

Vets ignore MRSA warning at peril

IT wasn't an earth-shattering pronouncement. There was no brimstone or sulphur, or divine judgement. Voices weren't raised in anguish or despair, but the words spoken at the first international conference on MRSA in animals will change the way veterinary surgeons approach infection control in small animal practice once and for all.

Two days of presentations at the University of Liverpool's veterinary school, in association with the Bella Moss Foundation (BMF), provided the strongest proof yet that methicillin-resistant *Staphylococcus aureus* is now rightly classed as a hazardous zoonosis – a disease affecting humans and animals. As infection rates go up, the value of providing scientific and practical solutions to the profession does too. A fact acknowledged by government department DEFRA, which part-funded the conference.

David Lloyd, chair of veterinary dermatology at the Royal Veterinary College (RVC), acknowledged the contribution of the BMF – whose founder Jill Moss, sits on the DEFRA committee for MRSA – in framing the problems for small animal practice. As he delivered the opening paper, he said: "Potentially this issue could have caused great conflict between pet owners and the veterinary profession.

"I'd like to say what a pleasure it is to see people come together, and one of the objectives of this meeting will be to keep us together.

"I hope we are going to work out how to contain MRSA, with pet owners, because I'm sure it's how we're going to get on top of this problem."

Professor Lloyd is a world leader in the study of MRSA in companion animals, a man with the vision to critically examine procedures at the prestigious Queen Mother Hospital at the RVC. What was discovered – that 18 per cent of veterinary staff carried MRSA – shocked him into action and the RVC is now involved in an 18-month national study of MRSA in cats and dogs.

Human medicine is in the midst of its own MRSA crisis, with more than 40 per cent of *S aureus* bacteraemias in UK hospitals showing resistance to multiple antibiotics. Its emergence in the 1990s was a cause célèbre for media critics of the National Health Service, with estimates of

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reports from the first international conference on MRSA in animals, in Liverpool, where speakers warned vets not to be complacent

taxpayer costs of £1b each year in additional healthcare.

Special measures

"In Scandinavia, Holland and Iceland, where special measures have been taken to control MRSA, the rate is less than three per cent," said Prof Lloyd. "It shows what can be done if you take the appropriate steps. This is what we should be doing in the veterinary profession.

"Staphylococcal infections are a major problem in pets, and one of the most common reasons for pets to be treated in veterinary practice is for staphylococcal infection. It's usually *Staphylococcus intermedius*, but *S aureus* does cause a substantial number of infections. Through experience, we know these infections are far more difficult to treat."

He added: "We do hear from practices that tell us they've suddenly had outbreaks in surgical cases, and they need advice. But clearly we need to broaden our ideas and consider this as a much wider problem than just a clinical problem in veterinary practice."

Prof Lloyd first recognised MRSA as a problem at the RVC in 1997, after a number of cases emerged over a period of weeks. He said: "It made us realise that MRSA could be responsible for animal infections in veterinary practice.

"The first case belonged to a hospital surgeon who refused to be sampled, but we suspect that was the source of the organism. The second was a veterinary surgeon who allowed himself to be sampled and was shown to be a nasal carrier of MRSA. We identified one orthopaedic case that was probably infected by him – he didn't wear a mask – and subsequently we identified one more case, though there were probably others."

Worldwide picture

A picture emerged that was confirmed by other reports from all over the world, one where surgery, wounds and skin disease played an important part in transmission of infection. The good news, said Prof Lloyd, was that in most cases, oral antibiotic

was effective in improving or resolving the infections.

Late in 2002, Prof Lloyd saw more cases, one a chronic chin acne and the other a recurrent acute dermatitis problem. Both were unresponsive to antimicrobial treatment. It was a clue to the involvement of MRSA. He showed the audience a picture of a Staffordshire bull terrier with its terribly infected chin.

"The owner, who worked as manager of the food facilities at a local hospital, had a three-year-old daughter," he said. "She'd been hugging the dog, which had green pus dripping off its face. It had MRSA and pseudomonas infections. I asked the owner to go and be swabbed, but she never did. It just goes to show how people misconceive the health risks."

So far, evidence shows that the route of infection is from owners and veterinary staff to animals. There is also evidence of transfer between animals and people – Scott Weese presented evidence from equine practice in Canada where in-contact veterinary staff were infected by a foal. It's not clear whether infection is passing between animals.

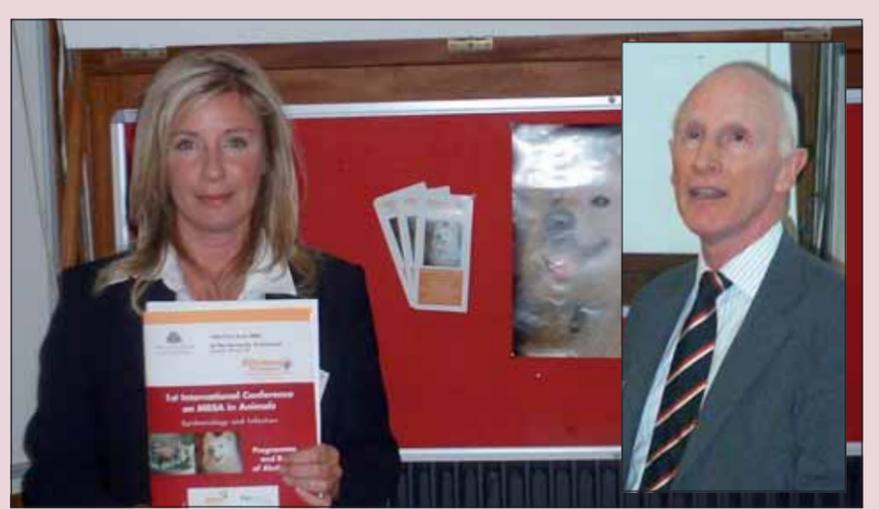
Human link

What is apparent is the link between human healthcare and MRSA cases in animals. The predominant strain at the RVC was epidemic MRSA-15 (EMRSA-15). Along with EMRSA-16, these two strains are responsible for more than 90 per cent of hospital infections.

