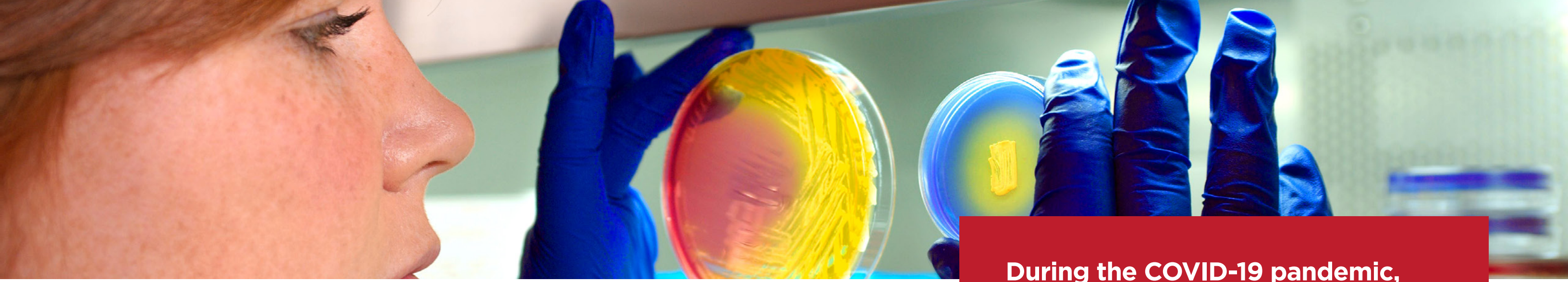

During the COVID-19 pandemic, the detection and reporting of antimicrobial resistance data slowed tremendously because of changes in patient care, lab supply challenges, testing, treatment, and the bandwidth of healthcare facilities and health departments.

COVID-19 Impacts on

Antimicrobial Resistance Tracking and Data:

Enhance data systems and sharing to prevent infections and stay ahead of antimicrobial resistance

CDC uses several data sources and systems to track antimicrobial resistance in the United States and abroad. Knowing where and how changes in resistance are occurring helps us find solutions to prevent spread and slow resistance, especially in outbreak responses.[1]

Recently, the United States has been building a solid foundation for public health preparedness to address antimicrobial resistance.

- Some of thee CDC programs focused on antimicrobial resistance were repurposed during the pandemic to offer COVID-19 testing support or surge capacity to overwhelmed labs.
- Since 2016, CDC has used its Antimicrobial Resistance Laboratory Network (AR Lab Network) to detect known and emerging antimicrobial resistance in every state.
- It continued to collect isolates throughout 2020 using established processes, but some isolates remain untested due to testing backlogs.

> CDC's AR Lab Network received and tested 23% fewer specimens or isolates in 2020 than in 2019.[2]

The number of bacterial whole genome sequence (WGS) submissions to the AR Lab Network via PulseNet in 2020 was about 21% less than the average number of isolates analyzed 2015-2019 by WGS or legacy methods. This also reduced the number of sequences the National Antimicrobial Resistance Monitoring System for Enteric Bacteria (NARMS) used to predict antimicrobial resistance related to intestinal illnesses.

More resources are needed to continue establishing a resilient public health system that can maintain capacity to respond to antimicrobial resistance while also responding to other threats. Without an infrastructure and supply chains grounded in preparedness, critical antimicrobial resistance data will be delayed again when the next threat emerges. We must address gaps identified before the COVID-19 pandemic, including expanding the public health workforce, increasing local access to the best detection tools and technology, and expanding global lab capacities.

Infections in the Community

- During the COVID-19 pandemic, many bacterial and fungal infections went potentially undiagnosed and untreated. The COVID-19 pandemic changed healthcare-seeking behavior and access to health care when outpatient clinics closed or limited appointments, resulting in fewer in-person visits. For example, people with mild intestinal infections that cause diarrhea may have let the illness run its course at home instead of seeking care. This may have also been the case for respiratory infections, such as those caused by *Streptococcus pneumoniae*.
- Rapid treatment can keep patients from getting sicker, prevent the pathogen from spreading, and slow the development of resistance. For example, if left undetected and untreated, gonorrhea can cause serious health complications and continue circulating in a community, increasing the chances of it developing resistance to available treatments.
- Another example is tuberculosis (TB), which is spread through the air. TB is treatable and curable, but people with TB can die if they do not get proper treatment. In 2020, reported TB cases substantially decreased in the United States, probably due to factors related to the COVID-19 pandemic, including undiagnosed cases (a result of decreased medical visits) and misdiagnosed cases. Decreases in immigration and increased use of respiratory control practices may also have contributed to the decline in cases.

Because of pandemic impacts, 2020 data are delayed or unavailable for 9 of the 18 antimicrobial resistance threats.

- *Clostridioides difficile (C. diff)*
- Drug-resistant *Neisseria gonorrhoeae*
- Drug-resistant *Campylobacter*
- Drug-resistant nontyphoidal *Salmonella*
- Drug-resistant *Salmonella* serotype Typhi
- Drug-resistant *Shigella*
- Drug-resistant *Streptococcus pneumoniae*
- Erythromycin-resistant group A *Streptococcus*
- Clindamycin-resistant group B *Streptococcus*

Available data show an alarming increase in resistant infections starting during hospitalization, growing at least 15% from 2019 to 2020.

- Carbapenem-resistant *Acinetobacter* (↑78%)
- Antifungal-resistant *Candida auris* (↑60%)*
- Carbapenem-resistant Enterobacterales (↑35%)
- Antifungal-resistant *Candida* (↑26%)
- ESBL-producing Enterobacterales (↑32%)
- Vancomycin-resistant Enterococcus (↑14%)
- Multidrug-resistant *P. aeruginosa* (↑32%)
- Methicillin-resistant *Staphylococcus aureus* (↑13%)

**Candida auris* was not included in the hospital-onset rate calculation of 15%.

Invest in Adaptable Programs

Established networks, like the AR Lab Network, can be tapped into during an emergency, offering foundational strength and flexibility when challenges arise.

The seven regional labs in CDC's AR Lab Network supported each other during the pandemic to maintain critical national testing for antimicrobial resistance. Some labs offered tests outside of their typical regions when others were challenged by supply shortages or staff and equipment were diverted to COVID-19 testing.

The National Tuberculosis Molecular Surveillance Center used its AR Lab Network sequencing capacity to study SARS-CoV-2, the virus that causes COVID-19. The lab sequenced more than 4,700 SARS-CoV-2 genomes in 2020 to support contact tracing and help stop the virus from spreading. These collaborations display the flexibility of the AR Lab Network and how CDC's antimicrobial resistance investments can be adapted during a crisis.

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What's Next: CDC is exploring investments in the U.S. infrastructure to better respond to the challenges of antimicrobial resistance and emerging threats simultaneously.

- Supporting uninterrupted laboratory supplies and equipment for patient care, infection control, and data tracking during emergencies and surge outbreaks.
- Merging strategies to respond to COVID-19 and antimicrobial resistance, such as using telehealth for contact tracing, supporting specimen self-collection, or offering express clinics that allow walk-in testing for sexually transmitted infections.
- Expanding the use of automated data to the National Healthcare Safety Network (NHSN) to reduce manual data collection and submission, which would allow healthcare facilities to send information on antibiotic use and antimicrobial resistance.