Role of Fluoride in Preventing Caries and Maintaining Oral Health

1. Purpose
This Guideline provides information regarding best practice for the use of fluorides in Queensland.

2. Scope
This Guideline provides information for all dental practitioners and relevant health professionals employed within the Queensland public health system.

3. Related documents

Procedures, Guidelines and Protocols:
- Use of Fluoride Varnishes Guideline

4. Guideline
While the use of fluoride is an important strategy in the prevention of dental caries, it is important for dental practitioners and relevant health professionals to encourage the other evidence-based behaviours which promote and maintain oral health, namely:

- practise good oral hygiene
- choose healthy snacks like fruits, cheese and vegetables
- limit sugary foods and drinks
- chew sugar free gum
- not smoke
- breastfeed where possible
- wear a mouthguard when playing contact sports
- seek regular dental care
- arrange for children to have a dental assessment by two years of age
- drink plenty of tap water.
Water fluoridation

Fluoridation of drinking water is an effective, efficient, socially equitable and safe population health measure for the prevention of dental caries. The consumption of optimally fluoridated water should be promoted to all Queenslanders and supported by all levels of government.

The fluoridation of public water supplies has been practised around the world for more than 60 years and is supported by more than 150 major health organisations including the World Health Organization, the Australian Medical Association and the Australian Dental Association.

People of all ages benefit from drinking fluoridated water throughout life. Children benefit from water fluoridation as soon as their teeth are formed – giving them the best chance of having healthy teeth for life. Teenagers benefit from water fluoridation as they are at higher risk of developing dental caries due to risk factors such as poor oral hygiene, a cariogenic diet or active orthodontic treatment. Young adults benefit as they can spend less time and money on expensive dental treatment. Middle aged people can enjoy a healthier more comfortable lifestyle by avoiding the pain and costs of dental treatment. Older people are now keeping their teeth longer and will benefit from being well-protected against dental caries.

Water fluoridation provides an additional benefit in caries prevention to that provided by fluoride toothpaste.

While breast milk is the best nutrition for infants, infant formula in Australia is used widely. As most formula products are sold as powder, their reconstitution with water can provide an additional source of fluoride for formula fed infants. Australian evidence does not show a link between the use of fluoridated water to reconstitute infant formula and the development of dental fluorosis. Therefore, infant formula can safely be reconstituted with optimally fluoridated water (around 1 part per million).

Bottled water

Regulations in Australia and New Zealand permit the voluntary addition of fluoride to still, packaged water at a range of 0.6 – 1 mg/L. As a legal requirement, any bottled water sold in Australia or New Zealand which has added fluoride must state clearly on the label that the product ‘contains added fluoride’.

The addition of fluoride to bottled waters provides a potential opportunity for individuals to maintain fluoride access if they are regular bottled water consumers. This measure is however, least likely to benefit those most in need due to cost.
Fluoride toothpaste

Fluoridated toothpaste is an effective measure for the prevention of dental caries and its widespread use has been a major factor in the reduction of dental caries since the late 1960’s.

In Australia, fluoridated toothpastes are available in three concentrations: junior or children’s toothpaste with a fluoride concentration of 400 - 550 ppm, standard toothpaste with a fluoride concentration of 1 000 - 1 500 ppm and high concentration fluoride toothpaste of 5 000 ppm fluoride.

For very young children however, standard (adult) strength fluoride toothpaste (1000 parts per million fluoride) is also associated with a higher risk of developing dental fluorosis. To reduce this risk, low (junior or children’s) fluoride toothpaste (0.5 mg/g fluoride) should be used for children up to 6 years of age.

Children under 6 years of age should use toothpaste under adult supervision. Toothpaste should be stored out of the reach of young children.

In non-fluoridated areas (less than 0.5 parts per million):

- For infants, from as soon as teeth appear up to 6 months of age, the teeth should be cleaned twice a day with a wet toothbrush or wet cloth by a parent or carer without toothpaste.

- From six months of age up to six years of age, the teeth should be cleaned twice a day with low (junior or children’s) fluoride toothpaste (containing approximately 0.5 mg/g fluoride) under adult supervision. A small pea-sized amount of toothpaste should be used on a child-sized, soft toothbrush. Children should be encouraged to spit out after brushing. Excess toothpaste should not be swallowed. Children should not rinse after brushing as the very small amount of toothpaste left in the mouth, after spitting, continues to protect against dental caries.

