# MRSA in farm animals and meat

## A new threat to human health

Soil Association

# Foreword

There is little information about whether MRSA is in British farm animals, but the Soil Association calls on the Government to test both live animals and imported meat as a matter of urgency.

It is already clear, however, that farm-animal MRSA could spread to the UK and that effective measures are needed to prevent this. In addition to biosecurity, it is also necessary to grapple with the routine prophylactic use of antibiotics.

Until now, attention has focused on antibiotics used for growth promotion. The last of these were banned in 2006, but there is no sign of genuine progress; overall antibiotic use is down slightly, but only in line with falling livestock numbers.

For many farmers, the problem is how to get off the antibiotic treadmill. In a global food market, individual producers have limited choice. To be competitive, they are forced to adopt practices such as weaning pigs at an early age when their immune systems are undeveloped and they are vulnerable to infection. This is then used to justify the frequent inclusion of antibiotics in feed.

Organic farming systems are still developing, but already include proven alternatives. The Government acknowledges that organic methods are beneficial for the environment; it is now time it recognised they also reduce the need for antibiotics.

However, it cannot just be left to the market to address a new health threat like this. The Government must set policy in the right direction and make sure it is implemented. When I served on the Policy Commission on the Future of Food and Farming chaired by Sir Don Curry, we urged the Government to ensure that the banned growth-promoters were not simply replaced by increased prophylactic use of prescribed antibiotics. Yet this is what now seems to be happening. In 1992 the Lamming Committee also raised this issue and called for the prophylactic use of antibiotics in farming to be reconsidered.

These important recommendations have been ignored. While action is now needed at a European level, the Government should establish a new independent group to examine the way in which antibiotics are still widely used in the UK to prevent diseases in farm animals that could be avoided by other means.

Helen Browning OBE
Food and Farming Director, Soil Association

# Executive summary

## 'A new monster'

This report focuses on a major new antibiotic-resistance problem in farming, which may have serious consequences for human health. In some countries, methicillin-resistant *Staphylococcus aureus* (MRSA) has been found in a large number of farm animals and in retail meat. The British scientist, Dr Andrew Waller, has described the emergence of MRSA and other methicillin-resistant bacteria in animals as 'a new monster' (see p 11), but according to Defra, there is currently no UK or EU legislation to control it.

## Farm-animal MRSA is spreading across Europe

In the Netherlands, where most research has been undertaken to date, a very high proportion of pigs are carrying MRSA. The superbug has also been found at high levels in Dutch calves and on a Dutch chicken farm. A Dutch survey found an alarmingly high proportion of retail meat to be contaminated with MRSA. The Dutch Agriculture, Nature and Food Standards Minister, Dr Cees Veerman, has admitted the situation is 'worrying' (see Appendix). In January 2007, he warned that the international movement of farm animals and the comparable farming methods used in other countries mean that it is 'very unlikely that "animal-farming-related MRSA" only exists in the Netherlands' (see Appendix). Since then, the strain of MRSA found in Dutch farm animals has been discovered in pigs in Belgium, Denmark and Germany, and is strongly suspected in French pigs. The Netherlands is Europe's largest exporter of live pigs, sending almost six million pigs to other EU countries in 2005. This may be contributing to the spread of the superbug.

MRSA has also been found in cattle and chickens and in retail meat in other European and Asian countries, and in a significant number of pigs in Canada.

## Farm-animal MRSA is being transmitted to humans

A major concern is that the MRSA bacteria are already transferring from animals to humans. Farmers and their families, farm workers, vets and abattoir workers are at highest risk because of their direct contact with animals. A very high percentage of Dutch pig farmers now carry farm-animal MRSA strains, in a country where, until recently, MRSA infections have remained rare both inside and outside hospitals. In the past year, a high proportion of cases of MRSA detected in the Netherlands have been due to the farm-animal strain, and it has already caused serious infections.

## MRSA not yet found in UK farm animals, but the Government not testing pigs, chickens, or imported meat

MRSA has not yet been found in any British farm animals. However, despite being aware of this serious new zoonotic infection in near neighbours and major food-trading partners, Government MRSA testing has been restricted to cattle

and there are no plans to test pigs or chickens. The Food Standards Agency (FSA) has not tested any imported meat for MRSA contamination either. Since 60% of all pig meat consumed in the UK is imported, with most of this coming from countries where MRSA has been confirmed in pigs, British consumers are probably already being exposed to MRSA on meat. Defra recognised last year that 'trade rules might have to be reviewed if MRSA became established in food-producing animals', yet despite clear evidence that this has occurred, it has taken no action to safeguard consumers from contaminated meat.

