



**Know
When
Antibiotics
Work**



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Antimicrobial Stewardship

Preventing the Spread of Antibiotic Resistance and
Improving Patient Care

(Adapted from the Centers for Disease Control and Prevention)

'Phantom Menace' Superbug Is Spreading, Officials Report

Julia Zorthian @jzorth | Dec. 4, 2015



The CDC found 43 cases between 2010 and 2015

Instances of a threatening superbug that scientists are calling the "phantom menace" are rising in the U.S., officials reported Thursday.

This particular strain of bacteria is a type of Carbapenem-resistant Enterobacteriaceae (CRE), which are dangerous because they typically are highly antibiotic-resistant and have steep mortality rates, the Centers for Disease Control and Prevention (CDC) said. According to the CDC, this CRE carries a plasmid with an enzyme that can break down certain antibiotics, which it can transfer to other bacteria in the body, the Washington Post explains.

'Super Bug' Linked to Antibiotic Resistance Nearly 15,000 Annually

Feb 26, 2015, 10:27 AM ET

By LIZ NEPARENT via GOOD MORNING AMERICA



C. Diff infections on the Rise and Not Just in Hospitals

To Your Health

The superbug that doctors have been dreading just reached the U.S.

By Lena H. Sun and Brady Dennis May 27

Here's how scientists discovered the antibiotic-resistant superbug

Edited by [name] Share

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The Post's Lena Sun visited Walter Reed Army Institute of Research in Silver Spring, Md., where scientists there identified a strain of bacteria resistant to the last-resort antibiotic, colistin. The bacteria was found in a Pennsylvania woman. Microbiologist Patrick McGann explains how his team identified the gene that gives the bacteria this resistance (Monica Akhtar, Lena Sun/The Washington Post)

NEXT VIDEO
New Warning About CDIFF Superbug

Obama Budget 2016 Funds Fight Against Antibiotic Resistance

By Amy Nordrum @amynordrum a.nordrum@ibtimes.com on February 03 2015 8:53 AM EST



Antibiotic Resistance will kill 300 million by 2050

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Antimicrobial drug resistance could be a huge problem by 2050 © iStock

The report predicts that the world's GDP would be 0.5% smaller by 2020 and 1.4% smaller by 2030 with over 100 million premature deaths. The Review on Antimicrobial Resistance, chaired by Jim O'Neill, is significant in that it is a global review that seeks to quantify financial costs.

This issue goes beyond health policy and, on a strictly macroeconomic basis, it makes sense for governments to act now, the report argues. 'One of the things that has been lacking is putting some pound signs in front of this problem,' says Michael Head at the Farr institute, University College London, UK, who sees hope in how a response to HIV came about. 'The world was slow to respond [to HIV], but when the costs were calculated the world leapt into action.'

He recently totted up R&D for infectious diseases in the UK and found gross underinvestment in antibacterial research: £102 million compared to a total of £2.6 billion.¹ Other research shows that less than 1% of available research funds in the UK and Europe were spent on antibiotic research in 2008-2013.²

What is “Stewardship”?



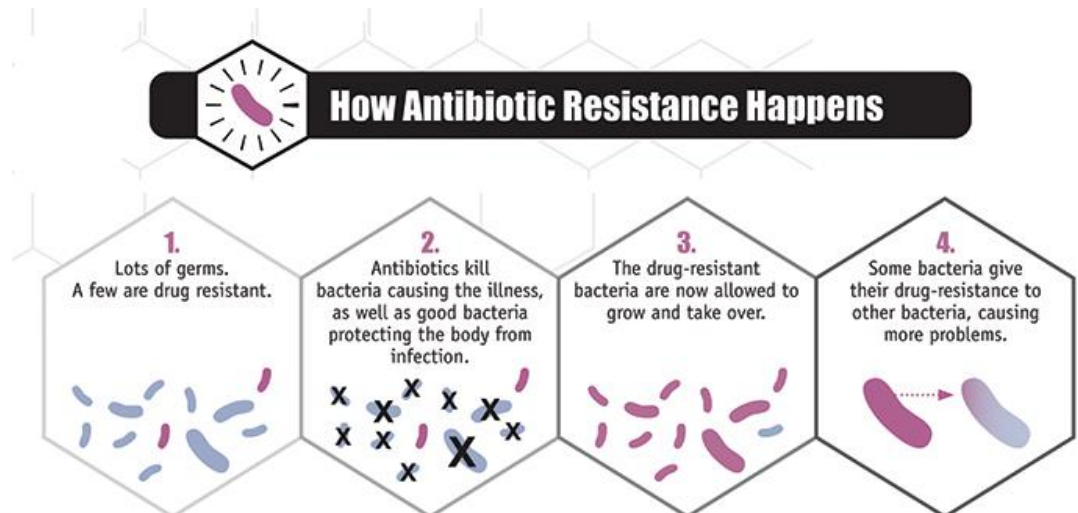
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“Antimicrobial stewardship refers to coordinated interventions designed to improve and measure the appropriate use of antimicrobials by promoting the selection of the optimal antimicrobial drug regimen, dose, duration of therapy, and route of administration.” – Infectious Diseases Society of America

