



Position
Statement

British Association for the Study of
Community Dentistry (BASCD)

Position statement on Community Water Fluoridation

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First Edition

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BASCD strongly supports community water fluoridation as a safe, equitable and effective intervention, which should be implemented on a universal basis to reduce the prevalence and severity of tooth decay and reduce oral health inequalities.

Summary

The balance of evidence strongly supports community water fluoridation as a safe, effective, and sustainable method of reducing tooth decay. Around a third of children and adults in the UK have tooth decay, yet only 10% of people receive fluoridated water. Community water fluoridation is the most cost-effective and sustainable oral health improvement strategy, and has the potential to reduce oral health inequalities. Water fluoridation should be used as a complementary strategy to other oral health improvement programmes aimed at reducing the prevalence and severity of tooth decay.

The purpose of this document is to inform policy makers of the compelling evidence for community water fluoridation and urge the implementation of this intervention on a universal basis to reduce tooth decay in the UK population.

Why BASCD has produced this statement

Despite improvements in oral health over recent decades, tooth decay is a significant public health problem in the UK and globally. A third of UK adults have obvious tooth decay^(1,2) and there are regional inequalities in children. Almost a quarter of 5-year-olds in England⁽³⁾, over a third of 5-year-olds in Wales⁽⁴⁾, and just over a quarter of 5-year-olds in Scotland⁽⁵⁾ have obvious experience of tooth decay. In 2013, 40% of 5-year-olds in Northern Ireland had experience of tooth decay.⁽⁶⁾

For many years tooth decay has been the main reason for hospital admission for children between 5-9 years old (Box 1). In 2019, the estimated costs for hospital tooth removal due to tooth decay for children aged between 0-19 was £33 million.⁽⁷⁾

Box 1. Hospital admissions of children due to tooth decay.^(7,8)

In 2022, the total number of children under 19 admitted to hospital for tooth decay in England was 29,849.

These figures are lower than before the COVID-19 pandemic but are not an indication that the levels of tooth decay are improving, as there are large waiting lists for hospital dentistry for children due to the backlogs caused by the pandemic.

Most of these children will have had decayed teeth removed under general anaesthetic, which carries great risks for an almost completely preventable disease.

The burden of dental disease is experienced disproportionately by those from disadvantaged backgrounds and stark oral health inequalities exist.⁽⁹⁾ Untreated tooth decay can cause pain and infection which may interfere with daily activities such as attending school or work, eating, sleeping and general wellbeing.^(10,11) Tooth decay is mostly preventable through maintaining good oral hygiene, controlling sugar intake and exposure to fluoride.⁽¹²⁾ However, those at the highest risk of disease struggle with adopting and maintaining these behaviours.

BASCD's 2019 Fluoride position statement⁽¹³⁾ covered all fluoride-based health improvement approaches, such as school-based toothbrushing and fluoride varnish programmes as well as water fluoridation. Due to the changing socio-legal parameters for water fluoridation this statement will provide BASCD's detailed position solely on community water fluoridation for caries prevention.

Fluoride and prevention of tooth decay

Exposure to fluoride has a strong protective effect in preventing tooth decay by strengthening enamel and making teeth more resistant to acid attacks from dietary sugars.⁽¹²⁾ Regular exposure to fluoride that maintains an optimal concentration to strengthen and protect teeth can be achieved by a range of methods, such as twice daily toothbrushing with fluoridated toothpaste or addition of fluoride to drinking water.⁽¹²⁾ The global prevalence of tooth decay has reduced since the introduction of fluoride toothpaste⁽¹⁴⁾, however, around a quarter of adults do not brush their teeth twice a day and the burden of tooth decay remains high.^(2,3,4,5,6) Exposure to fluoride incorporated into aspects of everyday living, such as public drinking water, requires no behavioural change and has the potential to reduce inequalities as it is available to everyone, regardless of age, oral health behaviour, access to dental care or socio-economic circumstances.^(15,16,17,18)

All water supplies contain varying small amounts of naturally occurring fluoride. Community water fluoridation is the process of adjusting the levels of fluoride found in public water supplies to 1 mg/L (one part per million [1 ppm]) to achieve optimal prevention of dental caries and was first introduced over 70 years ago in the USA.^(18,19) The addition of fluoride to drinking water maintains a constant low level of fluoride in the mouth, through drinking the water or eating meals prepared with fluoridated water.⁽¹⁸⁾ A unique advantage of community water fluoridation is that it benefits people who are difficult to reach with other oral health preventive programmes, who are often the people with the greatest need.^(16,18)

What is the evidence for community water fluoridation?*

There have been effective water fluoridation schemes worldwide for over 70 years. The World Health Organization (WHO) first reviewed water fluoridation in 1958 and since then it has consistently been found to be a safe and effective intervention in reducing tooth decay.^(20,21,22,23,24,25,26) Currently, over 400 million people worldwide receive fluoridated drinking water.⁽²⁷⁾

There is clear evidence of benefit of water fluoridation across the life course. Exposure to optimum fluoride concentration in drinking water from birth not only protects baby teeth but also provides benefits for developing adult teeth.^(28,29) Positive benefits have been found in studies involving adults, which is significant as adults are keeping their teeth for longer and the proportion of adults in the UK population is increasing.⁽³⁰⁾ There is evidence of considerable additive benefits from community water fluoridation on top of the use of fluoride toothpaste.⁽³¹⁾ Community water fluoridation should be considered as complementary to other strategies aimed at reducing tooth decay, including oral health promotion programmes, such as ChildSmile in Scotland and Designed to Smile in Wales. Community water fluoridation is cost-effective, has a low environmental impact, and is a sustainable intervention in the prevention of tooth decay.^(32,33,34,35) Water fluoridation is the most cost-effective oral health improvement intervention and for every £1 invested into water fluoridation schemes, there are savings of £12.71 after 5 years, and £21.98 after 10 years.⁽³⁶⁾