The UK is fortunate in that it does not import live pigs from any countries known to be affected, and a small Soil Association survey did not detect MRSA in British pigs. The UK does, however, import live chicks and turkey poults from the Netherlands and elsewhere. Since there is evidence that MRSA may be widespread on Dutch chicken farms, there is a high risk that these imports will introduce MRSA to British livestock. The many foreign vets and farm workers who come to work in the UK, and young British farmers who often work abroad to gain experience, could also become colonised and then transmit the resistant bacteria to British farm animals.

### Further spread of MRSA will have 'a major public-health impact'

It is not yet clear whether farm-animal MRSA is spreading to people unconnected to farming. Professor Jan Kluytmans, a microbiologist working at one of the worst-affected hospitals in the Netherlands has said: 'The main question is whether this strain will spread from those living on pig farms to other individuals in the community. If so it will have a major public-health impact' (see p 46).

In the UK, between 2000 and 2004, 1,981 MRSA infections were recorded in people who had not recently been in contact with hospitals. These community-acquired cases are typical of a growing global trend, which may be related to farm-animal MRSA. Farm-animal MRSA could spread in the community either by human-to-human contact, or on food. Dr Mark Enright of Imperial College London has recently said that one possibility is that the gene for methicillin resistance is transferring from animal bacteria to human *S. aureus* in the human gut, resulting in new strains of MRSA (see p 45).

### High antibiotic use in farming is promoting the spread of MRSA

In the Netherlands, both scientists and Government ministers are blaming MRSA in farm animals on the very high levels of antibiotic use in Dutch intensive farming (see p 51). Dr Veerman refers to insufficient care for individual animals and poor management as factors contributing to high usage levels. He also says that the EU ban on the antibiotic growth-promoters appears to have led some intensive producers to increase their use of prescription antibiotics (see Appendix).

### UK Government has failed to cut farm antibiotic use

The British Government committed itself to reducing the overall amount of antibiotics used in UK farming in 1999, but little progress has been made so far. Prompted by an aggressive advertising campaign, controversially permitted by the Government, British pig farmers, like their Dutch counterparts, are switching from the banned growth-promoters to medically important antibiotics obtained with a prescription. Some advertisements even claim that the prescription antibiotics will help the animals grow faster.

# MAIN FINDINGS

## MRSA in Dutch pigs, calves and chickens (see Chapters 3 and 4)

- A Dutch survey carried out at nine abattoirs accross the country last year found that 209 of 540 pigs (39%) were carriers of MRSA. Another survey found that 20 of 150 calves (13%) were MRSA-positive. MRSA has been found on a Dutch chicken farm but no national survey has yet been undertaken to establish the incidence on other farms.

## MRSA on meat (see Chapters 3 and 4)

- A survey by the Dutch Food and Consumer Product Safety Authority in 2006 found very high levels of MRSA in Dutch meat: five of 25 samples of pork (20%), five of 24 samples of chicken (21%) and two of 64 samples of beef (3%) contained MRSA. In a limited number of surveys across the world, MRSA has also been found in pork, beef and chicken.
- Most imported pig meat in the UK comes from the Netherlands, Denmark and Germany, three countries where MRSA has been confirmed in pigs. Despite this, the FSA has tested no imported pig meat for MRSA.

## Farm-animal MRSA transferring to humans (see Chapters 3, 5 and 6)

- Nearly 50% of Dutch pig farmers have been found to be carriers of MRSA. This prevalence is 1,500 times higher than in the general Dutch population. Medical authorities in the Netherlands now consider all people living on pig and cattle farms to be at high risk of carrying MRSA, and they are isolated on admission to hospital until screening shows they are clear.
- The rate of detection of the farm-animal MRSA strain in humans has increased sharply in the Netherlands: in the last quarter of 2006, 25% of all MRSA found in humans in the Netherlands was the farm-animal strain. In one Dutch hospital, 80% of the MRSA currently being found is the farm-animal strain.
- Farm-animal MRSA has similarities to community-acquired MRSA in humans and may be a factor in its global rise.

