

Federal Policies to Combat Antibiotic-Resistant Bacteria

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National Security Council

National Vaccine Advisory Committee
February 10, 2015



An aerial photograph of a lush green forest with a winding river. The river flows through the center of the image, surrounded by dense green vegetation. The lighting is bright, creating a vibrant green color palette.

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***

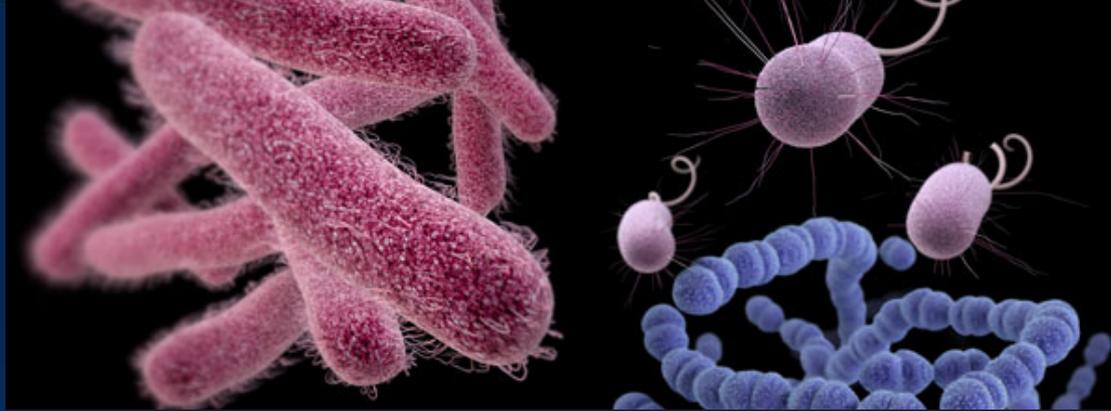


That's why Congress should undo the damage done by last year's cuts to basic research so we can unleash the next great American discovery – whether it's vaccines that stay ahead of drug-resistant bacteria, or paper-thin material that's stronger than steel.

