

# Health and Wellbeing Board

27 November 2017

## Oral Health Update



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### Report of Amanda Healy, Director of Public Health County Durham, Adult and Health Services, Durham County Council

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#### Purpose of the report

- 1 The purpose of this report is to update Health and Wellbeing Board (HWB) on the possibility of implementing water fluoridation in response to the poor levels of oral health and associated harms locally. The exploration of the expansion of the community fluoridation scheme is referenced in the County Durham oral health strategy and is a recommendation by the Health and Wellbeing Board. The preferred option identified at paragraph 1 of the report would also benefit residents in Sunderland and South Tyneside and would therefore require agreement and joint working.

#### Background

- 2 Oral health is important for general health and wellbeing. Poor oral health can affect someone's ability to eat, speak, smile and socialise normally, for example due to pain or social embarrassment. Tooth decay is the most common oral disease affecting children and young people in England, yet it is largely preventable. While children's oral health has improved over the last twenty years, almost a third (27.9%) of five year olds still had tooth decay in 2012. Tooth decay was the most common reason for hospital admissions in children aged five to nine years old in 2012 – 13.
- 3 Data from the last large scale dental survey (2012) of five year old children's oral health in County Durham shows wide variations in dental disease experience between different wards, from 61% of children having had decay experience in Woodhouse Close (Bishop Auckland) to just 6% in Chester-Le-Street South. This highlights a need to narrow the gap in oral health inequalities.
- 4 Further details in relation to oral health can be found in the Integrated Needs Assessment Oral Health factsheet  
[http://www.countydurhampartnership.co.uk/media/23002/Oral-Health-in-County-Durham/pdf/Oral\\_Health\\_HSCW022.pdf](http://www.countydurhampartnership.co.uk/media/23002/Oral-Health-in-County-Durham/pdf/Oral_Health_HSCW022.pdf)
- 5 The Oral Health Strategy went to the Health and Wellbeing Board on the 31<sup>st</sup> January 2017 and Cabinet on 15<sup>th</sup> March 2017. Within the strategy is an ambition to reduce oral health inequalities using the most up to date evidence based interventions.

## Fluoride

- 5 Fluoride is widely present in the environment and it occurs naturally in virtually all water. The concentration of fluoride in water is normally expressed as milligrams of fluoride per one litre of water (mg/l) or in parts fluoride per million parts of water (ppm).
- 6 In the UK, the naturally occurring level of fluoride in water is typically around 0.1 to 0.2 mg/l, although in some localities (for example Hartlepool) it is about 1.0mg/l.
- 7 The most advantageous level of fluoride in water, in temperate climates, is 1mg fluoride per litre of water (1mg/l). At this level the benefits of fluoride in reducing decay are optimal.
- 8 Community water fluoridation (CWF) ensures that, where the natural fluoride concentration is too low to provide dental health benefits, it is raised to and maintained at the optimum level (1mg/litre).
- 9 At 1 January 2016, 26 local authorities had community water fluoridation schemes covering the whole or parts of their area with some six million people in England receiving a fluoridated water supply, principally in the North-East (Consett, Gateshead, Hexham, Newcastle, Whitley Bay) and in the West and East Midlands.
- 10 The Derwentside area of County Durham has had a community fluoridation scheme in place since the mid-1960s. The scheme is currently funded from the Public Health grant and the average annual charge is approximately £50,000 per annum.

## The benefits of fluoridation

- 11 “Water fluoridation which has both topical and systemic effects is particularly beneficial for individuals and communities at increased risk of tooth decay, such as those from more deprived backgrounds and other vulnerable groups.” Public Health England (PHE) 2016.
- 12 There is a significant amount of evidence for the effectiveness and safety of water fluoridation in improving oral health. PHE state “*that fluoridation is an effective, safe public health measure suitable for consideration in localities where tooth decay levels are of concern*”. Appendix two highlights the findings from PHE’s evidence review answering concerns which have been raised about alleged adverse side effects.
- 13 On average, five-year olds in fluoridated areas are 15% less likely to have had tooth decay than those in non-fluoridated areas. When deprivation and ethnicity (important factors for dental health) are taken into account, five-year olds in fluoridated areas are 28% less likely to have had tooth decay than those in non-fluoridated areas (PHE, 2014). Children in fluoridated communities having fewer decayed, missing and filled teeth than children in non-fluoridated communities e.g. 2.25 fewer decayed, missing and filled teeth among 5-15 year olds across a range of countries.

