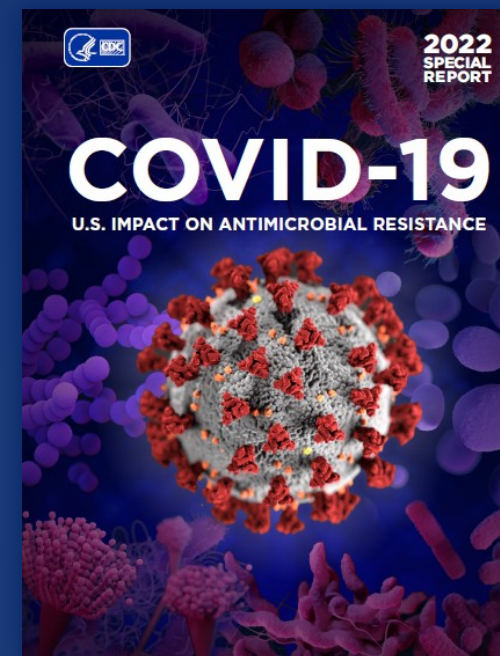




# **COVID-19: U.S. Impact on Antimicrobial Resistance 2022 SPECIAL REPORT**

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## Report Overview

- CDC showed as recently as 2019 that **more than 3 million Americans acquire an antimicrobial-resistant infection or *Clostridioides difficile* infection** (often associated with taking antimicrobials) each year. **Nearly 50,000 people die from these threats.**
- As the pandemic pushed healthcare facilities, health departments, and communities near their breaking points in 2020, we saw a **significant increase in antibiotic use**, difficulty in following infection prevention and control guidance, and a resulting **increase in healthcare-associated, antimicrobial-resistant infections in U.S. hospitals.**
- In fact, resistant hospital-onset infections and deaths both **increased at least 15%** during the first year of the pandemic.
- **There is a lack of data in 2020 for many pathogens** that spread in the community, like sexually transmitted drug-resistant gonorrhea.
- **We must invest in the prevention-focused public**

**In the first year of the COVID-19 pandemic:**

**↑15%**

Resistant infections & deaths increased 15% in hospitals in 2020

**~80%**

80% of patients hospitalized with #COVID19 received an antibiotic March-Oct. 2020, most were probably not needed



Delayed or unavailable data led to resistant infections spreading undetected & untreated





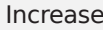




# **COVID-19 Impacts on 18 AR Threats**

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	Resistant Pathogen	2017 Threat Estimate	2018 Threat Estimate	2019 Threat Estimate	2017-2019 Change	2020 Threat Estimate and 2019-2020 Change
URGENT	Carbapenem-resistant <i>Acinetobacter</i>	8,500 cases 700 deaths	6,300 cases 500 deaths	6,000 cases 500 deaths	Stable*	7,500 cases 700 deaths <b>Overall: 35% increase*</b> <b>Hospital-onset: 78% increase*</b>
	Antifungal-resistant <i>Candida auris</i>	171 clinical cases†	329 clinical cases	466 clinical cases	 Increase	754 cases <b>Overall: 60% increase</b>
	<i>Clostridioides difficile</i>	223,900 infections 12,800 deaths	221,200 infections 12,600 deaths	202,600 infections 11,500 deaths	 Decrease	Data delayed due to COVID-19 pandemic
	Carbapenem-resistant Enterobacterales	13,100 cases 1,100 deaths	10,300 cases 900 deaths	11,900 cases 1,000 deaths	 Decrease*	12,700 cases 1,100 deaths Overall: Stable*
	Drug-resistant <i>Neisseria gonorrhoeae</i>	550,000 infections	804,000 infections	942,000 infections	 Increase	<b>Hospital-onset: 35% increase*</b>
SHEPHERD	Drug-resistant <i>Campylobacter</i>	448,400 infections 70 deaths	630,810 infections	725,210 infections	 Increase	Data unavailable due to COVID-19 pandemic
	Drug-resistant <i>Campylobacter</i>	448,400 infections 70 deaths	630,810 infections	725,210 infections	 Decrease*	Data delayed due to COVID-19 pandemic‡ 26% of infections were resistant, a 10% decrease
	Antifungal-resistant <i>Candida</i>	34,800 cases 1,700 deaths	27,000 cases 1,300 deaths	26,600 cases 1,300 deaths	 Increase*	28,100 cases 1,400 deaths <b>Overall: 12% increase*</b> <b>Hospital-onset: 26% increase*</b>
	ESBL-producing Enterobacterales	197,400 cases 9,100 deaths	174,100 cases 8,100 deaths	194,400 cases 9,000 deaths	 Increase*	197,500 cases 9,300 deaths <b>Overall: 10% increase*</b> <b>Hospital-onset: 32% increase*</b>
	Vancomycin-resistant Enterococcus	54,500 cases 5,400 deaths	46,800 cases 4,700 deaths	47,000 cases 4,700 deaths	Stable*	50,300 cases 5,000 deaths <b>Overall: 16% increase*</b> <b>Hospital-onset: 14% increase*</b>

