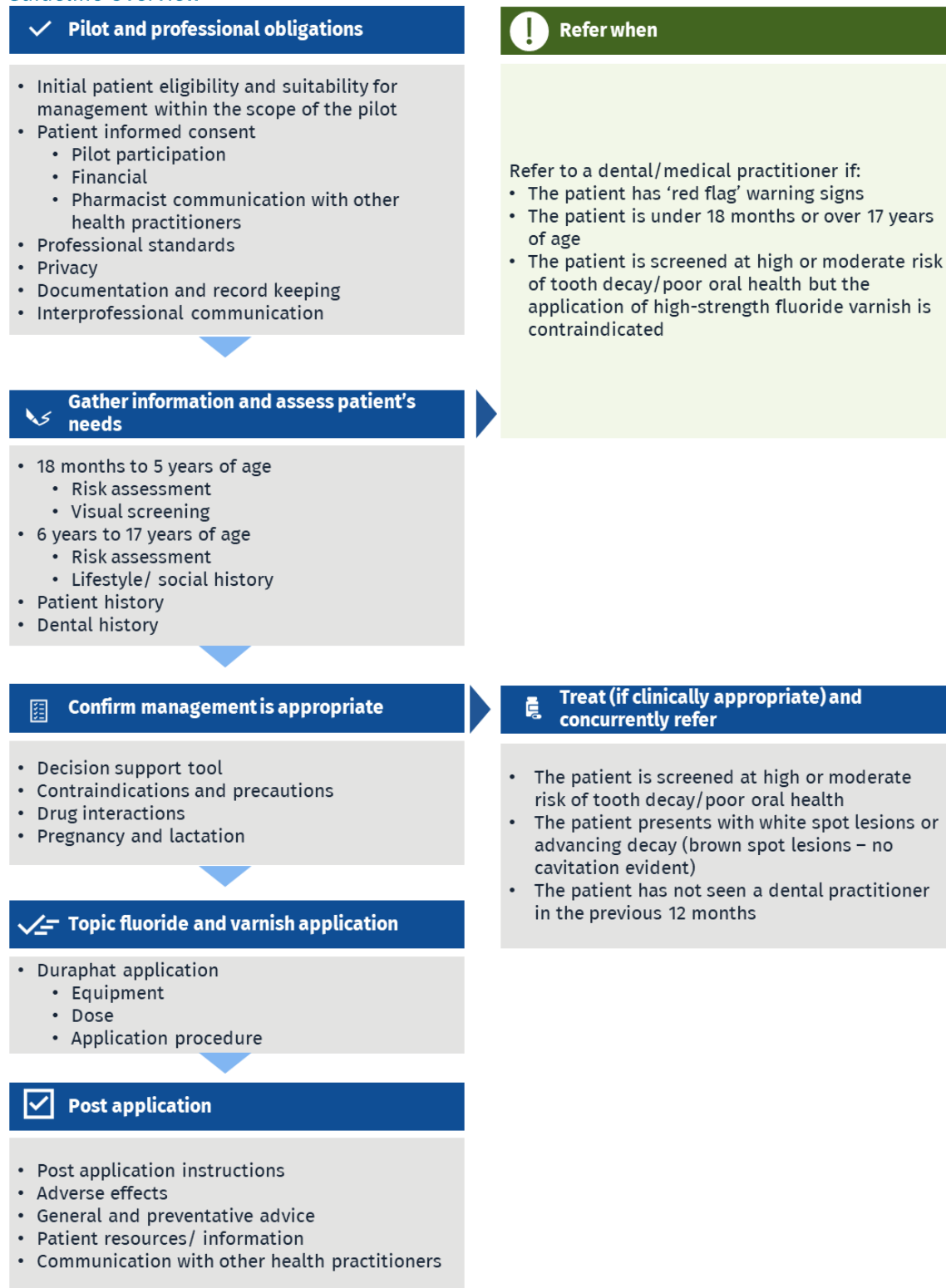


Queensland Community Pharmacy Scope of Practice Pilot

Oral Health Risk Assessment and Fluoride Application - Clinical Practice Guideline

Guideline Overview





'Red flag' warning signs at patient presentation that necessitate immediate referral (same day) to a dental or medical practitioner:

- Recent orofacial trauma (not yet seen by a dental and/or medical practitioner)
- Facial swelling or fever from an oral infection
- Difficulty swallowing or breathing
- A toothache that is getting worse, despite taking regular analgesia.

