



What Clinicians, Pharmacists, and Public Health Partners Need to Know about Antibiotic Prescribing and COVID-19

Clinician Outreach and Communication Activity (COCA) Call

Thursday, November 18, 2021

Free Continuing Education

- Free continuing education is offered for this webinar.
- Instructions on how to earn continuing education will be provided at the end of the call.

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- Planners have reviewed content to ensure there is no bias.
- The presentation will not include any discussion of the unlabeled use of a product or a product under investigational use, except Dr. Lauri Hicks would like to disclose that she will be advising against using medications that are not supported by data or recommended for treating COVID-19 (e.g., hydroxychloroquine).
- CDC did not accept commercial support for this continuing education activity.

Objectives

At the conclusion of today's session, the participant will be able to accomplish the following:

1. Describe the impact of the COVID-19 pandemic on antibiotic prescribing.
2. Discuss opportunities to improve antibiotic prescribing for patients who have COVID-19.
3. Identify strategies and resources to support antibiotic prescribing decisions and educate patients about appropriate antibiotic use.

To Ask a Question

- Using the Zoom Webinar System
 - Click on the “Q&A” button
 - Type your question in the “Q&A” box
 - Submit your question
- If you are a patient, please refer your question to your healthcare provider.
- If you are a member of the media, please direct your questions to CDC Media Relations at 404-639-3286 or email media@cdc.gov.

Today's Presenters

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The content and conclusions are those of the authors and presenters and do not necessarily represent the views of, nor should any endorsements be inferred by, the Centers for Disease Control and Prevention.



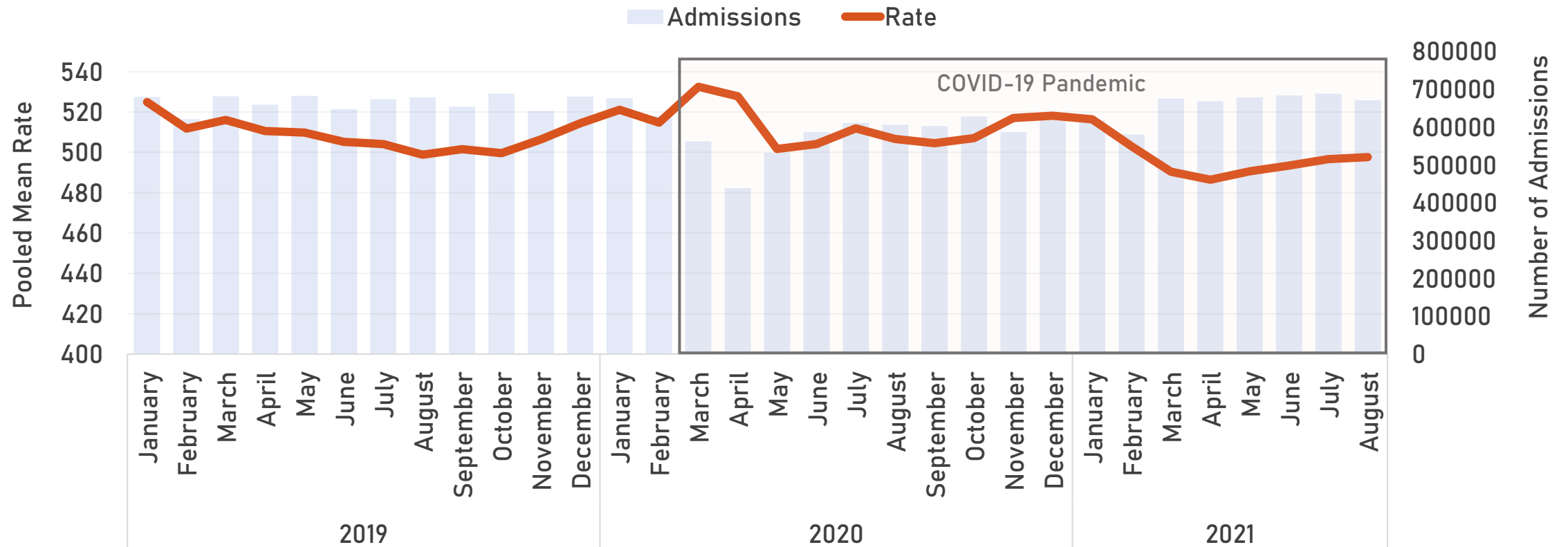
During the COVID-19 pandemic, antibiotic use varied across healthcare settings, with azithromycin prescribing higher than expected in all settings.

A variety of data sources provide a snapshot of antibiotic use across healthcare settings during the COVID-19 pandemic.

- **Hospital data**
 - Antibiotic use from 526 hospitals reporting to CDC's National Healthcare Safety Network (NHSN)
- **Nursing home data**
 - Antibiotic use from PharMerica long-term care pharmacy data including 1,900 U.S. nursing homes
- **Outpatient data**
 - Antibiotic use extrapolated to 100% from 92% of retail prescriptions (IQVIA data) and from 100% Medicare carrier claims and Part D event files

