CDC's Antibiotic Resistance Threats Report, 2019

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EXTENDED SPECTRUM β-LACTAMASE (ESBL)-PRODUCING ENTEROBACTERIACEAE

CDC's 2013 AR Threats Report

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*

2013 Data Recalculated for 2019 Report

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

At least

~~2,049,442~~ **2,600,000** illnesses

~~23,000~~ **44,000** deaths

*bacteria and fungus included in this report

The Threat of Antibiotic Resistance in the United States

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

New National Estimate*

Antibiotic-resistant bacteria and fungi cause at least an estimated:

2,868,700 infections

35,900 deaths

+

***Clostridiodes difficile* is related to antibiotic use and antibiotic resistance: ***

223,900 cases

12,800 deaths

New Threats List

Updated urgent, serious, and concerning threats—totaling 18

5 urgent threats

2 new threats

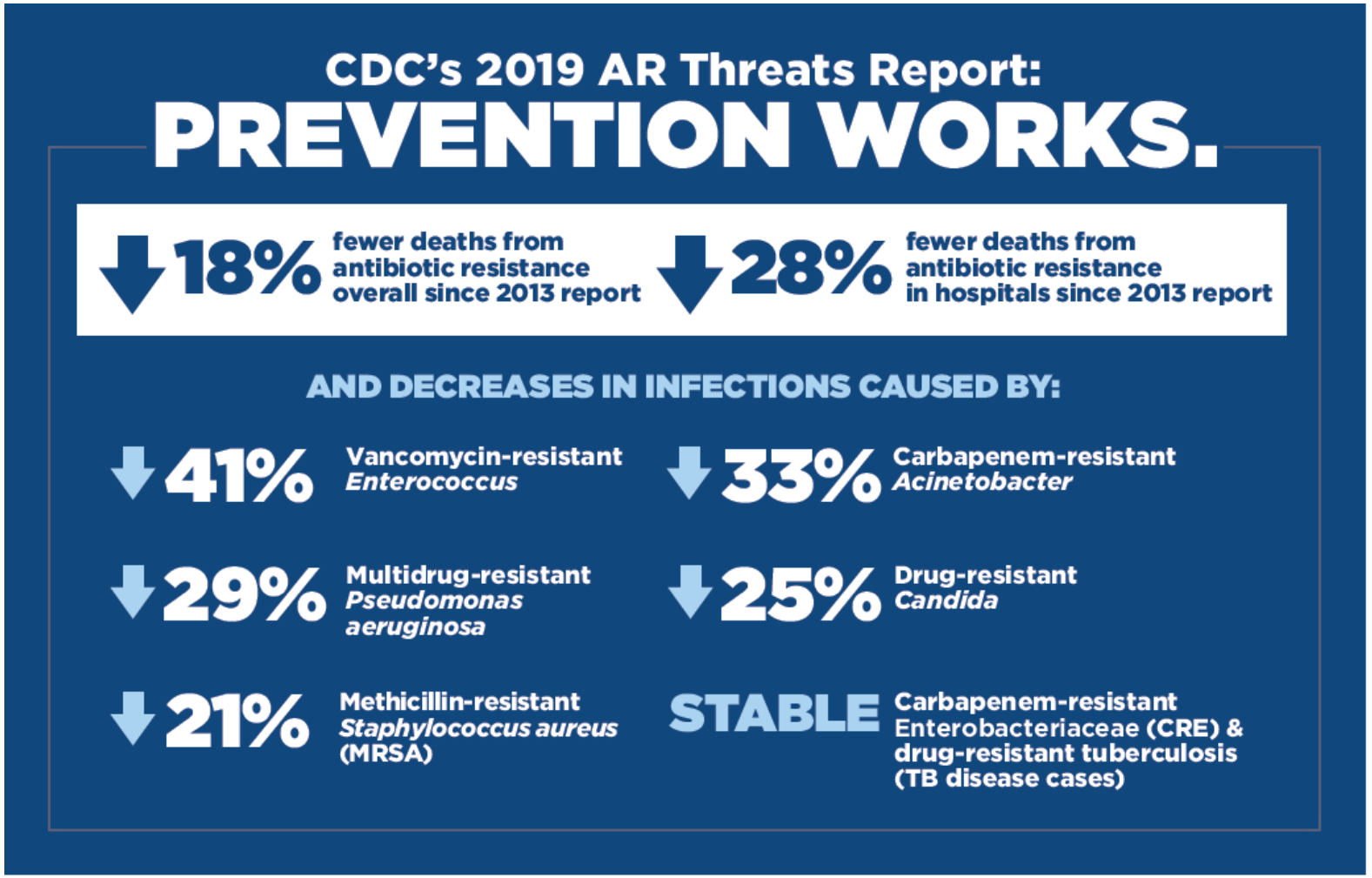
NEW:
Watch List with **3** threats

Antibiotic resistance remains a significant One Health problem, affecting humans, animals, and the environment.

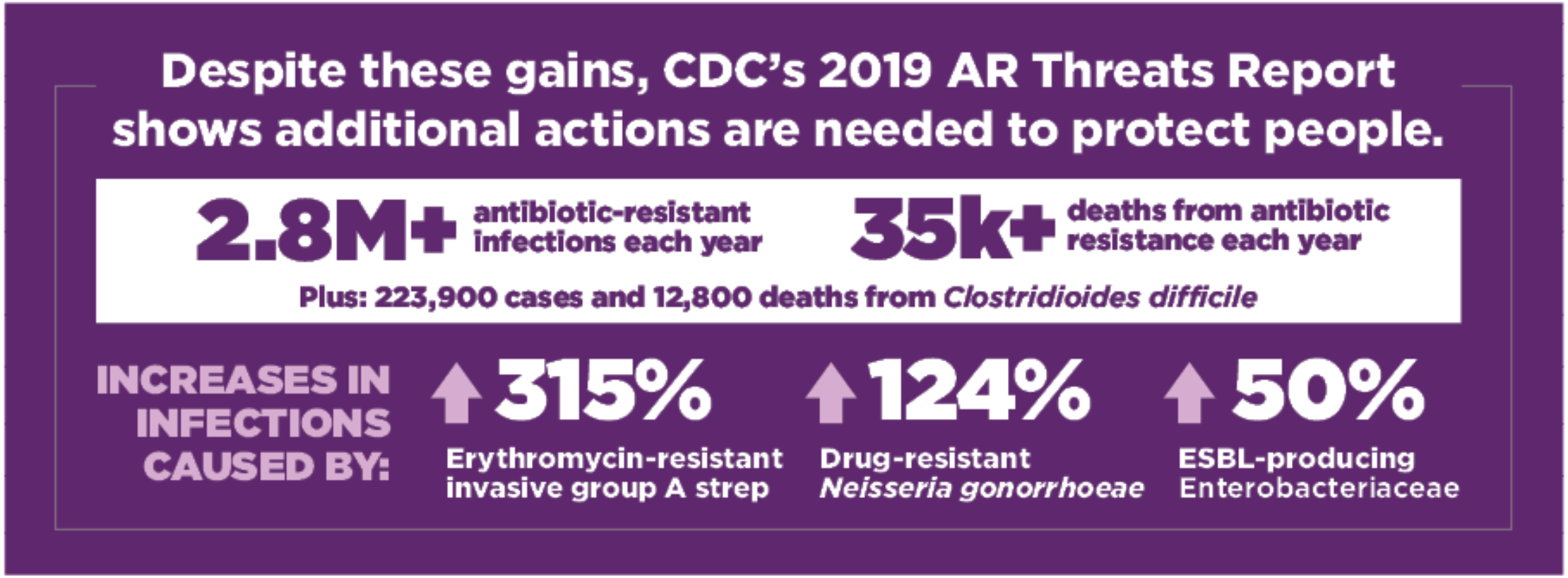
* *C. diff* cases from hospitalized patients in 2017

www.cdc.gov/DrugResistance/Biggest-Threats

Infection Prevention in Hospitals is Working



More Work Needed Beyond Hospitals



Current Antibiotic Resistance Threats in the U.S.