## Farm-animal MRSA and human infections (see Chapter 3)

- Dutch patients with pig MRSA have developed skin infections, endocarditis (a heart infection) and osteomyelitis (a bone infection). The same strain of MRSA has caused blood poisoning and other deep-seated infections in Belgium and it has caused infections in Denmark.
- In Germany, this MRSA strain has not only caused has caused skin infections in hospital outpatients, it has also caused pneumonia in seven inpatients. This may be an indication that the strain is now entering and spreading in hospitals.

## Excessive use of antibiotics in UK farming (see Chapters 8 and 9)

- Intensively farmed animals are vulnerable to a multitude of diseases which antibiotics are used to control. Overall use is excessively high and, if introduced into the UK, farm-animal MRSA would spread rapidly under these conditions.
- There are no British figures for antibiotic consumption by species, but there are indications that consumption per pig is rising.
- The Government has ignored a requirement in EU Directive 2004/28/EC to prohibit the advertising of antibiotics directly to farmers.

# RECOMMENDATIONS

## Testing livestock and meat for MRSA

It is imperative that the MRSA status of British farm animals and meat on sale in British retail outlets be officially established as soon as possible. We therefore recommend:

- Immediate surveys of British pigs and poultry, with regular testing of all at-risk food animals for subsequent years.
- Urgent testing of imported live farm animals and pork, chicken and beef from EU countries, and immediate testing by the FSA of imported pig meat and chicken. All future surveys of retail meat should test all detected staphylococci for antibiotic resistance.

## Reducing antibiotic use on farms

The 1999 Government commitment to developing a strategy for reducing the use of veterinary antibiotics has never been properly implemented. This should now be given a high priority in order to bring about a substantial and rapid reduction in the farm use of antibiotics.

To assist this process the Government should implement the following important recommendations from independent advisory committees which have not been acted upon:

- prohibit the advertising of prescription-only antibiotics to farmers (Swann Committee 1969)
- review the prophylactic use of antibiotics in livestock production (Lamming Committee 1992)
- ensure that the antibiotic growth-promoters are not replaced by increased prophylactic use of prescribed antibiotics (Curry Commission 2002)
- publish data on the use of antibiotics by species, compound and antibiotic class (ACMSF 1999)

The Government's strategy for reducing veterinary antibiotic use should also:

- encourage farming systems with a low reliance on antibiotics and specifically recognise that organic farming is beneficial because of its lower use of antibiotics

## Screening farmers and farm workers

- Farm workers and vets coming to work in the UK from countries which have MRSA in their livestock should be screened for MRSA. If found to be positive they should not work with animals until they have been successfully treated. Young British farmers returning from working abroad should also be screened.
- If MRSA is found in British livestock, British farm workers and vets should be screened.

## Enhancing biosecurity and promoting best practice

- The Government should initiate an assessment of all biosecurity measures that could contribute to preventing the spread of MRSA to British farm animals.

## Use of critically important antibiotics on farms

Fluoroquinolones and third- and fourth-generation cephalosporin antibiotics are defined by the World Health Organisation as 'critically important' in human medicine. Their use is known to promote the spread of MRSA in humans. We recommend that:

- all prophylactic and off-label use of these antibiotic classes should be prohibited
- any advertising of these drugs to veterinary surgeons (and farmers, until the Government agrees to prohibit this) should make this clear

## OTHER FINDINGS

### MRSA in pigs (see Chapter 3)

- The strain of MRSA found in Dutch farm animals has recently been discovered in pigs in Belgium, Denmark and Germany and in a pig farmer in France.
- In Canada, a survey of pig farms has found MRSA in a high proportion of pigs on some farms. The MRSA bacteria in Canadian pigs may be different strains to the main strain in European pigs.

### MRSA in other animals and in people who work with them (see Chapter 4)

**Cattle**

- MRSA has been found in cattle, or their milk, in several countries other than the Netherlands in recent years.
- MRSA has been found in cattle from a farm in Hungary. It was being passed between the cattle and the farm workers, although it was not established in which direction the bacteria were transferring.
- A new strain of MRSA has been found in bovine milk in Korea. This strain can produce the Panton-Valentine leukocidin (PVL) toxin, which is often associated with increased virulence in community-acquired MRSA.
- A Dutch study has shown that cattle farmers are far more likely to carry MRSA than members of the general public.

