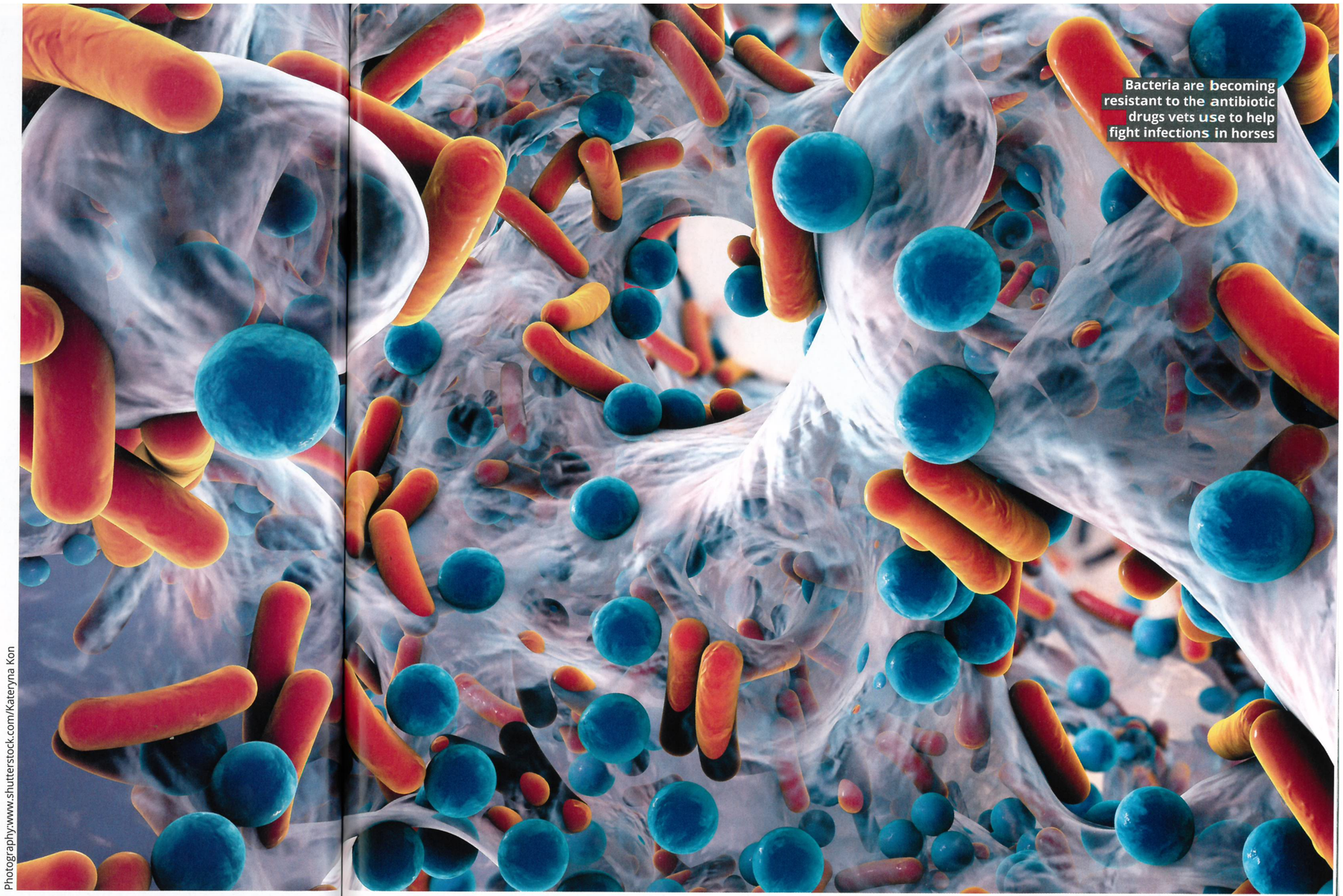
THE VET REPORT

Fighting antibiotic resistance

Antibiotic resistance is said to be one of the biggest threats to horse – and – human health. Equine vet Aoife Byrne sets out what the issue means for your horse or pony



Bacteria are becoming resistant to the antibiotic drugs vets use to help fight infections in horses

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OUR EXPERT

Aoife Byrne

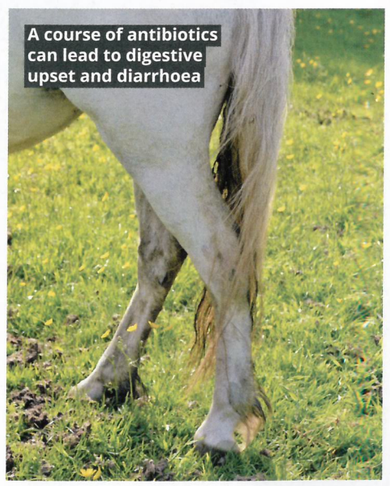
Aoife, DrMedVet MRCVS, works at Chapelfield Veterinary Partnership in Norfolk, a XLEquine Practice. She qualified as a vet in 2007. A keen horsewoman, Aoife enjoys riding side-saddle.

Antibiotic resistance is an emerging problem that is recognised internationally as one of the largest threats to both human and animal health.

All of the world's major health and veterinary organisations are working to try and limit the development of resistance so that effective antibiotics can be retained to help treat our horses in the future.

Antibiotics are drugs that kill bacteria by disrupting their normal biology. They either directly kill bacteria (these are known as bactericidal drugs) or stop them from growing (bacteriostatic).

They are relatively safe as the mechanism by which they destroy bacteria has no direct effect on your horse, although side effects can arise either due to the killing of 'good bacteria' in the gut or unexpected consequences of the medicine.



A course of antibiotics can lead to digestive upset and diarrhoea

The most severe side effects include allergic reactions, skin reactions or diarrhoea.

