Improving People's Lives Through Innovations in Personalized Health Care

Leadership in Antimicrobial Stewardship

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Critical Impact of Antimicrobial Resistance

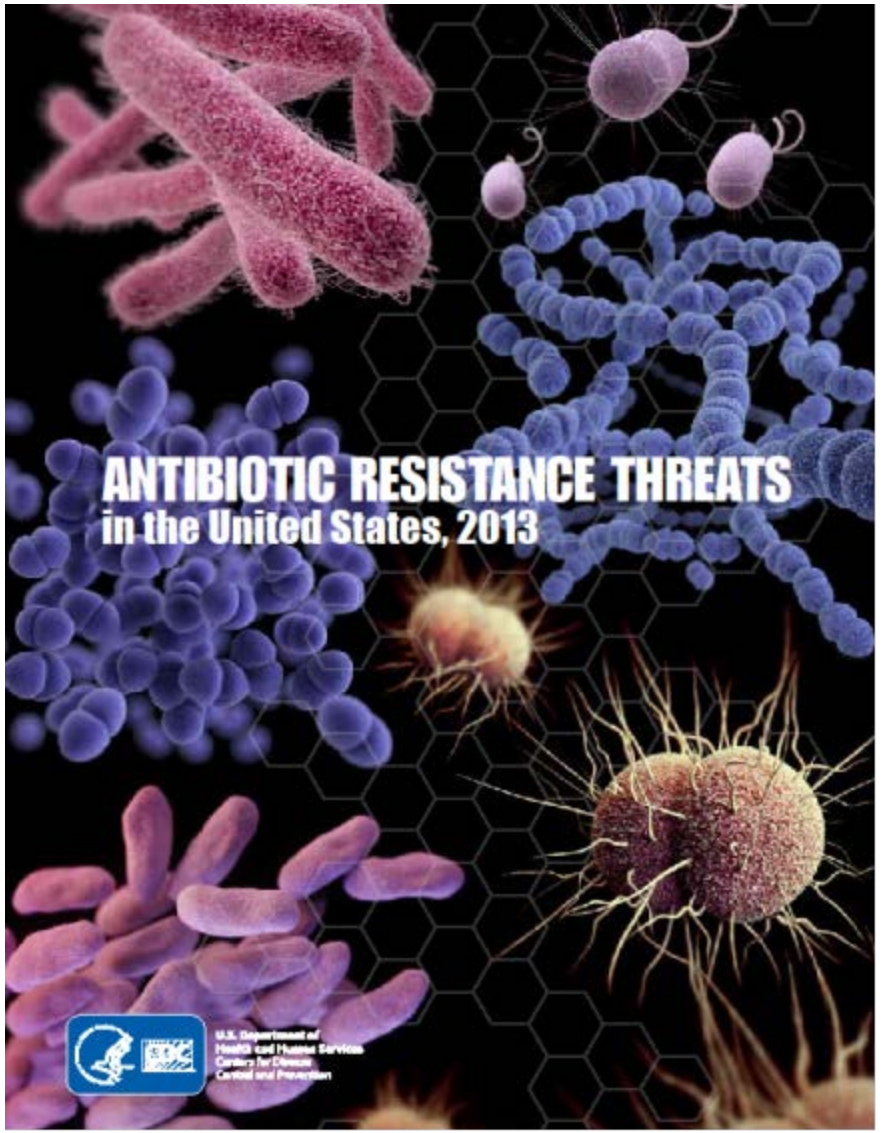
"If we do not act to address the problem of AR, we may lose quick and reliable treatment of infections that have been a manageable problem in the United States since the 1940s. Drug choices for the treatment of common infections will become increasingly limited and expensive - and, in some cases, nonexistent."

-A Public Health Action Plan to Combat Antimicrobial Resistance

World Economic Forum

- "…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."

Howell L editor. Global Risks 2013, Eighth edition: an initiative of the Risk Response Network. World Economic Forum 2013