**Chickens**

- A recent study found MRSA in chicken droppings on a farm in the Netherlands. Five of six adults living on the farm and on two associated poultry farms nearby were also carriers of the same MRSA strain. Dutch Government scientists believe the chickens are likely to have given the MRSA to the farmers.
- The wife of a chicken farmer in the Netherlands developed life-threatening endocarditis caused by farm-animal MRSA. No chickens on their farm or pigs nearby were tested and it is not known for certain how she became infected.

**Horses**

- In recent years, MRSA has been reported in horses in the UK, Ireland, Austria, Canada, Japan and the US.
- Several studies have found that people who work with horses are colonised by the same strain of MRSA as the horses they handle. One large North American study found MRSA in nearly 5% of horses tested, and on all horse farms with MRSA-positive horses, at least one human was a carrier of the same MRSA strain.
- In some cases, MRSA apparently acquired from horses has caused infections in humans. Some studies have found horses and associated humans to be carrying hospital strains, but others have found them both carrying strains uncommon in humans, suggesting they may have originated in horses.
- The UK Government is allowing the use of a banned antibiotic growth-promoter as a horse-feed additive without reviewing its safety. The product, Founderguard, contains the antibiotic virginiamycin, banned throughout the EU in 1999 because it is closely related to a new drug (Synercid) developed to treat MRSA and other highly antibiotic-resistant infections. The use of Founderguard could result in Synercid-resistant MRSA developing in horses and transferring to humans.

**Pets**

- MRSA colonisation is increasingly found in pets, including cats and dogs, and is known to cause infections. Although there is good evidence to suggest that

the MRSA in pets is related to hospital strains and comes from contact with humans, pets can form a reservoir of MRSA for reinfecting humans.

### Further evidence of MRSA in meat (see Chapters 3 and 4)

- In addition to Dutch Government testing, a private Dutch survey of retail pig meat carried out last year found two of 80 samples (2%) were contaminated with MRSA.
- In Jordan, MRSA was found in three of 317 samples of beef (1%), six of 717 meat samples from sheep (1%) and five of 218 chicken samples (2%).
- In Korea, MRSA was found in one of 69 samples of retail chicken meat (1%).
- MRSA has recently been found in two of 292 samples of retail chicken meat in Japan (1%), although these were believed to have been contaminated by workers handling the meat.

### Further aspects of the UK situation (see Chapters 3 and 4)

- MRSA has been found in pets in the UK.
- Defra has tested 425 samples of milk from dairy cows with mastitis, but no MRSA has so far been found.
- A Soil Association survey which tested 92 pigs from eight UK farms (two organic), and 30 samples of Dutch pork bought from retail outlets in the UK did not find MRSA.
- A preliminary and as-yet-unpublished study carried out by scientists from Kingston University in Surrey found that one of 50 samples of retail pig meat and one of 100 chicken-meat samples bought in the UK were contaminated with *S. aureus* which was methicillin-resistant. Genetic tests to identify the strains and show whether the bacteria were true MRSA have yet to be completed.

### Farm-animal MRSA can spread in the environment (see Chapter 5)

- MRSA is present in the manure from MRSA-positive farms. Spreading this manure on the land may result in environmental contamination by MRSA and create additional opportunities for the bacteria to pass to humans.
- Recent research has shown that intensive pig farms emit air plumes with very high densities of *S. aureus*. People living near MRSA-positive pig farms may therefore be exposed to MRSA in the air.

### Farm-animal and community-acquired MRSA (see Chapter 6)

- Farm-animal MRSA and community-acquired MRSA share certain genetic similarities which distinguish them from hospital-acquired MRSA. This suggests they may be related, or that the resistance genes are being exchanged by horizontal gene transfer.
- The US has very high levels of community-acquired MRSA, but there is no information available on MRSA in US livestock. Since the US imports millions of live pigs each year from Canada, and a significant proportion of Canadian pigs have MRSA, MRSA is probably already present in US livestock. Farm-animal MRSA could therefore have played a role in the emergence of community-acquired MRSA in the US.

