

Letter to the editor

Infection control: another look

Rob Baird MBBS FRACP, Infectious Diseases Physician and Microbiologist
Director of Microbiology, Melbourne Pathology, Collingwood, VIC

To the Editor,

Infection control, or its more appropriate term 'healthcare epidemiology', has made dramatic advances in the last 20 years, with innovations such as universal precautions in 1987 following the HIV awareness of the 1980s, the many good national initiatives, such as AS4187 (1994 and onwards) and the various NH&MRC manuals have laid the groundwork for infection control practice and services.

However, further improvements still need to occur and, if the following issues were addressed, a more efficient and productive system could be in place. Everybody has a 'wish-list' but the following would have wide support and could be managed cost effectively if a controlled strategy was in place.

National infection control surveillance systems

Many authors have identified this problem but it is still not resolved¹. It lacks foresight that Australia has different State based surgical wound surveillance systems that are not directly comparable^{2,3}. This is the infection control equivalent of the various different State railways gauges of 100 years ago. The individual State systems are not directly comparable to each other or to NNIS data; this lack of strategic planning leads to a waste of infection control resources. This is possibly the single biggest waste of infection control time and expertise in Australia's history and we have let it happen without a whimper.

Patient bacterial surveillance

The worldwide problem of increasing bacterial resistance to antibiotics is well known and MRSA (and all its cousins like VISA), VRE and acinetobacter are familiar to infection control personnel⁴. Combined with increasing resistance to pneumococci and *Escherichia coli*, surely a national priority should be nationally available laboratory based bacteria-resistance data. This is currently not funded and the data are not freely available in real time. These

systems could be set up with very small investments of money, yet provide excellent trend data.

The lack of a tertiary training facility, large academic units and competencies for individual practitioners

Infection control personnel include nurses, various medical specialities, epidemiologists and public health trained individuals. The lack of nationally standardised competency assessment and a nationally recognised training course is a hindrance to data collection, analysis and advice to healthcare groups⁵. Some of the research presented at both national and international meetings is not academically rigorous, and is often a repeat of studies that have been previously performed.

The need for a broad based approach to justify the many infection control pronouncements, that are not evidence-based, is long overdue. Many personnel will have been at meetings where discussion on the value of theatre attire, eating in operating theatres and many other topics progresses no further than opinion due to the lack of large evidence-based studies. This would not be allowed in oncology, why so in infection control? National competencies, academic units and coordinated research efforts are all priorities to address the evidence-base of infection control practice.

In addition, our national journal should be available on MEDLINE, so that submitted research can be readily accessed. This is also part of academic recognition of the speciality.

Environmental/equipment surveillance

If we believe that bacteria on the host cause 75% of nosocomial infections, cross infection 24% and equipment less than 1%, the focus on equipment issues by infection control staff is disproportionate to their overall significance⁶. Some examples include the following.

Endoscopy bacteriology: evidence of its usefulness and cost benefit

Endoscopy microbiology is a poor use of resources of time and staff, with little evidence showing the numbers of infections prevented. Current endoscopy cleaning and disinfection practices are adequate and it is very unusual nowadays to have endoscopes implicated as the cause of cross infection in Australia. Endoscope bacteriology now has very little function and should be scrapped. The Gastroenterological Society of Australia guidelines advocating its use are not evidence-based^{7,8}.

Theatre air sampling: evidence of levels and usefulness

Theatre air quality is not the major or even minor cause of most prosthetic surgical infections from skin bacteria. The HEPA filtered air at 20 changes per hour is far cleaner than the patient, the operating theatre staff and the unnecessary traffic of people through theatre. The emphasis on theatre air quality is over placed⁹.

Cost implications of AS4187-2004¹⁰

How many infections have better sterilisation practices prevented and at what cost? Questioning AS4187 is like questioning the value of Mother Teresa or Florence Nightingale. AS4187-1994 was an excellent document, addressed a number of faults in the systems of sterilisation and was long overdue. However, the 2003 edition, with manufacturer representation amongst the authors, has increased the compliance requirements and other costs significantly. Has there been any study at all to show the cost benefit of the new standards in terms of infections prevented? The next version will undoubtedly be more stringent, as standards are not usually reduced. It is time *cost justifications were considered when re-writing standards*.

Fortunately, sterilisation issues are now rarely the cause of infections, but again we have an undue emphasis on equipment issues rather than the human factors which are many orders of magnitude more likely to be a factor⁶.

Hand hygiene promotion

This has been a fantastic infection control initiative and a demonstration of how effective an intervention can be. Issues with hand hygiene disinfectants remain concerning due to their lack of sporicidal activity¹¹. This is important if *Clostridium difficile* becomes established in Australia as it is overseas¹¹. There is a need for long-term follow-up and the continuation of publication of results.

Conclusion

This list of issues is by no means exhaustive. There are many other examples that are time consuming and expensive. Surely cost analysis and some idea of how many infections will be prevented should be part of the introduction of new procedures and regulations. Perhaps two questions could be asked of each 'new' infection control intervention. How many infections will this prevent? What will it cost?

Host and human factors are more important than equipment when dealing with infection control issues. Infection control practice needs to regain its balance. Infection control: it is in your hands.

References

1. Spelman D. Hospital-acquired infections. *Med J Aust* 2002; 176:286-291.
2. McLaws M-L, Irwig LM, Mock P, Berry G & Gold J. Predictors of surgical wound infection in Australia: a national study. *Med J Aust* 1988; 149:591-595.
3. Auricht E, Borgert J, Butler M, Cadwallader H, Collignon P, Cooper C *et al*. Uniform national denominator definitions for infection control indicators: surgical site infection and health care associated bloodstream infections. *Aust Infect Control* 2001; 6(2):47-51.
4. The Joint Expert Technical Advisory Committee on Antibiotic Resistance (JETACAR). *The Use of Antibiotics in Food-producing Animals: Antibiotic-resistant Bacteria in Animals and Humans*. Canberra: Office of National Health and Medical Research, Oct 1999.
5. Murphy C & McLaws M-L. Credentialing, diversity and professional recognition in foundations for an Australian infection control career path. *Am J Infect Control* 1999; 27:240-246.
6. McDonald M, Spelman D, Sexton D. Infections acquired in hospital. In: Yung, McDonald, Spelman, Street and Johnson. *Infectious Diseases. A Clinical Approach*. Cherry Print, Mount Waverley, Victoria 2001: 397-412
7. Cowen A, Jones D & Wardle E. *Guidelines: Infection Control in Endoscopy* (2nd ed). Gastroenterological Society of Australia, 2003.
8. Collignon PJ & Graham E. Cleaning and disinfection of endoscopes: have there been recent improvements? *Med J Aust* 1991; 154(6):391-2, 394.
9. Jowitt D & Morris AJ. The questionable value of microbiological sampling when commissioning new operating theatres. *J Hosp Infect* 2005; 59(3):267-8.
10. Standards Australia AS/NZ4187-2003. *Cleaning, Disinfecting and Sterilizing Reusable Medical and Surgical Instruments and Equipment, and Maintenance of Associated Environments in Health Care Facilities*.
11. Gerding D. Review and update of *Clostridium difficile*. Session 3205 presented at the 2006 Annual Meeting of the Association for Professionals in Infection Control and Epidemiology. Tampa, FL, USA. 10-14 June 2006.