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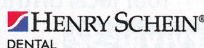
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# Fears or crisis?

Michael Sultan considers the antibiotic epidemic.

Recent research from the World Health Organization (WHO) reveals that bacterial resistance to antibiotics is a significant and growing threat to the international population. The report into antibiotic-resistant superbugs branded the current situation a "global epidemic".

The warning from WHO stated that common infections and minor injuries have the capacity to kill due to the increasing bacterial resistance. As serious as this sounds, it isn't a new threat and we have been aware of the growing resistance of certain bacteria to antibiotics for many years. So, do the new reports represent renewed fears of an antibiotic epidemic? And are we facing a genuine global crisis?

An article in *The Times* recently reported that in England alone there have already been approximately 5,000 deaths annually as a direct result of antibiotic-resistant bacteria over the last few years. What is more in 2012 there was an estimated 170,000 deaths worldwide caused by multi-drug resistant bacteria.

## Superbugs

Over usage of antibiotics kills various bacteria, leaving resilient strains behind. This leads to the formation of superbugs such as MRSA, which are untreatable with frontline medicines. What this inevitably means is that there is an increasing need for the pharmaceutical industry to develop new drugs and medicines that can

counter this worrying side effect.

However as most pharmaceutical companies are profit driven with incredible amounts of money devoted to research and development, and as antibiotics are not seen as being a high profit investment, there is the danger that this will be overlooked for more fruitful avenues.

This has led to the development of antibiotics becoming painfully slow and has allowed bacteria to build up resistance to existing drugs. Therefore, governments across Europe and America are being encouraged to kickstart investment into new antibiotic treatments and medicines and to seek out new solutions.

## New solutions

One such solution could be to limit general access to antibiotics, this could take the form of a ban on over the counter distribution. Although this might have an effect in a country such as India, in America 70 per cent of the antibiotics used are in agricultural settings. For example, a typical farmed salmon will have consumed its own weight in antibiotics before it is even eaten. So it would appear the solution might not simply be to limit the current provision of antibiotics; encouragement of stronger education around the effects of over usage of such medicines is needed.

However, even if antibiotics are used correctly and cautiously, and there is a surge in their production, the bacterial genes for antibiotic resistance are ubiquitous. Therefore there is an unarguable need for new and alternative treatments, for example bacteriophages (viruses that attack bacteria).

## Dentistry

So how does this affect us as dentists? The American Dental Association suggests that on the whole dentists are responsible prescribers and unlikely to play a significant role in the global



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nearly 10 per cent of all antibiotic medicines in primary care, and some of this undoubtedly comes from their over usage when treating toothaches, which are inflammatory in nature. It should be remembered that these treatments should not be used as an alternative to clinical procedures, rather as an adjunct, and that patients should always be encouraged to fully complete courses of antibiotics in order to avoid leaving partially resistant strains. Removing the source of the problem, for example through drainage, should always be preferred to prescribing antibiotics.

In 2004 the *Journal of Antimicrobial Chemotherapy* featured an article titled 'Antibiotic resistance in general dental

practice – a cause for concern?' The article stated that in 1996 dentists in the UK have written 3.5m prescriptions of antibiotics, equating

to an average of 159 courses per dentist. The paper concluded that the dental profession needs to improve its diagnostic service, surveillance and education in order to combat the threat of increased antibiotic resistance in the future.

The most commonly used antibiotic medicines in dentistry are Penicillin, Amoxicillin and Metronidazole. Much of this restricted variation is due to the limited numbers available in the Dental Practitioner's Formulary. Dentists are the largest prescribers of Metronidazole and this is often used in combination with Amoxicillin due to the polymicrobial nature of infections. However, the FDI guidelines suggest that this should be avoided as prescribing for a broad spectrum of infections is more likely to lead to the development of resistant strains.

#### Proceed with caution

Speaking personally as an endodontist dealing in pain and infection, I feel we have a responsibility to treat and train. Until alternative solutions are provided we must work within our boundaries and means. However, that is not to say we should make the problem worse. We should remember that pulpitis is inflammation and should be treated as such, swellings and abscesses should be drained via incision or canals and antibiotics should only be given as an adjunct to treatment and not regarded as a cure-all. Finally, until new solutions and alternatives are freely available we must exercise extreme care and caution when prescribing antibiotics, and only do so when it is entirely necessary.

References available on request.

problem of antibiotics, but in the UK, the Department of Health feels differently.

NHS dentists in England provide

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Reference 1: GSK Data on File, MMR Research, 2013.

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