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Cheston B. Cunha	
Antimicrobial stewardship involves optimizing antibiotic use while using cost-effective interventions to minimize antibiotic resistance and control <i>Clostridium difficile</i> . An effective hospital-wide antimicrobial stewardship program (ASP) should be led by an infectious disease (ID) physician. The ASP team needs full and ongoing financial support for the ASP from the hospital administration. The ID clinician leader should have special expertise in various aspects of antimicrobial therapy, that is, pharmacokinetics, resistance, pharmacoeconomics, and <i>C difficile</i> . The ASP ID team leader and ID-trained clinical pharmacist staff are responsible for customizing ASP interventions to the hospital's unique set of antibiotic use-related concerns.	
Antimicrobial Stewardship and Antimicrobial Resistance	805
Louis B. Rice	
Antimicrobial stewardship programs aim to reduce costs, optimize therapeutic outcomes, and reduce antimicrobial resistance. Reductions of antimicrobial resistance are the most elusive because emergence and spread of resistant bacteria involves antimicrobial selective pressure and lapses in infection control techniques. The relationship between antimicrobial usage and resistance is not always direct. The understanding of which techniques are most effective is limited because many studies are descriptive or quasi-experimental. Recent meta-analyses or systematic reviews of stewardship programs offer encouragement that some interventions reduce overall antimicrobial selective pressure and, where associated with infection control interventions, affect resistance rates in individual institutions.	
Antimicrobial Resistance: An Antimicrobial/Diagnostic Stewardship and Infection Prevention Approach	819
Edward Joel Septimus	
Antimicrobial resistance (AR) is one of the most serious public health threats today, which has been accelerated by the overuse and misuse of	

antimicrobials in humans and animals plus inadequate infection prevention. Numerous studies have shown a relationship between antimicrobial use and resistance. Antimicrobial stewardship (AS) programs have been shown to improve patient outcomes, reduce antimicrobial adverse events, and decrease AR. AS programs, when implemented alongside infection control measures, especially hand-hygiene interventions, were more effective than implementation of AS alone. Targeted coordination and prevention strategies are critical to stopping the spread of multidrug-resistant organisms.

Antibiotic Stewardship: Strategies to Minimize Antibiotic Resistance While Maximizing Antibiotic Effectiveness

831

Cheston B. Cunha and Steven M. Opal

Empiric therapy of the septic patient in the hospital is challenging. Antibiotic stewardship is concerned with optimizing antibiotic use and minimizing resistance. Clinicians should avoid overcovering and overtreating colonizing organisms in respiratory secretions and urinary catheters. Empiric therapy should take into account the prevalence of multidrug-resistant organisms in the hospital setting. The most effective resistance prevention strategy is to preferentially select a low resistance potential antibiotic, which should be administered in the highest possible dose without toxicity for the shortest duration to eliminate the infection.

Creative Collaborations in Antimicrobial Stewardship: Using the Centers for Disease Control and Prevention's Core Elements as Your Guide

845

Priya Nori, Yi Guo, and Belinda Ostrowsky

Antimicrobial stewardship program (ASP) success and growth rely on recurring collaborations with partners within the health care system, such as administration, clinical services, infection prevention, pharmacy, the medical school, and microbiology. These collaborations present valuable opportunities for development of hospital policies, institutional guidelines, and educational curriculum. External opportunities for collaboration may be less frequent but equally valuable. These collaborations are facilitated by health system partnerships with national quality organizations, neighboring ASPs, and the Department of Health. All collaborations present novel opportunities for policy development, research initiatives, and expanding the regional ASP footprint.

Role of Education in Antimicrobial Stewardship

855

Inge C. Gyssens

The ability to treat infectious diseases with antimicrobials is an essential component of medical management. Antimicrobial therapy is based on the characteristics of the patient, drug, microorganisms causing the infection, and colonizing flora. Prudent antibiotic use is the only option to delay the emergence of resistance. Training in infectious diseases and knowledge of the principles of responsible antibiotic prescribing and uses must be improved. To change practice, health care professionals should be educated at all levels of their training.

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