'Red flag' warning signs at patient presentation that necessitates urgent referral (within 3 days) to a dental practitioner (or medical practitioner):

- Advanced decay (discolouration and cavitation)
- A visible abscess
- A toothache that is not impacting daily functioning and can be managed with over-the-counter analgesics.

Key points

- Tooth decay (caries) is caused by acid-producing bacteria, commonly *Streptococcus mutans*, present in the thin biofilm on teeth (plaque) ⁽¹⁾. Acidophilic and cariogenic bacteria grow in plaque and produce acid that demineralises the tooth, starting with the enamel ⁽¹⁾.
- If left untreated, the demineralisation of the tooth structure will progress into the dentine layer until it reaches the nerve/ pulp of the tooth to cause infection ⁽¹⁾.
- An established body of evidence suggests that the application of high-strength fluoride varnish to teeth every six months can reduce dental decay and prevent progression of early-stage carious lesions ⁽²⁻⁵⁾.
- Patients may either be referred by a dental practitioner (an oral health therapist, dental therapist, oral hygienist or dentist), or assessed by the pharmacist as at moderate or high risk of tooth decay or poor oral health to eligible and suitable for varnish application.
- Fluoride varnish contains 22.6 mg/mL (22600 ppm) fluoride ion suspended in an alcohol and resin base ⁽⁴⁻⁶⁾. The only fluoride varnish currently registered in Australia to prevent caries is Duraphat® 5% w/v sodium fluoride varnish ^(4, 7).

When applying the information contained within this clinical practice guideline, pharmacists are advised to exercise professional discretion and judgement. The clinical practice guideline does not override the responsibility of the pharmacist to make decisions appropriate to the circumstances of the individual, in consultation with the patient and/or their carer.

Gather information and assess patient's needs

In order to assess the patient's suitability for an application of high-strength fluoride varnish, and/or whether a referral to a dental practitioner is required, an oral health risk assessment must be undertaken by the pharmacist.

Risk assessment and screening - 18 months to 5 years of age

Risk assessment

Refer to Appendix 1.

There is no arbitrary scoring system for risk status due to the variability of the interaction between risk factors and protective factors. Pharmacists must use their professional judgement to evaluate the child's risk status.

- A child with no obvious clinical signs of decay, only a few moderate level risk factors and multiple protective factors may be deemed low risk.
- If the child has at least one high risk factor, regardless of the number of protective factors, they would generally be considered at least moderate risk of tooth decay and poor oral health and fluoride application should be considered if appropriate.

Visual screening using the 'lift the lip' technique

- Depending on age, the child may either sit or stand in front of the pharmacist or lay in the parent's lap (see Figure 1).
- The parent or caregiver should lift the upper lip of the child in front of the pharmacist so that the front teeth and gums are clearly visible to look for signs of decay⁽³⁾.
- A torch may be used to check around the mouth and back teeth if desired, and a piece of gauze may be used to clean visible plaque and debris off teeth for better visibility⁽⁸⁾.
- During the screening, the pharmacist should look for:
 - signs of tooth decay (white spot lesions, brown spot lesions, cavitation (holes))
 - facial trauma (loose or broken teeth, lacerations on gums)
 - oral infection, facial swelling/asymmetry due to spreading infection
 - gum disease (red, swollen gums)
 - other relevant findings including mouth ulcers and possible signs of fluorosis.

Figure 1. Young child positioning sitting in parent/care givers lap for lift the lip screening



Image source: Metro South Health ⁽⁹⁾.

Appendix 2 provides descriptions and clinical photographs of common oral presentations.

