

Shaping hope through innovation



As the NHS moves on from its 70th birthday, BSPD's **Stanley Gelbier, Claire Stevens** and **Ben Underwood** look forward

Reading the all too frequent media headlines, you could be forgiven for thinking that children's oral health is no better than it was at the inception of the NHS in 1948. Beneath the headlines, however, positive change is afoot.

Stanley Gelbier, Claire Stevens and Ben Underwood, all passionate about children's dentistry, all pioneers in different ways, reflect on the past but also look to the future in the confident expectation children's oral health will improve.

Looking back

Whilst the low sugar, wartime diet was undoubtedly good for children's teeth, the rot set in – literally – over the ensuing decades. Widespread availability of sugary products, lack of awareness of oral hygiene and changing NHS systems for dentistry all did their worst. Stanley Gelbier, the UK's

first Honorary Professor of the History of Dentistry reports: "I remember well some of my earlier school dental inspections in Hackney. I could say smile and, without a mirror or probe, was able to say 'extractions needed' due to the pus coming out of sinuses. That was not so true at school inspections in nearby Leyton, where children were from more affluent homes."

Stanley, a public health dentist who trained in the 1950s and worked in the NHS through the 60s and 70s, is a remarkable witness to the impact of the NHS on children's dental health. He says: "In the early stages, relatively few children received treatment, let alone any prevention. This was partly due to mothers not taking them to a dentist until it was too late – when toothache prevailed. Additionally, dental undergraduates were not taught how to treat children properly and the NHS paid GDPs less for treating children than for adults. If they treated a lot of children, they

were losing money – and it got worse if the child was difficult to handle."

Fortunately, preventive measures were introduced: application of topical fluoride and in the 1970s the advent and then widespread use of fluoride toothpaste being key turning points. The latter was widely credited as the innovation that has had the biggest impact on children's oral health (Figure 1) during the lifetime of the NHS. Improved dental health education via the local authority school dental services was another step forward (although sadly abolished in the 1990s).

Perhaps equally importantly there have also been innovations that have improved diagnosis, treatment and patient experience. The widespread use of x-rays, introduction of the high-speed handpiece and development of new and improved materials, particularly those with the ability to bond to enamel, have changed restorative techniques for the better, allowing clinicians to be less invasive



outside of dentistry. She believes that smartphones, apps and other emerging technologies can make toothbrushing relevant and appealing. The best example is Ben Underwood's Brush DJ app. An associate dentist appalled by the dental hygiene of some of the new patients he was seeing, Ben asked: "Can't someone find a way of getting the information in Delivering Better Oral Health (DBOH) available to everyone and make carrying out those basic evidence-based tasks fun so tooth brushing effectively is a want to, rather than a have to and often don't do?" He met his own challenge by developing the free Brush DJ app, which plays two minutes of music to make brushing fun and contains all the basic information given in DBOH, and in 2018 became the recipient of the BSPD Outstanding Innovation Award¹. Brush DJ has now been downloaded 1/3 of a million times in 197 countries and translated into 14 languages with evidence that its use results in behaviour change², but its greatest strength is that, being free to download, it can be accessed by those most in need.

An inaugural NHS Innovation Accelerator

Fellow, Ben has continued to develop Brush DJ alongside a personal philosophy on the meaning of innovation. He says "An innovation is a significant positive change from what existed before that is widely adopted. It shouldn't be confused with improvements or inventions. An improvement is when something is a positive change, but not a significant one. To be an innovation, rather than an invention, something needs to be widely adopted and benefit everyone. It doesn't have to be a gadget, it can be a new way of working or digital product." He asks rhetorically: "How do we ensure that innovations in children's dentistry are enduring and positive? They need the right conditions, the right influencers and appropriate regulation."

So, what might the future hold? Says Ben: "People are in my opinion the most important factor in helping or hindering an invention becoming an innovation. For example, for some people in the dental profession, it would be unnerving to give patients a link to an app or a video because giving out a leaflet is what they are used to. We need champions who

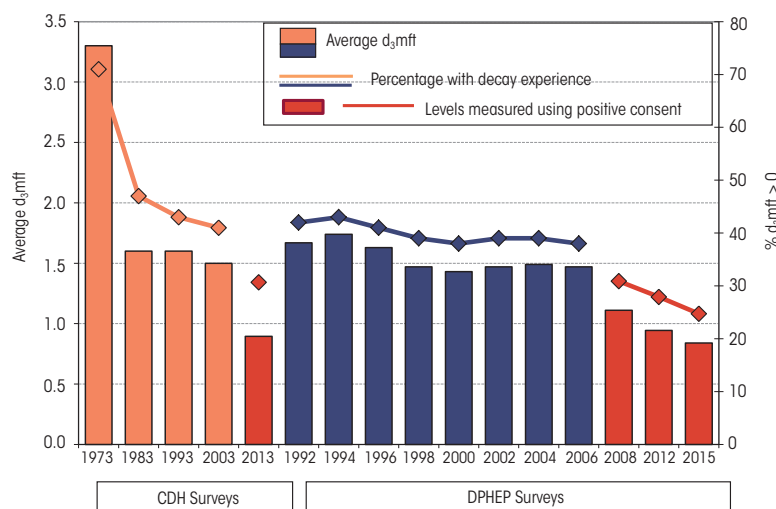
'HOW DO WE ENSURE THAT INNOVATIONS IN CHILDREN'S DENTISTRY ARE ENDURING AND POSITIVE? THEY NEED THE RIGHT CONDITIONS, THE RIGHT INFLUENCERS AND APPROPRIATE REGULATION.'

