



MRSA – Why treat the symptoms and not the disease?

For debate

The recent debate over MRSA in our community is really getting to the state of the ridiculous. There is no question that this bacterium, which has been around for at least 40 years, is becoming a bigger and bigger menace in hospitals.

Prior to the election, the shadow health secretary, Andrew Lansley, claimed that hospitals are being told to push more patients through beds rather than concentrating on hygiene and this is the cause of the epidemic. He calls for a search and destroy strategy to clean up wards.

The health secretary, Dr John Reid, blames the increased

use of contract cleaners under the last Tory government for the rise in the rates of infection. This is supported by the Public Sector Trades Union. They believe that it is the high input of patients that prevents MRSA and other hospital-acquired infections being tackled effectively. The answer, they feel, is strict hospital hygiene and frequent hand washing, with a higher proportion of single rooms.

Now, we are told that matrons should take charge of cleanliness in hospitals. Despite all the hand wringing and washing, the morbidity and mortality are both in an upward spiral.

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A recent National Audit Office (NAO) report stresses that private hospitals have fewer problems than NHS ones. It does not stress that this is understandable as they treat far less seriously ill patients and we all are aware that many private hospitals send their seriously infected patients to NHS intensive care wards – many of whom require long-term antibiotics. My personal experience with day-care centres confirms that these have even less of a problem and I believe this is in proportion to the use of antibiotics. Surely, nobody would suggest that private hospital staff wash their hands better or more often than NHS staff.

The BBC reports that the UK is the worst in Europe with a Department of Health report stating that in 2003/4 there were 19,311 blood infections, 40% of which involved MRSA strains, bringing us on a level with Greece and above places like Italy, Portugal, France and Spain. The Netherlands and Denmark appear to have success in controlling MRSA using a policy known as 'search and destroy'. This appears to be based on finding and isolating anybody with MRSA; the major thrust of treatment being increased use of alcohol swabs. In the UK, MRSA infection and

colonisation rates remain high and, last year, they killed thousands and cost the NHS a billion pounds.

In April of this year, the *Journal Emerging Infectious Diseases* published an article entitled 'Recurring methicillin resistant *Staphylococcus aureus* infections in a football team'. The source of the infection was the soap shared by the players – so it is possible that the bacterium has learnt to survive on soap and perhaps, one day, it may develop an ability to resist or even utilise alcohol.

Surely, it must be understood that all the above measures treat the symptoms and signs of the disease and ignore the cause. Consequently, as surgeons we have a responsibility to control MRSA wound infections, as these are our problems and not those of the NAO. We do this if we recognise that the basic cause of MRSA needs to be tackled, not help to control what is already there. How to prevent it getting there should be the thrust of our approach.

We have two problems to identify and cure: (i) the immediate problem to curtail infection as quickly as possible; and (ii) to alter any long-established practices which may be enhancing the development and spread of MRSA.

To do this, let us be clear where and how MRSA occurs. MRSA is a hospital infection; there is very little evidence despite 40 years' existence that it is firmly entrenched in the community. So why is it in places where there is the highest level of antisepsis and the greatest intention to control bacteria? The problem is within the hospitals and until we grasp the basic problem of what happens in these hospitals, we will not get on top of this epidemic.

We also have to be aware of some basic microbiological and bacteriological facts:

1. Bacteria generally do not grow one on top of one another. Any student growing bacteria on an agar plate realises they form isolated colonies.
2. Many bacteria that are pathogenic do lose their pathogenic islands or modify them when the need for them disappears. Perhaps here we have an explanation of why MRSA has never entered into the community. The pathogenic island that contains the genes for antibiotic resistance is not needed outside a hospital because the pressures that select MRSA strains against harmless *S. aureus* only occur in the hospital. Outside, the less harmful cousins of MRSA predominate simply because their genetic make-up has an environmental advantage as they do not have to spend time and energy propagating what is now a useless antibiotic-resistant gene. It is well known that, regardless of whether it is *S. aureus* or a *Pseudomonas* spp., if there is an infestation in the ward and it is severe enough, one closes the ward and within 4–6 weeks the infestation passes. This does not mean that the bacteria have disappeared, just that without positive selection, the majority of remaining colonies do not have the antibiotic resistant gene. Only a few residual colonies have; once we environmentally affect them by re-using antibiotics, they once more come to the fore. Thus the major problem is, and has always been, the inappropriate use of antibiotics.

The current problem should be tackled but in a way which will prevent the development of MRSA and other antibiotic-resistant bacteria by not allowing them to develop in a hospital and then trying to get rid of them.

What must happen is to have surgical hospitals which are antibiotic-free and comply with 'novel' standard practices:

1. The hospitals must be stand-alone separate units. Encourage use of day-only centres not attached to larger hospitals.

2. The surgeons must not order, or use, antibiotics on any of their patients.
3. No antibiotics can be used in the hospital.
4. A transfer to a hospital where antibiotics are used must be the way to treat wound infections.
5. The surgeons and staff operating in these hospitals should not be permitted to enter or treat patients in hospitals where antibiotics are used.
6. Continuity of care is something that must be sacrificed in this situation as it is for the patients' benefit.

This is merely isolation on a big scale, but it is the only form of isolation that is likely to work.

My next point is that when Ignaz Semmelweis in the 1850s first suggested we should clean our hands, he did not advocate scrubbing with antiseptics – perhaps he had a point! I think we have to re-look at the bacteriological side of scrubbing prior to surgery. What exactly are we doing? Are we actually killing harmless commensals on our hands to an extent that we are leaving space for other bacteria, such as MRSA strains, to settle? Does our wound preparation do exactly the same thing?

I believe the time has come to re-evaluate the whole concept of scrubbing of hands and even wounds. Perhaps we should be thinking of using probiotics and even dipping our hands into a solution which contains harmless bacteria, which can colonise our skin and prevent the pathogenic ones from settling on it.

In case this is thought an odd suggestion, I refer to an article in *The Times* on 5 December 2004, by Jonathan Wake, science correspondent, regarding dentists. In it, he states that scientists have adopted the: 'friendly bacteria idea to be promoted by the makers of yoghurt to help in the war against dental decay. The use of genetically modified bacteria, which will prevent decay by displacing the germs that cause cavities.' The company making these bacteria has just won approval for a controlled trial on humans. I believe such a revolutionary trial is something we should think of in hospitals. Are our dental colleagues so far ahead of us?

Adopting the first set of measures I believe will ameliorate the problem of MRSA wound infections, and give us time to consider seriously trialing 'good' bacteria to saturate our skins and even the patient's wounds fully prior to surgery to see if they can prevent the settling of pathogenic, antibiotic-resistant bacteria.

MRSA is a surgical problem: we know the cause, let us get it out of our surgical hospitals.