### Threat to human health from farm-animal MRSA (see Chapter 7)

- Because most farm-animal MRSA and most hospital strains of MRSA are sensitive to different antibiotics, the treatment of MRSA infections may become more complicated if farm-animal MRSA infections become common in humans. Pig MRSA is much more likely to be tetracycline-resistant and much less likely to be fluoroquinolone-resistant than hospital strains.
- Vancomycin is the most widely used antibiotic for treating MRSA infections, but because of the previous use of a growth-promoter very closely related to

vancomycin and the continuing use of certain prescription feed antibiotics, many European farm animals are carriers of vancomycin-resistant bacteria. If these bacteria transfer their resistance gene to MRSA bacteria, this will create a new superbug, vancomycin-resistant MRSA, which will cause major treatment problems and potentially high mortality.

### Reducing farm antibiotic use (see Chapters 8 and 9)

- The use of antibiotics to which MRSA is resistant helps it to spread. Four of the five most widely used antibiotic classes in UK farming (tetracyclines, beta-lactams, macrolides and aminoglycosides) increase the spread of MRSA in humans.
- All of the MRSA bacteria in Dutch pigs are resistant to tetracyclines, and some are also resistant to the aminoglycosides and the macrolides. These antibiotics are widely used in pig farming, and will therefore be increasing the farm MRSA problem.
- The Dutch Government is imposing heavy fines of up to £11,400 for vets who prescribe antibiotics for disease prevention. In contrast, the British Government supports the prophylactic use of antibiotics in animal feed.

# Appendix. Letter from Dutch Minister to Dutch Parliament

De Voorzitter van de Tweede Kamer
der Staten-Generaal
Postbus 20018
2500 EA 's-GRAVENHAGE

18 December 2006

Dear Chairman,
Following your request for further information on the situation concerning the methicillin-resistant *S. aureus* (MRSA) problem and the relationship to and the consequences for public health and animal farming in general, here is my reply. I can state that I find, on behalf of the Minister for Public Health, Welfare and Sport, that the discovery of MRSA in various agricultural animals and animal products is a worrying development which motivates me to come up with several new measures. Here below I set out the facts known to me so far, the actions being undertaken and my policy proposals.

**MRSA in humans**
There are 3 types of MRSA bacteria. Besides the 'classic hospital MRSA' and a type of MRSA that is found amongst the population, there is yet another type of MRSA that, in 2005, was found in pigs in the Netherlands. All three types have in common that they have become less sensitive to penicillin, methicillin and antibiotics that work in a similar way. The first two types of MRSA occur with very low frequency amongst the Dutch population (altogether less than 0.1%) and, so far as is known, have nothing to do with Dutch pig farming or other forms of animal farming.

The MRSA which is found in pigs and that we, for simplicity, refer to as 'animal-farming-related MRSA' is confirmed at a much higher frequency in Dutch pig farmers. During a limited investigation in 2006, 23% of this group were found to be 'carriers'. Also, the co-habiting family members of pig farmers could be carriers of the 'animal-farming-related MRSA'. Since 2003 there is also evidence of an increased presence of 'animal-farming-related MRSA' in calf breeders, according to the findings of a retrospective study by the Royal Institute for Public Health and Environment (RIVM) carried out in 2006 on material found in MRSA cases in hospitals which was stored by the RIVM.

The presence of 'animal-farming-related MRSA' in persons in close contact with pigs or in the immediate surroundings of them creates a problem with the admittance to hospital and nursing homes, as with all other types of MRSA, and brings with it risks to public health. In patients with (temporary) lowered resistance because, for example, of an operation or specific medication, all forms of MRSA, of which a patient is normally an unsuspecting carrier, can cause an

infection. MRSA infections carry greater risks for patients than antibiotic-sensitive infections because, fewer antibiotics are appropriate for the treatment of MRSA, and because the limited number of appropriate antibiotics show more negative side effects.

The low frequency of the presence of human infections with the first two types of MRSA in the Netherlands are due, according to experts, to successful Dutch policy in the area of infection prevention measures in Dutch hospitals on the basis of national guidelines by the 'Working Party for Prevention of Infection' (WIP) and a restricted use of antibiotics. As well as the extent of the use of antibiotics in health care, the presence of resistant micro-organisms is, in general, among the lowest in Europe. Therefore, there is a much larger margin of safety for hospital patients. Hospital infections are not totally preventable but the number and seriousness of hospital infections is limited by precautionary measures and limited antibiotic resistance.