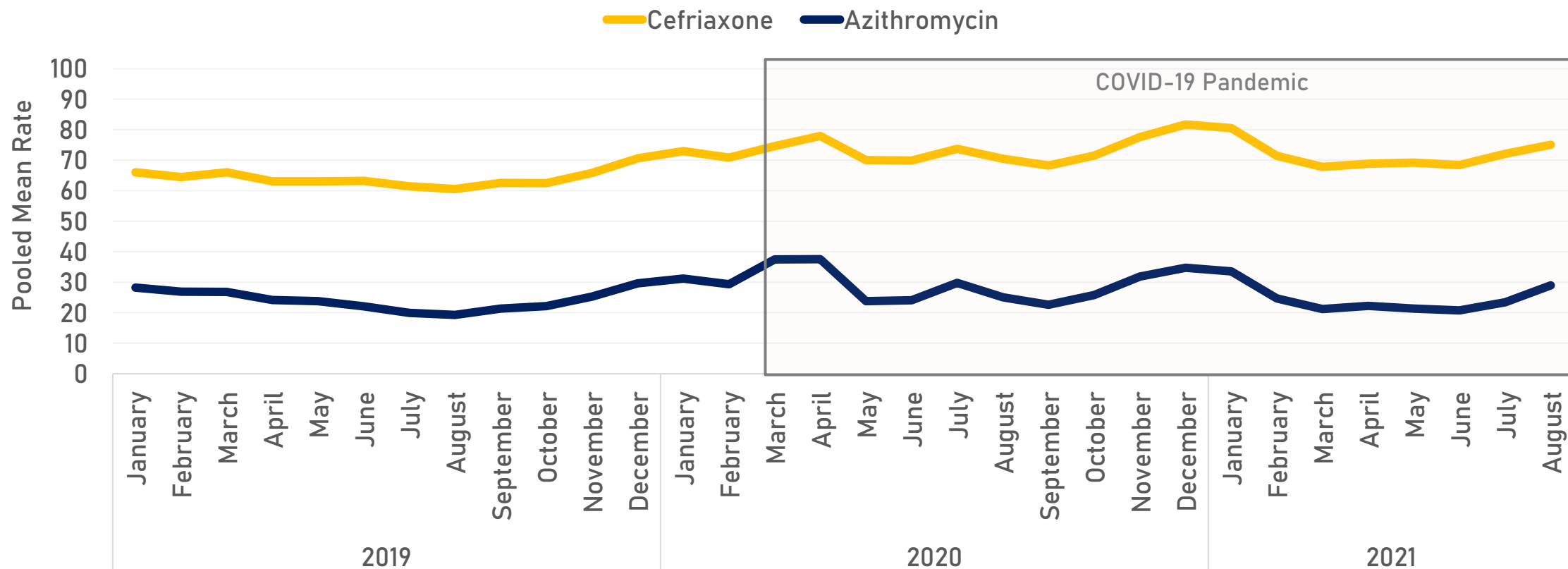
Early in the COVID-19 pandemic, overall antibiotic use increased in U.S. hospitals, but was lower in 2021 compared to 2019.

National Healthcare Safety Network (526 hospitals)
 Days of Therapy per 1,000 Days Present – All antibacterial agents



Hospital azithromycin and ceftriaxone use fluctuated – with multiple peaks in 2020 and 2021.

National Healthcare Safety Network (526 hospitals)
Days of Therapy per 1,000 Days Present

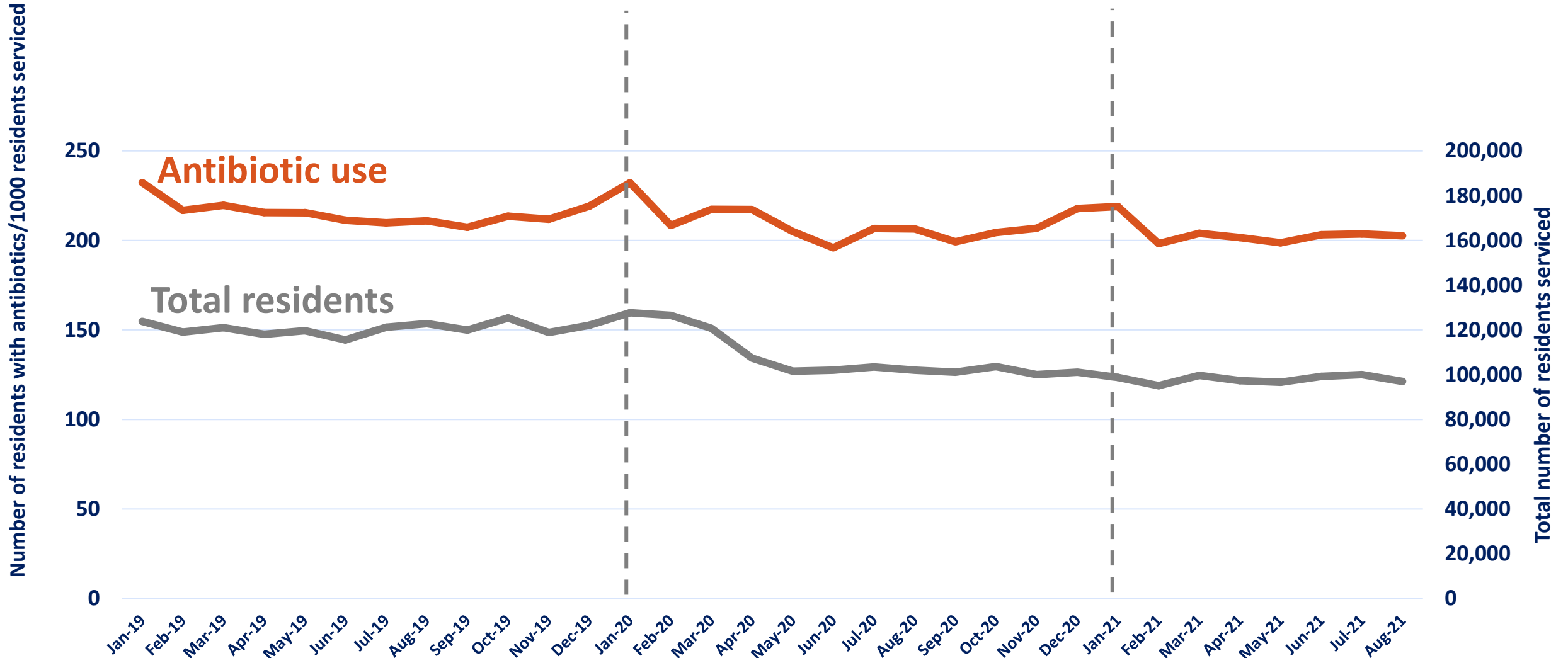


Overall nursing home antibiotic prescribing decreased, 2019-2021.

