

## Management of infectious diseases

*Announcing a series of practice updates in this rapidly changing field*

FEW AREAS OF MEDICINE have undergone greater change during the past 50 years than infectious diseases. The optimism and clinical confidence associated with the development of antimicrobial agents from the 1940s onwards has been tempered by the emergence of new diseases, such as AIDS and infections associated with transplantation and cancer therapy, and by the widespread development of antibiotic resistance. Despite many advances, infectious diseases continue to account for about a quarter of all deaths worldwide<sup>1</sup> (Box 1). Furthermore, a security dimension has emerged. A recent report on *The global infectious disease threat and its implications for the United States* from the US Central Intelligence Agency (CIA) analysed this “non-traditional threat”: *The dramatic increase in drug-resistant microbes, combined with the lag in development of new antibiotics, the rise of megacities with severe health care deficiencies, environmental degradation, and the growing ease and frequency of cross-border movements of people and produce have greatly facilitated the spread of infectious diseases.*<sup>2</sup>

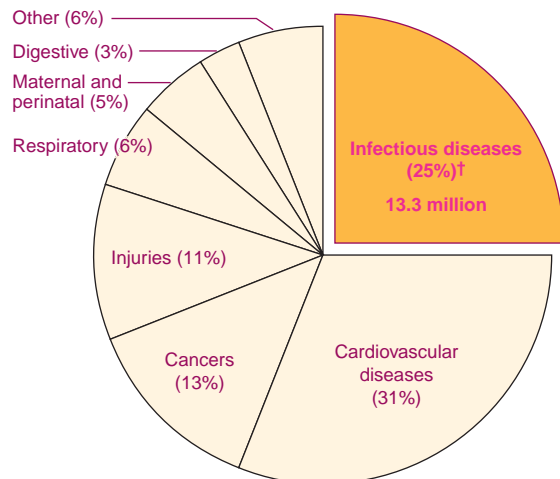
Clinicians today require more knowledge of infectious diseases than ever before.

In this issue of the Journal (page 229), we begin *MJA Practice Essentials — Infectious Diseases*. This series cannot hope to cover all new aspects of infectious disease. Instead, we aim to discuss clinically important areas where recent advances have occurred in diagnosis or treatment, new diseases have been identified, or healthcare changes have necessitated new clinical approaches to “old” diseases (eg, endocarditis and cellulitis) (Box 2). Some important topics, such as HIV infection and bioterrorism, are beyond the scope of this series. Wherever possible, recommendations are evidence-based, with the evidence graded according to the system of the National Health and Medical Research Council<sup>3</sup> (Box 3).

As with much of medicine, management of infectious diseases is affected by the competing needs for prompt empirical treatment and for a definite diagnosis to allow focused therapy. Advances in diagnostic technology have enhanced the possibilities for rapid, accurate diagnosis of conditions such as sexually transmitted diseases, deep-seated infections such as endocarditis and osteomyelitis, and common viral infections.<sup>4</sup> However, identification of bacterial pathogens and their antibiotic susceptibilities still requires careful specimen collection and slow, generally labour-intensive, microbiological culture methods. Furthermore, many rapid diagnostic tests are sufficiently expensive that initial empirical “shot-gun” therapy without investigation can seem attractive. As effective antiviral agents become ever more readily available, many of the issues faced with antibiotics, such as rapid diagnosis, susceptibility testing and dosage monitoring, must also be considered.

Current administrative pressure for shorter hospital stays and fewer outpatient or general practitioner consultations

**1: Causes of death worldwide in 1998 (% of all deaths)\***



\* Adapted from World Health Organization leading causes of death for 1998 (total of 53.9 million deaths from all causes worldwide).<sup>1</sup>

† Cancers, cardiovascular, respiratory and digestive deaths can also be caused by infections, further raising the percentage of deaths caused by infectious diseases.

appears to encourage use of broad-spectrum empirical antibiotic and antiviral therapy, rather than careful investigation, review and directed therapy. Combined with the community’s apparent ready acceptance or expectation of antibiotic therapy, this may explain Australia’s ranking as the world’s second-largest per-capita consumer of antibiotics (after France).<sup>5-7</sup> Similarly, in the US and Canada, it is estimated that about 50% of all outpatient prescriptions for antibiotics are unnecessary.<sup>7,8</sup> Antibiotic resistance is now emerging as a key challenge to many healthcare programs. Indeed, developments such as multidrug-resistant tuberculosis and resistance among common pathogens in develop-

