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ACTUALITY IN INTENSIVE CARE WARD

CUFFE: Hospitals in the UK have been struggling to get hospital-acquired MRSA under control, and the Government recently announced that at last the rate of infection was going down. But now scientists warn that a new, more virulent strain of bacteria is spreading within the community. It strikes the young - and it's life threatening.

HARRY: Whilst they didn't say that I was going to die, they suggested that it was something of a possibility and that I might lose my foot. It was eight days before I regained consciousness.

CUFFE: And from Scotland, there's disturbing evidence that another type of MRSA, which is transmitted to humans by farm animals and is spreading fast across Europe, has entered the UK. In tonight's File on 4 we ask, are we doing enough to identify emerging strains and control the spread of infection?

MORGAN: The longer this bug is ignored, the more time it has to get stronger, to mutate and to produce other toxins. This bug, if you give it a chance, it will change and it will come back and get you.

SIGNATURE TUNE

ACTUALITY OF SALLY WITH BABY

SALLY: [Sound of squeaky toy] What's that, eh?

CUFFE: At three months old, Thomas is now a healthy, contented baby, but he's had a narrow escape - and his parents have had the fright of their lives. His mother doesn't want us to use her real name, so I'll call her Sally. Thomas was born in May by Caesarean Section, and they'd been home from hospital for five days when the health visitor noticed a slight swelling on his heel.

SALLY: She appeared quite concerned and asked how quickly that happened, and said that she'd like our GP to have a quick look at Thomas. The GP thought it was at the time some sort of cellulitis and said he'd rather get him checked over and admitted him to the general hospital in Southampton. When we turned up at the hospital, straightaway they had a look at his heel and they said they wanted to give him antibiotics and start checking him for meningitis and a lumbar puncture, blood tests, everything – it was just sort of fired at us and I didn't know where all this was coming from.

CUFFE: Five day old Thomas was isolated in hospital, put on an intravenous drip and treated with a cocktail of strong antibiotics for three weeks. His parents were told he was suffering from a new and particularly virulent strain of bug called PVL that is spreading across the UK.

SALLY: What's scary is what would have happened if the health visitor hadn't been to my house that particular day, you know, what if she'd come the next day? What would have happened overnight to my son? I don't know. The orthopaedic doctors were worried that possibly the infection had got into the bone of his heel and left any hours maybe, it could've. That's how quickly it could have spread - if the infection had gone to his heel, we're talking about serious surgery that could have serious long term implications on the way he could walk in the future. Just awful.

CUFFE: Sally and her husband were tested for the bug and found to be carriers. Everyone is host to bacteria – called staphylococcus aureus – on their skin or in the nose, and most are completely harmless. But the strain which is now worrying the medical profession has a gene producing the toxin PVL.

MORGAN: PVL stands for Panton-Valentine Leukocidin. Panton and Valentine were the two scientists that discovered it in the 1930s. And the Leukocidin just means it's a leukocidal toxin. It kills white cells, leukocytes being another name for white cells.

CUFFE: Marina Morgan is consultant microbiologist at the Royal Devon and Exeter Hospital.

MORGAN: With a PVL producing skin infection, they're generally more severe, patients characteristically present with recurrent boils and abscesses. As your body starts making more and more white cells in response, you have an over-production of white cells. Quite often the abscesses are much bigger and they are nastier and deeper than you would have with an ordinary Staph Aureus.

CUFFE: And who is most vulnerable?

MORGAN: Generally speaking, with any sort of infection, the very young and the very elderly are at risk, but it would appear that in terms of PVL infections at least, those people less than forty would tend not to have an immunity to it, they probably haven't met it before in their lifetime.

CUFFE: Some of these virulent bugs can be treated with normal antibiotics, others are MRSA or resistant. In either case they affect skin and soft tissue and can lead to blood poisoning and necrotising or flesh-eating infections, and they can get into the lungs, with a high mortality rate.

MORGAN: I'm seeing a dramatic increase in the amount of the ordinary PVL Staph Aureus, not MRSA type strains, and if that's spreading as quickly as I'm seeing it spreading, then I would anticipate that the community-acquired MRSA strains will be spreading shortly in a similar fashion.

CUFFE: So in your own experience, what have been the cases that have really made you aware and alarmed about this?

