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 George Warman Publications, Unit 2 Riverview Business Park, Walnut Tree Close, Guildford GU1 4UX
T: 01483 304944 **F:** 01483 303191
E: dusubscriptions@georgewarman.co.uk
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Publishing Director: Stuart Thompson

Designer: Lisa Dunbar

Production/Assistant Designer: Daniel Annett

Illustrator: Richard Taylor

Chairman: John Siebert

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FJ Trevor Burke

Life after Minamata

Sometimes we need a push, a deadline, or even a threat to get us into action. Minamata provides us with a serious push with regard to what we will be using to restore posterior teeth in the future.

Minamata is a city in Japan. A chemical company was established there in 1908 (Chisso Co) and, in 1932, they started making acetaldehyde, a chemical which is used, with others, to make plastics. Mercury was used as a catalyst. It appears that organic mercury was dumped into the ocean; the locals (and the local cats) ate the fish and shellfish. Cats started going crazy, sometimes throwing themselves into the sea. Humans had difficulty walking, talking and eating; some had convulsions and died. The resultant mercury poisoning affected 60,000 people and was first reported in 1956, being then and now one of the world's worst environmental disasters. The Ministry of Trade and Industry blocked researchers from getting access to company waste and eventually made the company install a cyclator (sedimentation system) and, by 1959, there was agreement with patients of the 'Minamata disease' to give sympathy money in return for promising not to sue. In 1968, the Government officially announced the cause and, in 1973, Chisso Co lost a lawsuit, the largest settlement in Japan at that time.¹

If we move on 80 years from the initial use of mercury in the factory, Minamata has become a model environmental city. Discussions started in February 2009 and culminated in a conference held there to discuss the worldwide future of mercury. Hence, in Minamata in October 2013, 147 countries signed a treaty on minimizing the use of mercury. Alongside the use of mercury in fertilisers and industry, there is a section (Annex A, Part II) on measures to be taken to phase down the use of dental amalgam.² These are:

- Set national objectives for caries prevention;
- Set national objectives aimed at minimizing its use;
- Promote use of cost-effective and clinically effective mercury-free alternatives;
- Promote R&D into quality, mercury-free materials;
- Encourage professional organizations and dental schools to train dental professionals and students in the use of mercury-free alternatives;
- Discourage insurance programmes that favour dental amalgam use, and encourage insurance programmes that favour use of alternatives;
- Restrict use of amalgam to capsulated form;
- Promote best environmental practices in dental facilities to reduce releases of mercury.

All of these seem eminently sensible, but it is the recommendation concerning insurance programmes that favour the use of dental amalgam which is of greatest relevance to dentistry in the UK. In particular, it could affect NHS dentistry, in which the fee structure might be considered to discourage the use of alternative materials such as resin composite, because they take longer to place³ and are therefore more expensive. The amalgam vs composite debate was given a lengthy airing in the 40th Anniversary issue of *Dental Update* in May 2013⁴ and readers were given a view, on that occasion, on what an ideal amalgam replacement might look like. This material may well be:

1. Tooth-coloured (because patients are increasingly demanding this);
2. Self-adhesive (to avoid etching and bonding);
3. Resin-based (for optimal physical properties); and
4. 4–5 mm depth of cure (for placement in bulk and in a short time).

In addition, if speed of placement is a consideration, might there also be some consideration to points 2 and 4 above, for this new material to be self curing (although that might seem to be turning the clock back!) because it has been determined that 86% of the mean time difference between placing an amalgam and composite restoration in a posterior tooth is accounted for by the acid etching, washing/drying and light curing.⁵

When might this material become available? Hopefully, before the Minamata arrangements come into effect! When might that be? Some consider that this will be in the distant future (Personal Communication, Graham Stokes, British Dental

All articles published in Dental Update are subject to review by specialist referees in the appropriate dental disciplines.

