Summary of: A review of a child population dental preventive programme in Halton and St Helens

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Introduction An evaluation was undertaken to measure the dental health of five cohorts of 5-year-old children living in Halton and St Helens, each cohort having had a different length of time they were exposed to a population dental prevention programme before their fifth birthday. **Method** The dental health of each of five consecutive cohorts of 5-year-old children was measured epidemiologically using standardised methods. **Results** The mean level of active decay (dt) in the cohort that had the greatest exposure to the preventive intervention (cohort 5, 2011/12) was 0.83, whereas the mean level of active decay in the cohort with no exposure to the preventive programme (cohort 1, 2007/8) was 1.07. This represents a reduction of 22% in the mean level of active decay in 5-year-olds. There was also a 5.9% absolute increase in the number of 5-year-old children free from decay experience between cohorts 5 and 1. Children living in Halton and St Helens with postcodes in the more socially deprived index of multiple deprivation (IMD) tertiles gained the most from the programme. Comparing cohort 5 and cohort 1, the increase in the proportion of children free from decay was greatest in IMD tertiles 1 and 2 and least in IMD tertile 3 (least socially disadvantaged). **Conclusion** Following a four-year population dental preventive programme the dental health of 5-year-old children living in Halton and St Helens has improved and dental health inequalities have reduced. As there was no control group, the effects seen are associative and cannot be assumed to be causative.

EDITOR'S SUMMARY

It still seems incredible by any measure that we are unable and unwilling to work together as a society to vanquish the most common disease condition in the world – dental caries. We know why it happens, we know how it happens, we even know how best to prevent it happening but still the problem persists. It is probably politically incorrect to frame the question thus, but ‘are we mad?’

Not mad but just insufficiently motivated as a society to be prepared to tackle it. As we have noted previously in these pages if we really cared enough then we would do something about it; but if as a society we do not, thankfully as a profession and in particular the public health section of the profession, we do. This work once again outlines the ways in which science and common sense can be combined to synergistically provide positive results, frankly, against the odds. By combining knowledge of caries, its prevention, demographics and epidemiology it is possible to identify those most at risk and to target them accordingly. Consequently,

this preventive wide-scale programme using the application of fluoride varnish and the six-monthly mailing of toothpaste and toothbrushes to 34,000 children has shown commendable results in caries reduction and prevention over a relatively short period of time.

As in their oral health work the authors also take a pragmatic approach to the robustness and applicability of their scientific method and results. The ideal is often expressed as evidence emanating from a randomised controlled trial. This is almost never a possibility in human intervention in the real world whereas the attitude taken here, that it seems like common sense, does strike a pleasing equilibrium. Dubbed a ‘plan B’ this practical intervention is at least doing something to redress the health divide caused by social disadvantage while recognising that other public health measures such as water fluoridation potentially would be far more effective as a ‘plan A’.

We should be grateful that such dedication exists as without it even more children will suffer the unnecessary and

unpleasant consequences of society’s disregard for its most common disease condition. Other health agencies might take note.

The full paper can be accessed from the *BDJ* website (www.bdj.co.uk), under ‘Research’ in the table of contents for Volume 216 issue 8.

Stephen Hancocks
Editor-in-Chief

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IN BRIEF

- Suggests that simple, low cost studies, whilst not perhaps providing definitive answers, can provide useful information for commissioners.
- Reports that public health dental preventive interventions are associated with improved population oral health.

COMMENTARY

The paper describes the impact of a population-based prevention programme on child dental health in a locality with a record of poor, unchanging child dental health and good access to NHS dental care. The programme comprised two main components: tri-annual fluoride varnish applications delivered by local NHS dentists and the bi-annual postal distribution of a dental care pack including fluoride toothpaste (1,450 ppm) and toothbrush to all 3-11-year-old children.

Fluoride varnish application continues to be part of the recommended prevention regime for children as outlined in the BASCD DH document *Delivering better oral health: an evidence based toolkit for prevention*. The effectiveness of fluoride toothpaste as a means of reducing levels of dental decay is well documented. A significant feature of a postal toothpaste distribution scheme is the potential to reach all children in the target age ranges – and not just those who attend community health clinics, childrens centres, nurseries and other community settings.

Set against a backdrop of continuing poor dental health, the improvements reported in this Halton and St Helens programme are encouraging. Over the study period, the children exposed to the preventive programme for up to four years showed a significant reduction in active decay levels compared to children with no exposure to the programme (a 22% reduction), with the proportion of children who were decay free at five years old increasing by 5.9%. Greater improvements were observed in the children from the most deprived tertiles – a key finding as the most successful public health programmes do not just bring about improvements to health, but also reduce inequalities. Given this level of improvement between cohorts

of children and in comparison to children in a neighbouring local authority, the programme may justifiably attract interest from commissioners of oral health programmes in other localities.

There are limitations to the research: the authors are very clear that this programme does not set out to be a piece of carefully structured research following stringent scientific methodology. It is acknowledged that only around half of the eligible children consented to take part in the evaluation and this may introduce some bias to the results – although the social profile of the children in each cohort was similar and therefore comparison is justifiable. It is possible that other background changes which may have impacted over the study period may have contributed to improvements. The absence of a true control group means that this possibility cannot be discounted. Furthermore, additional research is required to determine the improvements attributable to the fluoride varnish component and the postal fluoride toothpaste element of the programme.

Despite these limitations, this paper does demonstrate that preventive interventions that are relatively straightforward and inexpensive to implement were associated with a greater improvement in child dental health than had been reported at any time in the previous 40 years. At a time when directors of public health in local authorities are considering which oral health improvement programmes they may wish to commission, the benefits associated with this prevention programme will make it worthy of consideration.

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AUTHOR QUESTIONS AND ANSWERS**1. Why did you undertake this research?**

Child dental health has been poor in Halton and St Helens for many years. In 2007, the PCT agreed to introduce a population dental preventive programme designed to improve the dental health of children living locally. Funding to measure the impact of this programme in a rigorous scientific manner was not available, yet the PCT felt that there would be benefit in recording the changes in child dental health locally. Although the methods used prevent the commissioners from being totally confident that the programme was in fact responsible for the observed changes, nevertheless, dental health in the child population improved during the period of the study and the costs of measuring that change were modest.

2. What would you like to do next in this area to follow on from this work?

In many ways, the next thing to happen is that others should replicate this work to see if they too are able to find associations between evidence-based dental preventive interventions and positive outcomes. Measuring change in population dental health does not lend itself to classical research methodology. In particular the randomised controlled trial, whilst representing the gold standard in terms of quality of research outputs, is difficult and expensive to apply at the population level. It may be that a lower level of cheaply gathered evidence, garnered time and again by different groups in different settings, yet all pointing in the same direction, will in future be sufficient to give commissioners the confidence to introduce population dental preventive programmes. Without the surety of the RCT there will always be doubt, but whilst waiting for truth, pragmatic common sense may be a reasonable 'plan B'.