MORGAN: The worst infections I've personally seen are PVL producing Staph Aureus pneumonias. The problem with that is that in its very early stages, it's very easy to miss.

HARRY: I had a pain in my foot which lasted about five days, after which time things started to deteriorate and I felt a bit unwell and a bit flu-like.

CUFFE: Harry was a fit and healthy 27 year old who had no idea that a sore foot could turn into a serious illness.

HARRY: One day I developed what was kind of soreness around the chest when I breathed, and this continued to get gradually worse throughout the day and into the evening, at which point I noticed that I was finding it increasingly difficult to breathe and later on that evening I couldn't lie down flat and catch my breath. I went into the living room and sat down and I coughed and I noticed that there was a taste of blood in my mouth.

CUFFE: He was lucky to live in the right place. Doctors at the Royal Devon and Exeter Hospital diagnosed pneumonia and contacted microbiologist Marina Morgan, who immediately recognised the possibility of a PVL infection. Harry didn't know it at the time, but he had less than a fifty-fifty chance of survival.

HARRY: Whilst they didn't say that I was going to die, they suggested that it was something of a possibility and that I might lose my foot. I think at the time I wasn't really aware of how sick they thought I was. I was on a ventilator which breathes for you for about eight days or so, and then on an assisted breathing ventilator for just over a week, I think, but it was eight days before I regained consciousness and began to understand a bit more about what had happened to me. It was almost six months before I was able to start work again. I lost a lot of my lung capacity and it was initially extremely hard for me to breathe when I did finally get back on my own two feet after two weeks of being in a bed, but I'm certainly very grateful to have recovered to the extent that I have.

ACTUALITY IN INTENSIVE CARE WARD

CUFFE: This is the intensive care ward where Harry was treated. It's a high tech area, with banks of machinery surrounding each patient, and the director of the unit is Dr Chris Day. He's now dealt with a number of cases of PVL infection – not all with a happy ending.

DAY: What's particularly worrying is that the patients we've had here have been very young and, because they're physiologically quite fit to start off with, they initially tolerate the early stages of the diseases without manifesting the symptoms which are easy to pick up, and then there's a period of very abrupt, severe deterioration which can take place over half an hour to an hour, where the patient becomes rapidly short of breath, and this can progress to a stage where they need to go onto a ventilator very urgently.

CUFFE: So it's about as severe as it could get really?

DAY: It's very severe. As the disease progresses it becomes multiple organ failure, so we have to support not only the breathing, put people on a ventilator, but their blood pressure can become very low and we have to support the heart and circulation with phaso-active drugs, and the kidneys can often shut down and we need to perform renal dialysis to support the functions of the kidneys.

CUFFE: The Health Protection Agency, which is responsible for co-ordinating infection control in the whole of the UK, has been monitoring PVL related diseases in England and Wales. To do this, it relies on hospitals sending samples for analysis. So far the number of deaths in the UK is small, but the number of reported cases has been doubling year on year - last year there were more than thirteen hundred. In some parts of the country, like Plymouth, there seem to be clusters of disease, but no-one knows if this is because there are more cases or because doctors are better at spotting them. Over the last year or so, the Government's advisor on Infection Control, Professor Brian Duerdan, has had his hands full trying to contain an epidemic of hospital acquired MRSA. Now he finds himself confronting a new threat for the population at large. Yet many things about this more virulent bug remain a mystery.

DUERDAN: We're not quite sure how it causes all its damage. We don't necessarily know where it's come from. We do know that it spreads in the community amongst close contacts, amongst families, amongst people who share the same sporting events. But we still need to know a lot more about its exact prevalence in the community – just where it is, how many people carry it.

CUFFE: Does it concern you that, at a time when you're still struggling to get MRSA in hospitals under control, there is this new and virulent strain spreading in the community?

DUERDAN: Obviously it is something that we're concerned about. There is an urgency for people to recognise that this is occurring in the community. They haven't spread rapidly but they are decidedly there and becoming well established now.

ACTUALITY AT SCHOOL

TEACHER: Where are we up? Your answer. What's defraction? Defraction is ...

CUFFE: Cranbrook School in Kent is a co-educational grammar, taking boarders as well as day pupils. It's the first school in the country to have an outbreak of PVL MRSA, and headmistress, Angela Daly, says it came as a complete shock to everyone.