in their care. Hall Crowns – an innovation developed by Scottish GDP Norna Hall - are now used routinely by paediatric dentists. We also take for granted now, the availability of safe and effective sterilisation. Importantly, the widespread use of local and general anaesthesia and sedation has helped, says Stanley, to take away much of the pain and terror of extractions. This is of course good news but galling too that numbers of general extractions - counted as hospital admissions - are now the measure of society's failure to tackle dental decay in children. These figures keep negative stories about dentistry in the media. What will it take to turn the tide of dental extractions which are an appalling indictment on us as a society?

Signs of hope?

For Claire Stevens, the digital communication sphere is the most important and progressive development of the last decade. As media spokesperson for BSPD and author of the toothfairyblog.org, she has exploited many digital opportunities to reach new audiences. For instance, during her week curating the @NHS Twitter account, she gained 1,000 new followers and made countless connections

Fig. 1 Caries experience of five-year-olds over time (reprinted with permission of PHE)



Results of dental surveys of five-year-olds in England from National Child Dental Health surveys and PHE Dental Public Health Epidemiology Programme surveys, 1973 to 2015.

will help inventions become innovations.” Steps are already being taken to see a future where patients hold their own records – a move which would seem to be both practical and empowering, making a very clear statement that the “no decision about me, without me” philosophy is now very much part of the NHS. There is also likely to be an increase in the use of Virtual & Augmented Reality learning in both the education of patients and to support them to prepare for procedures. And will we see a time where our smartphones can detect decay, perhaps working with a robot to clean our teeth?

As a profession, surely we have an ethical duty to re-focus resources on preventing disease and reducing inequalities. We need to reduce the amount of time currently taken for an innovation to become widely adopted in the NHS and to do this our brightest minds should be identified and nurtured.

For all of the progress we still have persistent inequalities in children’s oral health. How do we access the most deprived and hard to reach? This is the question facing the hugely successful Childsmile (Scotland) and Designed to Smile (Wales) programmes, and hopefully being addressed in part by the

states that the future needs a healthcare system that is accessible, personalised, preventive, humanistic and augmented. Let us hope that our own NHS adapts to meet the increasing demands placed upon it, so that it is still there to celebrate in another 70 years’ time.

References

1. <https://www.bspd.co.uk/Portals/0/OIA%202018%20release%20final.pdf>
2. B. Underwood, J. Birdsall, E. Kay. The use of a mobile app to motivate evidence-based oral hygiene behaviour. *BDJ*, 2015; 219 (4): E2 DOI: 10.1038/sj.bdj.2015.660

“THE “NO DECISION ABOUT ME, WITHOUT ME”

PHILOSOPHY IS NOW VERY MUCH PART OF THE NHS.?



Starting Well scheme in England. But alongside this, we need to look at reaching our patients and their parents/carers in other ways. When only 40% of children were seen by an NHS dentist last year we have to identify other effective methods of engagement. As more young people own mobile phones, there are more opportunities for us to reach out on social media and via apps. The means of communication is there, all it needs is creativity and a will to engage in a language or style that the young will respond to. Ben has proved this is possible with Brush DJ.

Currently he and Claire are working together to understand what (or who) will most successfully influence parents and carers of children with dental decay. The NHS needs not only to make research of this kind possible, but to make it a priority.

As Stanley, Claire and Ben look resolutely forward, they also glimpse back with gratitude to the greatest innovation of them all, our National Health Service. Dr Berci Mesko, Director of the Medical Futurist Institute



Stanley Gelbier started his career with a lecturership in child dental health at the London Hospital, from 1967 Stanley ran school and later community dental services. He was one of the founding members of the British Paedodontic Society, later to become the British Society of Paediatric Dentistry and went on to become national secretary and then President (1976/77). (https://en.wikipedia.org/wiki/Stanley_Gelbier)



Ben Underwood is a GDP, NHS Innovation Accelerator Fellow and Clinical Lead for Dental Research at Rotherham, Doncaster and South Humber (RDaSH) NHS Foundation Trust. He is the winner in 2018 of the BSPD Outstanding Innovation Award for the free Brush DJ app he developed.



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