

Defra Q&A Brief Re Methicillin-Resistant *Staphylococcus aureus* (MRSA) in Animals.

Background information on MRSA is available on the Health Protection Agency web-site and is summarised in paragraphs 1 to 6; this information can also be accessed at the following web-address: http://www.hpa.org.uk/infections/topics_az/staphylo/gen_inf.htm

1. What is *Staphylococcus aureus*?

Staphylococcus aureus is a bacterium. Strains of *Staphylococcus aureus* live completely harmlessly on the skin and in the nose of about one third of normal healthy people. However, *Staphylococcus aureus* can cause problems when it gets the opportunity to enter the body. This is likely to happen in people who are already unwell.

2. What illnesses are caused by *Staphylococcus aureus*?

Staphylococcus aureus causes abscesses, boils, and it can infect wounds - both accidental wounds such as grazes and deliberate wounds such as those made for a drip or during surgery. These are called local infections. It may then spread into the body and cause serious infections such as bacteraemia (blood poisoning). *Staphylococcus aureus* can also cause food poisoning.

3. How is *Staphylococcus aureus* infection treated?

Infections caused by many varieties of *Staphylococcus aureus* are easily treated with antibiotics such as some types of penicillin and erythromycin.

4. What is MRSA?

MRSA stands for methicillin-resistant *Staphylococcus aureus*. It is a variety of *Staphylococcus aureus* that is resistant to methicillin (a type of penicillin) and some of the other antibiotics that are usually used to treat *Staphylococcus aureus*.

5. Is MRSA treatable?

MRSA is no more dangerous or virulent than other varieties of *Staphylococcus aureus*, but it is much more difficult to treat because the range of antibiotics which are effective against it is reduced.

6. Who is at risk of MRSA infection?

MRSA is one of the most prevalent micro-organisms involved with healthcare-associated infections. It is usually confined to hospitals and in particular to vulnerable or debilitated patients. These include patients in

intensive care units, and on surgical or orthopaedic wards. Some nursing homes have experienced problems with this bacterium. MRSA does not pose a risk to hospital staff (unless they are suffering from a debilitating disease) or family members of an affected patient or their close social or work contacts.

7. Where can I get further information on the human health aspects of MRSA infection?

The Health Protection Agency produce a leaflet available at http://www.hpa.org.uk/infections/topics_az/staphylo/MRSA_leaflet.pdf

8. How are human and animal *Staphylococcus aureus* strains related?

Animal and human strains of *Staphylococcus aureus* are usually different and are particularly-adapted to colonising and/or infecting their preferred host species. For example, the strain of staphylococcus that commonly infects and colonises dogs is usually a different species, known as *Staphylococcus intermedius*, which differs in certain characteristics from *Staphylococcus aureus*. Although strains of *Staphylococcus aureus* may have a preferred host species, they may opportunistically infect other species in some circumstances. MRSA may be considered to be human staphylococcal strains that can occasionally infect or colonise other animal species.

9. When was MRSA first detected in animals in the UK?

There have been recent reports of MRSA in animals in the UK in both the popular media and in the scientific press. These recent UK reports all date from 1999 or later. There is an earlier report of the isolation of MRSA from a cat resident on a rehabilitation ward for the elderly in the mid-1980's. MRSA was isolated from the paws and back of the cat, but sampling of the carpet and ledges of the ward revealed them to be heavily contaminated with MRSA. Isolation from the cat was perhaps therefore unsurprising.

10. What species of animals are affected?

In the UK, since 1999, there are published reports that MRSA has been isolated from dogs, cats and from a rabbit and a horse.

11. Are there any reports of MRSA in animals from other countries?

In previous years MRSA has been recovered from a number of different animal species and from a number of different parts of the world. The animal species involved include dogs (USA, Korea and the Netherlands), horses (USA and Japan), dairy cows and chickens (Korea) and cats (Brazil). Some early reports of MRSA in animals in the scientific literature (pre-1980) did not use molecular techniques to confirm definitively the

identity of the suspect MRSA organisms and these reports may not be comparable with current reports.

12. Is MRSA increasing in prevalence in companion animals in the UK?

Some of the reports in the scientific literature report an apparent increase in MRSA infections in companion animals, though good baseline data is not currently available to assess how the position may be evolving. One of the reports comments that the most common staphylococcus recovered from companion animals at one laboratory was *Staphylococcus intermedius*.

13. What is the source of animal MRSA isolates?

The available evidence suggests that humans are likely to be the source of MRSA strains infecting or colonizing animals. The increasing prevalence of MRSA in the human population appears to be spilling over into other environmental niches that MRSA is able to inhabit. The source of MRSA infections in animals has been speculated on in several reports in the scientific literature. In an outbreak of MRSA infection in horses at a veterinary teaching hospital in the USA, the human attendants were considered to be the likely source of the infection. A dog colonised with MRSA was thought to have contracted the organism from its owners.

14. What are the main reservoir species of MRSA?

The main species colonised by MRSA is man and man forms the principal reservoir of this organism. However, in some circumstances other animals can be colonised by MRSA and in some instances the organism has caused disease in animals. Animals colonised or infected with MRSA form a potential reservoir that could re-infect human contacts. The duration and degree of colonisation of animals has not been well-described. Companion animals carrying or infected with MRSA could be regarded as equivalent in risk to human carriers or patients infected with the organism. The advice from HPA regarding human carriers or infected patients is that MRSA does not pose a risk to hospital staff (unless they are suffering from a debilitating disease) or family members of an affected patient or their close social or work contacts.

15. Are food-producing animals a reservoir of MRSA?

There is no current evidence that food-producing animals form a reservoir of MRSA infection in the UK. MRSA infection has not been detected in farmed livestock in the UK.

16. What are the infections caused by MRSA in animals?

Most MRSA infections in dogs and cats in the UK have been post-operative infections or wound infections. There have been lower numbers of skin, ear, urinary tract and bronchial infections.

17. What are the implications for animal health of these findings?

Clinical disease caused by MRSA infection in animals remains apparently rare with only low numbers of cases reported worldwide. Treatment of serious MRSA infections in animals with antimicrobials faces the same difficulties encountered in human medicine, because of the extensive resistance to antimicrobials shown by this organism. The British Small Animal Veterinary Association have been preparing some advice for veterinary surgeons involved in companion animal practice and this is likely to be published in the near future.

18. What are the implications for public health of these findings?

Companion animals if colonised or infected with MRSA will provide another potential source of the organism from which spread might occur. The advice of the HPA regarding colonised and infected people applies equally well to infected or colonised companion animals. This advice is that MRSA does not pose a risk to hospital staff (unless they are suffering from a debilitating disease) or family members of an affected patient or their close social or work contacts. The current view of Defra and the Department of Health is that animals are likely to be infected as the result of contact with colonised or infected humans.

19. What steps are being taken to monitor and investigate the situation?

Defra is liaising closely with other interested parties involved in monitoring and investigating the occurrence of MRSA in animals, including the University Veterinary Schools as well as the relevant agencies and departments with responsibility for public health. Consultation with these expert bodies will assist in further assessing the implications of the emergence of MRSA in animals and in devising possible measures to counter any deleterious effects.

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