DALY: The first I knew was when I'd heard that this girl had come back from holiday with MRSA and the advice immediately of the medical centre was that she should not go back to the house, that she should be sent home because we did not want it spreading, and I immediately agreed that that would happen.

CUFFE: Presumably you thought that was the end of it?

DALY: I sincerely hoped it would be the end of it. I thought this was an isolated case, we had dealt with it, there would be no more problems. And then the medical staff came back to me to say they had others from the same house who were presenting with similar symptoms. They were concerned about them. Those girls were also isolated from others as far as was possible.

CUFFE: The girls who were infected were all boarders in the same house, and one of them became feverish and had to be treated with intravenous antibiotics in hospital. But no one realised how serious it was till people from the Health Protection Agency arrived.

DALY: They swept in on us rather dramatically actually and were very serious and very full of doom and gloom about this. There had been a case of a young man at Kent University who had died of this particular PVL infection not many months before, and they were – quite understandably – very alert to this, so they were very anxious that we should get things right, as indeed we were.

CUFFE: And what did that involve?

DALY: We decided that we had to know the full extent of the infection so we had everybody in the house immediately swabbed, including all the staff, the teachers, the cleaners, everybody who had contact. We broadened that out to anybody who knew they'd had physical contact with any of these girls – boyfriends, other close friends – and anybody else who was worried could come forward if they had something that looked like a lesion, if they were concerned they could have it looked at, swabbed if we deemed it necessary, and all these swabs were sent off.

CUFFE: How many people?

DALY: At least a hundred were swabbed, it was a very busy time. And at the same time we were trying to deal with the publicity surrounding this and communicating with parents because we wanted people to know what was happening, but we didn't want panic.

CUFFE: The house where the girls lived had to be stripped and deep cleaned – costing the school £20,000. The fear for doctors in Britain is that community MRSA will become as much of a problem as it is the United States, where a toxic strain called USA300 is proving highly contagious and is associated with escalating sickness and death. After spreading among gay men, prisoners and the military, it's now a common cause of infection in children. At the University of Chicago Hospital, paediatrician Robert Daum was among the first doctors to recognise the threat it caused.

DAUM: In the mid 1990s, myself and some of my colleagues began to see patients who were sick enough to be hospitalised with what looked like Staphylococcus Aureus infections, and when the cultures came back they were MRSA cultures, which startled us, because these were perfectly healthy children who did not have contact with the healthcare system or have previous hospitalisation or any of the so-called healthcare-associated MRSA risks. We did a study and what we showed was that in the last few years, incidence of MRSA infections that had arisen in the community had gone up by 25-fold.

CUFFE: Would you describe it as an epidemic?

DAUM: Oh, I've been using the word epidemic for about five years now. You can look anywhere you like. One of my favourite papers is from University of California at San Francisco. They found around one in thirty people had one of these community MRSA infections. That's stunning, it's really a very high rate.

CUFFE: With increased travel, infection has become global, so it's perhaps curious that Britain hasn't yet seen a significant number of cases of USA300. One theory is that we have different social patterns. But there's no room for complacency, according to Richard James, professor of microbiology at the University of Nottingham.

JAMES: We do know that Staph Aureus is a serious pathogen and it continues to surprise us on its capabilities, so I would be very surprised if we don't get large increases in PVL strains in the UK. Now whether it's the US300 strain or another one, a more local one, difficult to say. But I think we have to be more alert and be looking for it.

CUFFE: Are you confident that the medical profession is sufficiently alert to the dangers?

JAMES: I would be very surprised if everybody in the NHS who might see a patient with a serious infection like this actually could recognise it, would know exactly what to do. Certainly there's a lot of advice gone out, but when they're still relatively rare – for example, if your GP had a patient with a serious skin infection, would they take a sample and send it off to a microbiology lab for analysis and get the results back? They'd probably just give antibiotics and say, 'Take these for a week, come back if there's any problem later.' Time will tell whether the medical profession are trained to recognise these organisms and the infection they can cause.

ACTUALITY AT SOUTHAMPTON GENERAL HOSPITAL

MAN: ... needs to be done again in three weeks.

MAN 2: Right.

CUFFE: In the children's orthopaedic department at Southampton General Hospital, consultant Nick Clarke is on the look-out for symptoms of infection. He thinks more should be done to educate doctors and admits that if he hadn't been to a training course in America, he'd never have identified his first case of PVL.

