Fluorides and the prevention of dental decay: a statement from the Representative Board of the British Dental Association^{*}

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Fluorides are found naturally throughout the world. The beneficial effects of fluoride on teeth were first observed in an area with naturally-fluoridated water. Clinical trials subsequently demonstrated that the same benefits could be obtained by adjusting the fluoride level of water supplies to an optimum level of 1 part per million.

Because early investigations into the prevention of caries with fluoride involved fluoride in water supplies, it was assumed that the benefit came about mainly through a strengthening of teeth during development. However, research has shown that fluoride's topical effect is equally or more important. Fluoride inhibits caries by encouraging the tooth to remineralise after attack by plaque acids.

This mechanism explains much of the improvement in dental health shown by the UK national surveys over the past 30 years. Throughout this period, most toothpaste has been fluoridated, with a resulting topical effect considerably greater than was expected when fluoride toothpastes were first developed. Fluoride toothpaste has made a major contribution to improved oral health in the UK.

The case for targeted water fluoridation

The success of toothpaste fluoridation in the UK has resulted in a reassessment of the role of water fluoridation. In some parts of the country, especially more affluent areas, decay levels are now very low, so that water fluoridation would bring little additional benefit. But in the major conurbations with areas of social deprivation, disease levels are much higher and water fluoridation remains an essential public health measure. Everyone's diet includes water so

In brief

- This paper summarises BDA policy on fluoride use.
- Water fluoridation remains an essential public health measure in deprived areas.
- Fluoride toothpaste is also an important public health measure.

everyone benefits, including the most disadvantaged who may not have the benefit of regular fluoride toothpaste use.

The recent White Paper on public health seeks to narrow inequalities in health. For oral health, water fluoridation is the most effective way of doing this but the need is for targeted water fluoridation schemes. The BDA has proposed that 25% of the UK population should be drinking optimally-fluoridated water by 2005. Provided that new fluoridation schemes serve areas of greatest social and material inequality, even an increase from the current 10% to a coverage of 25% could produce major dental health improvements.

The need for continued use of fluoridated toothpaste

Alongside targeted water fluoridation schemes, the population must continue to use fluoride in other ways if recent improvements in dental health are to be maintained. Fluoride toothpaste has been comprehensively tested and shown to provide a benefit even in fluoridated areas. Its use must be regarded as an important public health measure in its own right.

Other fluoride delivery systems are available, including salt and milk fluoridation. Tests have shown them to be effective in reducing decay, if used regularly, but these methods of delivery are not generally available in the UK.

Fluoride exposure from multiple sources

If excessive fluoride is ingested while permanent teeth are still forming (up to about the age of 7 years) mild enamel opacities may result. Such opacities are normally not discernible to the untrained eye. There are many other causes of opacities in addition to the ingestion of fluoride. It is noteworthy that after 30 years of fluoride toothpaste availability, fluoride dietary supplementation and water fluoridation in some areas, enamel opacities raise minimal public interest or concern. The risk benefit equation is strongly in favour of continued fluoride toothpaste use alongside water fluoridation.

However, if the benefits of fluoride toothpaste use are to be maintained, and if progress is to be made with water fluoridation in areas where this measure is still needed, it is essential that public confidence in fluoride is maintained. Limitation on the amount of fluoride ingested by under 7s can be achieved by supervised brushing, use of a pea-sized amount of paste and, for children at low risk of decay, by the use of formulations containing around 500 ppmF. Caution is necessary in the use of fluoride dietary supplements which are not a public health measure and should only be used under dentist supervision.

Summary

- Fluoride reduces the incidence of dental decay substantially.
- Fluoride benefits all age-groups, because of its topical effect.
- Water fluoridation needs to be targeted on high caries areas which are normally also areas of social and material deprivation.
- Thorough brushing twice a day with a fluoride toothpaste is also crucial to the improvement of oral health.

**Statement approved by the Representative Board of the British Dental Association on 6 November 1999, having been proposed by Dr Geoffrey Craig, on behalf of the Association's Health and Science Policy Group.*

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