

# How education influences prescribing at John Hunter Hospital

*Jennifer MacDonald, Deputy Director, Pharmacy, and John Ferguson, Microbiology and Infectious Diseases, John Hunter Hospital, Newcastle, NSW*

## The problem

The overuse of broad spectrum antibiotics, including the 'third generation' cephalosporins such as cefotaxime or ceftriaxone, has been linked to the emergence of multiresistant organisms.<sup>1</sup> These include vancomycin resistant enterococci (VRE), methicillin resistant *Staphylococcus aureus* (MRSA) and an increase in the incidence of opportunistic pathogens such as *Clostridium difficile*.<sup>2</sup> Such an increase in nosocomial *C. difficile* was noted in John Hunter Hospital, a tertiary referral centre, towards the end of 1997. If not clinically warranted these cephalosporins are often a more expensive option for treatment than alternatives.

## The strategy

Educational initiatives designed to alter prescribing habits can be more effective and better accepted in many settings than a totally proscriptive approach.

The strategy used at the John Hunter Hospital involved a multifaceted approach. A working party, looking specifically at the use of anti-infective drugs, was formed to encourage compliance with the prescribing guidelines published in the Antibiotic Guidelines<sup>3</sup> and those developed specifically for our hospital environment. Other interventions included:

- individual detailing of prescribers when inappropriate use was identified by ward pharmacists
- educational presentations to clinical units such as Emergency, Intensive Care and Respiratory Medicine
- the development and promotion of a consensus guideline which reduced the role of cephalosporins in management of community- and hospital-acquired pneumonia
- publicity of the hospital's anti-infective guidelines through the drug bulletin and on the intranet
- education sessions aimed at junior medical officers and interns
- presentations during grand rounds and Quality Week.

## The results

Antibiotic usage relative to hospital activity confirmed the success in changing prescribing habits.

The use of third generation cephalosporins dropped markedly from an average of 40.9 DDD\*/1000 patient days in 1997 to 27.9 for 1998–2000 (September) (incidence rate ratio 0.68, 95% CI 0.66–0.70).

In 1997 the average number of nosocomial *C. difficile* infections was 9.8 cases per 10<sup>5</sup> patient days. For the period 1998 to 2000 (September) the average fell to 4.0 cases per 10<sup>5</sup> patient days (incidence rate ratio 0.41, 95% CI 0.21–0.80).

Whilst this reduction may be due to many causes, the more appropriate use of broad spectrum anti-infective drugs may be a contributory factor.

In the 12 month period from January 1998, when the first education intervention commenced, the decreased use of cephalosporins was reflected in a greater than \$55 000 saving over the previous year. This reduction has been sustained over the three years since the first intervention by a continuing education and awareness process. A drug utilisation review cycle has been established involving twice yearly auditing of third generation cephalosporin prescribing, feedback and education. There has been a consistent improvement in the level of 'appropriate' prescribing of third generation cephalosporins as assessed by the infectious diseases team, with each audit.

\* DDD = defined daily doses

## ACKNOWLEDGEMENT

The authors wish to acknowledge the Hunter Infection Prevention and Control Unit for providing information on *Clostridium difficile*.

## REFERENCES

1. Gaynes R, Monnet D. The contribution of antibiotic use on the frequency of antibiotic resistance in hospitals [review]. Ciba Foundation Symposium 1997;207:47–60.
2. Zadik PM, Moore AP. Antimicrobial associations of an outbreak of diarrhoea due to *Clostridium difficile*. J Hosp Infect 1998;39:189–93.
3. Writing Group for Therapeutic Guidelines: Antibiotic. Therapeutic Guidelines: Antibiotic. Version 11. Melbourne: Therapeutic Guidelines Limited; 2000.

E-mail: [jmacdonald@hunter.health.nsw.gov.au](mailto:jmacdonald@hunter.health.nsw.gov.au)  
[john.ferguson@hunter.health.nsw.gov.au](mailto:john.ferguson@hunter.health.nsw.gov.au)