-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



9,000

DRUG-RESISTANT INFECTIONS PER YEAR



600

DEATHS

THREAT LEVEL
URGENT



CRE HAVE BECOME RESISTANT TO ALL OR NEARLY ALL AVAILABLE ANTIBIOTICS



DRUG-RESISTANT NEISSERIA GONORRHOEAE



246,000

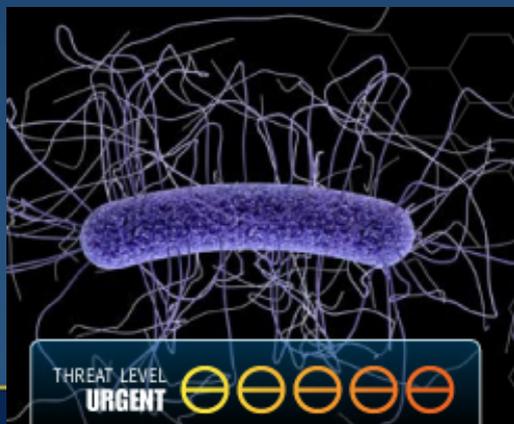
DRUG-RESISTANT GONORRHEA INFECTIONS



820,000

GONOCOCCAL INFECTIONS PER YEAR

THREAT LEVEL
URGENT



CLOSTRIDIUM DIFFICILE



250,000

INFECTIONS PER YEAR



14,000

DEATHS

THREAT LEVEL
URGENT



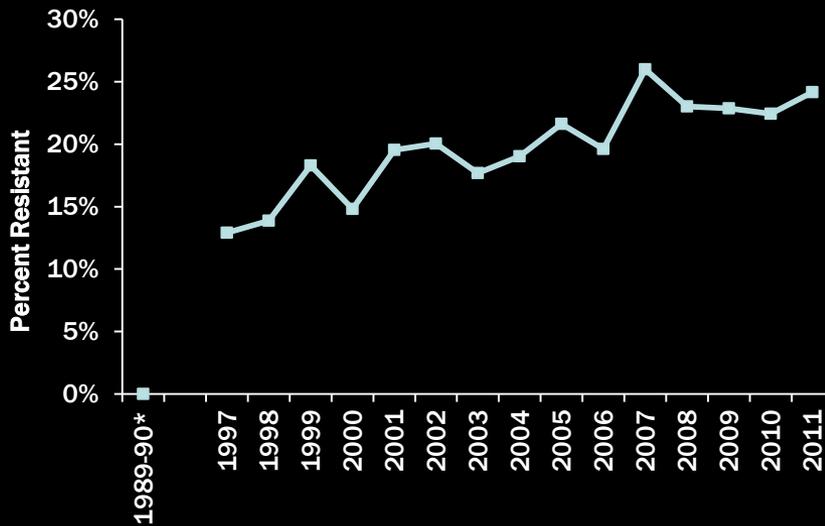
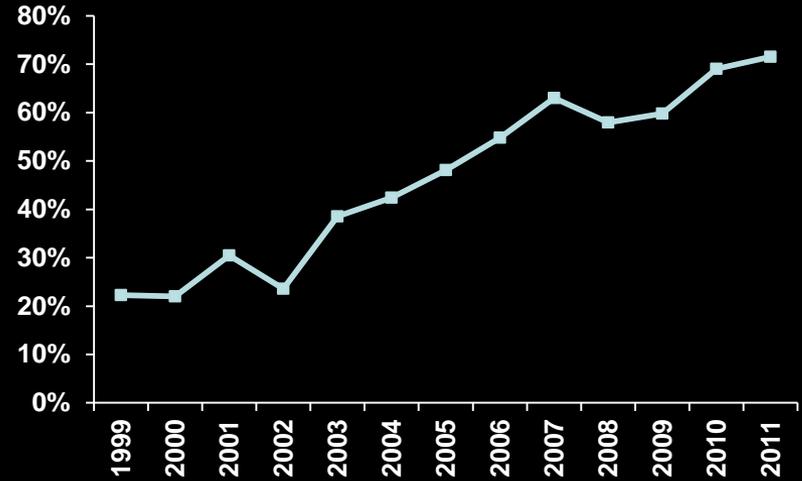
\$1,000,000,000

