A snapshot of antimicrobial use in New Zealand hospitals—a comparison to Australian and English data

Eamon Duffy, Sharon Gardiner, Tanya du Plessis, Kristen Bondesio, Brijul Morar

Antimicrobial stewardship is recognised internationally as a key strategy to help combat the risk to health from increasing antimicrobial resistance. The primary aim of stewardship programmes is to improve the quality of antimicrobial use (i.e., right antimicrobial at the right dose via the right route for the right duration) as well as monitor the quantity of antimicrobial consumption in both hospital and community settings. The Australian government funds both quality and quantity based approaches to monitoring antimicrobial use in hospitals. The National Antimicrobial Prescribing Survey (NAPS), run by the Australian Commission on Safety and Quality in Healthcare, is a good example of point prevalence, whereas the National Antimicrobial Utilisation Surveillance Program (NAUSP) is a centrally-run quantity survey. At present there is no central government support for routine monitoring of antimicrobial use in New Zealand.

Cooke et al (2014) recently published a longitudinal analysis of 5 years (2009—2013) of antimicrobial use from 158 National Health Service (NHS) Trusts in the UK. They also included a cross-sectional analysis of one year (April 2012—March 2013) focusing on four key antimicrobial agents/classes (fluoroquinolones, cephalosporins, carbapenems and piperacillin/tazobactam). The tenth annual report of the NAUSP in Australia has also been published recently and includes data from a similar time frame (July 2012—June 2013). We present comparative figures from five New Zealand District Health Boards (DHBs)—Auckland, Canterbury, Capital and Coast, Counties-Manukau and Waitemata—with dedicated full-time equivalent antimicrobial pharmacists (Table 1). The data are presented as Defined Daily Doses (DDDs) per 1,000 occupied bed days, an international World Health Organization (WHO) standard for measurement of medication usage. The time frame studied is as for the English study (April 2012—March 2013), and inclusion and exclusion criteria essentially match these original papers. That is, only antibacterial agents belonging to the British National Formulary class 5.1 that were issued or dispensed to wards (imprest) or inpatients were included. Paediatric, outpatient, psychiatric and day surgery issues were excluded.

Total antibacterial consumption showed only slight variation between the five DHBs, with Counties-Manukau using the least, and Capital and Coast the most at 704 and 798 DDDs/1,000 occupied bed days, respectively (Table 1). The three Auckland regional DHBs showed similar usage figures (704–735 DDD/1,000 occupied bed days). All DHBs used markedly lower amounts of total antibacterials than both the Australian and English national averages (~940 and 1,300, respectively).

The type of antimicrobial agent used varied between the DHBs. Cephalosporin use across New Zealand varied 2-fold, and was much higher than in England where use of this antimicrobial class has been restricted following introduction of government targets to reduce the incidence of *C. difficile* disease. Consequently, piperacillin-tazobactam (and likely other beta-lactam classes) is used more frequently...
in England than in New Zealand. The use of both quinolones and carbapenems was generally less in New Zealand than the other two countries, although quinolone consumption in Canterbury DHB was comparable to that seen in England. The variation observed between DHBs will reflect a mix of factors, including differences in local antimicrobial prescribing policies and guidelines, and case mix. It should also be recognised that the picture presented here is incomplete, with the antimicrobials chosen for comparison with the English study.

A recent survey of retail and hospital pharmacy sales data from 71 countries suggested that New Zealand, like Australia, had “very high antibiotic use” (~70 and 87 units per person in 2010, respectively) compared with other high-income countries, like the Netherlands and France (~8 and 23 units per person, respectively). A local study that focused on community antimicrobial consumption also suggested high use in New Zealand compared with many European countries. The hospital data presented here is encouraging with the mean total antibacterial use in five of our 20 DHBs (~735 DDD/1,000 occupied bed days) considerably less than observed in Australian and English hospitals. However, it remains higher than reported in countries such as France, Switzerland and Sweden at 633, 540 and 329 DDDs/1,000 occupied bed days, respectively indicating that there is considerable room for improvement.

In order to monitor our usage of antimicrobials across the country, a systematic process for collection and reporting of data should be implemented at a central government level. Currently, extraction and clean-up antimicrobial usage data for calculation of DDDs is difficult depending on the available data systems (pharmacy, prescribing and bed management), personnel and IT support. The national introduction of ePrescribing may enable faster data extraction, depending on the data warehousing and reporting capabilities that DHBs invest in. Comparison and benchmarking across all 20 DHBs and against other countries should be encouraged to make further gains in our AMS efforts.

Table 1: Antibacterial use (DDD/1000 occupied bed days) in New Zealand, Australia and England (2012–2013)

<table>
<thead>
<tr>
<th>2012–2013 Antibacterial use (DDD/1,000 occupied bed days)</th>
<th>New Zealand</th>
<th>Australia1</th>
<th>England2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ADHB*</td>
<td>CDHBb</td>
<td>CCDHBc</td>
</tr>
<tr>
<td>Total antibacterials</td>
<td>735</td>
<td>707</td>
<td>798</td>
</tr>
<tr>
<td>Quinolones</td>
<td>20</td>
<td>48</td>
<td>28</td>
</tr>
<tr>
<td>Cephalosporins</td>
<td>125</td>
<td>120</td>
<td>197</td>
</tr>
<tr>
<td>Carbapenems</td>
<td>21</td>
<td>14</td>
<td>20</td>
</tr>
<tr>
<td>Piperacillin-tazobactam</td>
<td>1.6</td>
<td>8</td>
<td>19</td>
</tr>
</tbody>
</table>

Comprised Auckland City Hospital, Christchurch, Christchurch Women’s, Burwood and The Princess Margaret Hospitals, Wellington and Kenepuru Hospital, Middlemore Hospital, and North Shore and Waitakere Hospitals.
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REFERENCES: