Ian Needleman: 'The spirit of positivity at London 2012 was incredible'

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Ian Needleman talks to the *BDJ* about his research study at the London 2012 Olympic Games, the future of periodontology and his top tips for dental students.

Professor Ian Needleman divides his week between specialist periodontal practice at PerioLondon and the Unit of Periodontology at the UCL Eastman Dental Institute where he is Professor of Restorative Dentistry and Evidence-Based Healthcare and Honorary Consultant in Periodontology with UCLH Trust. His research has been awarded prizes by the European Federation of Periodontology, Royal Society of Medicine, German Periodontal Society, German Cochrane Centre and International Association for Dental Research. His most recent study is an investigation of the oral health of athletes participating at the London 2012 Olympic Games and the effect of oral health on training and elite performance. Ian is also an editor with the Cochrane Oral Health Group and has worked with NICE, the UK Department of Health and NHS Scotland on national guidelines and initiatives. His research focuses on improving outcomes of periodontal therapy, including health-related quality of life, the relationship between sport and oral health, hospital acquired infections and evidence-based healthcare.

Why dentistry as a career? Did you consider any alternatives?

Biology and practical skills are two things I enjoy very much. They come together in dentistry and so it seemed to be the right thing for me. However, crucial to my decision to become a dentist was a particular individual, our dentist John Townend. When I was younger and started to show an interest in dentistry he spent a lot of time talking to me and explaining things. I thought he was great and I wanted to be just like that.

I did go for an audition for a specialist music school when I was about ten. I didn't get in. Basically they said come back next year, ie forget it! Of course, I was hugely disappointed for a couple of hours but then I got on with other things. I suppose I'm now relieved that it didn't work out because it's nice to have music as an interest rather than as a profession. I'm still a keen organist.

What do you feel has been the most important advance in periodontology in the last 20 years?

There have been a lot of advances in periodontology but one that is particularly influential, and which is going to have increasing influence, is the understanding that periodontal health affects quality of life. We are still in the early stages of understanding this but I think it has the potential to change how we do things. It could allow us to improve the way in which we engage with patients and also, importantly, with other health professionals and policy makers. Although, as periodontists we are absolutely fixated on measuring things to millimetre precision (and for good reason), most people outside of periodontics, and certainly outside of dentistry, don't see the relevance. But now we have something that goes across the health fields providing us with a very important way of communicating with a variety of people and that's very exciting.

By very good fortune in our practice we actually carried out the first study that looked at the different phases of periodontal treatment on quality of life. This was the first time that it had been shown that quality of life changed, and indeed improved, comparing people that were untreated with those that were treated. We really didn't know what the study was going to show. Indeed we were quite prepared for the results to show the opposite but fortunately they didn't!

It is often said that oral diseases are largely preventable – do you see a future in which oral disease is no more?

I don't think that is realistic but I do believe that there is a lot more to be done to reduce the burden of disease. The more we look into it the more we realise that causation and risk are much more complex than we thought. I think that really understanding this complexity is one of the big changes in dental health research over the last two decades.

At an individual level, behaviour change is an important developing field of dentistry; that is, finding better ways to help people consider making changes and helping them to make that change if they wish to do so. Engagement is important so that we find out from people what they really want rather than making judgements about what state of health is right for people.

For periodontology we don't have 'fluoride' – though it would be lovely to have it. I don't see anything on the horizon that will be the equivalent for periodontology that fluoride has been for caries. That's not surprising when we think of periodontal disease being one of the chronic diseases.

At a broader population level there are so many challenges. Within UCL it's hard not to be influenced by Sir Michael Marmot in epidemiology and the understanding of health disparities in the population. And not surprisingly oral health follows general health disparities remarkably closely. So to dive in and say, for example, we must get people brushing better without taking in consideration of these issues and their causes may not be useful. We may make progress but it could be slower than we would like. Though it can be thought of as an overwhelming challenge, I actually think that this offers fantastic opportunities. Here again we've got the opportunity of working with colleagues outside of dentistry in various fields, such as nutrition, tobacco, exercise, all sorts of things that we haven't necessarily traditionally thought of as directly affecting the burden of oral disease but clearly do. Working together we might not make the rate of progress that we would ideally like to make but I suspect that we will make it more securely and more predictably than if we try to do things on our own.

What do you feel is the current level of evidence-based practice employed in dentistry in the UK?

I think the UK is in a really good place. When I think back to when I started in this area, probably 15 years ago, we had to repeatedly make the case, against quite strong opposition, for evidence-based healthcare. Now we never have to do that. It is recognised. Most dental teams really want to implement evidence-based dentistry but there are difficulties that I don't believe we fully addressed. For example, what are the best ways of getting decision-support information to people? We need something that supports people's autonomy and judgement but does not take away the independence of making the decision. That's a step that we are quite slow in making progress towards and I think that is where resources really need to be spent. It's very positive to think of initiatives like the Department of Health's evidence-base toolkit, which has received a lot of enthusiastic welcome. I think we must translate this into decision support software for the digital age.

There are limitations though – expectations of evidence-based healthcare are often too high. There is much more uncertainty in evidence than people often give credence to or are honest enough to admit. Most of us write our papers as if things happen in a very straight sequence and we perhaps make the mistake of giving people the idea that our results are more black and white than they really are. Also, all of us who treat patients know just how different they are from each other.

What are your views on narrative *versus* systematic reviews?

There is a place for both. I don't think we explain clearly enough that high quality systematic reviews are difficult and costly to do. It's certainly possible to do a quick, low-quality systematic review but they are not of great use to people. The reality is that it is difficult to produce enough high quality systematic reviews but we do need more of them.