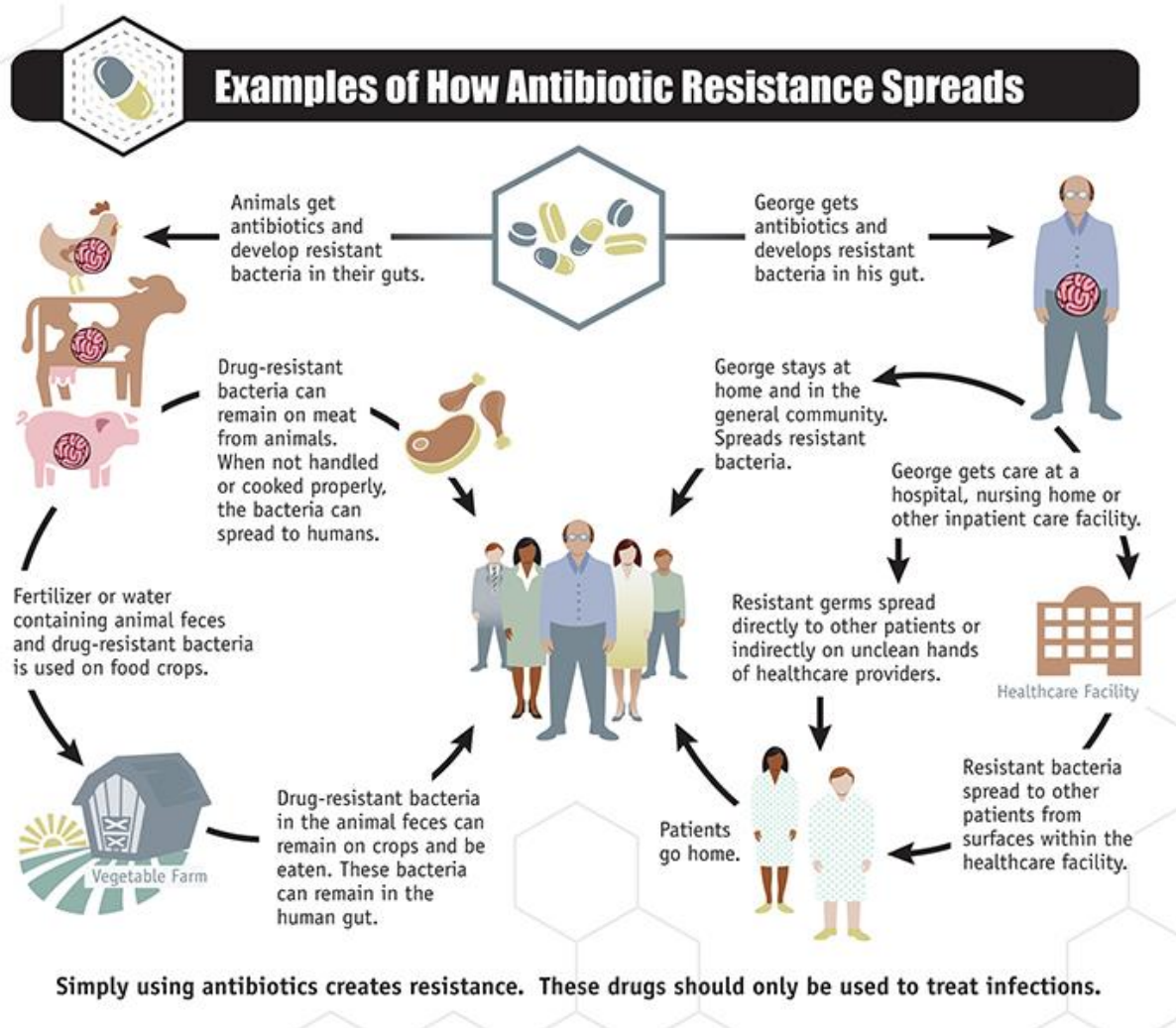
- A report from the Centers for Disease Control and Prevention (CDC) released in May 2016 reported that **at least 30%** of antibiotics prescribed in the US are unnecessary
- One of the goals of a stewardship program is to curb inappropriate antibiotic prescribing

What is Resistance?

- Antimicrobial resistance is the ability of microbes to resist the effects of drugs
 - Germs are not killed = growth is not stopped
- Infections with resistant bacteria are harder to treat and can require more expensive and toxic medications



More About Resistance



****Antibiotic resistance is a PUBLIC HEALTH issue****

How Can We Fight Resistance?



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Prevent Infections

- Avoiding infections in the first place reduces the amount of antibiotics that have to be used and reduces the likelihood that resistance will then develop
- Immunization, safe food preparation, handwashing

Tracking

- Gathering data on antibiotic-resistant infections, causes of infections, and whether there are particular reasons some people got a resistant infection

Developing New Drugs and Diagnostic Tests

- Because antibiotic resistance occurs as part of a natural process in which bacteria evolve, it can be slowed but not stopped; we will always need new antibiotics

Improving Antibiotic Prescribing

- Perhaps the single most important action needed is to change the way antibiotics are used via **antibiotic stewardship**

Protect every patient every time.



Actions to prevent antibiotic-resistant infections in healthcare.



Prevent infections from catheters and after surgery.

- ✓ Use catheters only when needed.
- ✓ Follow recommendations for safer surgery and catheter insertion and care.
- ✓ Remove catheters from patient as soon as they are no longer needed.

Prevent bacteria from spreading.

- ✓ Improve hand hygiene.
- ✓ Use gloves, gowns, and dedicated equipment for patients who have resistant bacteria.
- ✓ Know about antibiotic-resistant HAI outbreaks in your hospital and region (e.g. promote coordinated action for prevention).

Improve antibiotic use.

- ✓ Get cultures and start antibiotics promptly, especially in the case of sepsis.
- ✓ Use cultures to reassess the need for antibiotics and stop antibiotic treatment as soon as they are no longer needed.
- ✓ When antibiotics are necessary, use the appropriate antibiotic in the proper dosage, frequency, and duration.

What Does Antibiotic Stewardship Entail?



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Leadership Commitment

- Dedicating necessary human, financial, and information technology resources

Accountability

- Appointing a single (physician) leader responsible for program outcomes

Drug Expertise

- Appointing a single pharmacist leader responsible for working to improve antibiotic use

Action

- Implementing at least one recommended action (e.g. “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

Who is Involved?

Clinicians and Department Heads

- Prescribers must be fully engaged in and supportive of efforts

Infection Preventionists

- Coordinate facility-wide monitoring of HAIs
- Assist in analyzing and reporting data
- Help educate staff on importance of appropriate antibiotic use and laboratory testing

Quality Improvement Staff

- Optimizing antibiotic use is a medical quality and patient safety issue

Laboratory Staff

- Guide proper use of tests and flow of results
- Assist with development of antibiogram
- Present data in a way that supports optimal antibiotic use

IT Staff

- Critical to integrating new protocols into existing work flow (e.g. EPIC changes)
- Collection and reporting of antibiotic use data

Nurses/ Pharmacists

- Help assure cultures are performed before starting antibiotics
- Review medications daily and prompt discussion of antibiotic treatment, indication, duration

Why is Antibiotic Stewardship Important?