Risk assessment - 6 years to 17 years of age

For children and adolescents aged between 6 and 17 years of age, a risk assessment questionnaire is completed with the patient and parent/caregiver. No visual screening is required, although signs of poor oral health may be easily observable, such as plaque accumulation, decay in front teeth, gingivitis or bad breath.

Risk assessment

Refer to Appendix 3.

There is no arbitrary scoring system due to the variability of the interaction between risk factors and protective factors. Pharmacists must use their professional judgement to evaluate the child's risk status:

- A child/adolescent with no obvious clinical signs of decay, only a few moderate level risk factors and multiple protective factors may be deemed low risk.
- If the child/adolescent has at least one high risk factor, regardless of the number of protective factors, they would generally be considered at least moderate risk of tooth decay and poor oral health.

As part of the risk assessment, all children and adolescents (and their parent/ caregiver) should be asked about their current oral hygiene routines, including frequency of brushing, type of toothpaste (fluoride strength) and toothbrush used, and the use of any other oral hygiene aids including mouthwash and flossing.

Patient history

Sufficient information should be obtained from the patient and their parent/caregiver to assess the safety and appropriateness of any recommendations.

The patient history (in addition to the risk assessment questionnaire) should consider:

- age
- pregnancy and lactation status (if applicable)
- current medical conditions or special health care needs that may impact on oral health status and the safe use of topical fluoride:
 - asthma (severity and current level of symptom control)
 - history of hospitalisation for allergic reactions
- current illness e.g., colds, influenza, current infection of HSV

- current and recently commenced medication (including prescribed medicines, vitamins, herbs, other supplements and over-the-counter medicines)
- drug allergies/adverse drug events
- hypersensitivity/allergic reaction to colophony (natural resin) e.g., band-aids or medical adhesives
- smoking status (including vaping).



Reminder

Pharmacists can access a range of clinical information in a patient's My Health Record, including details about current and past medication history, allergies and current medical conditions.

Dental history

Consider the following:

- Does the patient have a dental practitioner that they visit routinely?
- When did the patient last see a dental practitioner? What was the reason e.g., emergency treatment, toothache, routine check-up?
- When was the last topical fluoride application? Previous adverse experiences with fluoride varnish.
- History of recent orofacial trauma (within the last 6 months), oral infections, toothaches or other oral pain (including use of analgesics), soft tissue pathology in or around the mouth (ulcerative gingivitis, herpetic stomatitis or aphthous ulcers).
- Impacts of oral health on quality of life including sleep and school attendance.
- Oral hygiene routines including toothbrushing frequency, use of fluoridated products (toothpaste, mouth wash).
- Consumption of fluoridated water.



Refer when

- The patient has 'red flag' warning signs
- The patient is under 18 months or over 17 years of age
- The patient is screened at high or moderate risk of tooth decay/poor oral health but the application of high-strength fluoride varnish is contraindicated.

Administer fluoride varnish (if clinically appropriate) and concurrently refer:

- The patient is screened at high or moderate risk of tooth decay/poor oral health
- The patient presents with white spot lesions or advancing decay (brown spot lesions – no cavitation evident)
- The patient has not seen a dental practitioner in the previous 12 months.

Confirm management is appropriate

Pharmacists should refer to the Queensland Health Guidelines for [Fluoride Varnish \(QH-GDL-410:2013\)](#) **AND** specific product information provided by the manufacturer to confirm the application of high-strength fluoride varnish is appropriate for each patient, including:

- contraindications and precautions
- drug interactions
- pregnancy and lactation

General information only is provided within this guideline.

Where there is any doubt about the suitability of a child or adolescent, the pharmacist should not undertake the procedure and refer the patient to their preferred dental practitioner, closest public dental service or Aboriginal and Torres Strait Islander Community Controlled dental clinic.

Contraindications and precautions

Contraindications for the professional application of high-strength fluoride varnish (Duraphat® - as per the manufacturer's instructions for use ⁽⁶⁾) include:

- history of hypersensitivity/allergic reaction to colophony (natural resin) e.g., sticking plasters or medical adhesives
- current systemic illness e.g., colds, influenza
- severe or uncontrolled bronchial asthma
- ulcerative gingivitis, stomatitis or other pathology of the soft tissues in or around the mouth e.g., herpetic stomatitis or aphthous ulcers, recent facial trauma/oral infection
- previous adverse experiences or reactions to fluoride varnish.