Diarrhoea is the greatest cause for concern and happens when the antibiotic destroys the good bacteria that enable adult horses and ponies to digest plant material (fibre) within their large intestine.

While a horse is receiving a course of antibiotics, passing a single, soft dropping (similar to a cow pat) is not usually a cause for concern. But if this progresses to a persistent, watery diarrhoea, it can rapidly become life threatening and you should consult your vet.

When are antibiotics needed

Not all infections caused by bacteria require antibiotic treatment. An adult horse or pony will mount his own immune system attack on bacteria. This immune system response can be effective at controlling the growth of many infections, without the need for antibiotics.

If your vet has dispensed antibiotics, it means your horse has a serious enough infection that requires treatment.

How has resistance occurred?

Antibiotics resistance means a bacteria no longer dies when exposed to an antibiotic drug that killed it effectively in the past. It occurs when bacteria change their biology so that they are no longer susceptible to the effect of a particular antibiotic or group of antibiotics.

Once exposed to antibiotics, any susceptible bacteria die but the resistant ones live and multiply.

Unfortunately, what also happens is that 'commensal' bacteria (those that live in harmony and synergy throughout the body), also can develop antibiotic resistance. This is because antibiotics don't just target disease-causing (pathogenic) strains.

Commensal bacteria also have the ability to form a multitude of resistant genes. Once these resistant genes have been formed, the 'good' bacteria can transfer the genetic information to others, including disease-causing strains, which ultimately add to the antibiotic resistance problem.

Super bugs

Resistant bacteria are not more harmful or damaging to your horse, they just cannot be treated effectively with a type of antibiotic that was previously effective. This may limit their future effectiveness in all horses.

Bacteria can pass resistance genes on to future generations, as well as acquire resistance to multiple or even all available drugs – even those to which the bacteria have not been directly exposed. The result of this is the development of 'super bugs'.

Resistant bacteria can be transmitted between animals or from animals to people, further exacerbating this issue.

The role of vets and owners

Firstly, not all bacteria are harmful. Most bacteria live in harmony with your horse. They exist on every surface of the body, both inside and out.

Vets will only prescribe antibiotics if they are absolutely necessary

Many of these 'good' bacteria help us by limiting the growth of potentially harmful bacteria. If we inadvertently destroy the good bacteria, we could make a horse more susceptible to life threatening infections.

When your horse is ill or has suffered an injury, if it is practical and feasible to do so,

"Not all infections caused by bacteria require antibiotic treatment. Your horse's own immune system is effective in controlling the growth of many infections"

Adopt good hygiene practices to help prevent infections

your vet should take samples or swabs for bacterial cultures and sensitivity testing to be carried out in a lab.

This can help the vet identify the bacteria involved and therefore choose very specific antibiotics that will target the problem and achieve the best clinical outcome.

For owners, it is important that a full course of antibiotics is completed, and given at the stated frequencey. Do not stop giving your horse the medicine, even if he appears to be improving or better.

Stopping a course of antibioctics early may leave some bacteria present at the site of infection.

These could then multiply, leading to a recurrence of a disease that may be less susceptible (resistant) to the drug you were using, or other antibiotics.

If you think your horse is not improving after a few days of treatment you should contact your veterinary surgeon, who will review whether he or she has prescribed the correct drug in this case.

They may need to use a different type of medication or obtain samples to determine the most effective antibiotic protocol to use going forward.

If your veterinary surgeon refuses to dispense antibiotics for a particular disease, it will be for one of the following reasons:-

- The disease is not caused by a bacterial infection. Viruses (like the common cold in people) and equine asthma are examples of conditions that mimic the signs of bacterial infections, but where bacteria play no role.
- It is a self-limiting infection that does not require treatment. Bacterial diseases, including strangles, are often effectively controlled by the animal's own immune system without the need for antibiotics.
- The horse's immune system has already controlled the infection. With some diseases (for example, strangles or a foot abscess), the equine body mounts an effective immune response that controls an infection through the formation of an abscess. Once the abscess has burst, the animal has already effectively controlled that infection and antibiotics will have no real benefit in most cases.

What is being done

When first discovered, in 1928, antibiotics were considered miracle drugs, contributing to increased human life expectancy.

But antimicrobial resistance (AMR) began to occur within a relatively short time of widespread antibiotic use.

This wasn't originally a problem, since 29 new drug classes were developed between 1929 and 1969. However, since then, the lack of discovery of new drugs poses a sobering contrast to the rapid and rising resistance of bacteria.

At the moment the vast majority of new antibiotic drugs that are developed are used as a priority in human medicine to treat critical infections like MRSA (a type of bacteria that is resistant to many widely used antibiotics) and *Clostridium difficile* (which can cause diarrhoea in humans).

Unfortunately, there are very few – if any – new equine specific antibiotics currently being developed.

Limiting antimicrobial resistance is a collective responsibility for both horse owners and equine vets.

It is important to respect the decision of your veterinary surgeon if they do not believe your horse needs antibiotics for a particular condition.

Good hygiene standards are vital when treating horses with infections to prevent transmission to other horses, and when managing horses with wounds to prevent contamination arising from other horses.

Good hand washing with soap and water can go a long way to reducing the spread of disease. ■

Making progress

The British Equine Veterinary Association (BEVA) has been commended for its work to tackle antibiotic resistance.

The organisation was highly commended by the Antibiotic Guardian Awards, which aim to reward organisations and individuals who have demonstrated achievement in tackling antimicrobial resistance.

BEVA launched a Protect ME campaign in 2012 ,to coincide with European Antimicrobial Awareness Day.

It has launched additional resources each year to help educate vets and the public about the issue and the role everyone has to play.