



COVID-19 Impacts on Antibiotic Use:

Improve the use of antibiotics wherever they are used and improve access

When a patient (human or animal) receives an antibiotic they do not need, not only does the patient get no benefit, but they are also put at risk for side effects (e.g., allergic reactions, toxicity that affects organ function, *C. diff*). Evidence suggests that 1 in 5 hospitalized patients who receive an antibiotic has an adverse drug event.²²

When COVID-19 cases increased in hospitals, so did antibiotic use. Antibiotics were frequently started upon admission, but several studies have shown that patients who had COVID-19 were rarely also infected with bacteria when admitted.^{11,12}

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.

Antibiotics and antifungals can save lives, but any time they are used—for people, animals, or plants—they can contribute to resistance.

Antibiotic Use Varied During the COVID-19 Pandemic



Hospitals

- From March 2020 to October 2020, almost 80% of patients hospitalized with COVID-19 received an antibiotic.¹³
- Antibiotic use was lower overall as of August 2021 compared to 2019 but increased for some antibiotics like azithromycin and ceftriaxone. Approximately half of hospitalized patients received ceftriaxone, which was commonly prescribed with azithromycin.
- This likely reflects difficulties in distinguishing COVID-19 from community-acquired pneumonia when patients first arrive at a hospital for assessment.



Outpatient Settings

- Antibiotic use significantly dropped in 2020 compared to 2019 due to less use of outpatient health care and less spread of other respiratory illnesses that often lead to antibiotic prescribing.
- However, in 2021 outpatient antibiotic use rebounded. While antibiotic use was lower overall in 2021 compared with 2019, in August 2021, antibiotic use exceeded prescribing in 2019 by 3%.
- From 2020 through December 2021, most antibiotic prescriptions for adults were for azithromycin and increases in azithromycin prescribing corresponded to peaks in cases of COVID-19. After an initial peak in azithromycin prescribing in March 2020, azithromycin use decreased during the pandemic.
- By August 2021, there was still more azithromycin prescribing than in August 2019.



Nursing Homes

- Antibiotic use in nursing homes spiked alongside surges of COVID-19 cases but remains lower overall.
- However, azithromycin use was 150% higher in April 2020 and 82% higher in December 2020 than the same months in 2019. Azithromycin prescribing remained elevated through October 2020.
- In 2021, antibiotic use overall was, on average, 5% lower than 2019. This decrease might be due to fewer nursing home residents during this time.

Public health must continue educating consumers, healthcare providers, and industry on the value, risks, and best practices of antibiotics and antifungals.

- These drugs are often a treatment option for emerging infectious diseases, particularly when no other treatment options are available or known.
- While some of this prescribing can be appropriate when risks for related bacterial or fungal infections are unknown, this antibiotic prescribing can also put patients at risk for side effects and further the pressure for resistance to develop and spread.
- Healthcare workers can protect patients by ensuring antibiotics and antifungals are only used when they are effective and needed, such as to treat life-threatening conditions caused by fungi or bacteria, like sepsis.

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

- Prior to the pandemic, CDC's Core Elements of Antibiotic Stewardship (Core Elements) helped many hospitals improve their antibiotic use. In 2020, more than 90% of U.S. hospitals had an antibiotic stewardship program aligned with CDC's Core Elements.¹⁴
- As part of the CARB National Action Plan, CDC aims to continue this progress in outpatient settings.
- CDC also aims to support and encourage antimicrobial resistance preventives, such as decolonization therapies, and vaccines coming to market. This will help reduce antibiotic and antifungal use by preventing infections from occurring or offering alternative treatments to these important drugs.



NHSN

NATIONAL HEALTHCARE
SAFETY NETWORK

Tracking Antibiotic Use to Optimize Prescribing Practices

CDC's NHSN allows healthcare facilities to automate monitoring antibiotic use. These data inform interventions to optimize prescribing, which improves treatment effectiveness, protects patients from harms caused by unnecessary antibiotic use, and slows antimicrobial resistance. In CDC's 2019 AR Threats Report, CDC noted that tracking antibiotic use in settings like nursing homes and long-term care facilities is often non-existent or difficult to implement.

While more work needs to be done to improve tracking antibiotic use and stewardship efforts, the number of hospitals reporting antibiotic use data from 2018 through 2021 more than doubled. This helps CDC and facilities better monitor prescribing and use.



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

- Optimizing antibiotic and antifungal use across all healthcare settings and wherever they are used.
- Continuing to improve antibiotic and antifungal prescribing and use across healthcare settings, including encouraging use of CDC's NHSN antibiotic use module for reporting and implementing CDC's Core Elements across 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 to address antimicrobial-resistant pathogens and other conditions for which antibiotics and antifungals are commonly prescribed.
- Working with partners to promote optimal antibiotic and antifungal use and appropriate tracking for companion animals and plant agriculture.
- Supporting basic and applied research and development for new antibiotics and antifungals, therapeutics, and vaccines.



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