Additional contraindications include where the patient:

- has had a professional topical fluoride treatment in the past 3 months
- has severe or uncontrolled bronchial asthma
- has been hospitalised for any allergic reaction in the past 12 months ⁽¹⁰⁾.

Drug Interactions

No other high dose fluoride products (such as fluoride gels) should be used. The presence of alcohol in the formula should be considered ⁽⁶⁾.

Pregnancy and lactation

Duraphat® contains 33.8% volume of ethanol (up to 0.2g of alcohol per dose), as such it should be avoided for patients who are pregnant or lactating ⁽⁶⁾.

Topical fluoride varnish application

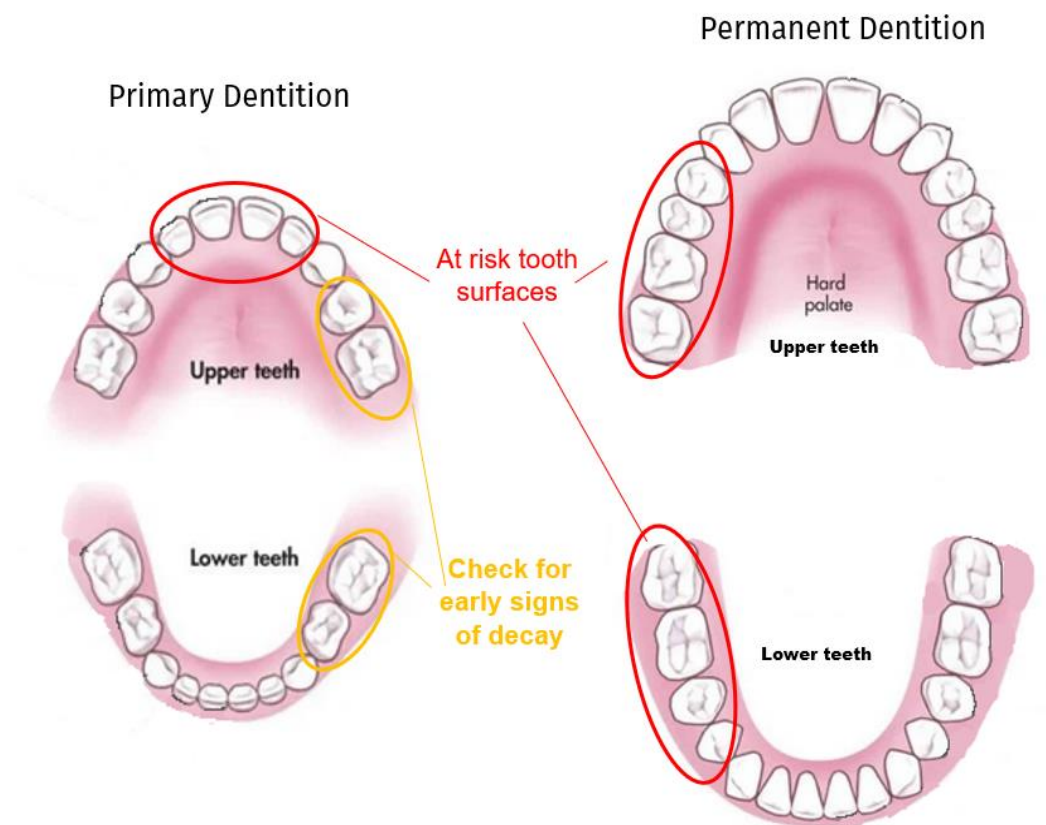
If the patient is assessed to be at a moderate or high risk of tooth decay, or has been referred by a dental practitioner for the procedure, the parent/caregiver should be advised that a high-strength fluoride varnish application is indicated.

High-strength topical fluoride varnish is generally well tolerated, safe, and easy to apply⁽⁵⁾.