At optimal levels, there is no evidence for adverse health effects associated with community water fluoridation.^(20,21,22,23,37,38) However, a dose-dependent relationship exists between fluoride exposure and the risk of fluorosis, which is a condition that causes changes in the appearance of tooth enamel. The possibility of dental fluorosis increases with increased exposure to fluoride, which may be a cosmetic concern.⁽³⁹⁾ The impact of fluorosis on quality of life is significantly lower than the effect of tooth decay.⁽⁴⁰⁾ The optimal level of fluoride in drinking water in a country such as the UK is 1mg fluoride per litre of water (1mg/L).^(18,19,20,21,22) This level represents the ideal balance between prevention of caries with occurrence of mild dental fluorosis.^(18,19)

* The BASCD 2019 Position statement on fluoride vehicles in the prevention of tooth decay [<https://www.bascd.org/wp-content/uploads/2019/09/BASCD-Fluoride-position-statementVI-12-09-2019-final.docx>] considers the evidence base in more depth; studies published after the 2015 Cochrane review of water fluoridation might be of good enough quality to be added to this evidence based document in future editions.

Community water fluoridation in the UK

Community water fluoridation was first introduced in the UK over 50 years ago.⁽²¹⁾ Over 6.1 million people in the UK (10%) receive fluoridated water.⁽²⁷⁾ Of those, 330,000 receive naturally fluoridated water at a level over 0.5mg/L. The remaining receive water which has been adjusted to 1mg/L (one part per million [1 ppm]). Studies carried out in the UK have shown benefits following the introduction of community water fluoridation schemes and monitoring reports have confirmed water fluoridation as a safe and effective intervention.^(20,21,22) Furthermore, the benefits of community water fluoridation are greatest in the most deprived areas (Box 2).⁽²²⁾

Box 2. Fluoridation reduces hospital admissions for tooth decay by 60%⁽²²⁾

Hospital admissions for decayed tooth extraction in children under 19 was 60% lower in areas with the highest concentration of fluoride in drinking water, compared with areas with the lowest levels of fluoride. The greatest reduction in hospital admissions was seen in the most deprived areas.

Surveys conducted in North East England⁽⁴¹⁾ and Scotland⁽⁴²⁾ found strong public support for water fluoridation. When asked about decision making regarding water fluoridation, the UK public have expressed a desire to be informed of plans for implementation of water fluoridation, but do not wish to be responsible for decision making, preferring policy to be left to experts.⁽⁴³⁾

In 2021, the four UK Chief Medical Officers published a joint statement in support of water fluoridation as an effective public health intervention in reducing tooth decay and reducing oral health inequalities (Box 3).⁽⁴⁴⁾

Box 3. UK Chief Medical Officers support for water fluoridation⁽⁴³⁾

"There is unquestionably an issue with tooth decay in the UK and an entrenched inequality which needs to be addressed. Fluoridation of water can reduce this common problem.

On balance, there is strong scientific evidence that water fluoridation is an effective public health intervention for reducing the prevalence of tooth decay and improving dental health equality across the UK. It should be seen as a complementary strategy, not a substitute for other effective methods of increasing fluoride use."

Water fluoridation is a devolved issue in the UK. In England and Wales, the Health and Care Act 2022 places responsibility for the implementation of water fluoridation in areas in England to the Secretary of State, and for areas in Wales, the Welsh Assembly.⁽⁴⁵⁾ Before this, local authorities were responsible for proposing and implementing community water fluoridation schemes; however, there were significant difficulties such as water supply lines spanning several local authority boundaries. This Act removes barriers in the implementation of community water fluoridation schemes. In Scotland health authorities may request the statutory water undertaker to add fluoride to public water supplies under

the Water (Fluoridation) Act 1985.⁽⁴⁶⁾ In Northern Ireland the Department of Health, Social Services and Public Safety may request the water undertaker to add fluoride to the water supplies.⁽⁴⁷⁾

Water fluoridation is supported in the UK from many professional organisations including:

- ❖ Department of Health and Social Care; NHS England and NHS Improvement.
- ❖ Faculty of Dental Surgery at the Royal College of Surgeons of England
- ❖ British Medical Association
- ❖ British Society of Paediatric Dentistry
- ❖ British Dental Association
- ❖ UK Faculty of Public Health
- ❖ British Association for the Study of Community Dentistry

International support for community water fluoridation

Water fluoridation is strongly supported by the WHO, the FDI World Dental Federation, and the International Association for Dental Research (IADR) as a safe and effective means of reducing tooth decay.

The Republic of Ireland include water fluoridation as a key component of its oral health policy.⁽³⁵⁾ In 2017, 71% of the population the Republic of Ireland had access to fluoridated public water supplies and economic analysis has shown benefits in the provision of fluoridated water to children in the Republic of Ireland.⁽³⁵⁾

Box 4. Ten Greatest Public Health Achievements⁽⁴⁸⁾

In 1999, the US national public health organisation, Centers for Disease Control and Prevention (CDC), named water fluoridation as one of the ten greatest public health achievements of the twentieth century.

BASCD support for a broad programme of measurers

There is no single fluoride delivery system that is wholly effective by itself, therefore policy makers should consider a range of interventions to increase exposure to fluoride based on local need. When planning oral health improvement programmes, it is important for policy makers and commissioners to seek specialist advice and support from dental public health teams.

BASCD asserts that community water fluoridation should be seen as a key element in a multi-component contemporary approach to decay prevention and urge the implementation of community water fluoridation schemes to reduce the burden of this preventable disease.

Prepared for BASCD by J.A. Holloway, Specialty Registrar in Dental Public Health

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