IN EXCESS MEDICAL COSTS PER YEAR



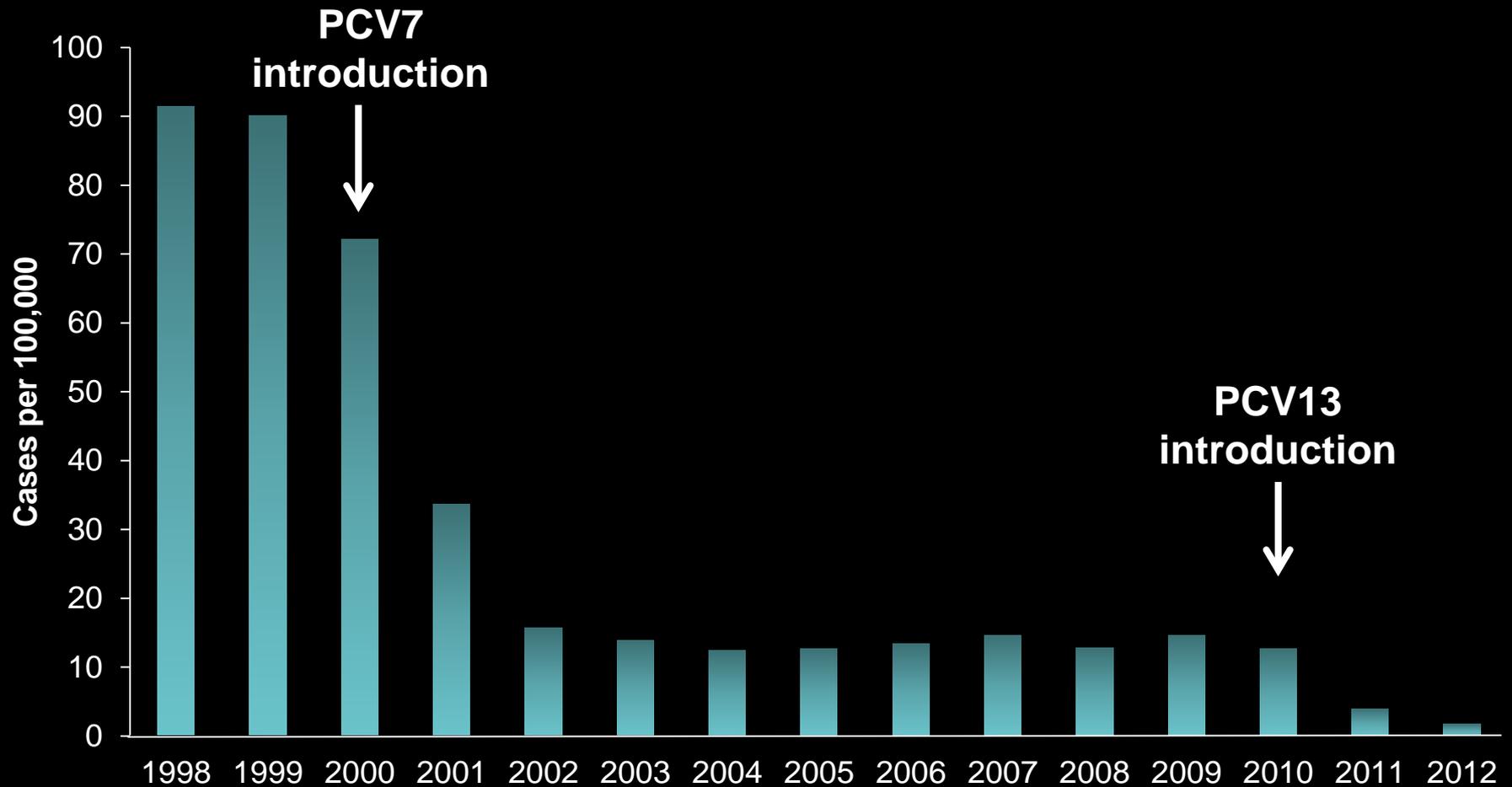
Enteric diseases: Increasingly resistant to antibiotics

Salmonella
resistance/partial
resistance to
ciprofloxacin



Campylobacter
resistance to
ciprofloxacin

Invasive pneumococcal disease caused by PCV13 serotypes plummeted after vaccine introduction