- 14 Reviews of clinical effectiveness by NICE (PH55) and PHE (Commissioning Better Oral Health for Children and Young People, 2014) have found that the return on investment for water fluoridation for £1 spent is £12.71 after five years and £21.98 after 10 years, this compares favourably with £3.06 and £3.66 for a targeted tooth brushing scheme over the same time frames.
- 15 The current dental extraction costs alone for 2016 total:
  - County Durham £276,131 per annum
  - Sunderland £ 173,076 per annum
  - South Tyneside £105,878 per annum
- 16 Appendix two highlights the evidence review demonstrating there are no known health risks to fluoridating water if delivered at the appropriate levels as specified in paragraph six.

### **Process for implementing a community fluoridation scheme**

- 17 Parliament has given its express consent to the deployment of water fluoridation as a public health measure, by passing legislation to that end. However, parliament has also decreed that decisions about particular water fluoridation schemes should be made locally, not nationally, and only through a rigorous process defined in legislation. The legislation as it stands prescribes specific roles for and duties of various actors in all aspects of water fluoridation.
- 18 Upper tier and unitary local authorities propose and make decisions to implement new schemes and work jointly with other local authorities affected by any proposed/agreed scheme.
- 19 Water companies advise on the technical feasibility of schemes and, when requested to do so implement and operate them in accordance with the legislation and regulations.
- 20 The Secretary of State for health determines whether the arrangements which would result from a local authority's initial proposal for a fluoridation scheme would be operable and efficient. The Secretary of State currently also provides the capital funds for new schemes.

### **Local progress**

- 21 Within County Durham the preliminary scoping phase has been completed. The County Durham Oral Health Strategy included an assessment of need across County Durham as well as detailing an action plan to tackle the health inequalities. The action plan included exploring the feasibility of water fluoridation in County Durham. This is the first phase of the process as defined by the Public Health England guidance. Public Health England colleagues support the process to provide expert guidance on the procedures to be followed. If the technical appraisal confirms the viability of the project the Council will need to submit a formal Fluoridation proposal to Public Health England. Since the proposal would affect residents of Sunderland and South Tyneside those two Councils would need to be formally consulted at that

stage. The three Councils would form a Joint Committee to take the project forward to public consultation and make a decision whether to proceed after considering the results of public consultation. Appendix three provides a brief overview of the statutory process.

### **Initial feasibility study and options for implementation**

- 22 Water companies operating boundaries are defined by water distribution systems, not by administrative boundaries so water fluoridation schemes usually extend beyond the boundary of a single local authority. County Durham is within the 'central supply area' as are Sunderland and South Tyneside local authorities.
- 23 The desktop initial feasibility study indicated that it is technically feasible to fluoridate parts of, or the whole of County Durham. There are three main options.
- Option 1. According to Northumbrian Water the simplest and most economic method of fluoridating a water supply is to construct the fluoridation plant at all the water treatment works supplying County Durham. These Water Treatment Works also supply water to properties within Sunderland and South Tyneside Council boundaries. The capital cost is approximately £1,200,000.
  - Option 2. An alternative approach is to fluoridate specific water quality zones in County Durham with the highest levels of decay experience. These water quality zones cover the majority of South West Durham and the Easington area. This would allow the fluoridated water to remain within County Durham's administrative boundaries however new water mains and water pumping stations would need to be built. The capital costs are estimated at £1,500,000, but it must be noted that this would not provide complete coverage for County Durham as some areas would not receive fluoridated water.
  - Option 3. This approach involves the development of water fluoridation plants to deliver to specified water quality zones. This would allow the targeted zones to receive fluoridated water, but without the development of a new mains system. Fluoridated water would still leave County Durham into the neighbouring local authorities but as they would only receive fluoridated water from one water treatment works, then the rest of their supply would not be fluoridated. Therefore the levels of fluoride within the neighbouring authorities would be changeable and potentially unlikely to reach the desired levels of fluoride where the chances of reducing decay are optimal. Costs have not been provided for this option as it is not a viable option to explore going forward.