2019

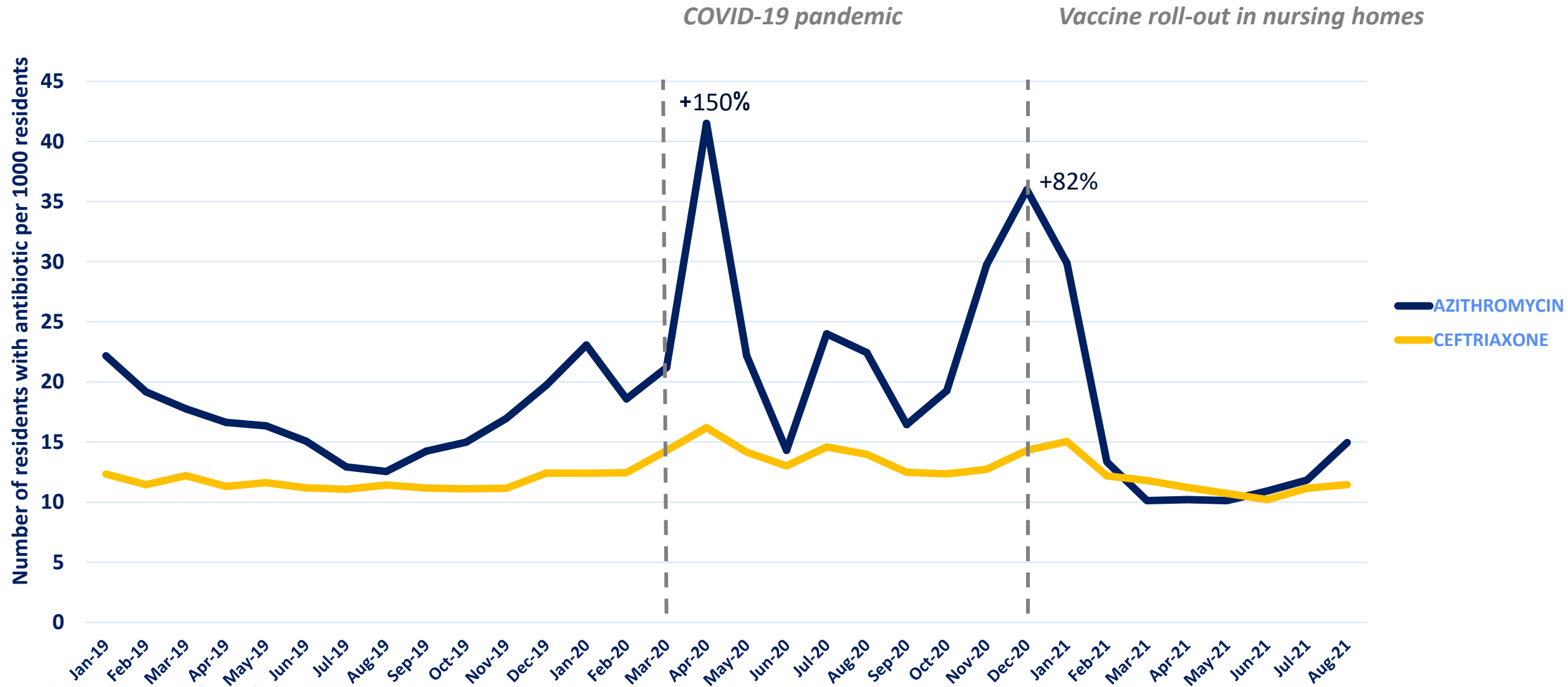
2020

2021

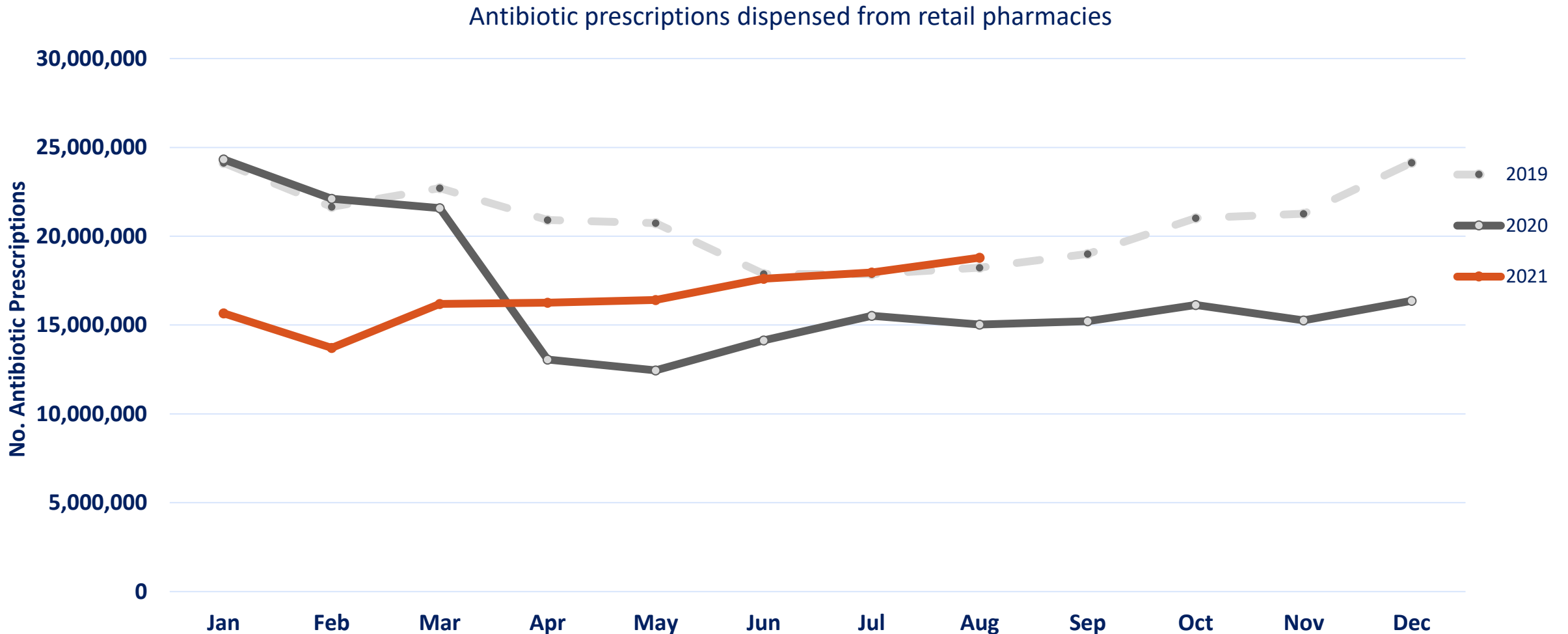


Source: Pharamerica, long-term care pharmacy data

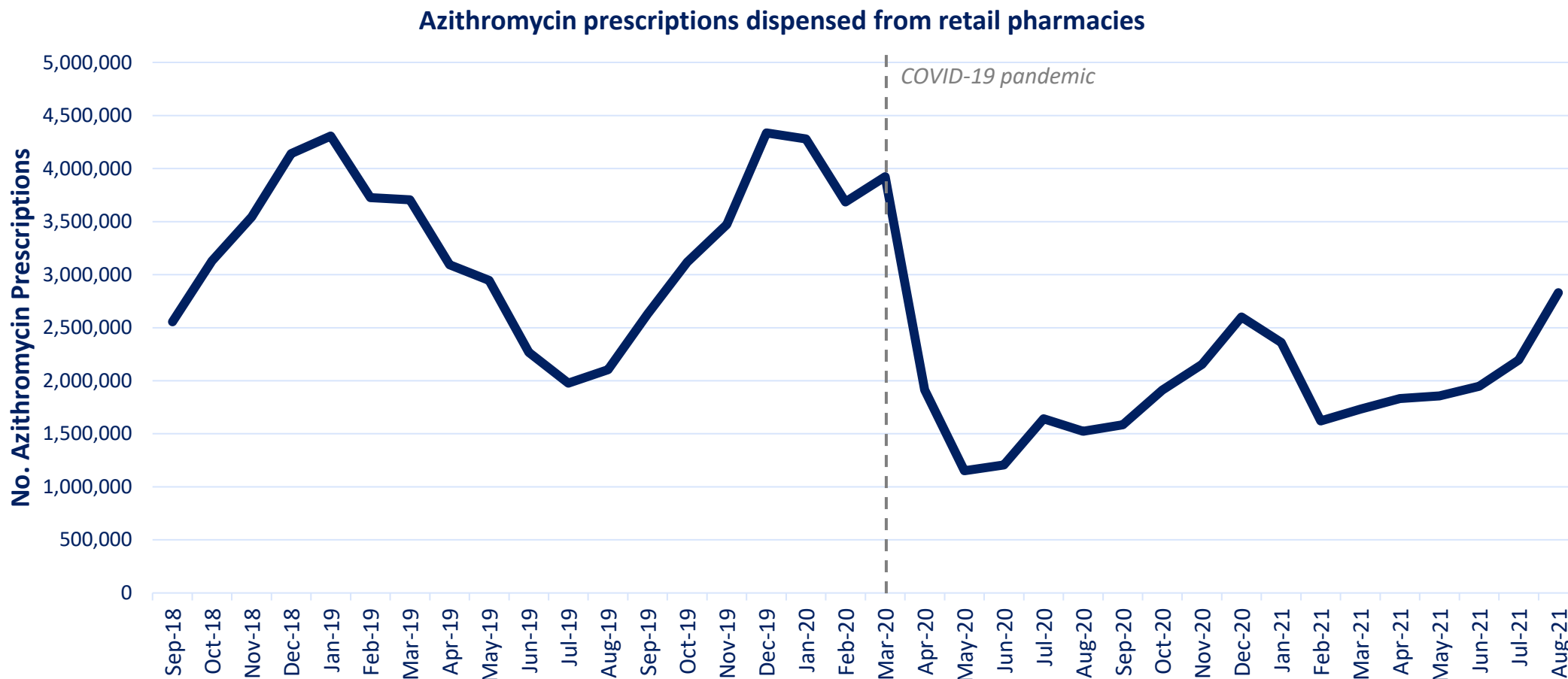
Nursing home azithromycin and ceftriaxone prescribing increased in 2020 and 2021 compared to 2019.



Overall outpatient antibiotic prescribing initially decreased in 2020 and has rebounded in 2021 to pre-pandemic levels.



