Leadership in Antimicrobial Stewardship

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Critical Impact of Antimicrobial Resistance

“If we do not act to address the problem of AR, we may lose quick and reliable treatment of infections that have been a manageable problem in the United States since the 1940s. Drug choices for the treatment of common infections will become increasingly limited and expensive - and, in some cases, nonexistent.”

-A Public Health Action Plan to Combat Antimicrobial Resistance
“…arguably the greatest risk…. to human health comes in the form of antibiotic resistant bacteria. We live in a bacterial world where we will never be able to stay ahead of the mutation curve. A test of our resilience is how far behind the curve we will allow ourselves to fall.”

HAZARD LEVEL
URGENT

These are high-consequence antibiotic-resistant threats because of significant risks identified across several criteria. These threats may not be currently widespread but have the potential to become so and require urgent public health attention to identify infections and to limit transmission.

*Clostridium difficile (C. difficile)*, *Carbapenem-resistant Enterobacteriaceae (CRE)*, *Drug-resistant Neisseria gonorrhoeae* (cephalosporin resistance)

- Clostridium Difficile (CDIFF)
- Carbapenem-Resistant Enterobacteriaceae (CRE)
- Neisseria gonorrhoeae
Multidrug-Resistant Acinetobacter

Drug-Resistant Campylobacter

Fluconazole-Resistant Candida

Extended Spectrum Enterobacteriaceae (ESBL)

Vancomycin-Resistant Enterococcus (VRE)

Multidrug-Resistant Pseudomonas Aeruginosa

Drug-Resistant Non-Typhoidal Salmonella

Drug-Resistant Salmonella Serotype Typhi

Drug-Resistant Shigella

Methicillin-Resistant Staphylococcus Aureus (MRSA)
Antimicrobials Present Unique Management Challenges

- 200-300 million antibiotics are prescribed annually
  - 45% for outpatient use
- 25-40% of hospitalized patients receive antibiotics
  - 10-70% are unnecessary or sub-optimal
  - 5% of hospitalized patients who receive antibiotics experience an adverse reaction
- Antibiotics are unlike any other drugs, in that use of the agent in one patient can compromise its efficacy in another (“Societal Drugs”)

- Slide courtesy of Sara Cosgrove, MD  Johns Hopkins University
Antimicrobial Stewardship

“Antimicrobial stewardship includes not only limiting inappropriate use but also optimizing antimicrobial selection, dosing, route, and duration of therapy to maximize clinical cure or prevention of infection while limiting the unintended consequences, such as the emergence of resistance, adverse drug events, and cost.”

Clin Infect Dis 2007;44:159-177
Summary of Core Elements of Hospital Antibiotic Stewardship Programs

- **Leadership Commitment**: Dedicate necessary human, financial and information technology resources.

- **Accountability**: Appoint a single leader responsible for program outcomes. Experience with successful programs show that a physician leader is effective.

- **Drug Expertise**: Appointing a single pharmacist leader responsible for working to improve antibiotic use.

- **Action**: Implementing at least one recommended action, such as systematic evaluation of ongoing treatment need after a set period of initial treatment (i.e. “antibiotic time out” after 48 hours).

- **Tracking**: Monitoring antibiotic prescribing and resistance patterns.

- **Reporting**: Regular reporting information on antibiotic use and resistance to doctors, nurses and relevant staff.

- **Education**: Educating clinicians about resistance and optimal prescribing.