Antimicrobial Stewardship Interventions

Thinking Inside and Outside the Box

Keith W. Hamilton, MD*, Neil O. Fishman, MD

KEYWORDS

• Antimicrobial stewardship • Penicillin skin testing • Ward rounds
• Transitions in care • End of life • Multidisciplinary rounds

KEY POINTS

- Many health care facilities do not have antimicrobial stewardship programs in place.
- Antimicrobial stewardship ward rounds offer an efficient way to improve the acceptance of stewardship recommendations.
- Patients that report penicillin allergies often receive suboptimal treatment for infectious conditions so performing interventions to better identify those patients with true allergies, including penicillin skin testing, offer promise to providing more optimal care.
- Patient transitions in care from one health care setting to another result in errors and complications; therefore, improved antimicrobial stewardship in these transitions is essential.
- In addition to promoting centralized antimicrobial stewardship programs, leaders in stewardship should also promote judicious antimicrobial prescribing practices by all providers.

INTRODUCTION

Professional societies call for implementation of antimicrobial stewardship in all health care facilities, and provide detailed descriptions of optimal components and implementation strategies (**Table 1**).[1] However, less than 50% of acute and long-term care facilities in the United States perform regular stewardship activities.[2,3] The degrees to which these activities are performed are somewhat variable, and often proportional to hospital size and resources. It is not always clear how much impact these activities have on inappropriate antimicrobial prescribing practices. The most common barriers to implementation of stewardship interventions include lack of personnel, lack of financial resources, opposition from prescribers, and resistance from administration.[3] Because of the gap between guidelines and practice, health

Disclosures: Neither author has anything to disclose.
Healthcare Epidemiology, Infection Prevention and Control, Hospital of the University of Pennsylvania, Suite 101 Penn Tower, One Convention Avenue, Philadelphia, PA 19104, USA
* Corresponding author.
E-mail address: Keith.Hamilton@uphs.upenn.edu

Infect Dis Clin N Am 28 (2014) 301–313
http://dx.doi.org/10.1016/j.idc.2014.01.003 **id.theclinics.com**
0891-5520/14/$ – see front matter

Table 1
Optimal components of a successful antimicrobial stewardship program

Strategies	Components
Antimicrobial stewardship team	Hospital epidemiologist Clinical pharmacist with infectious diseases training Microbiologist Infection control practitioner Information technology specialist
Collaborative committees	Infection control committee Pharmacy and therapeutics committee Quality assurance Patient safety
Measurement capabilities	Information systems capable of measuring antimicrobial use Computer-based surveillance
Stewardship strategies	Preprescription authorization of select antimicrobial agents Prospective audit of antimicrobial prescriptions with feedback to prescribers
Supplemental strategies	Education Guideline development Specialized antimicrobial order forms Streamlining based on clinical and laboratory data Dose optimization Parenteral to oral conversion

care providers need to develop ways to leverage available resources and personnel to build and enhance antimicrobial stewardship programs, and to broaden the scope of antimicrobial stewardship.

To create a successful antimicrobial stewardship program, health care facilities, ambulatory practices, and patient care units need not fulfill all of the ideal components of a centralized stewardship program, but instead should focus on exploiting available assets most efficiently and effectively. Innovative strategies to accomplish these goals can take a variety of forms, ranging from advanced electronic alert systems to more simple interventions such as ward rounds with the antimicrobial stewardship team. These innovations can improve the efficiency and effectiveness of antimicrobial stewardship interventions, and can make antimicrobial stewardship a more universal and successful practice in all health care settings.

ANTIMICROBIAL STEWARDSHIP WARD ROUNDS

Many health care facilities have moved from a more tightly restricted system requiring preprescription authorization to a model that incorporates less restricted antimicrobial use up front but coupled with prospective audit and feedback, also know as postprescription review and feedback. Prospective audit and feedback to providers can be an effective method to improve judicious antimicrobial use. Many studies have shown significant reductions in inappropriate antimicrobial use, increases in cost savings, reductions in *Clostridium difficile* infection, and reductions in nosocomial infections with drug-resistant organisms.[4–7]

Many health care facilities performing prospective audit and feedback use phone calls or electronic messaging to deliver immediate feedback to prescribers.[8] Because factors that affect antimicrobial prescribing are complex, prospective audit is often not straightforward, and feedback to prescribers can be difficult and, therefore,