MRSA in companion animals, surprisingly, was first described by Matthew Ojo in Nigeria, in 1972.

"After that we heard nothing until 1988, when there was a report of colonisation in a cat, which was used as the ward cat in a hospital geriatric ward," said Prof Lloyd. "They discovered that the recurrent MRSA they were experiencing seemed to be carried by the cat, and when they got rid of the cat the problem ceased. It was the first real evidence that animals could acquire MRSA and transfer it to people who are suffering ill-health.

"Subsequently, we had a report from Cefai and colleagues in 1994 – again from the UK – they were healthcare workers who had a dog and it was linked to recurrent infection in some of their patients. The dog was shown to be a carrier. This has become a trend in evidence



Above: Jill Moss of the BMF has helped to frame the problem of MRSA in small animal practice as one for veterinary staff and pet owners. Inset: David Lloyd, an authority on MRSA in companion animal practice, thinks veterinary surgeons need to re-assess the risks.

showing transfer between animals and people."

Animal infections increased at the RVC in 2002 and 2004, and in 2003 IDEXX Laboratories identified 95 clinical specimens of MRSA from across the UK.

"This showed us that it wasn't just a local problem, it was something that was affecting the country as a whole," said Prof Lloyd. We can also see that it goes on throughout the world – North America, Europe, the Far East and Asia.

"We've reached the point that we worried about when we first started investigating. It's not just dogs and cats either. It's horses, rabbits, seals and birds – wherever we look, we seem to be finding MRSA spread."

Dermatological MRSA

Prof Lloyd's first case of dermatological MRSA was from a dog with folliculitis over much of its body. He treated the folliculitis and isolated *S intermedius* which was resolved with cephalixin. When the owner returned in two weeks, all of the lesions had gone except for one small area on the lip.

"I don't know why I sampled it. Perhaps because I'm a bizarre microbiologist," he said. "It was MRSA. Our lab reported it as *S intermedius* that was resistant to cephalixin and just about everything else. I asked them to check it because it was so unlikely.

"I'm afraid this is an indicator of what's happening in many laboratories, because labs think that if it comes from a dog and it's a coagulase positive *Staphylococcus*, it must be *S intermedius*. There are time and financial penalties in re-checking, but it's a problem we have to face.

"We do clearly have a restriction of antimicrobial treatment options in small animal practice," he said. "We have organisms that are resistant to a wide range of antibiotics and other antimicrobials. The good news is that MRSA isolates in the US and Europe are commonly susceptible to

oxytetracycline and potentiated sulphonamides, so systemic treatment is possible. We can also use fucidic acid and mupirocin for de-colonisation."

Long-term studies in large animal groups are now needed to assess treatment.

Ideally, veterinary surgeons should sample every animal for colonisation, said Prof Lloyd, but practices don't operate under ideal conditions. If practices do receive animals with recurrent infection or have lab results suggesting *S intermedius*, which is resistant to antibiotics, then the alarm bells should start ringing.

The RVC hospital is about to be rebuilt to make infection control easier, but a regime where animals are sampled before they are admitted, if there is evidence of recurrent or non-responsive infection, has proven its worth. All animals are treated separately in their kennels, isolated wherever possible, and emergency cases are kept separate until their history has been examined. Vigorous barrier nursing is used in intensive care cases.

De-colonised

Staff and clients identified as carriers of MRSA can be de-colonised, said Prof Lloyd. Whether or not they should be compelled to do so is an interesting moral dilemma, but the implications for everything from public health to animal insurance are wide-ranging.

He commented: "We haven't instituted obligatory treatment for staff and I don't think we could do that without changing our regulations. We recommend that clients consult their GP under our advice."

Hygiene is an overriding concern, and another area where Prof Lloyd felt that complacency had crept in.

"We tend to think that if we spray disinfectants, we will remove these organisms. We need to get back to the idea of actually cleaning surfaces. This is something that's coming through in human medicine and we need to adopt it in veterinary medicine."

Risk information

The veterinary profession cannot begin to control MRSA without information on the risk factors, he stated. It needs, not only to investigate the extent of colonisation and carriage in animals and veterinary practice, but also in the community where potentially more virulent strains of community acquired MRSA have been discovered.

"We need to find out whether distinct pet animal clones are arising and being exchanged, not just within the practice but also in the community – at pet shows for instance," he said. "Some of these MRSA isolates will survive more in the environment than methicillin-susceptible strains, and they carry genes that promote resistance to the sort of antimicrobials we use in disinfection." For veterinary staff just beginning to gather information on the risks and implications in practice, he recommended the BSAVA guidelines (available on their website at www.bsava.com/resources/mrsa).

"Vets have heard of MRSA, but most don't know a lot about it," he concluded, "They need to realise that this is not just a problem with dogs. There are now serious zoonotic implications."

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INFORMATION

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