Antimicrobial resistance and disease control: making One Health work

Antimicrobial resistance and infectious disease control were the main themes at a One Health conference held in London last month. Hosted collaboratively by the Royal Society of Medicine and the Bella Moss Foundation, the meeting put particular emphasis on making the One Health concept work when dealing with resistance and disease control. Georgina Mills reports

‘EVERY antibiotic has been affected by resistance. Every bacterial species has developed resistance to at least one key antibiotic, while used as treatment. But very few bacteria, currently, are resistant to every antibiotic class, but those numbers are increasing.’

So said Neil Woodford, head of the Antimicrobial Resistance and Healthcare Associated Infections Reference Unit at Public Health England, speaking at the meeting, which was held at the Royal Society of Medicine in London on October 13. Noting that there was currently greater political interest in antimicrobial resistance (AMR) than ever before, he described it as a ‘complex and multifactorial’ problem for healthcare.

But what risks did people face? Travel was clearly associated with exposure to resistance, said Professor Woodford. Air, road and sea networks could all contribute to the transmission of resistance and such networks had become easily accessible: ‘Everywhere in the world is less than 48 hours away now,’ he said.

It was not just the process of travel that might spread AMR either – the destination that people visited influenced the risk of colonisation by bacteria and the type of resistance that they picked up. For example, he reported, studies had shown that people visiting India and south-east Asia were at a far higher risk of colonisation than people visiting other countries. Added to this was the fact that many people might carry resistant bacteria, and pass them on, without showing clinical signs of an infection. This was a real issue, he said.

Professor Woodford explained that, although it was known that some resistance genes were seen in both animals and humans, it was not known whether these had been acquired first in people or in animals, or in which direction they had moved between the two. Surveillance was key for AMR, he said, and there were many surveillance schemes around the world. But, a situation needed to be reached in which resistance problems were considered in every country worldwide, even if they were not directly affecting a particular country at the time.

Companion animals and One Health
Combining animal and human health was the topic of the afternoon sessions at the meeting, with speakers concentrating on
Michael Day: the role of small animals in zoonotic disease is often forgotten

Set against this, there was a whole list of diseases that dogs and cats could transfer to humans, and they might act as a reservoir for these infections. Alternatively, the reverse might happen, and people might transmit the disease to their dog or cat. ‘Dogs and cats could be part of the mechanism of how these diseases are spread,’ he said. Giving a few examples, he described leishmania and rabies, both of which were zoonotic diseases that had to be dealt with through a One Health approach.

However, ‘We still have a huge challenge in One Health,’ he concluded. The greatest challenge in his eyes was that, as far as One Health was concerned, the veterinary community ‘gets it’, but ‘We have a long way, I think, to go to make our human medical colleagues [do so]’.

Alternatives to antibiotics

‘It is striking that the recent dire warnings from Dame Sally Davies on antimicrobial resistance differ so little from similar dire warnings given in 1998 and 1999 . . . and we’re not much further forward,’ said Bob Michell, formerly vice-chairman of the Comparative Clinical Science Foundation, who gave the concluding talk of the day. There was now hope that the issue had reached the political agenda, he said, but ‘our political system is not amenable to problems that span further than the electoral cycle’, and AMR was a problem that would be ongoing.

AMR could be described as a form of zoonosis: ‘It is a clinical condition, exchangeable between humans and animals in either direction,’ said Professor Michell. However, despite the warnings, NHS patients were consuming more antibiotics than ever before. He believed that pharmacists needed to be more involved, and given encouragement and powers to intervene if they saw antibiotics being prescribed when they were not required.

In addition, he said, ‘We need to stop reinventing the wheel.’ Hospital-acquired infections had been a ‘notorious problem’ since the 1970s and two key principles had emerged, namely, that it should be the physicians who moved about from ward to ward, not the patients; and that hospitals should not exceed optimum bed occupancy. These two measures, he believed, would reduce reliance on antibiotics, and therefore the spread of resistance.

One ‘specific and tragic’ example that Professor Michell described as ‘highly relevant’ to AMR was the situation surrounding the use of oral rehydration for the treatment of acute diarrhoea. The World Health Organization (WHO) had described this treatment as the ‘greatest life-changing advance of the 20th century’, he said. However, he believed that one of the most ‘avoidable abuses’ of antibiotics was the continued willingness of doctors to supply them as front line precautions for travellers’ diarrhoea, despite the evidence that this was ‘usually useless’ and ‘frequently exacerbates the condition’.

Oral rehydration solutions were vital in refugee camps and situations following natural disasters, Professor Michell said. The solutions needed to have the maximum conceivable efficacy, but they did not, he said. ‘It is therefore outrageous that an oral rehydration solution designed for use in calves, which is a good model of cholera-type diarrhoea [in people], outperforms the WHO solution in calves on all the key measurements that relate to survival.’

The medical profession needed greater encouragement to engage with One Health, Professor Michell believed. Although comparative medicine had moved on to appreciate that animal diseases did not just resemble human diseases, but were frequently identical to them, there was still ‘slender support’ for such ventures from the most prestigious funding agencies, he noted.

He concluded by quoting Stewart Cameron, a medical expert in glomerulonephritis in people, who had said at a conference on the comparative medicine of renal disease some 30 years ago: ‘Too little attention has been paid to the comparison of human and spontaneous animal disease, either by veterinarians or physicians. And it is to be hoped that greater exchange of information can be organised in the future.’

This still held true today, said Professor Michell.
Antimicrobial resistance and disease control: making One Health work

Veterinary Record 2014 175: 473-474
doi: 10.1136/vr.g6458

Updated information and services can be found at:
http://veterinaryrecord.bmj.com/content/175/19/473

Email alerting service
Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

Notes

To request permissions go to:
http://group.bmj.com/group/rights-licensing/permissions

To order reprints go to:
http://journals.bmj.com/cgi/reprintform

To subscribe to BMJ go to:
http://group.bmj.com/subscribe/