It is also helpful to look at other types of evidence, such as observational studies, as long as we understand the strengths and limitations involved. Often observational studies can do things a clinical trial can't do; for instance, they might have a broader patient base thereby more representative of the patients that we see in our own practices. Other useful evidence might be in the form of qualitative data, which can seem a bit scary at times particularly to those of us who have been brought up on quantitative research. But qualitative research can tell us a lot about why people do things, how people do things, what they would like and how processes work. That can be terribly important as it can provide us with a much richer understanding, ie if I offer this to a patient are they going to be satisfied with the outcome?

Narrative reviews are really good at getting an initial scope of an area but it would be rare these days for anyone to base their clinical decisions on such a review. We usually don't know how conclusions are drawn from narrative reviews and it is difficult to know whether it's something I would adopt in my practice. Narrative reviews are a really great starter for an overview but if I'm looking for clinical decision making then high quality systematic reviews looking at a variety of different types of evidence would be where I'd put my money.

What was it like being based in the athletes' village during the London 2012 Olympic Games?

It was extraordinary – an amazing experience. I was there about four times a week throughout the Games and each time I was there I said to myself, 'I can't believe I'm here doing this'. Just imagine the first time I walked into the Olympic Village about five weeks before the start of the Games, never having seen this at close hand. I was completely daunted and overwhelmed on seeing the scale of the operation and also realising the challenge of the research task we had set ourselves. It was exciting.

Working with the volunteers and staff in the dental clinic – mostly volunteer dentists, nurses, hygienists, receptionists – was amazing. The spirit of positivity was incredible. It was 'can do' and 'will do'! I can't underline our gratitude to them for doing so much to make our research study a success. It was just fun to be around them. They were a wonderful spirit.

We spent a lot of time talking to the athletes in the course of recruiting them into the study. The majority were really interested and engaged in it and wanted to help. They were remarkably modest, lovely human beings – normal people.

Hearing their stories about the effect of their oral health on their training was quite shocking at times. I remember very clearly one athlete who told me that he hadn't been able to train properly for a year because of oral health problems. That's a whole year 'not training' as an elite athlete! It's just staggering. Of course it's not just the effect on his training, and presumably performance, but also the effect on him as an individual. It's hard to imagine what went

through his mind with regards to his own confidence and stress levels. It was really unexpected in many ways to hear this at first hand.

It was great hearing from athletes who had been very successful at the games. It was extraordinary to share that with them. Of course the opposite is true too. Most of the athletes at the games don't win medals and it was interesting to hear the stories of what happened.

We recruited, through very hard work, just over 300 athletes. This generated a lot of data.

One of the things that generally just blew me away about London 2012 was the attention to detail. Everything was so far beyond what people could have 'gotten away' with doing, designing and building. What fascinates me, and I guess it's going to be the subject of many PhDs, is now we have gone up to this level of performance what will we come down to? Will we go back to the baseline? I suspect the legacy of the Olympic Games is that it's changed everyone (some more than others) at least a small amount to think 'I can offer a bit more'. Maybe I've still got my rose-tinted specs on but I think it did show us what we can do!

What effect can elite sport have on a person's oral health?

It can be very good: healthy lifestyle and fitness are all good for oral health. But there are also some challenges; for example, for an infectious disease like periodontal disease, elite athletes engaged in high intensity training will undergo periods of immune suppression leading to periods where the infectious burden may gain advantage. Also an elite athlete's diet has been traditionally very high in carbs, which can be challenging to oral health and cause caries. A lot of people have also looked at the effects of sports drinks on dental erosion. It may simply be that elite athletes very focused on a challenging training routine either have difficulty getting access or finding time to get to a dentist for check-ups or preventive care. Often perhaps it doesn't enter their mind-set in comparison to other aspects of sports medicine.

What is the future for periodontology?

Great. In particular periodontology is doing really well at embracing biomedical research, particularly in terms of molecular biology and genomics. What's great about periodontology is that it is looking at understanding the patient at an individual and also at a broader, society level. When you bring together a discipline that is forward looking and has an appreciation of that breadth of endeavour then I think the future is very promising.

It shocks most medics (non-dentists) to hear how high the proportion of people with significant levels of periodontitis is. The number of people with moderate or severe periodontal disease really isn't changing, and not just in the UK but throughout Europe, so there are some important questions there.

In practice, the developments in regenerative, reconstructive treatments for patients with severe periodontal problems are very exciting. I'm not ashamed to say we have had great success in treating people with periodontal disease in terms of traditional outcomes. It is also really exciting to see the quality of life measures reinforcing this. It's not just what we think but patient perceptions also show that there is a lot of real benefit.

If you could write UK guidelines on any topic, what would you choose?

I'm very focused on improving periodontal health and that's an area that I continue to work on together with the British Society of Periodontolgy.

If I were your student, what are the three most important things you would advise me to do to become a successful and happy dentist?

1. **Communication skills**: this is something I think that we were not taught or I've blanked it out of my memory! Dentists need to know how to really communicate ie how to listen and how to ask the right questions. Understanding and some expertise in behaviour change are also key skills but can be difficult to acquire
2. **Technical ability**: I think this is often underplayed these days but technical ability is crucial. I don't think anyone would want to go and see a technically inept dentist. Therefore, still and for the foreseeable future, technical proficiency is going to be important
3. **Keeping up to date**: Skills in how to keep up to date and in knowing how and when to bring new things into practice are important. Dentists should know how to evaluate whether new processes/materials made a difference and achieved what we expected them to for our patients.

Interview by Ruth Doherty,
***BDJ* Managing Editor**

Ian will speak on the topic of 'Periodontitis prevention – achieving successful long-term health' on Saturday 27th April at the BDA Conference & Exhibition held at ExCeL, London. Register online at www.bda.org/conference