Outpatient azithromycin prescribing initially decreased after a peak in March 2020 but now exceeds pre-pandemic levels.





Antibiotics are commonly prescribed for patients with COVID-19.

Most hospitalized patients with COVID-19 receive antibiotics.

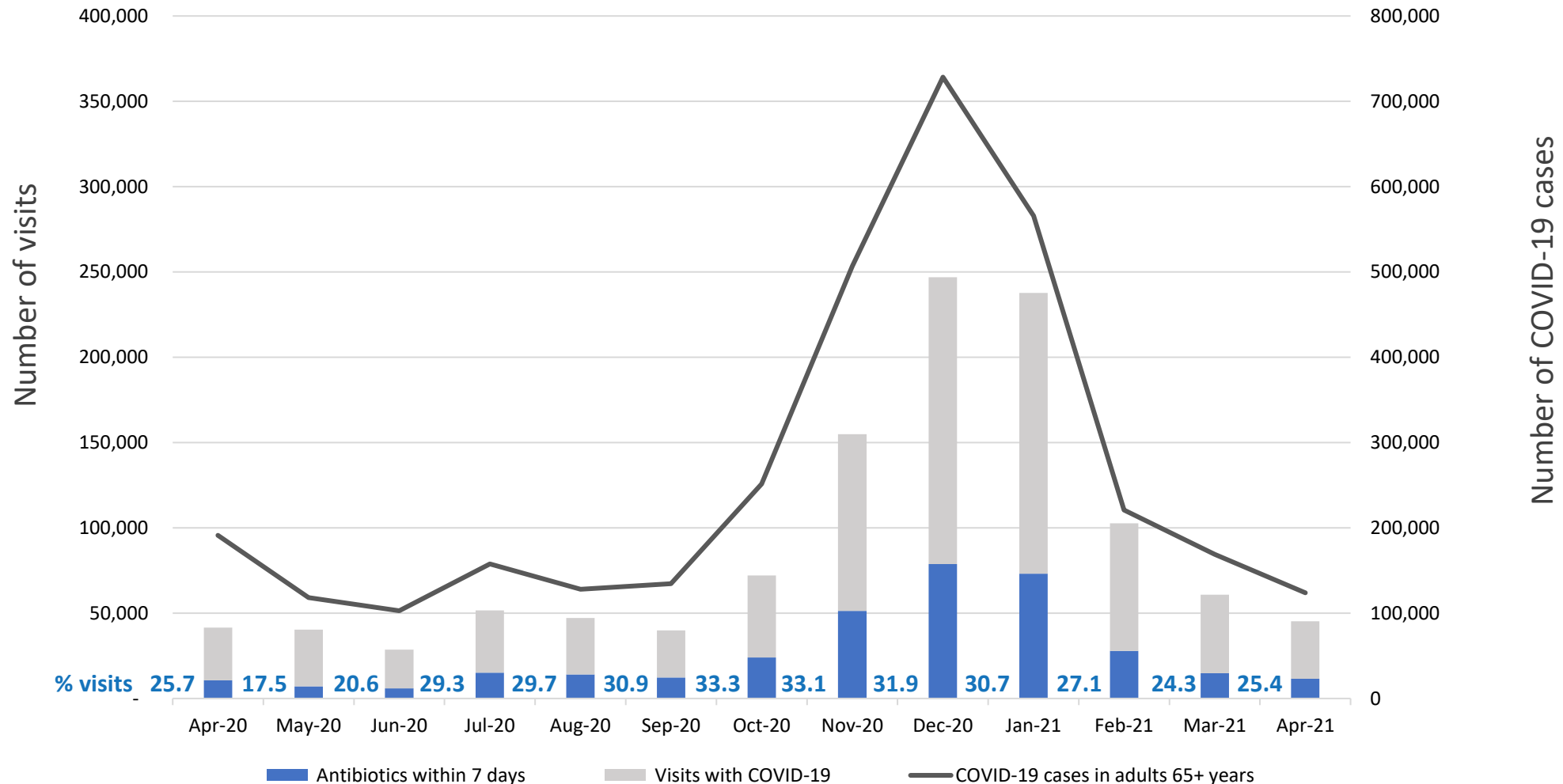
Trends in Antibiotic Use in United States Hospitals During the Coronavirus Disease 2019 Pandemic