## Financial impact of options

### Technical appraisal

- 24 There are costs associated with the technical appraisal which Northumbrian Water would provide on instruction. NHS England agreed to jointly fund the initial feasibility study and are committed to support the technical appraisal fees. South Tyneside and Sunderland will also contribute to the costs of the technical appraisal. As an indicative cost Hull Local Authority who have progressed to a technical appraisal were charged £50,000.00 for their technical appraisal.

### Capital investment

- 25 There are capital costs associated with establishing CWF schemes, however these are anticipated to be met by Public Health England who have capital available specifically for the establishment of schemes.
- 26 Northumbrian Water has estimated the capital costs per property to understand the difference in cost effectiveness of the two costed options.
- Option 1: Fluoridation at the water treatments works would produce estimated capital costs of £3.85 per property.
  - Option 2: The targeted approach to fluoridation would generate costs of between £100 and £114 per property.
- 27 When the Secretary of State reviews a proposal for water fluoridation they would consider the proposed costs and consider whether they are “operable and efficient”.

### Indicative revenue / operating costs (to be funded from local system e.g. LA, NHS England)

- 28 The operating costs for the current delivery of a community water fluoridation scheme in Derwentside is approximately £50,000 per year. The costs above would therefore be based on an expansion of the current scheme operating in County Durham.
- 29 The approximate operating costs are based on the PHE’s estimate of 50p per head of population benefitting within County Durham.
- Option 1: To provide a community water fluoridation scheme for the whole of County Durham an approximate total would be £156,000 per annum.
  - Option 2: The geographically targeted options, based around specific areas of County Durham, would have reduced costs in line with a reduced number of properties.

- 30 Final costs would be assessed during a more detailed appraisal and may change with the involvement of other authorities. International evidence suggests that the cost-benefit ratio increased with the size of the population served.

### **Partnership working**

- 31 It is clear that a combined approach with Sunderland and South Tyneside would bring the most effective improvement to the largest number of residents. Discussions have therefore taken place with both Councils seeking their support to explore the feasibility of the recommended proposal.
- 32 All formal consideration of proposals for fluoridation arrangements covering more than one authority has to involve each of the affected local authorities. If unanimity cannot be achieved the proposal needs 67% support to be implemented. Voting power is based on the number of residents affected within each local authority area.
- 33 South Tyneside H&WBB have agreed to move forward with a technical appraisal and Sunderland are having informal discussions which are looking positive. Should full support be achieved the legislation defines the appropriate decision making structure of an inter-authority joint committee.

### **Consultation and engagement**

- 34 The requirements for public consultation and engagement are clearly stipulated within the statutory process, a summary of which is in appendix three. The immediate next steps are laid out below.

### **Next steps**

- 35 County Durham public health team continue to offer to assist the other two local authorities, with guidance from Public Health England, on the process and the evidence base for water fluoridation. South Tyneside have confirmed commitment to progress to technical appraisal and it is anticipated that Sunderland will also agree.
- 36 Should approval be granted then the work will progress to a complete a full technical appraisal by Northumbrian Water. This more detailed and specialist approach will provide a greater clarity on the engineering requirements and associated costs to deliver a scheme. This is required to allow all partners to reach agreement to progress towards an initial proposal to the Secretary of State and the commencement of the statutory process which would include a comprehensive public consultation.

### **Outcomes**

- 37 Giving every child the best start in life is an ambition throughout Durham County Council and all partnership agendas. Impact will be seen on public health outcomes framework 4.02 - proportion of five year old children free from dental decay.