Fluoride varnish is applied to at-risk tooth surfaces where it sets rapidly on contact with saliva to form a coating that is subsequently worn off over a 24 hour period through chewing and delayed tooth brushing⁽⁵⁾. In the context of this guideline an 'at-risk' tooth surface is defined as:

- a tooth surface that has signs of early decay (white spot or brown spot lesions)
- a tooth surface directly abutting a decayed tooth surface (in between two teeth)
- the four front primary teeth in the upper jaw (present in children up to the age of 6-7 years) (as per Figure 2)
- chewing (occlusal) surfaces and interproximal surfaces (in between) of permanent molars and pre-molars (if present) (as per Figure 2).

Figure 2. Common areas of decay in children and adolescents



The recommended frequency of fluoride varnish application is twice per year.

There is no published evidence that has found the professional application of fluoride varnish is a risk factor for enamel fluorosis in children of any age⁽³⁾.

Parents/caregivers should be advised that topical fluoride varnish is a preventative treatment and cannot reverse advanced tooth decay (although it may halt further development), treat dental infections or relieve dental pain.

So that the patient and parent/caregiver are aware of what to expect, they should be advised prior to the procedure that:

- Teeth may appear yellow for up to 24 hours due to the tint of the varnish, before it wears off and tooth colour returns to normal.
- Soft foods can be consumed after 30 minutes but harder foods cannot be chewed for at least 4 hours (it is important that the varnish is left undisturbed for as long as possible)⁽⁴⁾.

Guidance regarding Duraphat® application has been provided in Appendix 4.

Post application

Patients and parents/caregivers should be provided with post-application instructions and advice before the procedure is undertaken.

The efficacy of fluoride varnish depends on the length of time it can remain undisturbed on the teeth surfaces. As such, patients should be advised to:

- avoid eating and drinking for at least 30 minutes after application, after which time soft food and fluids can be consumed
- not chew food for at least 4 hours after application
- not brush teeth for at least 4 hours after application⁽⁴⁾.

Adverse effects

Accidental ingestion of large amounts of fluoride may result in acute burning in the mouth and/or a sore tongue. Nausea, vomiting and diarrhoea may occur soon after ingestion (within 30 minutes) and may be accompanied by salivation, haematemesis, and epigastric cramping abdominal pain. These symptoms may persist for up to 24 hours.

The manufacturer also states that:

- Swelling of the oral mucosa, ulcerative gingivitis and stomatitis have been observed in exceptional cases in sensitive individuals and/or individuals with a tendency to allergic reactions (especially after extensive application).
- Asthma attacks may occur in rare cases in people with bronchial asthma.
- Retching or vomiting may occur after a high dosage/extensive application in those with gastric sensitivity ⁽⁶⁾.

If necessary, the varnish layer can easily be removed from the mouth by brushing and rinsing ⁽⁶⁾.

General and preventative advice

In addition to post-application advice, patients should be reminded of the importance of regular check-ups with a dental practitioner and provided with appropriate information to enable effective home care. Anticipatory guidance should include instruction on toothbrushing, flossing and the use of other oral hygiene aids tailored to the patient's age.

Children aged 18 months to 5 years:

- children aged between 18 months and 5 years should have their teeth cleaned twice daily by a parent with a pea sized amount of toothpaste containing 500-550 ppm fluoride. A small, soft bristled toothbrush should be used and the child instructed to spit and not swallow the toothpaste and not to rinse after brushing ^(11, 12).

Children and adolescents aged 6 to 17 years:

- Teeth should be cleaned twice daily (or more frequently) with a soft bristled toothbrush and a toothpaste containing 1000-1500 ppm fluoride (a standard toothpaste readily available at supermarkets or the pharmacy). Toothpaste should not be swallowed, and the patient should avoid rinsing after brushing ^(11, 12).
- Floss should be used to clean in between teeth.
- Disclosure tablets may be used to demonstrate effective methods of plaque removal.