Open Forum Infectious Diseases

BRIEF REPORT

- Most patients (77.3%) hospitalized with COVID-19 received antibiotics.¹
 - Over 80% of antibiotics were started on admission.
 - Almost half of patients received ceftriaxone, frequently in combination with azithromycin.

Outpatient antibiotic prescriptions track with COVID-19 cases and visits among adults ≥ 65 years of age.



Self-knowledge Check: The following statements regarding antibiotic use during the COVID-19 pandemic are true EXCEPT:

- A. Overall antibiotic prescribing was lower in the outpatient setting.
- B. Overall antibiotic prescribing was lower in nursing homes.
- C. Early in the COVID-19 pandemic, overall antibiotic use increased in U.S. hospitals, but was lower in 2021 compared to 2019.
- D. Antibiotic prescribing was uncommon for patients with COVID-19.
- E. Azithromycin was commonly prescribed in all healthcare settings coinciding with peaks in COVID-19 cases.

Answer: The following statements regarding antibiotic use during the COVID-19 pandemic are true EXCEPT:

- A. Overall antibiotic prescribing was lower in the outpatient setting.
- B. Overall antibiotic prescribing was lower in nursing homes.
- C. Early in the COVID-19 pandemic, overall antibiotic use increased in U.S. hospitals, but was lower in 2021 compared to 2019.
- D. Antibiotic prescribing was uncommon for patients with COVID-19.**
- E. Azithromycin was commonly prescribed in all healthcare settings coinciding with peaks in COVID-19 cases.

Rationale: Data indicate antibiotic prescribing for patients with COVID-19 is common.



COVID-19 Case Studies

Case Study: older adult requiring hospitalization



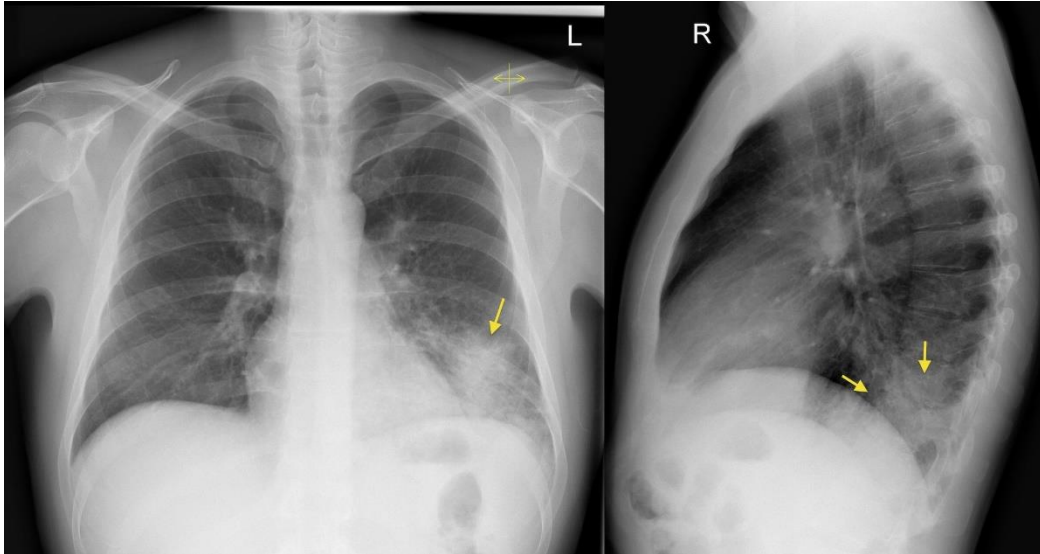
- Mr. S is a 70-year-old man admitted to your hospital with a cough, fever, and malaise that started two days ago.
- He has a history of hypertension, coronary artery disease, and diabetes.
- His grandson was recently febrile, and Mr. S and his wife had to care for him as he couldn't go to daycare.

Physical exam on admission

- T 100.9, HR 94, RR 18, BP 137/75, 93% on 2 liters of oxygen
- Gen: NAD, coughing
- HEENT: no cervical lymphadenopathy, no thrush, pupils equally reactive
- CV: regular rate and rhythm, no murmurs
- Pulmonary: decreased sounds at bases, rales in left lower lobe
- Abdomen: soft, non tender, no organomegaly
- Extremities: trace edema



Chest radiograph and laboratory results



| | | | |
|-----|----|-----|----|
| 139 | 97 | 15 | 97 |
| 3.4 | 22 | 1.2 | |

| | | |
|----|----|-----|
| 13 | 13 | 276 |
| | 37 | |

COVID-19: PCR+

Blood cultures: pending

BNP: 202 pg/mL

Troponins: negative

Procalcitonin: .002 µg/L

Self-knowledge Check: Choose the best option for managing this patient.

