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Why use fluoride varnish?

The Childsmile programme uses fluoride varnish to help reduce dental decay in children.

Fluoride is a mineral that helps to prevent tooth decay. Fluoride varnish is a golden gel which is applied to children's teeth using a soft brush. The varnish sets quickly and has a pleasant taste and a fruity smell.

[SIGN Guideline 138 \(2014\)](http://www.sign.ac.uk/pdf/SIGN138.pdf) finds fluoride varnish to be effective in the prevention of decay and recommends that it should be applied to the teeth of all children at least twice yearly. The benefit to all children is further supported by the latest Cochrane Systematic Review (Marinho et al. 2013).

The [Scottish Dental Clinical Effectiveness Programme \(SDCEP\)](http://www.sdcep.org.uk/index.aspx?o=2332) Prevention and Management of Dental Caries in Children guidance outlined that the benefits of fluoride varnishing should be extended to all children. They recommend fluoride varnishing twice a year to all children over two years of age.

Even at very low levels, fluoride in the plaque and saliva is able to alter the balance between demineralisation and remineralisation, favouring the remineralisation process. As the remineralisation happens in the presence of fluoride, the new mineral crystals are stronger and less susceptible to acid attack.

When fluoride is present in the saliva, the fluoride ions become concentrated in the plaque. When sugars then enter the plaque, the presence of fluoride reduces the conversion of dietary sugars into acid by plaque bacteria with less acid produced.

How fluoride varnish works:

- it slows down the development of decay by stopping demineralisation
- it makes the enamel more resistant to acid attack (from plaque bacteria), and speeds up remineralisation (remineralising the tooth with fluoride ions, making the tooth surface

stronger and less soluble)

- it can stop bacterial metabolism (at high concentrations) to produce less acid.

Fluoride varnish leads to heavy remineralisation of the enamel surface, and subsequent acid attacks will allow fluoride ions to penetrate more deeply into the tooth structure. Varnishes like Duraphat® are useful because they stay on the tooth surface for some hours, allowing slow release of the fluoride ion.

HEAT Target 9

At least 60% of 3 and 4 year old children in each SIMD quintile to receive at least two applications of fluoride varnish per year by March 2014.

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