High strength fluoride products

Advice on the use of higher strength fluoride toothpastes and mouthwashes should be sought from a dental practitioner for patients at high risk of decay ⁽¹¹⁾, and the use of high-concentration fluoride toothpaste must be guided by the [Australian Pharmaceutical Formulary and Handbook | Australian Pharmaceutical Formulary and Handbook \(psa.org.au\)](#) (login required) ⁽¹³⁾.

Patient resources

- National Institute of Dental and Craniofacial Research:
 - [The Tooth Decay Process: How to Reverse it and Avoid a Cavity](#)
 - [Tooth Decay](#)
- Australian Dental Association – [Brushing factsheet](#)
- NSW Health – [Resources for Aboriginal and Torres Strait Islander People2](#)




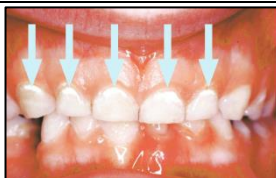
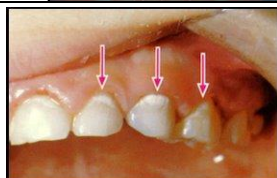






Pharmacist resources

- Queensland Health Guidelines:
 - [Fluoride Varnish \(QH-GDL-410:2013\)](#)
 - [Fluoride – Prevention of Dental Caries and Maintenance of Oral Health \(QH-GDL-411:2013\)](#)
 - [Lift the Lip](#) (Metro North Health)
- Remote Primary Health Care Manual – [Clinical Procedure Manual](#)
- Queensland Health and Royal Flying Doctors Service (Queensland branch) - [Primary Clinical Care Manual 11th edition 2022](#)
- Northern Territory Department of Health - [Healthy Smiles: Oral health and fluoride varnish information for health professionals](#)
- Department of Health Victoria - [Evidence-based oral health promotion resource](#)
- Australian Dental Association – [Practical Guidelines for the use of Fluorides](#)
- MIMS Online - [Duraphat](#)
- [Fluoride Safety](#) and [Water Fluoridation Maps](#) – The University of Adelaide

Appendix 1 - Risk assessment tool (18 months to 5 years)

Risk assessment and screening process – children aged 18 months to 5 years (Adapted from Metro North Health ⁽¹⁴⁾ and CAMBRA risk assessment ⁽¹⁵⁾)	
Risk Factors	Risk level
Individual or family history of decay (including parent/primary caregiver and siblings with fillings, teeth extracted or active untreated decay). Routine referral to a dental practitioner (including public dental clinic) is required if the child has not had a dental check-up (not just emergency treatment) in the past 12 months.	Moderate to high
Child has a bottle or sippy cup with a fluid other than water, plain milk or plain formula during the day.	Moderate
Child takes a bottle or sippy cup to bed with fluid other than water, including on-demand breastfeeding. Routine referral to a dental practitioner (including public dental clinic) is required.	High
Snacking between meals, especially high sugar and carbohydrate intake, e.g., lollies, chips, biscuits, muesli bars, flavoured milk, juice, soft-drinks, cordial, jams etc. Consider frequency of snacking and child's diet as a whole.	Moderate to high
Special health care needs and/or regular medications that have a high sugar content or may cause dry mouth. Routine referral to a dental practitioner (including public dental clinic) is highly recommended.	Moderate
Clinical signs	
White spot lesions visible on any teeth or obvious decay (brown spots, holes/cavitation) (see Appendix 2). Routine referral to a dental practitioner (including public dental clinic) is highly recommended.	High
Visible plaque accumulation. Routine referral to a dental practitioner (including public dental clinic) is highly recommended.	Moderate
Gingivitis (bleeding, swollen or red (as opposed to pink) gums). Routine referral to a dental practitioner (including public dental clinic) is highly recommended.	Moderate
Toothache, recent trauma (not yet seen by a dental practitioner), facial swelling from infection or visible abscess (see Appendix 2). Immediate referral to the nearest dental practitioner or a medical practitioner/emergency department is required.	High
Protective factors that reduce risk of poor oral health and caries	
<ul style="list-style-type: none"> child drinks fluoridated water (tap water in communities with fluoridated water supply) child/primary caregiver has a usual dental practitioner child has seen a dental practitioner for a check-up (not just emergency care) in the past 12 months fluoride varnish has been applied in previous 6 to 12 months parent/caregiver brushes the child's teeth twice daily with an appropriate fluoride toothpaste 	

