

## Fluoride – why should the developing world miss out again?

Despite being named as one of the ten greatest health advances of the 20<sup>th</sup> century (WHO), fluoride at appropriate levels is still only available to 20% of the world's population (FDI), leaving over 5 billion people without our most effective defence against tooth decay. As ever, the developing world bears the brunt of this inequality.

But with complex international politics, anti competitive behaviour and global multi-national interests involved, what can small NGOs like Dentaaid possibly do to improve the situation?

Well, quite a lot actually.....!

Luke Wordley, Dentaaid's Chief Executive explains:-

In the early 1990s Neil McDonald and Robert Yee faced a dilemma. As general dental practitioners from UK and Canada respectively, they had both left their homes and practices in the West and, with their families, travelled to Nepal to give their time and energies serving the oral health needs of this amazing but very poor mountain kingdom. Based with the United Mission to Nepal (UMN), like most Western dental volunteers, their approach had been based on that which worked at home – treating patients visiting a fully equipped clinic. In this case at a place called Tansen in a dental surgery at a hospital set up by the mission agency.

However, within a few months both had become frustrated, as they independently realised Western dentistry was neither particularly appropriate nor practical in a developing world context like Nepal and, more acutely, that their efforts were not leading to tangible improvements in oral health on any scale amongst the communities they were trying to help. Their dilemma was that, while neither had a strong community dental public health background, it was clear that their efforts in this area would be more effective in Nepal than their clinical skills providing emergency care. They therefore set out to learn more about the wider factors affecting oral health in Nepal and quickly made a startling discovery. While there was a thankfully strong tooth brushing culture in the country, hardly any of the toothpaste sold, including many global multi-national brands, contained any fluoride at all. When questioned about this, the government was largely unaware of this point (with oral health being a very low priority), while a couple of manufacturers cited that, with Nepal being a mountainous country, they did not include fluoride since local dentists and manufacturers felt that Nepal was similar to India where in some parts of India there was an overabundance of fluoride. However, small studies of water samples collected in Nepal revealed low levels of fluoride in the drinking water and dental and skeletal fluorosis was not evident in the general population of children.

Neil and Robert recognised that without more extensive data they would not be able to influence government policy or opinion, or that of the toothpaste manufacturers. Therefore, under the "UMN Oral Health Programme" they set about conducting Nepal's first ever national water fluoride survey. This proved to be a difficult job in the world's most mountainous and thus inaccessible country! For more remote areas, collection creativity was required and numerous trekking expeditions were persuaded to carry plastic pots and issued careful instructions to collect water samples from streams and springs at remote points on aerial maps!

Three years later, the sample data was finally complete and the results confirmed Neil and Robert's hunch. From over 600 water samples collected, only three had any significant naturally occurring fluoride and even those were at levels which would be safe combined with fluoride toothpaste.

Armed with this data, (and using skills learnt during one year MSc courses in Public Dental Health at UCL), over the next few years Neil, Robert and the UMN Oral Health Programme team were able to educate and persuade the toothpaste manufacturers to include fluoride in their toothpaste. Using baseline DMFT (Decayed, Missing or Filled Teeth) data collected before and for the five years since this fluoridation of toothpaste was achieved, the level of dental caries in the 12-year-old schoolchildren dropped approximately 40% – a remarkable record and an opposite trend to what has occurred in many other lower income Asian countries.

#### The role of NGOs in fluoride

So the example of UMN Oral Health Programme in Nepal shows what can be achieved in the developing world to improve oral health through fluoride by small but determined NGO groups. However, skilled and adequately resourced national groups, especially in the lowest income countries, are extremely rare. More importantly, the barriers are often rooted in international issues, policies and politics decided in the West and beyond the influence and resources of small national groups in low-income countries. Therefore, NGOs like Dentaid which are based in the West but have a global remit are vitally important.

#### Dentaid and fluoride

In August 2006, Dentaid recruited Robert Yee as Director of Oral Health, after Robert had passed on Directorship of UMN Oral Health Programme to a Nepali he had trained. In his position with Dentaid, Robert is able to apply skills learnt in Nepal to train national governments, dental associations and NGO groups in low-income countries all over the world to work to break down local and national barriers to accessing fluoride. In the last six months alone, he has conducted this role in seminars in Nepal, Myanmar and France (for Francophile low income countries), with related courses also held in China, Bangladesh and Uganda.

In addition, Dentaid has represented populations of low income countries and NGOs at a number of meetings and global conferences including in Australia, UK and perhaps most importantly the Global Consultation on "Oral Health through Fluoride", jointly convened by the World Health Organisation (WHO), the FDI World Dental Federation and the International Association of Dental Research and held in Geneva in November, 2006. In particular, through jointly written research and presentations, Dentaid was able to influence the Global Consultation to adopt the issue of taxation on fluoride as one of the five major action points to come out of the Conference.