**MRSA in animals and animal products**

As mentioned before, in 2005 wholesale 'animal-farming-related MRSA' was found in pigs (about 40%). In the course of 2006, MRSA was found by the Food Safety Authority (VWA) in calves that were examined within the framework of Zoonoses guidelines (faeces examination). Here 13% of the calf samples tested positive (20 of the 150 samples). Added to that, during the regular mastitis test in 2006, it was found that this type of MRSA was present in dairy cows (on 4 premises) and in some samples of raw milk from these premises.

'Animal-farming-related MRSA' has also shown up in a small-scale investigation by the VWA in 2006 into a small number of samples of meat. It was found in 5 of 25 samples (20%) of raw pork, 2 of 64 samples (3%) raw beef and 5 of 24 samples (21%) raw chicken. The samples were drawn from supermarkets. The VWA has, after consultation with the RIVM in mid-2006, concluded that the consumption of these animal products poses no significant public-health problem. Because it is difficult to draw further conclusions on the basis of these findings, it has been decided to repeat this investigation on a larger scale. Within the framework of the MRSA investigative programme which was started on 1 December 2006, the prevention of 'animal-farming-related MRSA' in pigs, calves, cattle (among which are calves and dairy cows) poultry and other intensively reared animals is being closely examined and furthermore in raw meat from pigs, calves, cattle, poultry, milk and other relevant animal products. The results of this can be expected in the second half of 2007.

**Causes – increased veterinary use of antibiotics and 'animal-farming-related MRSA'**

As previously mentioned, I find the established facts regarding 'animal-farming-related MRSA' worrying. This type of MRSA is not only found in pigs but also in other animals although it is not clear to what extent. As to the causes of this development, I mention the following.

There are even stronger indications that the high usage of antibiotics in livestock farming is the most important factor in the development of antibiotic resistance, a consequence of which is the spread of resistant micro-organisms (MRSA included) in animal populations. The use of antibiotics in agricultural animals has increased since 1998 while, at the same time, resistance levels are tending to increase (see Maran report from the CIDC – Central Institute for Animal Disease Control in Lelystad during 2004 and the agri-monitor of the LEI Agriculture Economy Institute of December 2006 about the use of veterinary antibiotics in the Netherlands in 2005). According to FIDIN, the branch organisation for the pharmaceutical industry in the Netherlands, there was an increase in the use of veterinary antibiotics of approx. 12% in 2005 compared

with the previous year.

The causes are not completely clear but many suggest a connection with the banning of the use of so-called 'antimicrobial growth-promoters' (AGPs) on 1 January 2006. This ban was introduced to counteract antibiotic resistance. AGPs are antibiotics which are administered constantly, via animal feed, in low concentration as a preventative measure. I included this in my reply to the parliamentary question from Mr Ormel. The AGPs have an inhibiting effect on certain unwelcome bacteria in the intestinal canal of the stomach in animals and probably encourage growth in agricultural animals. This ban, which started with a ban on the antibiotic avoparcin as an AGP in the second half of the nineties, was gradually carried through in Europe with the ban on other AGPs leading to a total ban. Because AGPs in part had a preventative effect for a number of animal diseases, the use of antibiotics registered for therapeutic use increased in some businesses (in particular businesses with shortcomings in housing and hygiene measures). Also, there was talk of preventative use.

This is evident from the recent FIDIN initiated survey amongst vets. The majority of the 164 polled pig vets is of the opinion that the ban on AGPs is the most important cause of the increase in the use of antibiotics in the pig industry. In addition, the pig vets refer to the increase in the size of businesses (less care for the individual animal) as another factor in the increased use of antibiotics and also to the increasing infection rate and insufficiently good management. The vets in the calf and poultry industry were less outspoken about the increase in the use of antibiotics. It was noticeable that about a third of the calf vets were of the opinion that there was pressure from the farmers and/or feed adviser to use more antibiotics (see results of the FIDIN survey in the 'Tijdschrift voor Diergeneeskunde' [Magazine for Veterinary Medicine] of 16 November 2006). The extent to which increasing usage is a direct consequence of existing antibiotic resistance is being further investigated.

