Federal Policies to Combat Antibiotic-Resistant Bacteria

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New diseases are inevitable, but in the 21st century we have the tools to greatly reduce the threat posed by global epidemics. We can put in place a safe, secure, globally linked, interoperable system to prevent disease threats, detect outbreaks in real time, and share information and expertise to respond effectively.”

--Secretary Sebelius, Secretary Kerry, and Assistant to the President Lisa Monaco, February 2014

Today’s Health Security Risks:

- Emergence and spread of new or re-emerging microbes
- Globalization of travel and trade
- Rise of drug resistance
- Potential for accidental release, theft or illicit use
“We have to change our mindsets and start thinking about biological threats as the security threats that they are....”

President Barack Obama
September 26, 2014
That’s why Congress should undo the damage done by last year’s cuts to basic research so we can unleash the next great American discovery – whether it’s vaccines that stay ahead of drug-resistant bacteria, or paper-thin material that’s stronger than steel.

- President Barack Obama

2014 State of the Union
Overview of Antibiotic Resistant Threats
Estimated minimum number of illnesses and deaths caused annually by antibiotic resistance*:

At least

2,049,442 illnesses
23,000 deaths

*bacteria and fungus included in this report
CARBAPENEM-RESISTANT ENTEROBACTERIACEAE

- Threat Level: URGENT
- 9,000 Drug-resistant infections per year
- 600 deaths
- CRE have become resistant to all or nearly all available antibiotics

DRUG-RESISTANT NEISSERIA GONORRHOEAE

- Threat Level: URGENT
- 246,000 Drug-resistant gonorrhea infections
- 820,000 gonococcal infections per year

CLOSTRIDIUM DIFFICILE

- Threat Level: URGENT
- 250,000 infections per year
- 14,000 deaths
- $1,000,000,000,000 in excess medical costs per year
Enteric diseases: Increasingly resistant to antibiotics

Salmonella resistance/partial resistance to ciprofloxacin

Campylobacter resistance to ciprofloxacin
Invasive pneumococcal disease caused by PCV13 serotypes plummeted after vaccine introduction

CDC, Emerging Infections Program
Vaccination prevents spread of drug-resistant *S. pneumoniae* infections

- The introduction of conjugate vaccines for *S. pneumoniae* led to decreases in drug-resistant infections as well as a marked decline in overall cases.
C. difficile infections declined sharply after revision of antibiotics guidelines. University Hospital Lewisham, London, 2005-07

Gaps in Knowledge of Antibiotic Resistance

- Limited national, state, and federal capacity to detect and respond to urgent and emerging antibiotic resistance threats
- Currently, no systematic domestic or international surveillance of antibiotic resistance threats
- Data on antibiotic use in human healthcare and in agriculture are not systematically collected
- Programs to improve antibiotic prescribing are not widely used in the United States
- Advanced technologies can identify threats faster than current practice, but not well developed yet
The number of new antibiotics developed and approved has steadily decreased in the past three decades, leaving fewer options to treat resistant bacteria.

*Intervals from 1980–2009 are 5-year intervals; 2010–2012 is a 3-year interval. Drugs are limited to systemic agents. Data courtesy of FDA’s Center for Drug Evaluation and Research (CDER).
Combating Antibiotic Resistance (Prevent, Detect, Respond, Discover)

1. PREVENTING INFECTIONS, PREVENTING THE SPREAD OF DISEASE
2. TRACKING
3. IMPROVING ANTIBIOTIC PRESCRIBING AND USE, AKA “STEWARDSHIP”
4. DEVELOPING NEW DRUGS AND DIAGNOSTICS

For a fully compliant version of these images, go to page 18
Vision: The United States will work domestically and internationally to prevent, detect, and control illness and death related to infections caused by antibiotic-resistant bacteria by implementing measures to mitigate the emergence and spread of antibiotic resistance and ensuring the continued availability of therapeutics for the treatment of bacterial infections.
FACT SHEET: President’s 2016 Budget Proposes Historic Investment to Combat Antibiotic-Resistant Bacteria to Protect Public Health

The President’s FY 2016 Budget builds on these recent efforts by nearly doubling the amount of Federal funding for combating and preventing antibiotic resistance to more than $1.2 billion. The funding will improve antibiotic stewardship; strengthen antibiotic resistance risk assessment, surveillance, and reporting capabilities; and drive research innovation in the human health and agricultural sectors. For example, the Budget:

- $650 million shared by the National Institutes of Health and the Biomedical Advanced Research and Development Authority;
- $280 million for the Centers for Disease Control and Prevention;
- $85 million at the Department of Veterans Affairs;
- $77 million for the US Department of Agriculture;
- $75 million for the Department of Defense; and
- $47 million for the Food and Drug Administration.
“Today the danger is Ebola, tomorrow it could be another flu outbreak or a terrorist armed with a biological weapon.”

-AMB Susan Rice, NSA
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2. Tracking
3. Improving antibiotic prescribing and use, AKA ‘stewardship’
4. Developing new drugs and diagnostics