	Resistant Pathogen	2017 Threat Estimate	2018 Threat Estimate	2019 Threat Estimate	2017-2019 Change	2020 Threat Estimate and 2019-2020 Change
S E R I O U S	Multidrug-resistant <i>Pseudomonas aeruginosa</i>	32,600 cases 2,700 deaths	29,500 cases 2,500 deaths	28,200 cases 2,400 deaths	 Decrease*	28,800 cases 2,500 deaths Overall: Stable* <b>Hospital-onset: 32% increase*</b>
	Drug-resistant nontyphoidal <i>Salmonella</i>	212,500 infections 70 deaths	228,290 infections	254,810 infections	 Increase	Data delayed due to COVID-19 pandemic† 14% of infections were resistant, a 3% decrease
	Drug-resistant <i>Salmonella</i> serotype Typhi	4,100 infections <5 deaths	4,640 infections	6,130 infections	 Increase	Data delayed due to COVID-19 pandemic† 85% of infections were resistant, a 10% increase
	Drug-resistant <i>Shigella</i>	77,000 infections <5 deaths	215,850 infections	242,020 infections	 Increase	Data delayed due to COVID-19 pandemic† 46% of infections were
	Methicillin-resistant <i>Staphylococcus aureus</i>	323,700 cases 10,600 deaths	298,700 cases 10,000 deaths	306,600 cases 10,200 deaths	 Increase	279,300 cases 9,800 deaths Overall: Stable* <b>Hospital-onset: 13% increase*</b>
	Drug-resistant <i>Streptococcus pneumoniae</i>	12,100 invasive infections 1,500 deathst	See pathogen page if comparing data over time	12,000 invasive infections 1,200 deaths	Stable	Data delayed due to COVID-19 pandemic
	Drug-resistant Tuberculosis (TB)	888 cases 73 deathst	962 cases 102 deaths	919 cases	 Increase	661 cases Decreaset
C O N	Erythromycin-resistant group A <i>Streptococcus</i>	5,400 infections 450 deathst	See pathogen page if comparing data over time	6,200 infections 560 deaths	 Increase	Data delayed due to COVID-19 pandemic

†CDC's database allows for continuous updates for TB, *C. auris*, and *Streptococcus*. Variations in historical TB data are attributable to updated information submitted in the interim by reporting areas. This report includes data reported through June 14, 2021. For *Streptococcus*, table reflects infection increase for 2018 compared to October 2021. For *C. auris*, this report reflects a critical case increase for 2018 data.

\*Changes are in rates, not comparisons of counts. Data for healthcare pathogens show a significant increase in hospital-onset rates of resistant infections in 2020, likely due to smaller number of overall hospitalizations during the pandemic.

‡For TB, 2019 and 2020 death reports are not available due to a 2-year lag. For enteric pathogens, 2018-2020 death estimates and 2020 estimates of total number of resistant infections are not available at this time.

**“These setbacks *can* and *must* be temporary.  
The COVID-19 pandemic has made it clear—**

**prevention is preparedness.**

**We must prepare our public health systems to  
fight multiple threats, simultaneously.**

**Because antimicrobial resistance will not**

**stop,**

**”**

**we must meet the challenge.**

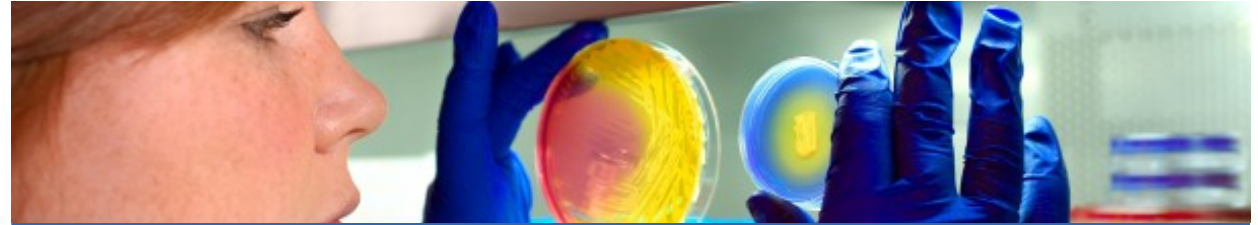
**Rochelle P. Walensky, MD, MPH  
Director, Centers for Disease Control and  
Prevention**



# COVID-19 Impacts on: Antimicrobial Resistance Tracking & Data

- 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, the bandwidth of healthcare facilities and health departments.
- Available data show an alarming increase in resistant infections starting during hospitalization, **growing at least 15% from 2019 to 2020.**
- Because of the pandemic impacts

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



## What's Next

- 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.
- 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.