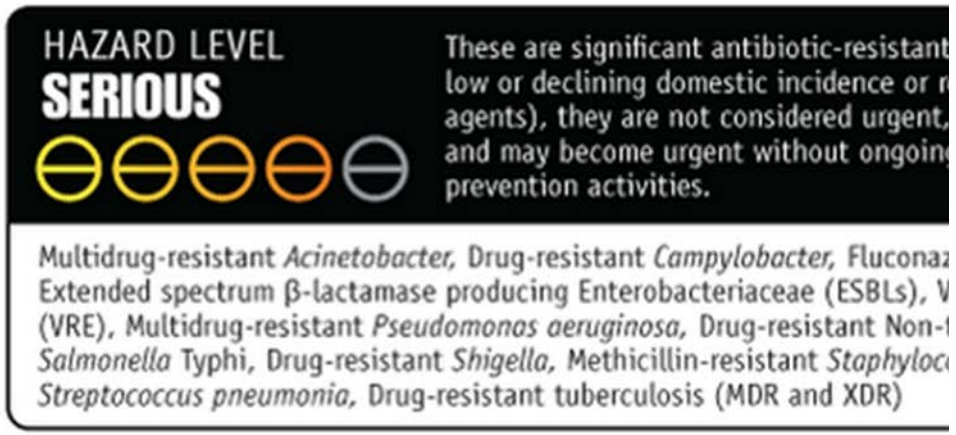

ANTIBIOTIC RESISTANCE THREATS
in the United States, 2013

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

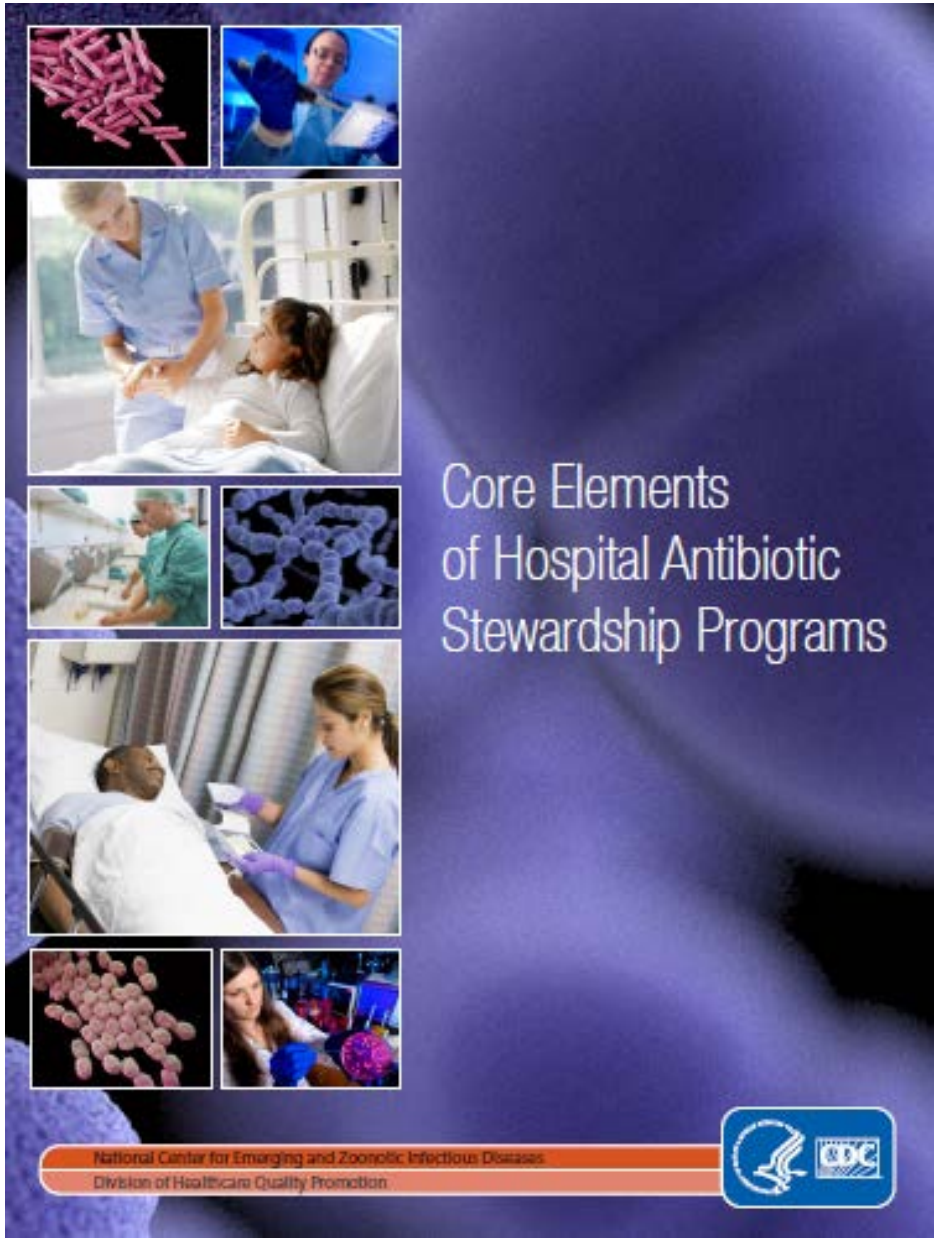
- 200-300 million antibiotics are prescribed annually
  - 45% for outpatient use
- 25-40% of hospitalized patients receive antibiotics
  - 10-70% are unnecessary or sub-optimal
  - 5% of hospitalized patients who receive antibiotics experience an adverse reaction
- Antibiotics are unlike any other drugs, 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


Core Elements
of Hospital Antibiotic
Stewardship Programs
National Center for Emerging and Zoonotic Infectious Diseases
Division of Healthcare Quality Promotion

Summary of Core Elements of Hospital Antibiotic Stewardship Programs

- **Leadership Commitment:** Dedicating necessary human, financial and information technology resources.
- **Accountability:** Appointing 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 systemic 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.