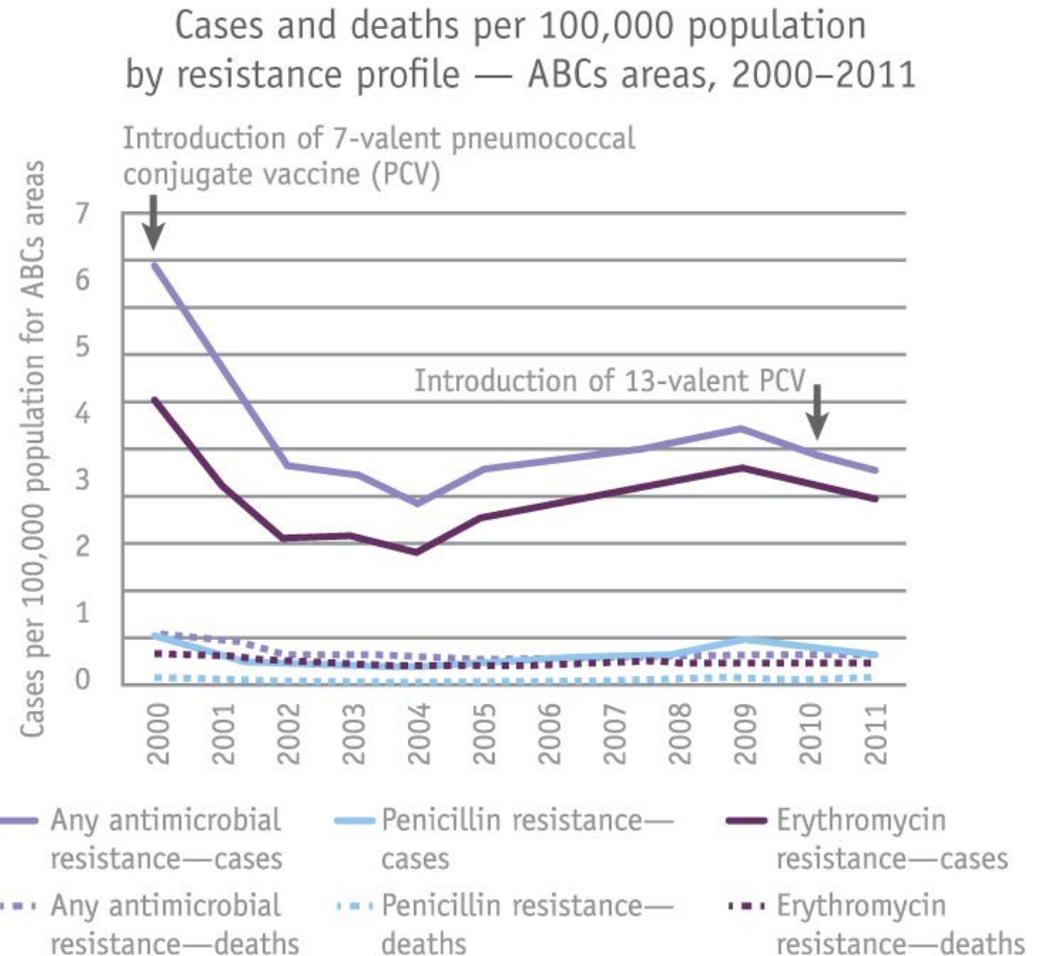


CDC, Emerging Infections Program



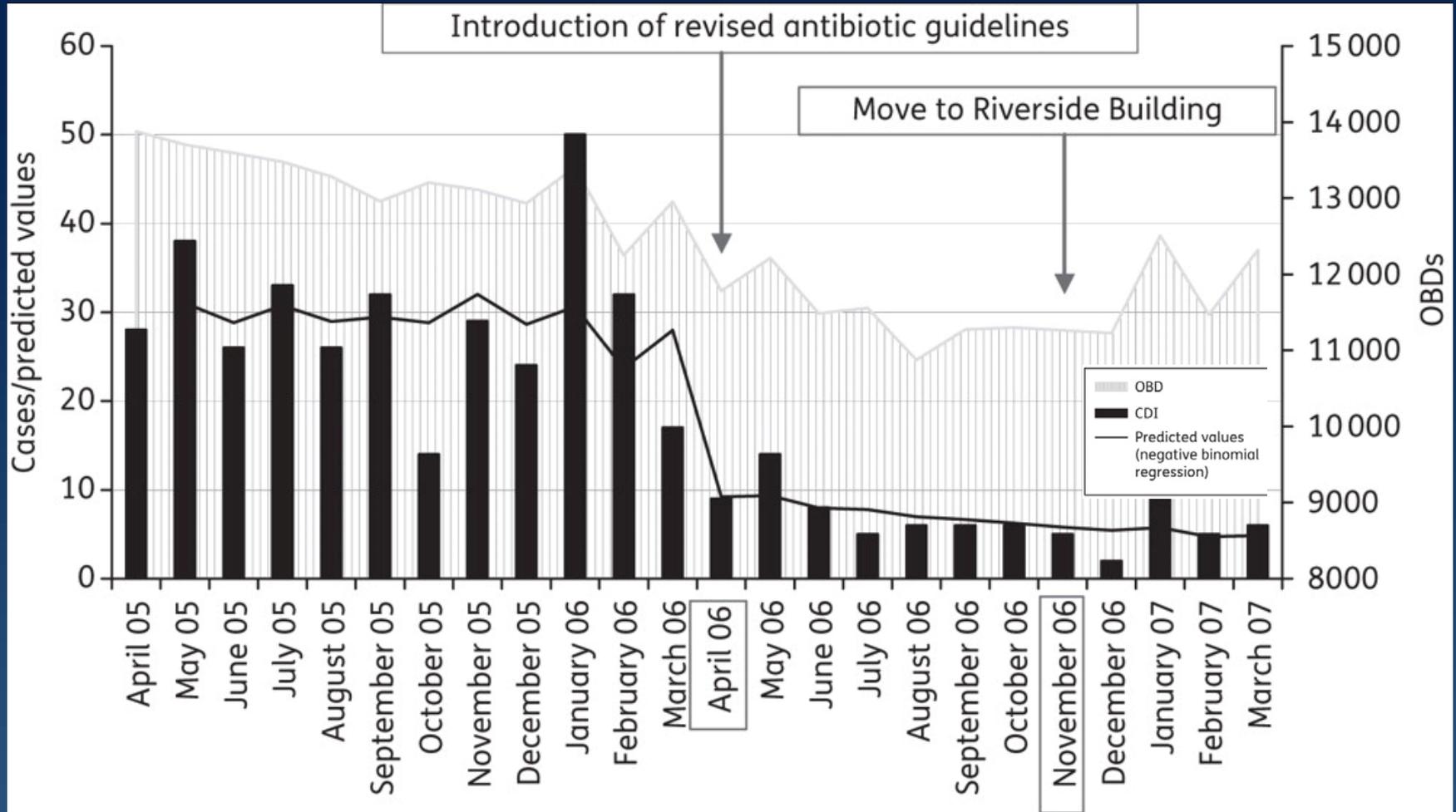
Vaccination prevents spread of drug-resistant *S. pneumoniae* infections

