



Are we prepared for the revolution in diagnostic technology?

The advances in diagnostic technology have been significant over the past 3 decades. The introduction of the enzyme linked immunoabsorbent assay (ELISA) revolutionised serological assays and enabled large scale automation of serological testing. Equally, the introduction of the polymerase chain reaction (PCR) enabled the amplification of DNA and RNA gene segments and the detection of infectious agents with high sensitivity and specificity.

However, these techniques raised the expectations of clients submitting specimens for analysis for more rapid, less expensive and for the introduction of portable tests. Can one afford to wait 48 hours for a specific anthrax diagnosis when a 'white powder' could be a bioterrorist weapon? The emergency services need to know what to do with the potential victims and whether they and the site need to be decontaminated. The medical authorities need to know if they need to commence antibiotic treatment. A 48 hour delay might prove fatal for some of the 'victims'. Further, the press and the public are seeking a rapid response.

Are there suitable hand-held devices that can be used at the site of the incident by emergency services personnel? What is



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the quality control for such devices and will they lead to many false positives or false negatives? What is the role of the diagnostic laboratory in this response?

Then there is the debate on whether presumptive results can be supplied by the diagnostic laboratory and the manner in which authorities interpret or misinterpret such results. An example might be the response to the 'white powder' incidents at the Indonesian Embassy in Canberra in 2005.

In addition to the emergency response issues, there is the move to more and more point of care and simple diagnostic test kits that will give results within 30 minutes. In addition, tests that will diagnose many infections simultaneously (multiplex tests) are starting to appear. Many of these are in development and many are already appearing on the market. However, questions must be asked. What are the technologies behind these tests, are they reliable and are they quality controlled? Will the diagnostic microbiology have a role in the future and what will that role be?

As microbiologists, these are issues that we all have to face and to address. But who is really addressing this in a climate of under-funding and potential staff cuts? And where will the new advances in diagnostic technology lead us over the next decade? This is a looming issue that laboratories, microbiologists, the Australian Society for Microbiology and the Government need to address. But is there any evidence that these issues are being addressed and the laboratories of the future being designed? And who can afford these advances in technology?

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