It is a matter of life and death

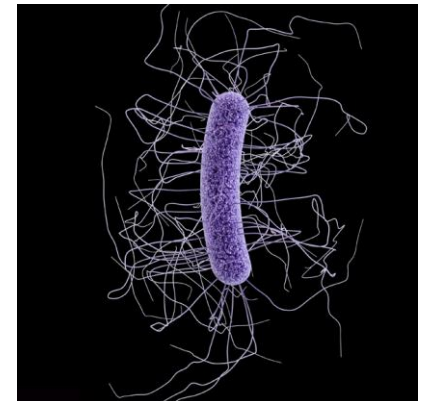
Estimated minimum number of illnesses and deaths caused annually by antibiotic resistance*:

At least  **2,049,442** illnesses,
 **23,000** deaths

**bacteria and fungus included in this report*

What is *C. difficile*?

- Gram positive, spore-forming bacterium that causes inflammation of the colon
- Estimated to cause approximately half a million infections in the US in 2011
- Poor antibiotic prescribing practices put patients at risk for *C. difficile* infection (CDI)
 - Patients on antibiotics are **7-10 times** more likely to get CDI



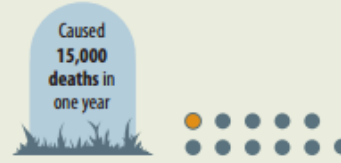
IMPACT



Caused close to half a million illnesses in one year.



Comes back at least once in about 1 in 5 patients who get *C. difficile*.



1 in 11 people 65 and older died within a month of *C. difficile* infection diagnosis.



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RISK



People on antibiotics are 7-10 times more likely to get *C. difficile* while on the drugs and during the month after.



Being in healthcare settings, especially hospitals or nursing homes.



More than 80% of *C. difficile* deaths occurred in people 65 and older.

SPREAD



Touching unclean surfaces, especially those in healthcare settings, contaminated with feces from an infected person.



Dirty hands.



Failing to notify other healthcare facilities when patients with *C. difficile* transfer from one facility to another.

PREVENT



Improve prescribing of antibiotics.



Use best tests for accurate results to prevent spread.



Rapidly identify and isolate patients with *C. difficile*.



Wear gloves and gowns when treating patient with *C. difficile*. Remember that hand sanitizer doesn't kill *C. difficile*.



Clean room surfaces with EPA-approved, spore-killing disinfectant (such as bleach), where *C. difficile* patients are treated.

What can I expect?

- You may be contacted by the Stewardship team to discuss antibiotics your patient is receiving
- The Stewardship team is here to help you determine whether treatment is still needed and whether it's appropriate

What can I do to help?

- Evaluate your patient's antibiotics every day
 - What am I treating?
 - Are they still needed?
 - Can they be narrowed or modified?
 - Is an oral option appropriate?
 - How long does my patient need to be on them?
- Discuss cases with the Stewardship team or consult Infectious Diseases

How does this help me, my patients or the hospital?



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- Reduces the risk of adverse events related to antibiotics such as C.difficile or IV issues
- Length of stay may be shortened
- Avoid excessive exposure to antibiotics
- Prevents development of resistant bacteria

Remember!

Every time antibiotics are prescribed:



Specific recommendations for common prescribing situations:



1. Order recommended cultures before antibiotics are given and start drugs promptly.



2. Make sure indication, dose, and expected duration are specified in the patient record.



3. Reassess within 48 hours and adjust Rx if necessary or stop Rx if indicated.



Rx for urinary tract infections

- Make sure that culture results represent true infection and not just colonization.
 - Assess patient for signs and symptoms of UTI.
 - Make sure that urinalysis is obtained with every urine culture.
- Treat for recommended length of time and ensure that planned post-discharge treatment takes into account the antibiotics given in the hospital.



Rx for pneumonia

- Make sure that symptoms truly represent pneumonia and not an alternate, non-infectious diagnosis.
- Treat for the recommended length of time and ensure that planned post-discharge treatment takes into account the antibiotics given in the hospital.



Rx for MRSA infections

- Verify that MRSA is growing in clinically relevant cultures. Do not use vancomycin to treat infections caused by methicillin-susceptible staph (and not MRSA).

What Everyone Should Know



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- Antibiotics can cause more harm than good!
 - Taking antibiotics increases your risk of getting an antibiotic-resistant infection later
 - Antibiotics kill the health bacteria in the gut
 - Antibiotics cause 1 out of 5 emergency department visits for adverse drug events
- Do NOT use antibiotics when a viral infection is suspected