- The introduction of conjugate vaccines for *S. pneumoniae* led to decreases in drug-resistant infections as well as a marked decline in overall cases



In 2010, 13-valent pneumococcal conjugate vaccine (PCV13) replaced 7-valent pneumococcal conjugate vaccine (PCV7).

C. difficile infections declined sharply after revision of antibiotics guidelines. University Hospital Lewisham, London, 2005-07



Source: Talpaert et al. *J. Antimicrob Chemother* 2011;66: 2168-74.



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

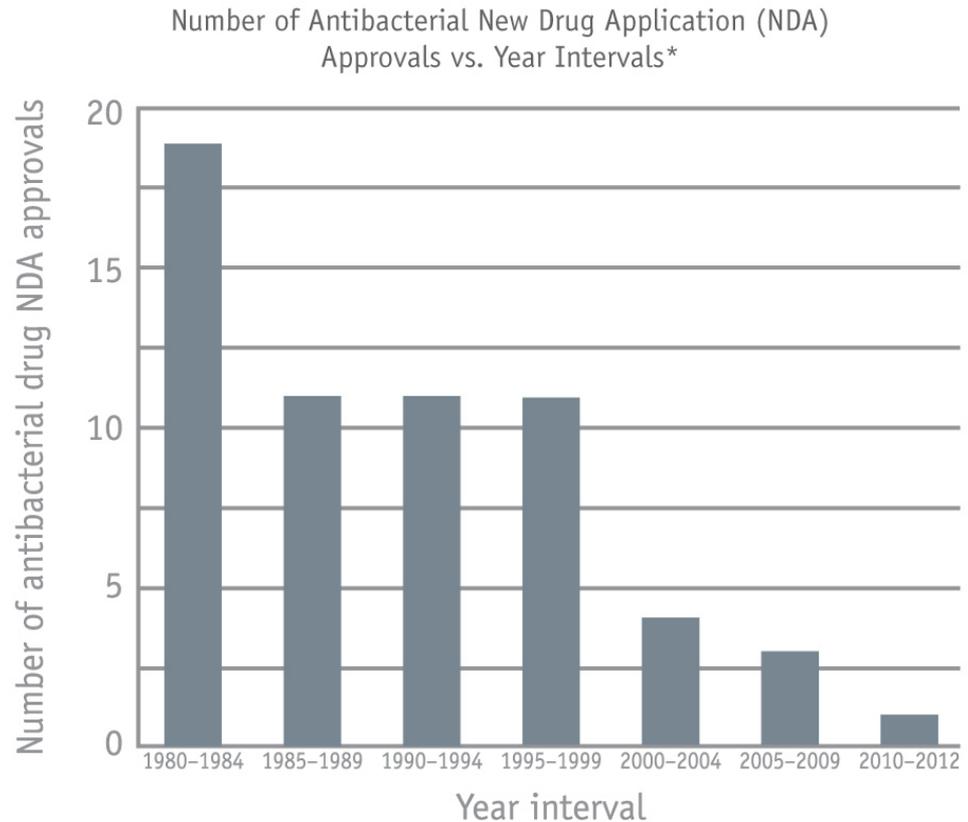


- Advanced technologies can identify threats faster than current practice, but not well developed yet