## **Recommendations**

38 The Health and Wellbeing Board is recommended to:

- (a) agree that option 1 involving the construction of a fluoridation plant at all water treatment works in County Durham be adopted as the preferred option
- (b) agree the progression to a full technical appraisal of fluoridation of County Durham (the central supply area).
- (c) note that a further report will be submitted to the Health and Wellbeing Board following completion of the technical appraisal.

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## Appendix 1

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**Finance** – Operating costs required for scheme. Initial estimates of 50p per head of population.

**Staffing** – a board multi-agency board will be coordinated and led by public health

**Risk** –The preferred option will require support from Sunderland and South Tyneside Councils. The legislation requires public consultation as part of the process. Fluoridation can be a sensitive issue.

**Equality and Diversity / Public Sector Equality Duty** - Public health aims to reduce inequalities and improve health outcomes by reviewing PH outcomes data and developing relevant policies, strategies and intentions as appropriate.

**Accommodation** - N/A

**Crime and Disorder** - N/A

**Human Rights** - N/A

**Consultation** – a full and comprehensive consultation would be undertaken following completion of the technical appraisal and endorsement to progress by all relevant chief officers and boards

**Procurement** – A technical appraisal will be required from Northumbrian Water.

**Disability Issues** - None

**Legal Implications** – The process of making a fluoridation scheme is regulated by the Water Industry Act 1991. Since water areas do not correlate to local government areas it requires a Joint Committee incorporating the councils affected by proposals which impact outside County Durham. A 67% majority based on population size is required to implement any proposal which is not unanimously supported by the constituent councils.



## Appendix 2: Summary of PHE evidence demonstrating the proposed risks to health are not upheld in evidence

Health condition	Evidence
Hip fractures	There was no evidence of a difference in the rate of hip fractures between fluoridated and non-fluoridated areas.
Kidney stones	There was evidence that the rate of kidney stones was lower in fluoridated areas than non-fluoridated areas.
All-cause mortality	While there was some evidence that the rate of deaths from all recorded causes was lower in fluoridated areas than non-fluoridated areas, the size of the effect was small.
Down's syndrome	There was no evidence of a difference in the rate of Down's syndrome in fluoridated and non-fluoridated areas.
Bladder cancer	There was evidence that the rate of bladder cancer was lower in fluoridated areas than non-fluoridated areas.
Osteosarcoma (a form of bone cancer) among under 25-year olds	There was no evidence of a difference in the rate of osteosarcoma between fluoridated and non-fluoridated areas.
Osteosarcoma (a form of bone cancer) among people aged 50 and over	There was no evidence of a difference in the rate of osteosarcoma between fluoridated and non-fluoridated areas.
All cancer	There was no evidence of a difference in the rate for all types of cancer between fluoridated and non-fluoridated areas.

## **Appendix 3: Summary of decision making process**

### **PHE Water Fluoridation Briefing note 5**

#### **Decision-making on Water Fluoridation**

##### ***Decisions about fluoridation always made at a local level***

Decisions on whether to introduce water fluoridation have always been made at a local level in England by the statutory bodies with responsibility for public health.

Up to March 1974, fluoridation decisions were made by local authorities. Between April 1974 and March 2013, they were made by health authorities. Since April 2013, those decisions have once again become the responsibility of local authorities, specifically upper tier councils including county councils, metropolitan boroughs, London boroughs and unitary authorities.

##### **Schemes introduced by local authorities and health authorities between 1964 and 1996**

Some existing fluoridation schemes are the result of decisions made by local authorities prior to 1974, the first one having been introduced in 1964 to serve Birmingham and parts of neighbouring Solihull.

Some schemes were introduced between 1974 and 2013 while health authorities were responsible for public health, the most recent one having come into operation in 1996 in parts of Wolverhampton, Walsall, south Staffordshire and Shropshire.

##### **Around six million people now benefiting**

Overall, fluoridation schemes in this country now serve a population of around six million people living in the North East, North West, Humberside, West Midlands, East Midlands and Bedfordshire.

The West Midlands is the most extensively fluoridated region of the country, with around 4 million people benefiting from this public health initiative. The second most extensively fluoridated area is the North East, with schemes serving over 800,000 people.