This is vitally important as, despite its proven health benefits, fluoride products like fluoride toothpaste are still classed internationally as cosmetics, and as such are often heavily taxed. While in the UK, this equates to a largely affordable 17.5% VAT, in other countries like Burkina Faso, cosmetic/luxury taxes and other tariffs can add over 50%; this, in countries where toothpaste is already unaffordable for the large proportion of the population. Indeed, Robert has co-authored a piece of research (soon to be published), which demonstrates that while it takes low income workers in the UK just 0.05 days of household expenditure to buy a year's supply of toothpaste (two large tubes), a low income worker in Zambia needs 10 days of household expenditure to buy the same amount. At this cost, it is simply unrealistic that such an investment would be made instead of other pressing priorities like food. In the coming years, Dentaid is determined to work with partners to do everything we can to help eliminate cosmetic taxes and tariffs on fluoride products and make them more accessible to low income communities.

#### Fluoride in action

But while Dentaïd pursues these vital “upstream” advocacy activities to improve oral health for tomorrow, the charity is determined to continue to expand its work and reputation for innovation and action to improve oral health today.

One example of such innovation is in Uganda. For the last eighteen months, with Ugandan partners BEAM, Dentaïd has been funding and running a unique oral health programme, designed to bring improved oral health for school communities in South-West Uganda. Twelve schools, including around 9,000 children (who have never brushed their teeth with toothpaste, learnt about oral health or seen a dentist), have taken part in the programme. All the children and teachers receive free screening and any necessary treatment, oral health education using culturally appropriate education materials Dentaïd has helped develop, and finally daily tooth brushing with fluoride toothpaste. It is the last of these, or rather how it is delivered, that is truly innovative.

All around the world, governments, NGOs and health bodies have identified schools as strategically important in improving oral health for whole communities. In oral health, these often include some form of fluoride tooth brushing programme. Unfortunately, time and time again these have proved difficult to implement and sustain. One cause of this has been the use of tubes of toothpaste in schools programmes. The tube of toothpaste is designed and intended for individual or family use, and not for mass brushing environments, where a number of limitations have been identified. Firstly, the potential cross contamination of toothbrushes, caused by scraping the nozzle of the toothpaste across heads of different brushes has been deemed unacceptable in many countries. Thus, tooth brushing programmes in the UK and other western countries often involve crude steps like splurging dollops of toothpaste on to sheets of paper from where they are scraped on to brushes to avoid this risk – a messy and time consuming business. Even if not going to these precautionary lengths, the time taken to process/administer a class of children with toothpaste from a tube has often proved impossible without encroaching unacceptably on the school timetable. And of course, when speed is increased, accuracy of dosage, dependent upon squeeze judgement of teachers, goes down too, undermining effectiveness and ease of stock control and usage. Finally, a number of programmes have been undermined by theft of toothpaste resources from school stocks, as the tubes are easily concealable and the same as those used at home or sold in the market.

So Dentaïd set about designing a toothpaste dispenser which would eliminate some of these problems. After many prototypes, the charity arrived at the current design, which is being piloted in the Ugandan programme and by a Dental University in the UK. The dispenser administers an exact and consistent quantity of toothpaste quickly and efficiently on to the head of the toothbrush, while a clever bracket guide eliminates physical contact between the brush head and neck and the toothpaste receptacle. Being of a considerable size (two litre bottles), it is less easily stolen and intrinsically has less 2<sup>nd</sup> hand value or market. Finally, it is also hoped that with economies of scale the dispenser packaging may prove as cheap or even cheaper than using tubes of toothpaste. The results of the pilots should be available in the summer and Dentaïd hopes in years to come that this dispenser may be used in school brushing programmes all over the world.

Dentaïd is also pursuing a number of other practical fluoride programmes and, subject to obtaining funding, hope to launch a research project in the near future looking at the use of fluoride gel in school programmes. Encouraging the local production of quality fluoride toothpaste within low-income countries is also high on Dentaïd’s priority list.

Thus, while NGOs are sometimes small and often poorly resourced, they have a pivotal role in advocating the oral health needs of the marginalised, by lobbying governments, manufacturers and other bodies to introduce policies and practices to alleviate unnecessary suffering and discrimination. Unconfined by competing priorities or share holder returns, Dentaïd and its NGO partners around the world have a vital role to play in ensuring that

low income countries do not continue to miss out on the vital benefits that fluoride has to offer us all.

Dentaid desperately needs funds to pursue fluoride initiatives to improve oral health in the developing world. Please consider making a one-off or regular donation, or taking part in a Dentaid fundraising event. Alternatively, your business, dental practice, society, church or children's school can sponsor a disadvantaged school overseas to join Dentaid's school oral health programme.

Please visit [www.dentaid.org](http://www.dentaid.org) for more details.