CLARKE: Coincidentally, when I arrived back in Southampton, I found a case on the ward who subsequently turned out to have exactly that. He was an eleven year old boy who was fit and well and had no other risk factors. This infection causes massive destructive of bone and joint and it is not like ordinary osteomyelitis.

CUFFE: Without having been to the States and seen the problem, what would you have done differently?

CLARKE: Well, this is the whole problem. We would not have treated it as aggressively. We actually changed the antibiotics, we identified the organism very quickly, and we were much much more aggressive. We repeated surgery on several occasions, which I'm sure we wouldn't have done.

CUFFE: Last month, the Health Protection Agency beefed up its guidance to health professionals, urging vigilance. The North American experience, it says, suggests there is a high risk of infected or colonised individuals transmitting PVL-producing bacteria in households, schools, close contact sports, military training camps, gyms and prisons - message reiterated by the Department of Health's Inspector of infection control, Brian Duerdan.

DUERDAN: Stopping the spread of infection depends upon doctors recognising that patients may have PVL strains, then doing the right tests, which are done through the Health Protection Agency, to confirm that this is the organisms that's causing the infection. Once you've done that, you can treat the individual and you can look at their contacts – their family contacts or their contacts in a sporting environment or in a social environment to see if they're carrying it or to see if they're having infections with it, and then you can deal with that as well.

CUFFE: Is enough being done to alert doctors to the fact? Because it seems almost shocking that it really is left to chance almost whether your particular doctor recognises what you've got.

DUERDAN: Doctors were not particularly aware of this infection because it hadn't been around. We have put out more guidance over the last couple of years to alert them. The Chief Medical Officer sent a letter to all doctors and put it in his bulletin and put guidance on the DH website about three years ago, and within the last two months the Health Protection Agency, in conjunction with the Department of Health, have put out new guidance to doctors on recognising and dealing with this infection.

CUFFE: But other microbiologists aren't convinced that the Department of Health has this virulent bug under control. Marina Morgan has seen a number of young patients die, and it's an experience she doesn't want repeated.

MORGAN: I think the Health Protection Agency and the Government are doing a fair amount to deal with this. The problem is that this is the one bug you cannot afford to be complacent with. I remember some years ago, when our hospital had very very few cases of ordinary, bog standard hospital-acquired MRSA and we were quite relaxed about it and assumed it was just due to dirty hygiene and poor infection control that other hospitals were afflicted, and then that all changed and a few years ago we started getting quite a few cases of hospital-acquired MRSA. That's pretty difficult. If you have a community-acquired MRSA, then I think potentially you've got a worse problem because it's going to be more spreadable, and if we take our eye off the ball and allow this to spread, then if it gets to the state that it is in America, then it will be too late. If we're going to do something about it, we've got to do something about this in the next couple of years, and possibly even in the next year to really get a handle on it. The longer this bug is ignored, the more time it has to get stronger, to mutate, to change into some other form and produce other toxins. This bug, if you give it a chance, it will change and it will come back and get you.

ACTUALITY IN NOTTINGHAM LABORATORY

JAMES: So, on this plate here, we have a culture of this is a hospital MRSA strain, so-called

CUFFE: In his laboratory at the University of Nottingham, Professor Richard James has been studying bacteria with the PVL toxin and assessing the risk to the community. Because of the way the bug can destroy lung tissue, he says a flu pandemic in the country could turn it into a major killer. And he thinks it warrants as much attention from the Government as the risk of bird flu.

JAMES: Politicians are always asked to spend more money on one thing or another, and recently obviously they spent a significant amount of money on avian flu, in stockpiling anti-virals in case avian flu comes to the UK. And that is, in my way of thinking, a much more remote threat than the possibility of getting a necrotising pneumonia outbreak in the UK, but very little has been done in advance of that.

CUFFE: What's your evidence for suggesting that that is more likely?

JAMES: To get an avian flu outbreak in the UK, then the virus has to mutate to be capable of being transferred to humans and then being transmissible in humans. There are quite a few steps involved there. Community-associated MRSA is already here in the UK. There's the known link to a viral infection that can trigger necrotising pneumonia. What we don't know is just what are the percentage of people who will go on to get necrotising pneumonia. That's the big unknown.

