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Trevor Burke

An urgent message for the four UK Chief Dental Officers

I have recently reminded readers that The Minamata Convention on Mercury is a global treaty, signed by the UK and over 100 countries from all over the world in October 2013 with the intention of protecting human health and the environment from the adverse effects of mercury. It contains clauses which limit the use of mercury from all sources, with dentistry being the only area which 'escaped' with a 'phase down' in mercury use, as opposed to a total ban. The Convention has now been ratified by 55 countries and signed by 128 countries, with the arrangements sealed within the Convention being that the Convention would enter into force on 15th August 2017 in the ratifying countries, that being 90 days after the fiftieth ratification was received. The implication of this being that, from 1st July 2018, amalgam use will be banned in the UK for children under the age of 15 years and for pregnant or nursing women. The need to find an amalgam 'replacement' is therefore now extremely urgent but, for the CDOs, this material has to fulfil, not only a list of ideal requirements, but also that any replacement material should not cost more than amalgam to place, given that we are all aware that the NHS in the UK is strapped for cash. Therein lies the problem: it has been known since the early days of composite restorations in posterior teeth that such restorations take longer to place than amalgam.¹ And, given that dentists' time is the most expensive part of any restoration, where is the money going to come from? I am sure that this may be a reason for the collective silence from the Departments of Health and I do not blame the CDOs for this. We are in chastened times financially. However, some help may be at hand. Resin composite materials have excellent physical properties (when compared with the 'gold standard' amalgam²). While it would be superb if a material which possessed all the ideal 'amalgam substitute' properties was available (and in this I include self-adhesion to tooth substance), this dream material is not yet with us. In this regard, early bulk fill materials (such as Dentsply's SDR[®]) required the placement of a layer of conventional composite to cap their surface because their wear resistance was not good enough, but there are now materials which do not appear to need a capping (such as Filtek[™] One [3M] and *Tetric Ceram* Bulk Fill (Ivoclar). Also, not needing to place a capping layer also seems to reduce stress in a restored MOD cavity.³ In addition, glass ionomer materials have been with us for many years, and reinforced versions are now available, such as Ketac[™] Universal (3M) and Equia[®] Forte (GC). However, while they may perform adequately in smaller/occlusal cavities, they may not yet be indicated for larger cavities in posterior teeth.⁴ Given the terms of the Minamata agreement, and the now very tight timescale, additional training may urgently be needed for some dentists, since not all will have been trained in how to avoid the problems of shrinkage stress and achieving a tight contact with posterior composite restorations. The stated aim, by two authorities in the field, is that all dental students, by no later than 2020, 'should have the knowledge skills, competencies and confidence to restore damaged and diseased posterior teeth effectively with state-of-the-art resin composite systems.'⁵ Perhaps this statement should be applied to all dentists in clinical practice? So, we now have resin-based materials which may be cured to 4 mm or 5 mm and may therefore be faster to place than conventional resin composite materials: perhaps, therefore, bulk fills are our alternative in the short to medium term? And, apart from the mercury argument, the 'black or white' debate ignores the benefits of using an adhesive material – less invasive cavities which save tooth structure.

The urgent message to Drs Hurley, Bridgman, Taylor and Reid therefore is: I know that you have a difficult decision to make because the alternatives to amalgam are more costly to place (notwithstanding UDAs in England and Wales), but our NHS dental workforce awaits your advice on what to do in July for under 15s. Why not bite the bullet and take this opportunity to introduce bulk fill restorative materials into the NHS armamentarium for this age group and collect data on the survival of such restorations, as has been done in Denmark for a similar age group.⁶ That would then provide a potential evidence base for the adoption of resin-based dentistry across all age groups.

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