Urgent Threats

- Carbapenem-resistant *Acinetobacter*
- *Candida auris*
- *C. difficile*
- Carbapenem-resistant *Enterobacteriaceae*
- Drug-resistant *Neisseria gonorrhoeae (N. gonorrhoeae)*

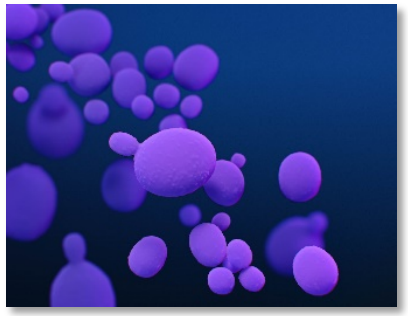
Serious Threats

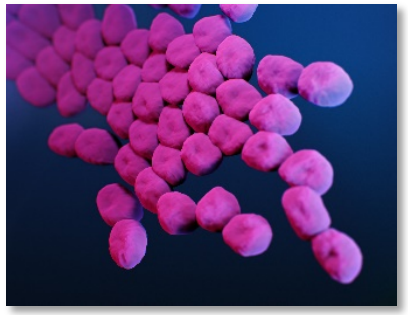
- Drug-resistant *Campylobacter*
- Drug-resistant Candida
- ESBL-producing Enterobacteriaceae
- Vancomycin-resistant *Enterococci*
- Multidrug-resistant *Pseudomonas aeruginosa*
- Drug-resistant nontyphoidal *Salmonella*
- Drug-resistant *Salmonella* serotype Typhi
- Drug-resistant *Shigella*
- Methicillin-resistant *Staphylococcus aureus*
- Drug-resistant *Streptococcus pneumoniae*
- Drug-resistant Tuberculosis

Concerning Threats

- Erythromycin-resistant Group A *Streptococcus*
- Clindamycin-resistant Group B *Streptococcus*

Since 2013, Ranking of Three Germs Shifted





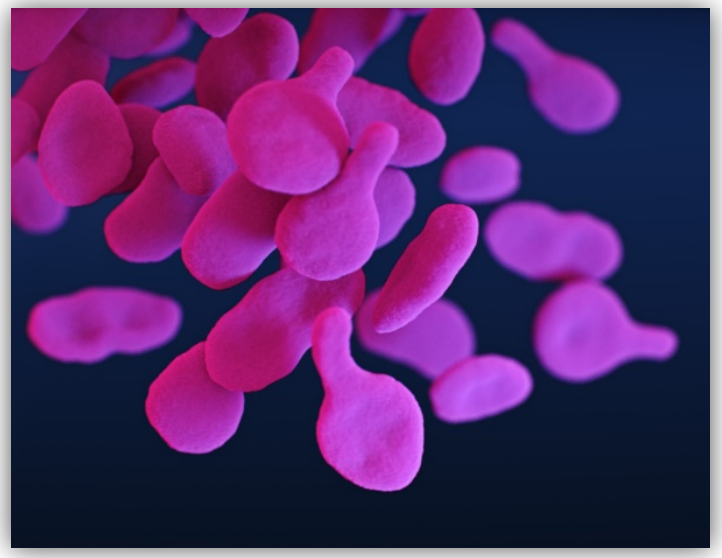
- *C. auris*
  - Not listed in 2013. Listed as Urgent in 2019.
- Carbapenem-resistant *Acinetobacter*
  - Listed as Serious (as Multidrug-resistant *Acinetobacter*) in 2013. Listed as Urgent in 2019.
- Vancomycin-resistant *Staphylococcus aureus* (VRSA)
  - Listed as Concerning in 2013. Removed as a threat in 2019.