***Improper use***

In my reply to the question by Mr Ormel of 24 October, I declared that the Ministry of Agriculture, Nature and Food Standards (LNV) had already received various signs of improper use of antibiotics in the intensive Dutch animal farming industry. From a recent report by the General Inspectorate (AID) and VWA of 7 November 2006, it appears that in 22% of the legally compulsory prescriptions from vets for medicated animal feed, irregularities were found. This led to 62 prosecutions and 32 warnings to vets. The irregularities were incorrect dosage duration, no notification of waiting period and incorrect dosage. Also, animal keepers were found who, without consulting a vet, had in their possession antibiotics or antibiotic-containing feedstuffs probably to use preventatively or for growth promotion. This is expressly forbidden. It was also found that antibiotics are advertised to farmers on the internet and, after ordering, are delivered with no further diagnosis with or without a prescription from a vet. The AID will, in 2007, pay more attention to enforcing the animal-medication ruling. Further to this, I want to mention that the impression exists that the majority of vets do follow the rules and are aware of their responsibility in the use of antibiotics.

**MRSA in an international context**

It is very unlikely that 'animal-farming-related MRSA' only exists in the Netherlands, considering the animal types where MRSA is found and the many animal movements and comparable livestock farming methods in other EU member states. So far, there are no hard facts about this. It is important, for these reasons, that all Member States examine their animals. 'Animal-farming-related MRSA' was on the agenda of the Task Force on Zoonose Data Collection of the

EFSA (European Food Safety Authority) in October 2006. Sweden has announced that it is soon to start an enquiry into 'animal-farming-related MRSA' and there are also plans to do this in Belgium. In 2004, the French carried out an enquiry into MRSA with pig farmers. Although it is not known if this concerned exactly the same 'animal-farming-related MRSA'. The conclusion was that there was talk of a significant connection between pig farming and resistant bacteria, of which Staphylococcus aureus was one. In Canada, the veterinary faculty of Ontario is to undertake an enquiry into MRSA in pigs and pig farmers. It probably involves a different type of MRSA to that found in the Netherlands. The bacteria were previously found in varying quantities in horses and people working with horses. In vets working with horses an infection percentage (probably carriers) was found of 10–14%.

**Investigation**

The implementation of the MRSA research programme, as was announced in the reply to the parliamentary question by Mr Ormel on 24 October last about antibiotic use, is now under way. The veterinary investigation is aimed at, amongst other things, at the original connection between the veterinary use of antibiotics and the presence of 'animal-farming-related MRSA' in agricultural animals and the meat from these animals, at the role played by the characteristics of the industry and at the manner in which MRSA is transferred into and among the product chain. For the veterinary part of the investigation, I have made available a budget of over 1.3Million euros over 2 years. The pig sector has initiated its own enquiry to gain more insight into the background of antibiotic use, and to promote discussion and awareness of the risks of antibiotic use.

The part of this programme which is aimed at public health is directed towards the specific properties of 'animal-farming-related MRSA', the possible risks to public health of 'animal-farming-related MRSA', the spread of 'animal-farming-related MRSA' from animals to humans and from human to human, and possible means of intervention.

From contacts with representative organisations of the primary livestock businesses, I know that this is taken very seriously there. In the coming consultation (see the following) I hope to reach agreement on joint action.

**Concrete steps towards the reduction of the veterinary use of antibiotics, with respect to the presence of 'animal-farming-related MRSA' in the Netherlands.**

A number of campaigns were already started in 2006, partly prompted by the European ruling (see appendix). Added to this, I shall, in anticipation of the results of the current investigative programme, shortly take the following steps. It concerns here the 'no-regret' measures which I, regardless of the results of the current process, consider useful.

1. I shall shortly enter into discussion with representatives of various animal sectors and the vets' organisation, the Royal Dutch Society for Veterinary Medicine (KNMvD), about antibiotic resistance in general and MRSA in particular, probably as a consequence of the high veterinary use of antibiotics. Obviously, measures to curb the use of veterinary antibiotics, resistance and MRSA will be discussed.
2. In the framework of further awareness, the ministers for LNV and VWS will see to it that measures are put in place to pass this information on to the relevant animal keepers, their co-habiting family members and all others who, professionally, are in close contact with the relevant live animal types and fresh animal products, about the risks of antibiotic use, antibiotic resistance (including 'animal-farming-related MRSA') and inappropriate antibiotic usage in the intensive Dutch livestock industry.

