Fluoridation

Shown over 50+ years to be effective and safe public health measure.

Effectiveness and safety is supported by evidence from York systematic review. (NB that review did also state that the quality of evidence for such a major public health measure was relatively poor).

Would expect that the highest need areas of the country to go with this first (e.g. North West, and North East).

Our local data shows evidence of beneficial effects of naturally occurring optimal levels of fluoride in Year 1 schoolchildren. Even the sub-optimal areas do better than the low fluoride areas. The effect is present even after controlling for material deprivation.

The normal steps involved in taking forward fluoridation are:

1) technical feasibility study
2) cost-benefit analysis
3) PCTs to then take forward through SHA
4) SHA and local government involved in public consultation
5) If public consultation shows strong local support then
6) request the relevant water supply companies to fluoridate supplies

PH benefits:

reduced prevalence and burden of dental caries especially children initially reduction of inequalities in oral health all people with natural teeth have the potential to benefit

Potential "costs"

technical feasibility studies are usually complex

frequently difficult to fluoridate localised areas - generally need to work across large populations - this is due to complexity of some water supply networks

size of benefit in low caries areas difficult to quantify - most studies were undertaken at time of high caries prevalence.

Can expect an increase in mottling of teeth - although the extent of mottling of genuine aesthetic concern is difficult to quantify Raises high passions on both sides of the debate

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Fluoridation

The beneficial effects of fluoride on teeth occurs through two main mechanisms:

a systemic (or pre-eruptive) effect:

when fluoride is incorporated within the hard structures of developing teeth, forming a crystalline structure which is more resistant to acid attack

a topical (or post-eruptive) effect:

when fluoride is available in the oral environment and becomes incorporated in the outer layers of the hard structures of teeth and makes them more resistant to acid attacks.

The latter mechanism is widely accepted as providing the greater protective effects against dental decay. Water fluoridation works through both mechanisms, conferring benefit both to children and any adults with natural teeth.

Fluoride is naturally present in all water supplies. We've evolved to cope with low levels of fluoride. Usually water fluoride levels are less than 0.3 parts per million (ppm). In some areas, natural levels can be much higher. Some oral health benefits may be achieved at levels between 0.3 and 0.7 ppm (suboptimal). Optimal levels for oral health are between 0.7 – 1.0 ppm. Levels above 1 ppm can lead to dental fluorosis in developing teeth.

Fluoridation is the artificial adjustment of fluoride levels in water supplies to give an optimal concentration of 1 part per million. Internationally, many water supplies have been fluoridated as a public health measure, some for over 50 years. Only 10% of the UK population (mainly West Midlands) receive optimally fluoridated water supplies.

There are pockets of naturally occurring optimal levels of fluoride in some water supplies, including some areas in Wiltshire. Approximately 10% of the Kennet and North Wiltshire population receive optimal levels of naturally occurring fluoride. Nearly 45% receive suboptimal levels of fluoride.

Dental surveys of Kennet and North Wiltshire 5-year-old children show that children living in areas with optimal fluoride are about a third less likely to have any experience of dental decay, compared to children in areas with very low fluoride.

Five of the 10 PCTs with the lowest decay in England are in the West Midlands.

The York Centre for Reviews and Dissemination's systematic review of water fluoridation concluded that water fluoridation benefits oral health. The benefits are maintained over and above alternative preventive measures. There is some (weaker) evidence that water fluoridation reduces inequalities in oral health.

The review also concluded there was no evidence of any harmful effects on human health, other than a likely increase in the prevalence of mottling, which may reach aesthetic concern in 12% of the population, compared to 3% in non-fluoridated areas.

The amendments of the 2005 Water (Fluoridation) Act mean that water companies now shall fluoridate water supplies at the request of the appropriate Health Authority, following a process of public consultation and technical feasibility studies.

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