Role of the pharmacist in antimicrobial stewardship

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Background

Health care acquired infection (HAI) a major patient safety issue

- Death rate 2-fold higher in patients with resistant infections
- Rates of resistance correlate with quantity antimicrobial usage
- Some antimicrobials promote resistance
- 25-50% antimicrobial use inappropriate

NSW patients at greater risk of lethal infection

A spokesman for the NSW Minister for Health, John Hargreaves, who repeated the minister’s opposition to pharmaceutical advertising, said that reducing the use of antibiotics and reducing hospital-acquired infections was one of the state’s top health priority. He said that the number of deaths in patients in NSW with HAI and the ACT had found that rates of resistance correlate with quantity antimicrobial usage.
Background

New antimicrobial approvals by FDA → antibiotics

Source: http://www.idsociety.org/badbugsnodrugs.html
Background

HAI program—Commission priority

1. HAI surveillance
2. Clinical Capacity
3. National infection control guidelines
4. National hand hygiene
5. Antimicrobial stewardship
   • Antimicrobial Stewardship Committee
   • Role of antimicrobial stewardship in hospitals
Antimicrobial stewardship

“..an ongoing effort by health care institutions to optimise antimicrobial use ..in order to improve patient outcomes, ensure cost effective therapy and reduce adverse sequelae of antimicrobial use (including resistance)”.


Aim: change prescribing behaviour.
Antimicrobial stewardship

Multidisciplinary, multifaceted
Successful programs:

• Improve appropriate antimicrobial use
  22 – 36% ↓ in antimicrobial use¹

• ↓ institutional resistance rates

• ↓ health care costs
  US$200K – 900K annual savings
  (Smaller and large teaching hospitals)¹

Dellit TH et al Infectious Diseases Society of America and Society of Healthcare Epidemiology of America guidelines for developing an institutional program to enhance antimicrobial stewardship CID 2007;44:159-77
Identify elements of antimicrobial management programs where there is evidence pharmacists have an important role.
Method

- Review of literature on pharmacists involvement in antimicrobial stewardship activities
- Discussions held with infectious diseases pharmacists and doctors
- Recommendations from national workshop reviewed
- Evidence based strategies identified
- Strategies incorporated into national guidance document
The Role of Antimicrobial Management Programs in Optimizing Antibiotic Prescribing within Hospitals

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Managing serious infections is a balance between providing timely and appropriate broad-spectrum empirical therapy for individual patients, which has been consistently shown to improve outcomes, and reducing unnecessary use of antimicrobial agents, which may contribute to the development of antimicrobial resistance. To control the spread of antimicrobial resistance, hospitals commonly implement programs designed to optimize antimicrobial use, supported by infection control measures. Hospital-based antimicrobial management programs—also called "antimicrobial stewardship programs"—are primarily based on education coupled with a "front-end" approach (i.e., restricting the availability of selected antimicrobial agents) or a "back-end" approach (i.e., reviewing broad-spectrum empirical therapy and then streamlining or discontinuing therapy, as indicated), on the basis of evidence and consensus. Antimicrobial stewardship programs are effective in reducing costs, improving outcomes, and reducing the emergence of resistant organisms.

Antimicrobial prescribing
A summary of best practice

Objective
To provide a framework for trusts to review their antimicrobial prescribing practice in order to ensure the safe and appropriate prescribing of antimicrobials.

This framework is aimed at:
- directors of infection prevention and control
- drug and therapeutic committee chairs
- consultant medical microbiologists and infectious diseases physicians
- pharmacists
- clinical directors

to help them develop their antimicrobial prescribing strategies and policies.
Antimicrobial Stewardship Programs in Health Care Systems

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Clin Micro Rev (2005): 18; 638

Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America Guidelines for Developing an Institutional Program to Enhance Antimicrobial Stewardship

Timothy H. Dellit,1 Robert C. Owens,2 John E. McGowan, Jr.,3 Dale N. Gerding,4 Robert A. Weinstein,5
John P. Burke,6 W. Charles Huskins,7 David L. Paterson,8 Neil O. Fishman,9 Christopher F. Carpenter,10 P. J. Brennan,9
Marianne Billeter,11 and Thomas M. Hooton12

CID (2007): 44; 159
Results

Strongest evidence

- Prospective audit with intervention & feedback to the prescriber by ID clinicians / pharmacists/AS Team (A = good evidence)
  - ↓ effect on inappropriate use & cost
  - ↓ *C. difficile*, resistant enterobacteriaceae

- Formulary restriction and pre-approval of specific agents
  - immediate effect on use & cost (A)
  - long term impact on resistance (B = moderate evidence)
Results

• Education to change prescribing practice
  – in combination with other strategies (A)
  – alone / on its own (B)

• Evidence-based guidelines & clinical pathways incorporating local micro & resistance patterns (A)
Results

Point of care interventions

• Streamlining or de-escalation of therapy on basis of micro culture (A)

• Dose optimisation based on: patient characteristics, site of infection, pharmacodynamics/kinetics (A)

• Systematic switch from IV to oral therapy (A)
Electronic antibiotic stewardship—reduced consumption of broad-spectrum antibiotics using a computerized antimicrobial approval system in a hospital setting

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Discussion

Roles of pharmacists?

“When considering RCT, the data show that in 83% (10/12) of the studies, pharmacists’ interventions have positive impacts on the effective and adequate use of antibiotics. Evidence of a positive impacts on clinical and economic outcomes exists but is still sparse.”

Clinical and economic outcomes of pharmaceutical services related to antibiotic use: a literature review

Vera von Gunten · Jean-Philippe Reymond · Johnny Bencey

Pharmacy World Sci (2007) 29: 146

AUSTRALIAN COMMISSION ON SAFETY AND QUALITY IN HEALTHCARE
Roles for pharmacists

- Core member of antimicrobial stewardship team with ID Physician/clinical microbiologist (A)
- Providing expert advice and education
- Attending ward rounds, review and feedback
- Liaising with:
  - Microbiology staff
  - Hospital committees – D&T, infection control
Roles for pharmacists

- Participating in the governance of antimicrobials
  - policy development, prescribing guidelines

- Supporting and maintaining formulary and approval systems including electronic systems

- Monitoring and reporting on usage data
  - auditing compliance with policy/guidelines
  - DUEs and QUM indicators

- Research related to antimicrobial stewardship.
Pharmacists are essential for effective antimicrobial stewardship. Pharmacists can play an important role in:

- Optimising antimicrobial drug usage
- Controlling development of antimicrobial resistance
- Reducing morbidity, mortality and costs of inappropriate antimicrobial use.
Australian Commission on Safety and Quality in Health Care

www.safetyandquality.gov.au