##### **Schemes serving 26 upper tier local authorities**

Currently, a total of 26 upper tier local authorities have water fluoridation schemes in place across all or part of the geographical areas they cover. Seven of these authorities are counties in which there are 26 'lower tier' borough and district councils served by those schemes.

## ***Legislation on water fluoridation***

Over the past thirty years, legislation on water fluoridation has included:

\* [The Water Fluoridation Act 1985](#)

\* [The Water Industry Act 1991](#)

\* [The Water Act 2003](#)

\* [The Health and Social Care Act 2012](#)

### **Current statutory basis for water fluoridation in England**

The Water Industry Act 1991, as amended by the Water Act 2003 and the Health and Social Care Act 2012, provides the statutory basis for water fluoridation in England today.

### **A vital change of wording in the Water Act 2003**

The Water Act 2003 was significant for a key change in the wording of previous fluoridation legislation.

Clearly, health authorities at that time relied – as local authorities do now – on water companies to implement their decision to introduce a water fluoridation scheme. However, the wording of the Water Industry Act 1991 had given discretion to water companies as to whether or not they complied with a health authority's formal request. That Act said that if requested to do so, water companies 'may' increase the fluoride content of the water specified.

In practice, this frustrated the attempts of health authorities in many parts of the country to introduce fluoridation in their areas. Schemes might otherwise have gone ahead in the 1990s to serve many communities in the North West and North East, as well as in Southampton and neighbouring areas of south west Hampshire.

To remove this 'blockage' to future water fluoridation schemes, the Water Act 2003 changed the word 'may' to 'shall', thus clarifying that the final decision about fluoridation rested with health authorities, not water companies.

Obviously, schemes had to be technically feasible for the water company to be able to implement them. But, subject to that important practical proviso, the decision belonged unambiguously to the health authority (or health authorities) whose populations stood to benefit from fluoridation, not with the company that would install and operate the plant and equipment on their behalf.

## **Transfer of decision-making responsibilities to local authorities in the Health and Social Care Act 2012**

The Health and Social Care Act which followed in 2012 was significant for transferring responsibilities for public health in England, including water fluoridation, from health authorities to upper tier local authorities. Decisions about water fluoridation therefore now rest with them.

### ***Public Health England's specific tasks in relation to fluoridation***

In addition, the 2012 Act created Public Health England (PHE), an executive agency of the Department of Health which, in the context of fluoridation, discharges the statutory duties of the Secretary of State for Health. In practice, Public Health England's fluoridation-related tasks include:

- \* advising local authorities whether fluoridation schemes they are proposing would be 'operable and efficient';
- \* providing information and expertise on fluoridation matters;
- \* entering into a legal agreement with the relevant water company when, following public consultation, a local authority or group of local authorities formally request the Secretary of State to implement a new fluoridation scheme or extend an existing one;
- \* working with water companies to ensure the safe and efficient operation of all fluoridation schemes in England.

### ***Regulations for local authorities on conducting public consultations***

Previous and current Acts of Parliament pertaining to water fluoridation have included requirements for public consultations to be conducted about proposals for schemes. The full details of those requirements are set out in secondary legislation known as 'consultation regulations'.

The currently applicable regulations are contained in the Water Fluoridation (Proposals and Consultation) (England) Regulations 2013, which set out the steps that a local authority, or group of local authorities, should take in putting forward, consulting on and making decisions about proposals to introduce, vary or terminate water fluoridation schemes.

#### **First steps in the process**

Important early steps in the process are for a local authority to check with Public Health England on whether the proposals are 'operable and efficient', and to make contact with all the other local authorities that would be affected and therefore be entitled to have a say.

## **Setting up a joint committee**

Where a number of local authorities are affected, the regulations lay down a series of options for establishing a joint committee to oversee the process, undertake a public consultation and come to a decision. As most local authorities share their water supplies with one or more other authorities, a joint committee is likely to be needed more often than not when fluoridation proposals are being discussed.

## **Population-weighted voting on the joint committee**

If the local authorities involved cannot come to a consensus, the regulations lay down a system of population-weighted voting for the local authority representatives on the joint committee. It means, for example, that the representatives of a local authority with 25% of the population directly affected by the proposal have 25% of the voting power on the joint committee. For a proposal to go ahead to the next stage (whether that is to public consultation and, following consultation, to a decision being made), it must attract at least 67% of the population-weighted votes.

## **Information to be published for public consultation**

The regulations require that the following details should be included in whatever information is published for the purposes of the consultation:

- \* the nature of the steps that the local authorities concerned are proposing to take;
- \* the reasons for the fluoridation proposal;
- \* the area affected by the proposal;
- \* the period within which representations by individuals and organisations can be made (which must be at least three months from the date on which the details are first published).

The regulations do not go into any more detail than this. But as far as the reasons for the fluoridation proposal are concerned they could, for example, include the need:

- \* to reduce levels of tooth decay;
- \* to reduce dental health inequalities between areas or between different social groups;
- \* to achieve population-wide improvements in dental health as cost-effectively as possible.

## **Sources of expertise**

Local directors of public health and consultants in dental public health are well placed to be able advise on:

- \* the most relevant and accurate information to include in the consultation materials;
- \* the most effective techniques available for ascertaining public opinion on the proposal.

Public Health England, which has specific expertise on water fluoridation, could also supply information and ideas. The public health departments of local authorities with existing fluoridation schemes may be a further source of help and advice.

## ***Factors that need to be taken into account when post-consultation decisions are made***

The regulations lay down a decision-making process to be followed by the joint committee after the consultation period has ended. The joint committee is required to have regard to any representations made in relation to the fluoridation proposal with a view to assessing:

- \* the extent of support for the proposal;
- \* the strength of any scientific evidence or ethical arguments advanced in relation to the proposal;
- \* any assessment of relevant health needs in the areas affected by the fluoridation proposal that may have been published in the each of the local authorities' joint strategic needs assessments and joint health and wellbeing strategies.

In addition, the joint committee is required to consider:

- \* the capital and operating costs likely to be incurred in going ahead with the proposed fluoridation scheme;
- \* any other scientific evidence in relation to the proposal, including any evidence of benefit to the health and wellbeing of individuals affected.

In practice, it will be Public Health England (an executive agency of the Department of Health) that takes the scheme forward after the local authorities involved have notified the Secretary of State.

Public Health England will enter into a contract with the relevant water supplier(s) to install and operate fluoridation plant and equipment in accordance with the necessary codes of practice laid down by the Drinking Water Inspectorate.

PHE will also negotiate with the water suppliers on both capital and running costs and will oversee the operation of the scheme.

## ***EU Law***

An EU Drinking Water Directive ([Council Directive 98/83/EC, November 1998](#)) governs the supply of 'wholesome and clean' drinking water for human consumption and sets standards for the maximum concentration of a number of substances in water, including fluoride. In line with WHO guidance, the Directive stipulates that the fluoride concentration in water should not exceed 1.5 parts of fluoride per million parts of water.

The EU Drinking Water Directive has been adopted in the UK, which means that no water supply should contain more than 1.5 ppm of fluoride. In practice, the target level for intentional water fluoridation schemes (i.e., where the naturally occurring level has been raised) is 1 ppm, which is well within the maximum set by the Directive.

There is no EU-wide obligation to add fluoride to any product, including water, consumed by humans. Nor is there an EU-wide obligation *not* to add fluoride to water or to any other product. The discretion to add or not to add fluoride lies with the government of each Member State.

Three EU countries currently practise water fluoridation:

- \* the UK (with schemes serving around 6 million people)
- \* Spain (with schemes serving around 4 million people in the Basque Country in the north of the country, Andalusia in the south and south east, and Catalonia in the north east);
- \* the Irish Republic (where fluoridation of all public water supplies has been mandatory since the mid-1960s and where approximately 3.3 million people are currently receiving fluoridated water).

Several EU countries, including France, Germany, Austria, Belgium, the Czech Republic and Slovakia, practise salt fluoridation.