# COVID-19 Impacts on: Preventing Infections

- Pandemic-related challenges **hindered many infection prevention and control practices**—undoing some progress on combating antimicrobial resistance.
- **Preventing infections** is one of the greatest tools for combating antimicrobial resistance.
- There were more and sicker patients during the pandemic who required more frequent and longer use of catheters and ventilators.
- Antimicrobial-resistant infections and deaths **have risen 15% in 2020 in U.S. hospitals** because of the COVID-19 pandemic.
- Hospitals saw significantly higher rates for four out of six types of HAIs in 2020.
- Acute care hospitals also saw more *Candida auris* cases, including in COVID-19



## What's Next

- Continuing to extend high-quality infection prevention and control training to all healthcare professionals.
- Increasing infection prevention and control implementation in facilities beyond hospitals.
- Communicating clearly to the public and fostering conversations on topics like how germs spread.
- Identifying barriers to implementing and developing plans to maintain quality infection prevention and control practices while supporting efforts to respond to new



# COVID-19 Impacts on: Antibiotic Use



While antibiotic use throughout the pandemic varied across healthcare settings, antibiotics were commonly prescribed to patients for COVID-19—even though antibiotics are not effective against viruses.

From March 2020 to October 2020, **almost 80% of patients hospitalized with COVID-19 received an antibiotic.**



While antibiotic use was lower overall in 2021 compared with 2019, in August 2021, antibiotic use exceeded prescribing in 2019



Azithromycin use was 150% higher in April 2020 and 82% higher in December 2020 than the same months in 2019.



## What's Next

- Optimizing antibiotic and antifungal use and prescribing across all healthcare settings.
- Tracking antibiotic and antifungal prescribing and evaluation for improvements toward optimal use.
- Enhancing communication of the latest antibiotic and antifungal use recommendations and guidance to healthcare workers.
- Supporting the development of new vaccines.
- Working with partners to promote optimal

# COVID-19 Impacts on: Environment (e.g., water, soil) and Sanitation

- Antimicrobial resistance is a One Health issue, impacting the health of humans, animals, plants, and the environment. CDC is looking at ways to **expand surveillance through existing systems** to monitor antimicrobial resistance from multiple sources across One Health.
- In 2020, researchers **leveraged an existing project funded by CDC's AR Solutions Initiative** focused on antimicrobial resistance to better understand the burden of COVID-19 in communities—using wastewater.
- **5 benefits of wastewater surveillance for antimicrobial resistance:** Captures silently spreading germs, operates independent of healthcare and clinical capacity, is efficient, moves



## What's Next

- Expanding the capacity of NWSS to collect antimicrobial resistance data from wastewater treatment plants and healthcare facilities to continue infectious disease surveillance.
- Studying antimicrobial resistance in community and healthcare wastewater, domestically and globally.
- Expanding global capacities to fight antimicrobial resistance in the environment, as part of the CARB National Action Plan.
- Mapping existing antimicrobial resistance

# COVID-19 Impacts on: Vaccines, Diagnostics, and Therapeutics

- The COVID-19 pandemic highlighted the importance of prevention. **We need more prevention products, not just new drugs**, to stop infections before they happen.
- The PCV13 vaccine protects people from 13 types of pneumococcus, including resistant forms. This vaccine prevented more than 30,000 cases of invasive pneumococcal disease and 3,000 deaths from 2010 to 2013 alone.
- Since 2016, **CDC has invested more than \$160 million in research** to address knowledge gaps with scalable, innovative solutions such as vaccines, therapeutics, diagnostics and other prevention tools.