CUFFE: And how serious would that be?

JAMES: Well, mortality rate more than 50% so it would swamp the hospitals. Those patients need so much support in the hospitals' intensive care units. It would just take away all the capacity for the hospitals who were treating those patients.

CUFFE: Some might accuse you of scaremongering?

JAMES: Yes, but we know it can happen and has already happened elsewhere, so all the pieces are in place, if you like, for this so it could well happen.

CUFFE: Currently one of the biggest problems for doctors treating PVL infection is the time it takes to diagnose it. Hospitals have to send a sample to one of two national reference laboratories at Colindale in north London or Glasgow – a process that can take three days or longer. Professor James and his team have developed a diagnostic technique that he believes could save lives.

JAMES: You need very rapid diagnosis that this is a PVL producing strain, because you have to give very specific kinds of antibiotics and other treatments that are trying to reduce the effect of the PVL toxin very quickly otherwise the patient will die. But the current methods are designed just to say is this isolate in this patient MRSA or not? In my way of thinking that is not sufficient now.

CUFFE: So what do you think they need?

JAMES: You should be looking for, amongst all of the Staph Aureus isolates, to say is it MRSA or not, and then is it a PVL producing strain or not, and so that's the minimum information that you need. And preferably you want to do that in two hours rather than three days.

CUFFE: Hugh Pennington is Emeritus Professor of Microbiology at the University of Aberdeen. He calls for a network of diagnostic centres across the UK, because he says the present system is too slow.

PENNINGTON: You can speed it up, the technology is there to do it faster, but a lot of the problem is not so much the actual tests in the lab, it's getting the strain from the patient, getting the strain to the lab, actually even deciding to take the strain from the patient in the first place. It is possible to do these things in hours rather than days, but you get back to the old resource problem. Where are you going to send the strains, how many labs have you got doing it, are the labs too busy to turn it round in three hours rather than three days? These techniques are now getting to the level where you can start to roll them out even in large district general hospitals, so that will take a while, but I think we should be looking at that.

CUFFE: So does Professor Duerdan at the Department of Health agree that – for rapid diagnosis – the UK needs more than two specialist laboratories?

DUERDAN: It doesn't take long to get an answer, because all laboratories are in contact with the Health Protection Agency, they can get the strain isolated locally sent up to one of the reference laboratories and the tests can be done within a day of receiving the organism, so we are trying to speed that up. But at the moment it does need to be done in specialist centres.

CUFFE: But in the most serious cases, this is an infection that could kill you within two hours.

DUERDAN: One of the things about this infection is not to wait and depend upon the laboratory confirmation, but to be able to recognise the clinical pattern that's developing, treat the patient as quickly as possible. And again that's in the guidance we've put out, the particular antibiotics to use and the way in which the patients need to be managed.

CUFFE: Several leading microbiologists have said it's not good enough to only have these two reference laboratories doing the tests. This is technology that is available, it's not that expensive and it could be made available in hospitals across the country.

DUERDAN: Testing for PVL strains needs to be done in a standardised way, it needs to be done in a carefully controlled way, but will become available through other HPA laboratories so that everywhere in the country has access to it.

CUFFE: How soon?

DUERDAN: They're working on rolling this out into their other laboratories at the moment. I can't give you an exact date.

CUFFE: There is a concern that in a way a pattern is being repeated here. When people first talked about hospital MRSA, the Government didn't in a way treat it as a priority. Some say it wasn't taken seriously enough. Now we have the emergence of new strains in the community. Could the same be happening here?

DUERDAN: It is well recognised that enough attention was not paid fifteen to twenty years ago to the emergence and the spread of MRSA in hospitals. We mustn't make those same mistakes, we are taking this seriously. It's why in a much shorter time this has been recognised as a problem and measures put in place to improve our understanding of it.

CUFFE: It's not just the PVL toxin that doctors and scientists are worried about. Many community infections, like those in hospitals, are resistant to antibiotics. Recently the Health Protection Agency urged pharmaceutical companies to spend more money on researching new drugs to replace those that are losing efficacy, and there's a perpetual race to keep up with emerging strains. Earlier this year, Health Protection Scotland reported the first evidence that a new community MRSA strain has crossed from Europe to Britain. What's particularly troubling is that this bug seems to have found a new route into the population.