CDC's 2019 Watch List

- Infrequently found in the United States or not well understood
- CDC and public health experts are closely monitoring

AZOLE-RESISTANT *A. FUMIGATUS*

DRUG-RESISTANT *M. GENITALIUM*



DRUG-RESISTANT *B. PERTUSSIS*

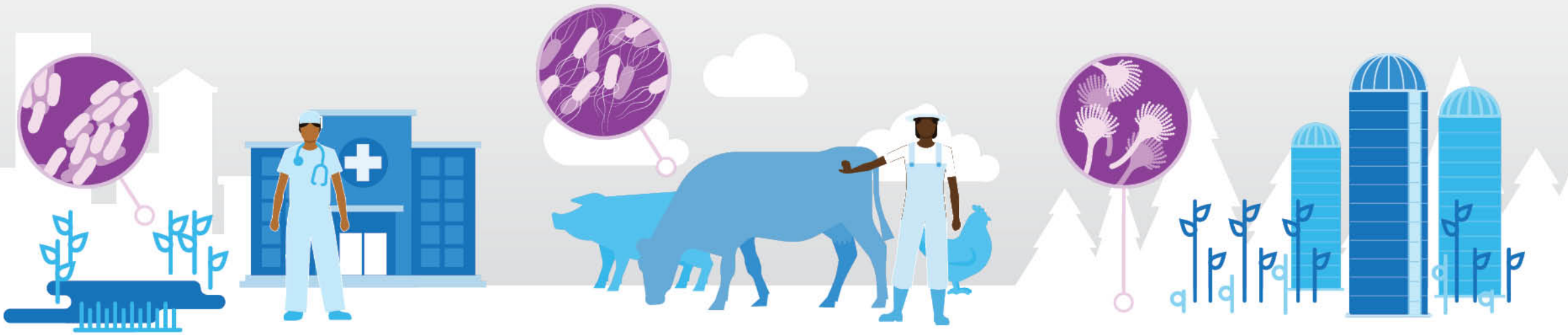
A ONE HEALTH CHALLENGE

The Interconnected Threat of Antibiotic Resistance

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Antibiotic Resistance Affects Humans, Animals & The Environment

People | **Animals** | **Environment**



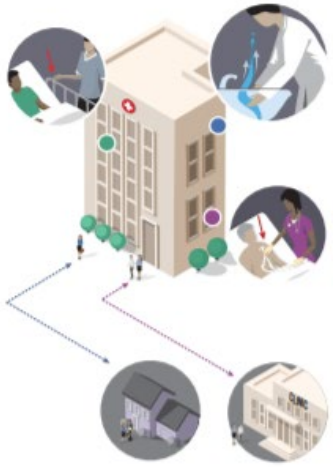
A Complex Web: Everything Is Connected

Using Plain Language to Convey Complex Ideas

A COMPLEX WEB: EVERYTHING IS CONNECTED

Healthcare Facilities

Antibiotic-resistant germs, including new and emerging resistance, can spread within and between healthcare facilities. These germs can cause infections in patients, called healthcare-associated infections (HAIs), and can spread to the community or environment (soil, water).



- Antibiotics save lives. However, any time antibiotics are used, the drugs can cause side effects and contribute to the development of antibiotic resistance.
- Germs can survive in plumbing (e.g., sink drains, toilets). The germs can splash back onto people, or move to wastewater treatment plants.
- Without appropriate infection control actions, germs can spread to people from other people on surfaces like bedrails or the hands of healthcare workers.
- Procedures and medical devices (e.g., catheters) help treat patients, but can be pathways for germs to enter the body and cause infections.

- Germs can move with patients when they are transferred from one healthcare facility to another, or go home.
- Germs can cause infections in the community when healthcare settings do not stop their spread.