Antibiotic Development is Dwindling

The number of new antibiotics developed and approved has steadily decreased in the past three decades, leaving fewer options to treat resistant bacteria.

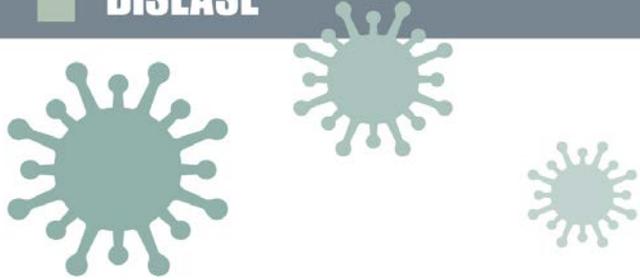


*Intervals from 1980-2009 are 5-year intervals; 2010-2012 is a 3-year interval. Drugs are limited to systemic agents. Data courtesy of FDA's Center for Drug Evaluation and Research (CDER).



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"

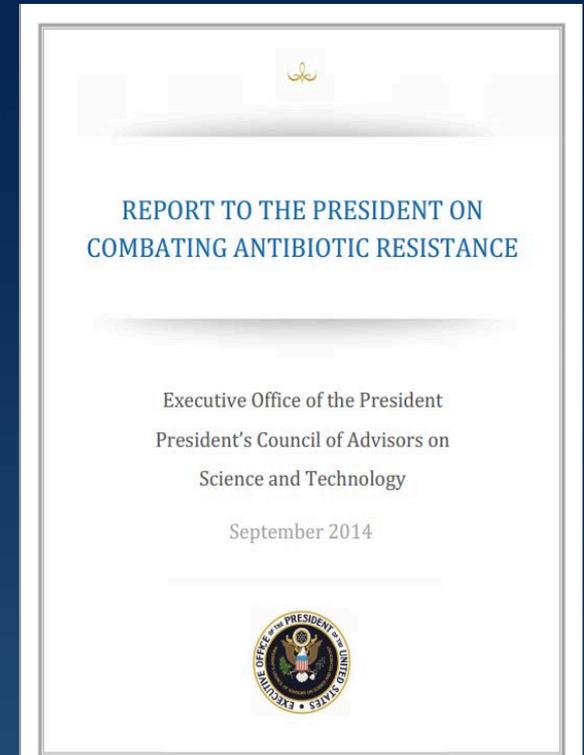
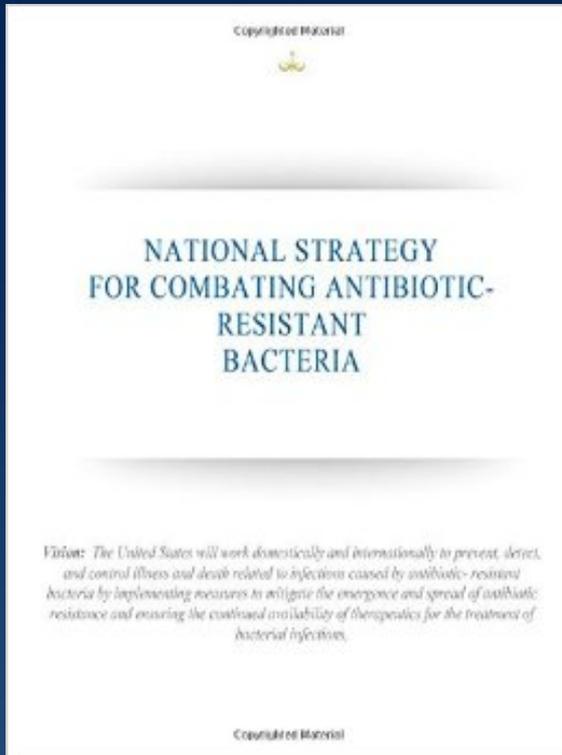


4 DEVELOPING NEW DRUGS AND DIAGNOSTICS



[For a fully compliant version of these images, go to page 18](#)

White House Initiative on Combating Antibiotic-Resistant Bacteria (CARB)



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.