3. In addition to the existing MRSA investigative programme, I shall ensure that, at short notice, an enquiry is made into alternatives to AGPs, in particular animal feed additives which improve intestinal bacteria.
4. In the interests of better control of inappropriate antibiotic use, there will shortly be an investigation into whether new legal requirements for veterinary prescriptions should be made. Among other things, earlier suggestions made by the vets' organisation, the KNMvD, in this framework will be included in this investigation (the KNMvD is intensively involved in the discussion about the 'pushing back' of 'animal farming related MRSA' and antibiotic resistance).
5. In anticipation of the European ruling on the hygiene package, I want to encourage the producers of primary animal products to speed up the voluntary sending of the European compulsory details on the use of antibiotics to slaughterhouses so that management of the use of medicines in a data file becomes possible sooner. (Europe has determined that this compulsion applies for pigs from 1 January 2008, for calves and horses from 1 January 2009 and for other livestock from 1 January 2010). For poultry this is already compulsory.
6. Within the framework of the Codex Task Force AMR and the working party which will co-ordinate the problems in the area of antibiotic resistance worldwide, the Netherlands will suggest that other countries also start investigations into the presence of 'animal-farming-related MRSA' in agricultural animals. The meeting will take place from 23–26 October 2007 in Seoul.
7. The European Commission will be asked to implement a ruling for member states to provide an annual statement of veterinary antibiotic usage per food-producing animal type as well as the already existing obligation for 'monitoring the antibiotic resistance development and antimicrobial substances' within the framework of the Zoonoses guidelines 2003/99/EG. Such a statement will clarify the trend in veterinary use of antibiotics in the various animal sectors, facilitate an analysis of the differences between member states and possibly offer negotiating points for the reduction of antibiotic use.

The Minister for Agriculture, Nature and Food Standards

Dr. C.P.Veerman

**Appendix**

**Measures already taken to limit antibiotic use and farm-animal MRSA**

1. By the beginning of 2006, the requirement for vets and traders of in-and-outgoing regulated medicines, including antibiotics, to keep records is becomes Dutch law.
2. It is agreed with the General Inspectorate (AID) that in 2007, special attention will be paid to the correct prescribing and administration of antibiotics by vets, and also for medicated feedstuffs and, furthermore, attention will be paid to the use of antibiotics by animal keepers according to regulations and to the illegal presence of antimicrobial raw materials, antibiotic-containing animal feed and to non-registered antimicrobial animal medicines at animal holding businesses. In 2006 it was proposed that AID would pay more attention to the use of tetracyclines and the correct use of medicated feedstuffs. This lead to the action called 'inappropriate use' in this letter.
3. To reach a good maintenance strategy, the ministry of LNV, in conjunction with the ministry of Justice, has, from September 2006, started with a project 'programmed maintenance of animal medicines and growth-promoters'. This is expected to help in the search for efficient methods to control the use of

antibiotics in intensive animal keeping.

4. In the interests of maintaining the code of practice for vets, the cabinet approved my proposal at the end of December 2006 to uphold the maximum punishment which veterinary disciplinary colleges can impose for transgressions, e.g. the preventative administration of antibiotics, to be doubled to 6.700 euros (and in special cases, when there has been great economic gain, to a maximum of 16,754 euros). In combination with financial fines, other sanctions are imposed, such as the suspension or withdrawal of authority to perform animal medical care. The veterinary disciplinary colleges make their own independent statement.
5. Since 1 January 2007, it is prohibited in Europe and so also in the Netherlands, to use antibiotics to control salmonella infections in certain breeding poultry couples (there are exceptions). This ruling will be extended in the coming years throughout Europe with similar measures for slaughter chickens, turkey and pork. These hygiene regulations are also intended to combat the antibiotic resistance of various salmonella types.
6. The European Commission is asked to put the subject of MRSA on the agenda in its own right.
7. By the beginning of December 2006, an extensive programme was started to put the relationship between antibiotic use and MRSA in pigs as well as the spread and means of transferring the 'animal-farming-related MRSA' in animals and humans in the frame.

This letter was translated by Marion Biles for the Soil Association.
The original letter in Dutch can be downloaded from the Dutch Ministry's website at: http://www.minlnv.nl/cdlpub/servlet/CDLServlet?p_file_id=16653