ACTUALITY OF COWS

CUFFE: There are more pigs and veal calves than humans in this southern part of the Netherlands. In a short drive from Eindhoven, we've passed one brick animal shed after the other, and there are a lot of transporters on the road taking them to market. Four years ago, scientists discovered that these animals were harbouring a strain of MRSA that had never been seen before, and what's worse, it was a strain that could be passed directly to the people who looked after them.

JOOSTEN: This is the shed where we keep calves. We have a thousand calves here in this stable and we have five hundred in another stable.

CUFFE: Theo Joosten rears calves for veal and most of these animals will end up in France or Italy. Last year he tore a ligament doing sport, and when he went into hospital for his operation and had a routine test for MRSA, he was found to be a carrier of the animal strain, which is called ST398. After the operation the wound became infected and it took several courses of treatment before it was cured.

JOOSTEN [VIA INTERPRETER]: I felt very ill, I had a high fever and I think between August and December 2007 I did not even visit the stables in my farm because I felt too ill to do that. Because of all that I could not work, other people had to take over the work, and during this time I seriously considered giving up farming. During my treatment the rest of the family was also tested and all of them except one were found to be MRSA positive, MRSA carriers, and as a result of that the whole family was treated with a nasal ointment and a body wash to see if we could get the family negative again.

CUFFE: Scientists have linked the emergence of this new bug to the use of antibiotics in farming. It's now beginning to have a serious impact on health services in the Netherlands. Anyone connected with animals is isolated on entering hospital, while tests are done for MRSA. Yet when microbiologists like Andreas Voss first identified the new bug, the Public Health Authority didn't take it that seriously.

VOSS: When we started to intensify our research for this animal-related MRSA, people were starting to laugh and say, 'You go ahead and play with your pigs,' and we found out it's not only pigs, it's the pig farmers, it's their families, it's people in contact like veterinarians, like food suppliers, so it's all around who is ever handling pigs. Then it was shown in other animals, mainly cattle, so suddenly it became a national interest.

CUFFE: Has it got into hospitals or is it still a community infection?

VOSS: It started out as a community infection. We do have published a first outbreak on a hospital spread where probably a nurse who was living on a farm and thereby became a carrier transferred the strain to multiple patients, actually causing a small outbreak, so it's now in the hospital too.

CUFFE: Is it always now connected to contact with animals?

VOSS: That's the very disturbing fact. It used to be until last year. Now more recently we see cases where we cannot find any risk factor, which for me is an indication that we have the first cases of community spread.

ACTUALITY OF GRUNDMANN WITH GRAPH

GRUNDMANN: This graph shows us the number of strains that here in the Dutch National Reference Service receives every year, and these are all ...

CUFFE: At the National Institute for Public Health and the Environment near Utrecht, Dr Hajo Grundmann shows me a graph indicating a dramatic rise in animal-related MRSA cases.

GRUNDMANN: Since 2006, since 2007 it actually has increased by 400%, but that's also due to the fact that we are looking for it now far more often and we are actually screening people that are in contact with farm animals, and therefore we find a lot more.

CUFFE: Have you had any cases which have been PVL positive and therefore more virulent?

GRUNDMANN: PVL positive animal-related strains we saw occasionally. It appears that they are not coming from Europe, they may come from further afield, but fortunately we have seen them in very low numbers.

CUFFE: Is that something that you have to monitor and that you worry about as a future possibility?

GRUNDMANN: Absolutely. This is what reference services are all about – to really collect these strains, look at them in detail and see if we find a pattern that could predict PVL or other virulence factors that arrive within *Staphylococcus Aureus* and then inform our population's doctors and hospitals what to do.

CUFFE: In the last two years, the animal strain of MRSA has spread across Europe - to countries like Belgium and France – and it's been found in poultry as well as pigs and calves. Britain doesn't import live animals from the Netherlands and there's no evidence that you can catch the disease from cooked meat, so until this year the UK seemed to have been spared. But in January that changed, with an announcement by the director of the Scottish MRSA reference laboratory, Dr Giles Edwards, that three samples taken from patients in Glasgow had been identified as the ST398 animal strain.

EDWARDS: They'd been sent to us by the diagnostic laboratories from two different hospitals, both in Glasgow, and they sent them to us because they had features which made, they weren't absolutely typical MRSAs.