THE WHITE HOUSE
Office of the Press Secretary
FOR IMMEDIATE RELEASE
January 27, 2015

FACT SHEET: President's 2016 Budget Proposes Historic Investment to Combat Antibiotic-Resistant Bacteria to Protect Public Health

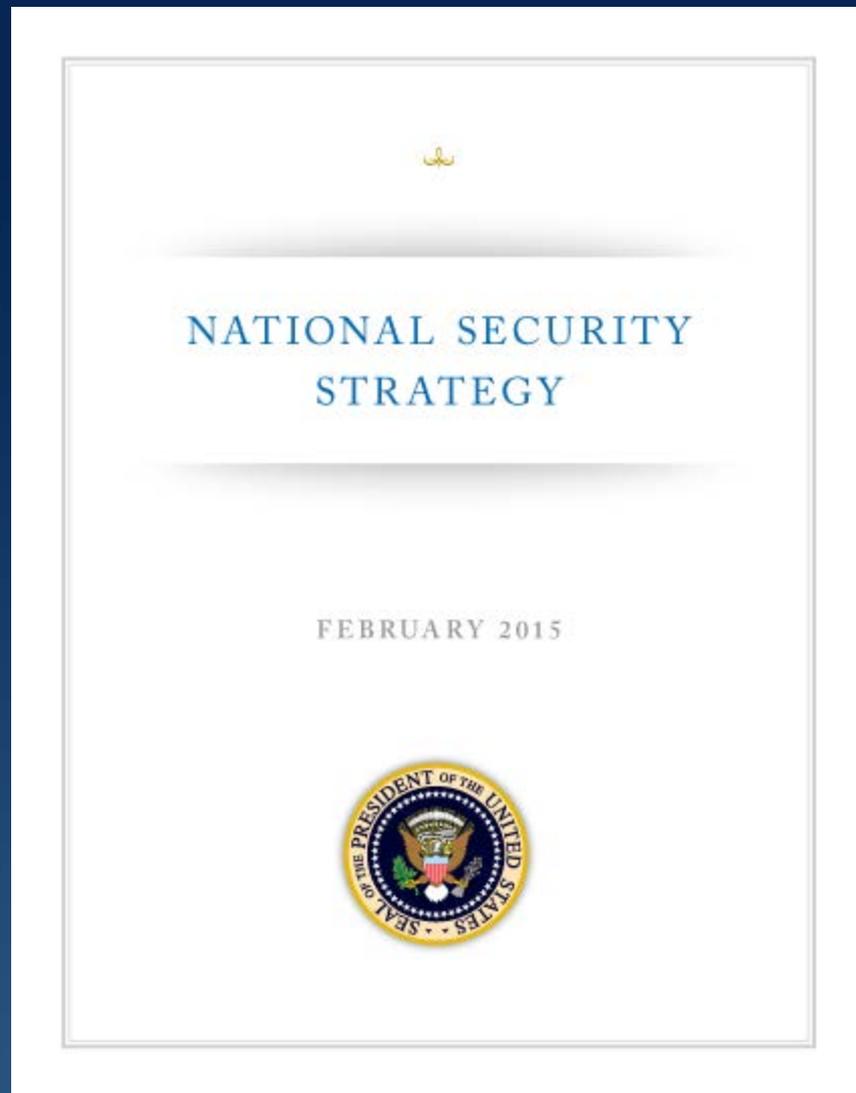
The President's FY 2016 Budget builds on these recent efforts by nearly doubling the amount of Federal funding for combating and preventing antibiotic resistance to more than \$1.2 billion. The funding will improve antibiotic stewardship; strengthen antibiotic resistance risk assessment, surveillance, 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



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