### 2: Infectious diseases series contents

- Infections in pregnancy
- Hospital-acquired infections
- Community-acquired pneumonia
- Acute community-acquired meningitis and encephalitis
- Hospital-in-the-home
- Emerging viral infections in Australia
- Sexually transmitted infections
- Soft tissue, bone and joint infections
- Infections in the returned traveller
- Herpes simplex and varicella
- Antibiotic resistance

### 3: Levels of evidence

Throughout the series, evidence is graded using the system of the National Health and Medical Research Council:<sup>3</sup>

- E1** Level I: Evidence obtained from a systematic review of all relevant randomised controlled trials.
- E2** Level II: Evidence obtained from at least one properly designed randomised controlled trial.
- E3<sub>1</sub>** Level III-1: Evidence obtained from well-designed pseudo-randomised controlled trials (alternate allocation or some other method).
- E3<sub>2</sub>** Level III-2: Evidence obtained from comparative studies (including systematic reviews of such studies), with concurrent controls and allocation not randomised, cohort studies, case-control studies, or interrupted time series with a control group.
- E3<sub>3</sub>** Level III-3: Evidence obtained from comparative studies with historical control, two or more single-arm studies, or interrupted time series without a parallel control group.
- E4** Level IV: Evidence obtained from case series, either post-test or pre-test/post-test.

ing countries (eg, *Salmonella* and *Shigella* spp. and malaria) threaten to totally undermine many current healthcare gains.<sup>7</sup> It is therefore essential that all Australian clinicians accept the responsibility that goes with the privilege of prescribing antimicrobial agents.

In both developed and developing regions, hospital-acquired infections are increasingly recognised as a major contributor to healthcare morbidity and costs.<sup>7</sup> For this reason, good hospital infection control practices are no longer simply a concern for microbiologists and infection control committees, but must be understood by all staff, including hospital administrators — even if the latter consider them merely as “risk management”. Few health issues attract more media attention than nosocomial infection.

Current training about infectious diseases appears relatively limited among some medical personnel. A recent review of the general training curricula of the 12 Australian medical colleges found that five (Anaesthetists, Ophthalmologists, Medical Administrators, Radiologists and Psychiatrists) did not mention antibiotics at all.<sup>6</sup> Similarly, among

the 19 subspecialty groups in the Royal Australasian College of Physicians, only two specify the need for training in antibiotics (Thoracic Medicine and Infectious Diseases).<sup>6</sup>

The challenge for Australian clinicians in the current era of “information overload” is to improve the appropriateness of investigations and treatment of infectious diseases to avoid unnecessary antimicrobial therapy.<sup>6,7,9,10</sup> Thus, *MJA Practice Essentials — Infectious Diseases* focuses on practical clinical problems that are either common or are sufficiently acute or severe that early recognition is important to limit morbidity or restrict disease spread. Whenever possible, recommendations are evidence-based.

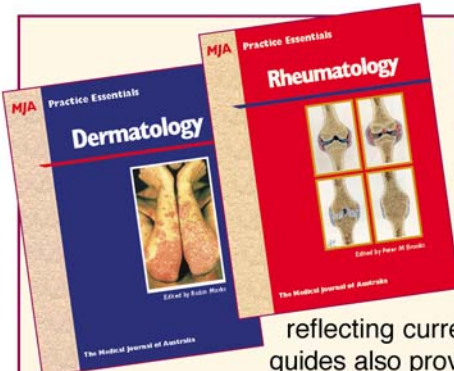
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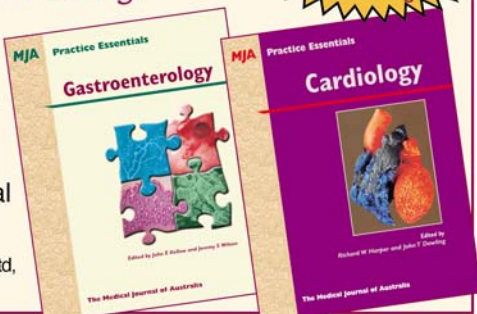
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