CUFFE: What was the significance of seeing that strain in the laboratory?

EDWARDS: The significance was that there was the belief that these might be animal associated, might be derived from animals and getting into humans from animals, which is quite common with things like salmonella but very unusual with Staphylococci. So we were interested in knowing if there was an animal-related strain of Staph Aureus in the human population causing infections.

CUFFE: Given the national concern about MRSA, here we have yet another strain. That will surely ring alarm bells?

EDWARDS: I'm sure it will ring alarm bells – and not inappropriately. What we need to do really, to find out how common this and other strains are, is to actually look at people who are not sort of selected by having got nasty infections and going to doctors about them. If you wanted to know more about the distribution of these strains, you would have to not quite swab people at random, but we would have to look at people who were not specially selected.

CUFFE: The Government's Inspector of Microbiology and Infection Control, Brian Duerdan, agrees that the Scottish cases of animal strain MRSA are a significant and worrying development.

DUERDAN: I was very surprised, like all my colleagues, for this strain to be seen out of the blue in three patients in a Scottish hospital. It hasn't been seen anywhere else in the UK and as far as I know there was no linkage of these patients either to the Netherlands or to pig farming or where it had come from. It is a surprise, it is still a conundrum. Like a lot of infectious diseases, there's always something to surprise us.

CUFFE: How are you following up on that discovery?

DUERDAN: The follow-up of what's happened in Scotland is the continued surveillance for strains of MRSA and for PVL strains that are sensitive, that are not MRSA, the sensitive Staph Aureus, and that's part of the heightened surveillance, and so far we have not picked up any other isolates of the Netherlands pig-type strain in this country.

CUFFE: Has any testing been done on a farming population, for instance?

DUERDAN: There hasn't been specific investigation of the populations here, but we have not seen the sort of infections that have occurred in the Netherlands, which would be the indicator that there was some problem in this country.

CUFFE: But other scientists we've spoken to believe the only way to keep track of MRSA and the virulent PVL strain of infection in the community is to carry out large scale surveys, testing a randomised sample rather than relying on hospitals to send swabs when there's a particularly serious infection. Professor Hugh Pennington says the Health Protection Agency is doing what it can with the funds available, but that's just not enough.

PENNINGTON: The technology is actually moving by leaps and bounds and it's getting cheaper and cheaper all the time. I know that the Health Protection Agency people are very good at this, but I just don't think they have the resources to do all the things that they would like to do in terms of really tracking these strains – how they spread, how they spread in hospitals, how they get around in the community, where they come from, all the genetic relationships, all this sort of stuff. This is now more amenable to analysis than it's ever been before. Every day it gets easier to do these studies, but you have to have the people and equipment and the time to analyse the results. I'm just not convinced that the HPA have the resources to do that to the level I would like to see that done.

DUERDAN: Staphylococcus Aureus infection, MRSA infections generally are a priority and the reference laboratories are geared up to deal with them.

CUFFE: Are you satisfied that they have enough skilled manpower and the resources to carry out this work?

DUERDAN: I'm assured by the Health Protection Agency that they are capable of doing this work and they are set up to do it. That's what they're there for. That's part of their job.

CUFFE: Why do you think your colleagues in the profession have their concerns about this then?

DUERDAN: Colleagues are always concerned – have we got the capacity to do the work? We have to ensure that we have that capacity. We have to be able to monitor this and see how it's spreading and also pick up the infections as quickly as we can and deal with them.

CUFFE: The Government's priority has been hospital acquired MRSA and this summer it announced that numbers were beginning to fall. But an easily transmissible community bug that strikes the young and healthy may prove even harder to contain. Professor Hugh Pennington remains worried. What are the implications if we don't do this work?

PENNINGTON: We'll be taken by surprise. New strains will appear, they'll sweep through the country before we really know that they're there, and then we have to do firefighting. We haven't really kept up with the modern technology to the degree we should have done, or to the intensity of work that we should have been doing to address these very very serious problems. The scandal here really is that we know what to do, the technology is there for us to spot these things as they're appearing and we know how to react to them. It'd be quite wrong if we allow these things to develop. And of course history tells us that if we do neglect these bugs, we neglect them at our peril.

SIGNATURE TUNE