- A. Start with broad-spectrum antibiotics, including vancomycin and piperacillin-tazobactam.
- B. For presumed community-acquired pneumonia, treat with ceftriaxone and azithromycin.
- C. Start ivermectin.
- D. Provide supportive care, initiate dexamethasone and remdesivir, and consider treatment with baricitinib or tocilizumab.

Answer: Choose the best option for managing this patient.

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Rationale: Antibiotics are not indicated for treatment of most patients with COVID-19. Other treatments for COVID-19 are recommended.

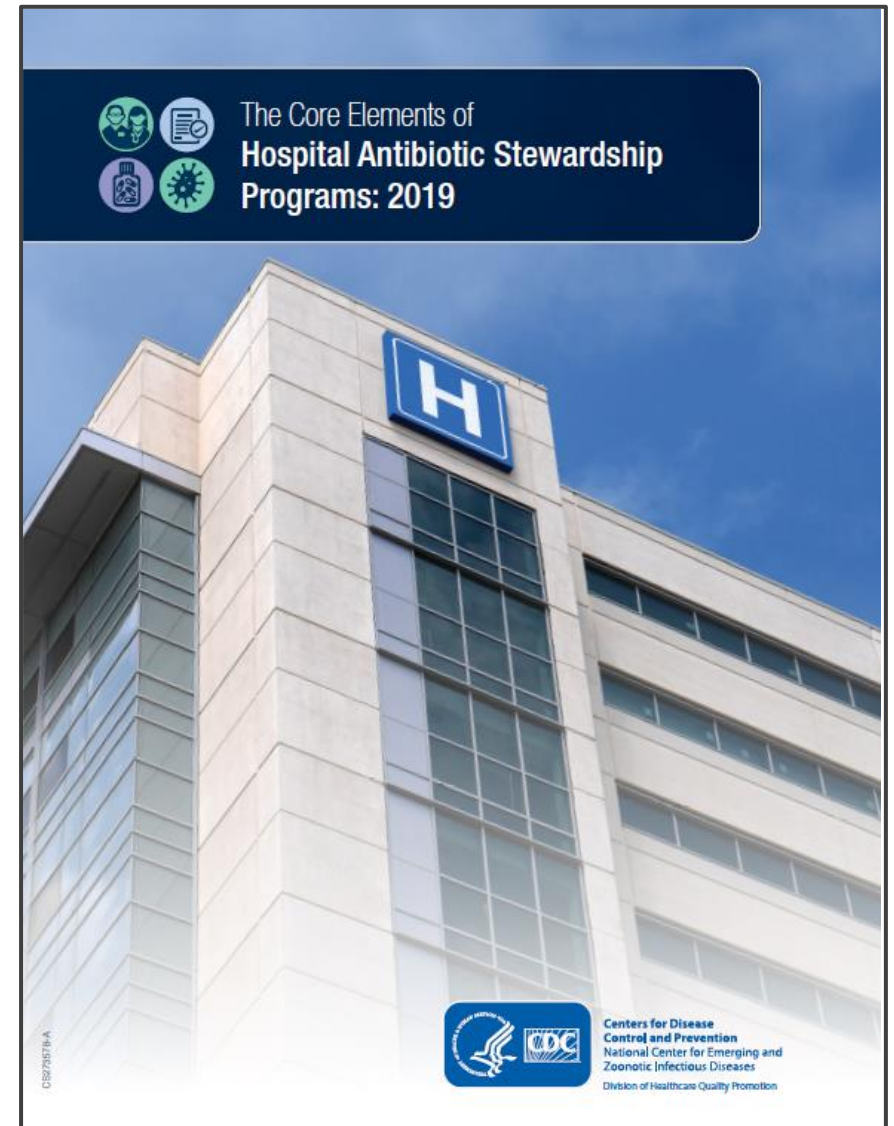
What is the frequency of secondary bacterial infections in patients with COVID-19?

- Bacterial co-infections are uncommon.
 - Bacterial co-infection (estimated on presentation) identified in **3.5%** of hospitalized patients (95% CI 0.4-6.7%)¹
 - Multicenter study found that bacterial respiratory co-infections were uncommon (**1.2%**) at the time of hospital admission ²
- Healthcare-associated infections are more common and associated with antibiotic exposure.
 - Retrospective cohort of hospitalized patients with COVID-19, **7%** had a proven or possible hospital-acquired infection 48 hours after admission³
 - Risk factors: ICU admission, dexamethasone use, severe COVID-19, heart failure, and antibiotic exposure on admission³



What strategies can be used to optimize antibiotic prescribing for patients hospitalized with COVID-19?

- Follow COVID-19 national or facility-specific treatment guidelines.
 - <https://www.covid19treatmentguidelines.nih.gov/about-the-guidelines/whats-new/>
- Leverage antibiotic stewardship expertise at your facility to support treatment decisions.
- When antibiotics are initially indicated for a patient, use proven strategies to improve antibiotic use.
 - Refine antibiotic treatment leveraging laboratory diagnostics and clinical status.
 - De-escalate antibiotic therapy if no evidence of bacterial infection.



Case study: child visiting pediatric office with COVID-19

- 10-year-old boy with 2-day history of fever, cough, and headache
- No past medical history
- Neighbor, who he plays with, tested positive for COVID-19 yesterday
- Physical exam normal except for T 101 and cervical lymphadenopathy
- No tachypnea and lungs sound clear
- COVID-19 rapid antigen test: **positive**
- Parent is concerned he might get pneumonia and is asking if he needs antibiotics



Self-knowledge Check: Choose the best option for managing this patient.

- A. Start him on amoxicillin.
- B. Provide a clear diagnosis and counsel his parent about when antibiotics are indicated and side effects.
- C. Offer recommendations for symptomatic therapy and a contingency plan for follow-up if he gets worse.
- D. Tell his parent that it's "just a virus" and encourage fluids.
- E. B and C

Answer: Choose the best option for managing this patient.