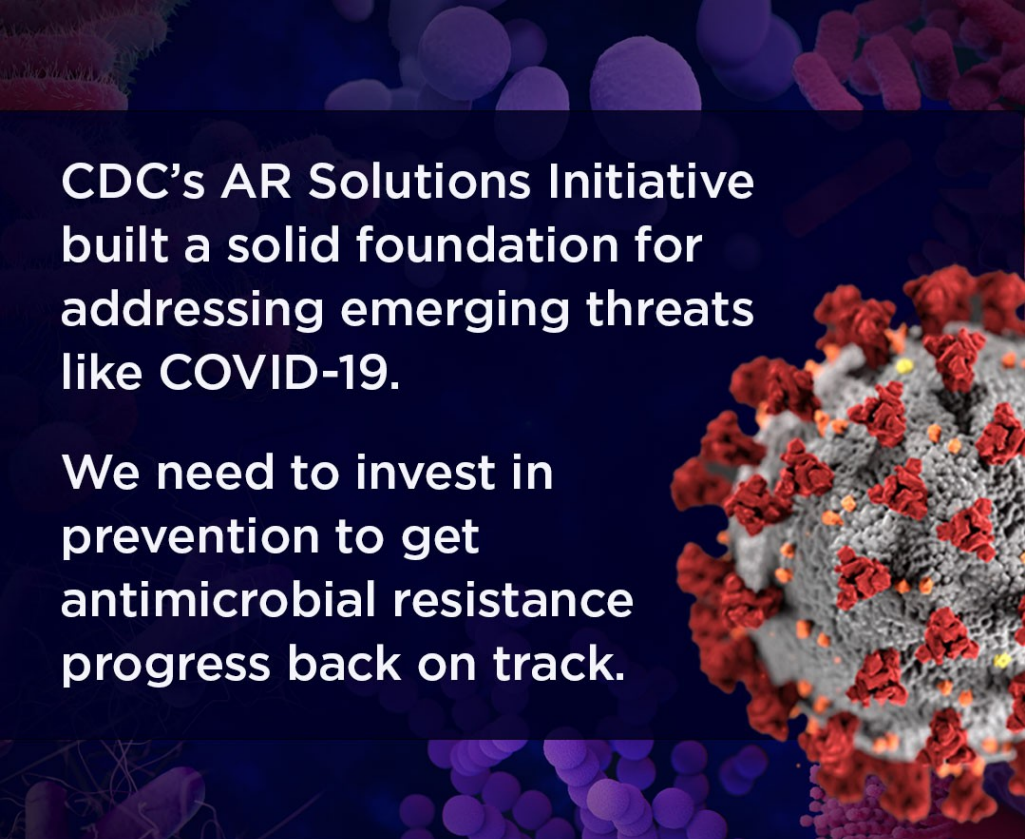


## What's Next

- Supporting more innovation and research on therapeutics, vaccines, and diagnostics.
- Enhancing interagency collaborations to accelerate research for developing new antibiotics, antifungals, therapeutics, and vaccines.
- Working to undo negative impacts the COVID-19 pandemic may have had on vaccine conversations.
- Supporting the widespread use of vaccines to prevent infections, slow the spread of resistance, and reduce antibiotic use.
- Building a vaccine data platform to inform

# Building Public Health Capacity for Antimicrobial Resistance

- The COVID-19 response has demanded that **attention and resources be diverted away** from a needed focus on antimicrobial resistance outbreak detection.
- The United States must continue to **invest in preparing public health systems across One Health** to address threats from multiple angles, simultaneously, and across One Health.
- As a direct result of CDC's prevention investments through its AR Solutions Initiative, the United States has made progress in slowing the spread of antimicrobial resistance and shown that preventing these infections is possible.
- **More sustainable funding is required to maintain momentum for this AR work moving forward.**



CDC's AR Solutions Initiative built a solid foundation for addressing emerging threats like COVID-19.

We need to invest in prevention to get antimicrobial resistance progress back on track.

[www.cdc.gov/DrugResistance/COVID-19.html](https://www.cdc.gov/DrugResistance/COVID-19.html)





# Coming up: CDC & FDA to discuss prevention tools

On **August 30, 2022**, CDC and FDA will co-host a virtual workshop to improve the development of products that prevent healthcare-associated infections (HAIs), including infections that can be resistant to the remaining antibiotics and antifungals available to treat them.

## Discussion topics will include:

- The current state of development of pathogen-directed products used to prevent HAIs
- Evidence supporting decolonization and pathogen reduction (in colonized patients) as a strategy to prevent infection and transmission of antimicrobial-resistant (AR) healthcare-associated pathogens
- AR threats as potential targets for decolonization and pathogen reduction
- Challenges and potential approaches to drug development and registration of products for the prevention of HAIs

**The workshop is open to the public and registration is now open.**

## Drug Development Considerations for the Prevention of Healthcare-Associated Infections

—Virtual Public Workshop  
Cosponsored by CDC & FDA

**Date:** August 30, 2022

**Time:** 8:30 a.m. – 5 p.m. EDT



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