“Reach a point where dental restorative materials are rare for everybody”

An interview with Christopher H. Fox, Executive Director of the International Association for Dental Research

The adoption of the Minamata Convention in Japan recently made way for a ban on mercury-containing products on a world-wide scale. Provision was also made for phasing down the use of and trade in dental amalgam. Dental Tribune International had the opportunity to speak with the Executive Director of the International Association for Dental Research (IADR), Christopher H. Fox, who attended four of the intergovernmental negotiating committee sessions on behalf of the dental profession, about the impact this could have on dentistry and the profession, about the need for the future of dental amalgam as a restorative dental material.

DTI: The recently adopted Minamata Convention on Mercury includes provisions on phasing down dental amalgam on a global scale. What impact do you think this will have on the dental community and particularly restorative dentistry in the long run?

Christopher Fox: I think it must be first pointed out that the Minamata Convention is a very broad treaty designed to reduce all use of and international trade in mercury, as well as the demand for mercury in products and processes. In addition, it is intended to address the need for the reduction of atmospheric emissions of mercury, as well as mercury releases on land and in water.

Dental amalgam is included in the treaty as a mercury-added product contributing to the global demand for mercury. In this regard, it is important to note that the treaty calls for phasing down the use of dental amalgam, as opposed to phasing out or banning the use of it. This will give the dental profession and profession time to make a transition and preserve dental restorative choices for our profession and patients.

One of the provisions for phasing down dental amalgam is for countries to set national objectives aimed at dental caries prevention and health promotion, thereby minimising the need for any dental restoration. A greater emphasis on prevention and health promotion is indeed welcome and will provide the greatest benefit to populations.

Another provision promotes research and development of alternative restorative materials. So, in the long run, dentistry and restorative dentistry, in particular, will have improved dental restorative materials from which to choose for their patients.

You were involved in some of the intergovernmental negotiating committee sessions in the run up to the Convention. What were the most significant steps in formulating the treaty, and did the outcome meet the expectations of those involved in dentistry?

The most discussed dental amalgam issue was a ban versus a phase-down. Led by the Responsible Officer for the WHO Global Oral Health Programme, Dr Poul Erik Petersen, a coalition of concerned dental organisations was able to show country negotiators that a ban would be detrimental to population oral health. Dental amalgam is a safe and effective dental restoration and remains the best restorative choice in many clinical situations or health system situations. As with any complex negotiation, the outcome has met many people’s expectations, but there are those who would have preferred a phase-out of dental amalgam and those who would have preferred no limitations set on dental amalgam.

Another area of discussion was the need for best environmental practices in dental facilities to reduce releases of mercury and mercury compounds to water and land. Dentistry must be a good steward of the environment and implement best environmental practices for dental amalgam, as well as for all other dental materials, medical waste and consumables.

You mention that in the dental community amalgam is still considered to be effective and safe. So why phase down its use at all?

Dental amalgam is a safe and effective restoration. The US National Institute of Dental and Craniofacial Research funded two large-scale randomised clinical trials on the safety of dental amalgam, yet still failed to find any adverse health effects. The reason for the agreed-upon phase-down is solely the environmental and health effects of mercury in the environment, not the direct health effects of the use of dental amalgam.

Mercury poisoning from amalgam is mostly found in countries where recycling of the material is insufficient. Is this not a more pressing issue that should be addressed globally?

The proper handling of dental amalgam and its waste must be adhered to by the dental profession and the health facilities in which they work. In addition to the provisions in the Minamata Convention calling for best environmental practices, there is a provision calling for dental amalgam to be used only in its encapsulated state. Only some countries require the use of dental amalgam separators and many more dental professional organisations are calling for their universal use.

Even if we were successful with our oral health promotion programmes however and could stop using dental amalgam tomorrow by the introduction of next-generation dental restorative materials, dental facilities would need dental amalgam separators in place for at least a generation as currently placed dental amalgam comes to the end of their life cycle and need to be replaced.

According to the Convention, a number of products containing mercury will be banned from 2020. Do you believe that amalgam will still play a major role in restorative dentistry by that time?

Seven years is a short time frame when we are relying on research and development pipeline to deliver improved dental restorative materials. Without being too pessimistic, a typical research and development time frame from discovery to clinical use in the pharmaceutical arena is 17 years. So, I believe dental amalgam will still be with us in 2020, but I am optimistic it will play a much reduced role in restorative dentistry.

Alternatives to mercury containing dental filling material were discussed last year at an IADR-FDI workshop on dental materials. Is there any viable alternative, and what needs to be done to implement and sustain its use in the future?

The symposium at the recent FDI Annual World Dental Congress in Istanbul was actually a much-condensed summary of a two-day workshop held in December 2012 at King’s College London. In brief, yes, we can have much improved, innovative dental restorative materials, but it is going to take a significant commitment from government funders, academia and industry. Keep in mind that even if a new material could be developed within a one-or two-year time frame, clinical safety and effectiveness trials and regulatory approvals will take significantly more time. Practising dentists have an important role here too, as they can participate in research networks evaluating new materials and identify research questions, not to mention advocating for research funding with policymakers in their country.

For a more complete answer to your question, I would refer your readers to the proceedings, which have just been published in the November issue of the Advances in Dental Research, an e-supplement to the Journal of Dental Research.

With the advent of preventive dentistry, stem cell research and the sophistication of tooth replacements, will restorative materials become obsolete someday?

Dental restorative materials are already obsolete or nearly obsolete for the socially disadvantaged and vulnerable populations. The IADR has a research agenda to reduce these oral health needs of socially disadvantaged and vulnerable populations. The IADR has a research agenda to reduce these oral health inequalities across populations and hopefully we will reach a point at which dental restorative materials are rare for everybody.

Thank you very much for the interview.

Christopher Fox