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- B. Provide a clear diagnosis and counsel his parent about when antibiotics are indicated and side effects.
- C. Offer recommendations for symptomatic therapy and a contingency plan for follow-up if he gets worse.
- D. Tell his parent that it's "just a virus" and encourage fluids.
- E. B and C**

Rationale: Antibiotic treatment will not provide benefit and could cause harm. Proven communication strategies for addressing patient and parent concerns are recommended.

Are there lessons learned from pediatrics that can apply to improving antibiotic prescribing for adults?

- Clinicians can effectively and efficiently communicate with parents and patients when antibiotics are not needed.
 - Review physical exam findings.
 - Deliver a clear diagnosis.
 - Provide a two-part, negative-then-positive recommendation.
 - Provide a contingency plan.
- Recommend watchful waiting and symptom relief.



Clinicians can “prescribe” symptom relief.

Relief for Common Symptoms of Colds and Cough



GENERAL INSTRUCTIONS

- Drink extra water and fluids.
- Use a cool mist vaporizer or saline nasal spray to relieve congestion.
- For sore throats, suck on ice chips, popsicles, or lozenges. (Do not give lozenges to children younger than two years old.)
- Use honey to relieve cough for adults and children at least 12 months old or older.
- Other:

SPECIFIC MEDICINES

- Fever or aches:

- Ear pain:

- Sore throat:

- Nasal congestion:

- Cough/chest congestion:

Use medicines according to the package instructions or as directed by your doctor or pharmacist. Stop the medication when the symptoms get better.

FOR CHILDREN YOUNGER THAN 4 YEARS OLD

Do not use over-the-counter cough and cold medicine in children younger than 4 years old unless directed by your doctor. Overuse and misuse of these medicines can result in serious and potentially life-threatening side effects.

To relieve a stuffy nose, parents can use:

- A rubber suction bulb

- Nose saline drops

- A clean humidifier

- A cool mist vaporizer

Call your doctor if the illness has not improved in a few days or if symptoms are severe or unusual.

To learn more about antibiotic prescribing and use, visit www.cdc.gov/antibiotic-use or call 1-800-CDC-INFO.



Symptom Relief for Viral Illnesses



1. DIAGNOSIS

- Cold or cough

- Middle ear fluid (Otitis Media with Effusion, OME)

- Flu

- Viral sore throat

- Bronchitis

- Other:

You have been diagnosed with an illness caused by a virus. Antibiotics do not work on viruses. When antibiotics aren't needed, they won't help you, and the side effects could still hurt you. The treatments prescribed below will help you feel better while your body fights off the virus.

3. SPECIFIC MEDICINES

- Fever or aches:

- Ear pain:

- Sore throat and congestion:

Use medicines according to the package instructions or as directed by your healthcare professional. Stop the medication when the symptoms get better.

2. GENERAL INSTRUCTIONS

- Drink extra water and fluids.
- Use a cool mist vaporizer or saline nasal spray to relieve congestion.
- For sore throats in older children and adults, use ice chips, sore throat spray, or lozenges.
- Use honey to relieve cough. Do not give honey to an infant younger than 1.

4. FOLLOW UP

- If not improved in ____ days/hours, if new symptoms occur, or if you have other concerns, please call or return to the office for a recheck.

- Phone:

- Other:

Signed: _____

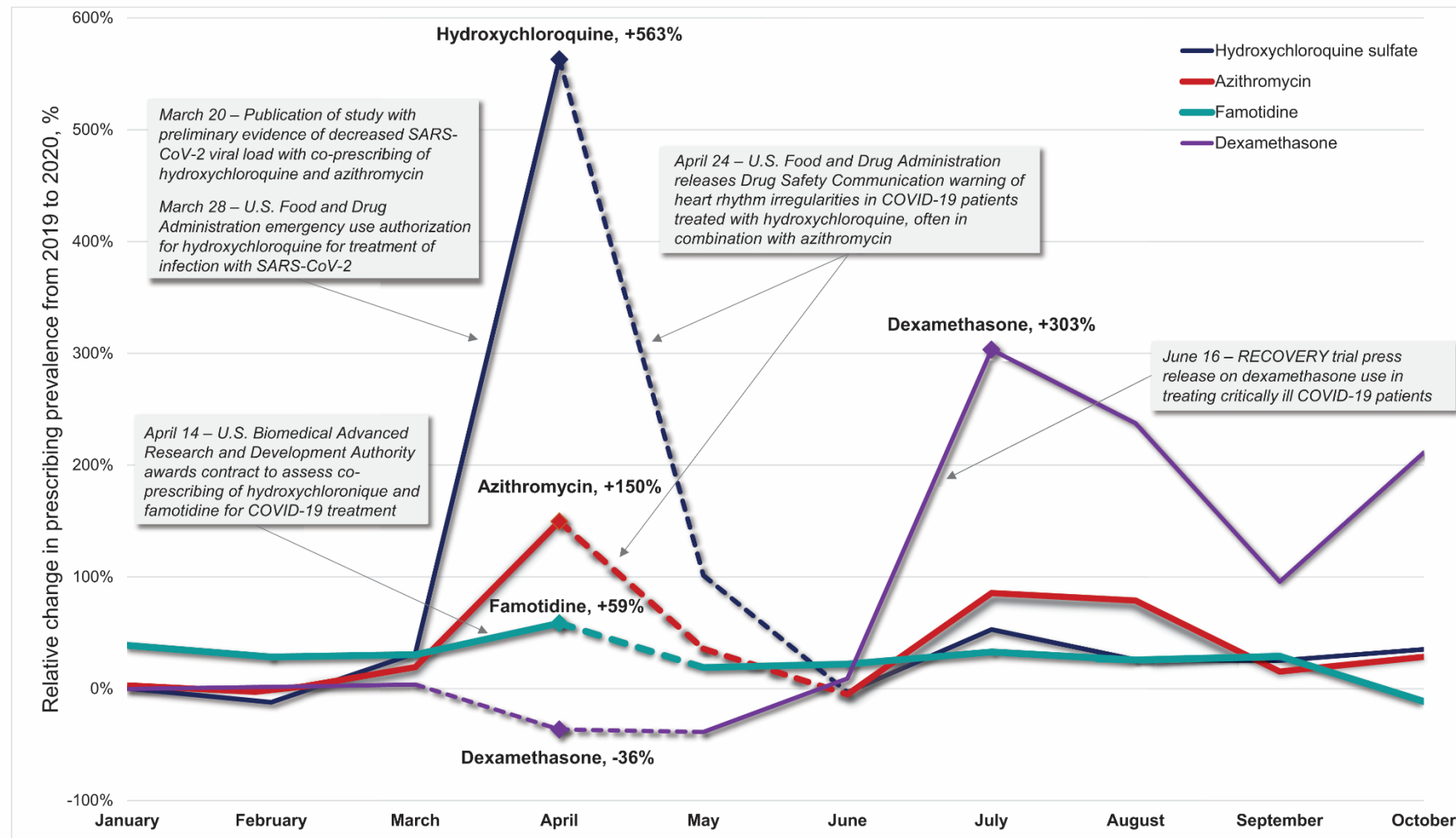
To learn more about antibiotic prescribing and use, visit www.cdc.gov/antibiotic-use.