- Human waste (poop) can carry traces of previously consumed antibiotics and antibiotic-resistant germs. Waste goes to treatment plants and is released as treated waste water. This can contribute to antibiotic resistance in the environment, including contaminating lakes and streams.

A COMPLEX WEB: EVERYTHING IS CONNECTED

Community & the Environment

Germs, including antibiotic-resistant germs, live and spread within our community and sometimes make people sick. Human activity can introduce antibiotics and antibiotic-resistant germs into the environment (soil, water), but it remains unclear how spread in the environment impacts human and animal health.

- Germs spread person to person, even during activities like handshaking, working out, having sex, or going to school.
- Resistant germs can spread between people and animals, including pets and petting zoos.
- Antibiotics save lives. However, any time antibiotics are used, the drugs can cause side effects and contribute to the development of antibiotic resistance.

- People can get infections when traveling internationally from other people, animals, contaminated food or water, or through receiving medical care. People can spread germs when they return.

- Antibiotics and resistant germs can spread through wildlife and through the environment, including bodies of water, and can make people sick.
- Waste (poop) from people in hospitals and animals on farms, applying antibiotics as pesticides, and antibiotic manufacturing (commonly occurs outside of the United States) can result in antibiotics and resistant germs in the environment. This contributes to the spread of resistance across the globe.
- Untreated sewage from septic systems and sewer leaks can contaminate the environment.

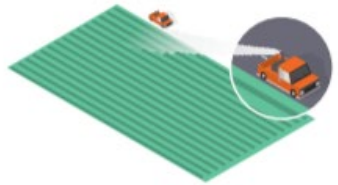
A COMPLEX WEB: EVERYTHING IS CONNECTED

Food, Farms, & Animals

Animals, like people, carry germs in their gut, including antibiotic-resistant germs. The U.S. food supply is among the safest in the world, but these germs can get into the food supply and people can get sick.

- People can get sick from eating or handling contaminated food or from contact with animals or their surroundings.

- Antibiotics save lives. However, any time antibiotics are used, the drugs can cause side effects and contribute to the development of antibiotic resistance.
- Animal waste (poop) can carry traces of previously consumed antibiotics and antibiotic-resistant germs. Sometimes animal waste is used as fertilizer on farms.
- Food, such as fruits and vegetables, can become contaminated through contact with soil or water containing waste from animals.



- Antibiotics and antifungals are sometimes applied as pesticides to manage crop disease. This may speed up the development and spread of resistant germs by contaminating surrounding soil and water.
- Stormwater and irrigation water from farmland can contaminate nearby lakes and rivers.

Antibiotic Resistance Spreads Easily Across the Globe

Resistant bacteria and fungi can spread across the countries and continents with people, animals, and goods.

One billion people cross through international borders each year. This includes 350 million travelers arriving in the United States through more than 300 points of entry.

Detect Resistant Threats

Prevent & Contain Resistant Germs

Improve Antibiotic Use

The Road Ahead on Antibiotic Resistance

Domestic Gaps

- Greater implementation of programs for infection prevention, antibiotic stewardship across the One Health spectrum.
- Increased collaboration between public health and health care to prevent the spread of germs and improve antibiotic use.
- Leverage use and resistance data to drive change in communities, states, and the nation.

Global Gaps

- Improved detection of known and emerging AR threats worldwide.
- Robust infection prevention everywhere to stop spread.
- Improved use of and access to antibiotics worldwide.
- Improved access to vaccines and safe water/sanitation.

Innovation Gaps

- New antibiotics, vaccines, diagnostics, and therapeutics to identify, prevent or treat.
- Better strategies for preventing spread of AR pathogens; Better strategies to improve antibiotic use wherever antibiotics are used.
- Understand AR in the environment and impact on human and animal health.
- Understand how the microbiome can be leveraged to prevent and treat infection.