Association representative, speaking at the European Dental Materials Conference in Birmingham, August 2013), but I tend to agree with Chris Lynch and Nairn Wilson that it is likely to be in *circa* five years, and that the teaching related to dental amalgam in dental schools will be phased out, starting with the students enrolling in 2015.⁶ In other words, we had all better become adept at the placement of resin composite restorations (or their mercury-free successor mentioned above) in posterior teeth! Just as well that the results of a survey in 2009/2010 indicated that present day dental students are receiving greater experience in the teaching of posterior composite than their predecessors.⁷ Nevertheless, for those who graduated earlier, a lot of courses will need to be organized! In that regard, an article in the present issue of *Dental Update* examines the current status of glass ionomer as an alternative material for use in loadbearing situations in posterior teeth (pp840-844).

It has been a momentous year for *Dental Update*, as we celebrated 40 years of successful evidence-based, peer-reviewed publishing since our first issue in 1973. I hope that you have enjoyed reading the past year's issues and that the topics which we have covered have been of value to you in your everyday clinical practice, let alone providing you with verifiable CPD. Of course, each issue would not be possible without our super authors – thanks to all of them, our reviewers, and the help of everyone in the production office at Guildford, ably led by Angela Stroud. It remains therefore for me to wish you an enjoyable festive season and to wish you every happiness in 2014.

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Abstract 1

Harris CM, Welbury R, Cairns A. The Scottish dental practitioner's role in managing child abuse and neglect. *Br Dent J* 2013; **214**: E24.

Dentists are expected to raise their concerns about possible neglect or abuse in children. The finding of this study would suggest that reporting levels are low, although awareness of child protection issues has increased.

Dentists are in a position to identify and report abuse and neglect in their young patients. In 2005, Cairns and colleagues (*Int J Paed Dent* 2005; **15**: 310–318) published a study exploring the role of general dental practitioners (GDPs) in child protection in Scotland. In this follow-up investigation, the same questionnaire was sent to a random sample of 1,215 GDPs in Scotland in March 2010, with a response rate of 52%. Over a third of the respondents had suspected abuse or neglect in at least one of their paediatric patients. However, only 11% had reported their concerns about a child to the appropriate agencies. The most common reasons cited for a failure to refer were: a lack of certainty about the diagnosis (88%); a fear of consequences for the child from the

involvement of statutory agencies (52%); and fear of litigation (48%). The majority of respondents had received some postgraduate child protection training, and 78% wanted further training on how to refer a child they had concerns about. Promisingly, 73% of GDPs reported that they would be willing to get involved in detecting neglect in young patients. Since the original study in 2005, the authors suggest that there has been an increase in awareness and child protection referrals by GDPs in Scotland.

Abstract 2

Rodd HD, Hall M, Deery C *et al*. Video diaries to capture children's participation in the dental GA pathway. *Eur Arch Paediatr Dent* 2013; **14**: 325–330.

Children identified a need for better information, and a desire to be involved in decision-making. However, there are considerable challenges to overcome in trying to engage with children without increasing their anxiety levels, or conflicting with parents' views about what is best for their child.

In this qualitative study, 10 children, aged 6 to 11 years, who required multiple dental extractions

under general anaesthetic (GA), were given a video camera to document their thoughts and feelings before and after their hospital admission. To explore the accounts further, two semi-structured home interviews were also conducted with each child. Transcripts from the video diaries and interviews were analysed by identifying emergent themes from the data, and using a thematic framework approach to organize the findings. In this paper, the authors focused on three themes relating to participation. The first theme was children's prior knowledge and expectation about their forthcoming dental GA. Some participants appeared well-informed, whilst others were unclear about what to expect. The next theme was children's role in decision-making. The perception was that the treatment decision was made by the hospital dentist (who was rather a vague figure), and not by their family dentist, parents or themselves. The final theme was opportunities identified by the children themselves to participate in the care pathway actively. Children reported that they were able to choose rewards for demonstrating 'bravery' and make special requests at home for food and aftercare.

**Miss Anne Morgan
Locum Consultant in Paediatric Dentistry
Charles Clifford Dental Hospital**