Appendix 2 - Clinical photographs

Clinical photographs to assist with visual screening ⁽¹⁶⁾		
Healthy teeth and gums: <ul style="list-style-type: none">no (or minimal) plaque on teeth and gumsgums are pink with no evidence of swelling or bleeding.		
3.White spot lesions: White, chalky/frosty lines/spots, usually along the gumline (this differentiates white spot lesions from similar presentations such as dental fluorosis)		
Advancing decay: Yellow or brown spots on teeth (possibly in combination with white spots) that don't wipe off, sometimes with visible cavitation.		
Abscess: <ul style="list-style-type: none">Tooth decay that has progressed to the nerve causing periapical infection (at the root tip).Presents as a lump on the gums (usually seen in the presence of decay).May be pus-filled and painful, or draining (usually without pain).Can usually be differentiated from mouth ulcers and other mucosal conditions by location (ulcers are more likely to occur on the inner lip, cheek or tongue).		
		
Gingivitis: Reversible gum inflammation, often observed in the presence of plaque and as red 'puffy' gums, particularly on the gum/tooth line that may bleed when touched/during brushing.		
Mouth ulcers: <ul style="list-style-type: none">Painful sores, often with a yellow or white centre, surrounded by red border/halo on oral mucosal surfaces and tongue (occasionally palate and gums), usually as a result of minor trauma (accidental biting, scratching or poking at gums with sharp objects e.g., fingernails).Recurrent severe or multiple ulcers may require a medical or dental referral to investigate the possibility of herpes simplex virus (HSV), or other infections ⁽¹⁷⁾.		
Dental fluorosis: <ul style="list-style-type: none">The observable effect of higher fluoride intake in early childhood as teeth are developing (before age of 8). There is usually no effect on dental or enamel function.Prevalence of dental fluorosis in Queensland is low (8.2% for all grades of fluorosis) and the vast majority of dental fluorosis observed is classed as very mild (almost imperceptible) to mild (0.1% cases were moderate or severe ^(18, 19)).		
		
Image source: Centers for Disease Control and Prevention		

Appendix 3 - Risk assessment and screening tool 6-17 years

Risk assessment and screening process – children and adolescents aged 6 to 17 years (Adapted from CAT risk assessment form (20))	
Risk Factors	Risk level
<ul style="list-style-type: none"> Child/adolescent comes from a low socio-economic background. Routine referral to a dental practitioner / public dental clinic is highly recommended.	High
<ul style="list-style-type: none"> Child/adolescent is a recent immigrant, a language other than English is primarily spoken at home, or of Aboriginal and Torres Strait Islander background. 	Moderate
<ul style="list-style-type: none"> Frequent snacking and consumption of sugary and/or acidic drinks (3 or more snacks and drinks per day). Consider diets high in sugar and processed carbohydrates, and consumption of regular and diet soft drinks, cordial, sports drinks, juice, iced (or regular) coffee and flavoured milk. Routine referral to a dental practitioner /including public dental clinic is highly recommended.	High
<ul style="list-style-type: none"> Special health care needs and/or regular medications with high sugar content or that may cause dry mouth. Routine referral to a dental practitioner / including public dental clinic is highly recommended.	Moderate
<ul style="list-style-type: none"> Personal or family history of previous decay (fillings or teeth extracted). Routine referral to a dental practitioner is required if the child/adolescent has not had a routine dental check-up in the past 12 months.	Moderate to high
<ul style="list-style-type: none"> Child/adolescent has orthodontic or other dental appliances that may make cleaning teeth difficult. 	Moderate
Clinical signs	
<ul style="list-style-type: none"> Visible decay (brown spots, holes/cavitation) (see Appendix 2). Routine referral to a dental practitioner is required.	High
<ul style="list-style-type: none"> Visible plaque accumulation. Routine referral to a dental practitioner is highly recommended.	Moderate
<ul style="list-style-type: none"> Gingivitis (bleeding, swollen or red (as opposed to pink) gums). Routine referral to a dental practitioner is highly recommended.	Moderate
<ul style="list-style-type: none"> Toothache, recent trauma (not yet seen by a dental practitioner), facial swelling from infection or visible abscess (see Appendix 2). Immediate referral to the nearest dental practitioner or a medical practitioner/ emergency department is required.	High
Protective factors that reduce risk of poor oral health and caries	
<ul style="list-style-type: none"> child/adolescent drinks fluoridated water (tap water in communities with fluoridated water supply) child/adolescent has seen a dental practitioner for a check-up (not just emergency care) in the past 12 months fluoride varnish has been applied in previous 6 to 12 months child/adolescent brushes teeth twice daily with an appropriate fluoride toothpaste. 	