In fluoridated areas (0.5 – 1 parts per million):

- For infants, from as soon as teeth appear up to 18 months of age, teeth should be cleaned twice a day with a wet toothbrush or wet cloth for babies by a parent or carer without toothpaste.

- From 18 months up to six years of age, the teeth should be cleaned twice a day with low (junior or children’s) fluoride toothpaste (containing approximately 0.5 mg/g fluoride) under adult supervision. A small pea-sized amount of toothpaste should be used on a small soft toothbrush. Children should be encouraged to spit out after brushing. Excess toothpaste should not be swallowed. Children should not rinse after brushing as the very small amount of toothpaste left in the mouth, after spitting, continues to protect against dental caries.
In all areas:

For all adults and children aged six years or over, the teeth should be cleaned twice a day with a pea-sized amount of standard (adult) fluoride toothpaste (containing around 1mg/g fluoride) on a small, soft toothbrush.

Rinsing after brushing is not required, as the very small amount of toothpaste left in the mouth, after spitting, continues to protect against dental caries.

Teenagers and adults with elevated risk of dental caries may use high concentration fluoridated toothpaste on the prescription and supervision of a dental practitioner.

**Fluoride supplements**

Fluoride supplements are not recommended for use in Australia.

In contrast to the evidence on the effectiveness of water fluoridation and fluoride toothpaste, fluoride supplements (tablets or drops) are largely ineffective as a public health measure due to low levels of compliance. Fluoride supplement use in pre-school years also increases the risk of developing dental fluorosis.

**Fluoride mouth rinses**

Fluoride mouth rinses may be prescribed by a dental practitioner for individuals aged six years or over who have a higher risk of developing dental caries. Fluoride mouth rinses should be used outside normal tooth brushing times, and should not be a substitute for brushing with fluoridated toothpaste. Mouth rinses should be spat out, not swallowed.

**Professionally applied fluoride products**

Fluoride products used in the practise of dentistry include gels, foams and varnishes with high doses of fluoride ranging from 9 000 – 23 000 ppm. Professionally applied fluoride products can be used for both primary and secondary prevention of dental caries. Primary prevention aims to prevent carious lesions that develop on sound tooth surfaces. Secondary prevention is remineralisation of the initial, precavitated lesion and of root caries.

The recommended frequency of application of professionally applied fluoride products is two to four times per year based on an assessment of risk.

Fluoride varnishes have advantages over other professionally applied fluoride products. One of the most significant advantages is that varnishes release fluoride over 24 hours and appear to increase the calcium fluoride reservoirs that aid in long-term fluoride release. Fluoride varnishes are well tolerated by patients, particularly by children, and are relatively easy to apply.
Department of Health: Role of Fluoride in Preventing Caries and Maintaining Oral Health

Fluoride varnishes contain fluoride ions suspended in an alcohol and resin base. Varnishes can be applied to all teeth, or as a spot application on individual teeth or localised areas. Although varnishes contain a high concentration of fluoride, they set immediately on contact with saliva such that very little is swallowed. The waxy film which adheres to teeth is gradually worn off by chewing or brushing.

**Further reading**

This document should be read in association with the following documents:

- *Water Fluoridation Regulation 2008*
- *Queensland Water Fluoridation Code of Practice 2010*
- The University of Adelaide Practice Information Sheet No. 2 ‘Professional fluoride applications in the dental surgery’
- The University of Adelaide Practice Information Sheet No. 3 ‘Home use of fluoride’
- Australian Dental Association Policy Statement 2.2.1 ‘Community Oral Health Promotion: Fluoride Use’ (includes ADA Guidelines for the Use of Fluoride), 2012
- World Health Organization, Water Sanitation and Health (WSH), Fluoride in Drinking-water, 2006

5. **Review**

This Guideline is due for review on: 1 July 2016

**Date of Last Review:** N/A

**Supersedes:** The Use of Fluorides in Queensland Policy, March 2008

6. **Business Area Contact**

Office of the Chief Dental Officer, Health Service and Clinical Innovation Division

7. **Approval and Implementation**

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Approval date: 09 September 2013
Effective from: 09 September 2013

Version Control

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