Appendix 4 – Duraphat® application

Equipment

- hand sanitiser or hand washing station
- Duraphat® varnish (single dose (0.4ml) pack or multi dose tube)
- Duraphat® dosage pad
- cotton gauze
- disposable microbrush/applicator
- appropriate personal protective equipment:
 - gloves
 - protective eyewear
 - single use surgical mask
 - apron (optional)
- single use, self-adhesive bib to protect patient clothing
- clean dry toothbrush (optional).

Dose

As per the manufacturer's instructions for use, the dose of Duraphat® varies based on age (and subsequently, dentition type):

- 18 months up to 6 years dosage: 0.25ml Duraphat® (5.6mg fluoride) (primary dentition)
- 6 to 14 years dosage: 0.4ml Duraphat® (9.04mg fluoride) (mixed dentition)
- 15 to 17 years dosage: up to 0.75ml Duraphat® (16.95mg fluoride) (permanent dentition)

A single use, Duraphat® Dosage Pad that indicates the amount of fluoride to be applied, or Duraphat® Varnish Single Dose (0.4ml) must be used to ensure the correct amount of varnish is dispensed and applied.

Application procedure

The following application procedure is based on the [Queensland Health Fluoride Varnish Guideline \(QH-GDL-410:2013\)](#) and the [Remote Primary Health Care Manual – Clinical Procedure Manual](#) and has been contextualised for the community pharmacy setting ^(4, 10):

1. Explain the procedure to the patient and what they can expect e.g., teeth will feel sticky, keep mouth open and tongue away from teeth during application.
2. Don appropriate PPE.
3. Position the patient; young children may be positioned as per the 'lift the lip' technique, older children should sit facing the pharmacist with their head tilted slightly back.
4. Dispense the correct amount of fluoride for the age of the child using a single use dosage pad or a Duraphat® Varnish Single Dose pack.
5. Remove any visible plaque from teeth using cotton gauze, or by brushing with a wet toothbrush (without toothpaste).
6. Dry the teeth using a clean piece of cotton gauze.
 - a. One quadrant (quarter of the mouth) should be dried and isolated at a time for application; although thorough drying is not necessary as the varnish sets on contact with saliva.

- b. Isolate the teeth by putting a finger and thumb on each sides of the tooth for application. Older children may tolerate rolled up gauze tucked into the space between the gum and cheek. Change the gauze periodically as it becomes wet.
7. Apply a thin layer of the varnish to 2-3 teeth (as required) in 1 quadrant at a time using a disposable microbrush/applicator, starting with the upper front teeth, moving to the back, then lower teeth. Do not overload the applicator and periodically check the tongue and cheeks for varnish and wipe away as required.
 - a. The varnish can be applied to the chewing surfaces of the back teeth and around the gumline on the outside of front teeth if there are white spots indicating early tooth decay.
 - b. For restless young children who may struggle to sit still, prioritise the upper front teeth.
8. Finish the procedure by checking the tongue and soft tissues for varnish residue and wipe away.

Note: Duraphat is indicated as a spot application fluoride treatment for at-risk tooth surfaces. It should not be applied to the whole dentition in one session (systemic treatment)⁽⁶⁾.

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