Case study: older adult in a nursing home

- Mrs. J is a 79-year-old female with a history of diabetes and congestive heart failure.
- She has been a resident of a nursing home for the past 5 years and was cared for by an unvaccinated nursing assistant who tested positive for COVID-19 on 3/26/2020.
- On 04/01, she develops a cough and slight increase in shortness of breath.
- Vital signs are stable and exam is remarkable for crackles at the lung bases bilaterally.
- Chest radiograph performed on 04/02 showed faint patchy opacities bilaterally, unchanged from previous imaging.
- She is started on hydroxychloroquine 200mg PO TID x 10d and azithromycin 500mg PO x1, followed by 250mg PO daily x 4d, and ceftriaxone 1 gm IM X 5d.
- COVID-19 PCR returns with a **positive** result on 04/06.

What prompted the changes in azithromycin and hydroxychloroquine prescribing during the COVID-19 pandemic?



Clinical Infectious Diseases, 2021; ciab225, <https://doi.org/10.1093/cid/ciab225>

Case study continued: older adult in a nursing home

- Mrs. J completed a course of hydroxychloroquine, azithromycin, and ceftriaxone with no significant change in status until 4/16.
- On 04/16, Mrs. J developed a fever of 100.5°C and chills. She still has a lingering cough, is slightly confused, and has new onset of diarrhea, abdominal pain, and tenderness on exam.
 - Leukocytosis: 15,000 cells/mm³
 - Chest radiograph: no significant change
 - Stool: positive for *Clostridioides difficile*
 - She is started on vancomycin PO, but her condition deteriorates and she requires hospitalization 2 days later.

Self-knowledge Check: What do you think could have been done to improve quality of care and prevent the *C. difficile* infection?



- A. Follow treatment guidelines for management of COVID-19 illness.
- B. Do not prescribe antibiotics when they provide no benefit.
- C. Implement COVID-19 vaccination and infection prevention and control measures for preventing nursing home and healthcare-associated infections.
- D. Leverage consultant pharmacists to provide support for making appropriate treatment decisions.
- E. All of the above

Answer: What steps would you take to improve quality of care and prevent the *C. difficile* infection?



- A. Follow treatment guidelines for management of COVID-19 illness.
- B. Avoid prescribing antibiotics when they provide no benefit.
- C. Implement COVID-19 vaccination and infection prevention and control measures for preventing nursing home and healthcare-associated infections.
- D. Leverage consultant pharmacists to provide support for making appropriate treatment decisions.
- E. All of the above**

Rationale: Guideline adherence for treatment, infection prevention and vaccination is recommended. Antibiotics can lead to adverse events and should only be prescribed when needed.

Optimize antibiotic use to improve quality of care.

- Follow COVID-19 treatment guidelines.
- Ensure adherence to infection prevention protocols.
- Leverage proven strategies to improve antibiotic use.
- Educate your patients that antibiotics are ineffective treatment for viruses like COVID-19.
- Everyone has a role to play in improving antibiotic use.

Common Respiratory Infections
Do you need antibiotics?

BE ANTIBIOTICS AWARE
SMART USE, BEST CARE

Common Cold

Chest Cold

Flu

COVID-19

Antibiotics **DO NOT WORK** against viruses that cause the common cold, most chest colds, flu, and COVID-19. Ask your healthcare professional about the best way to feel better while your body fights off the virus.

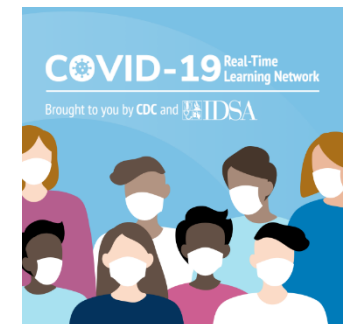
For more information, visit www.cdc.gov/antibiotic-use or call 1-800-CDC-INFO.

CDC

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Resources

- CDC antibiotic use resources
 - www.cdc.gov/antibiotic-use
 - CDC Training on Antibiotic Stewardship 10 hours of free Continuing Education credits https://www.train.org/cdctrain/training_plan/3697
- National Institutes of Health (NIH) COVID-19 Treatment Guidelines <https://www.covid19treatmentguidelines.nih.gov/about-the-guidelines/whats-new/>
- Infectious Diseases Society of America (IDSA) Real-Time Learning Network and guidelines
 - www.idsociety.org
 - <https://www.idsociety.org/practice-guideline/covid-19-guideline-treatment-and-management/>



U.S. ANTIBIOTIC AWARENESS WEEK

November 18–24, 2021

www.cdc.gov/antibiotic-use



**BE
ANTIBIOTICS
AWARE**

SMART USE, BEST CARE



For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

www.cdc.gov/antibiotic-use

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.



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- Sharon Tsay

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- All continuing education for COCA Calls is issued online through the CDC Training & Continuing Education Online system at <https://tceols.cdc.gov/>.
- Those who participate in today's COCA Call and wish to receive continuing education please complete the online evaluation by **December 20, 2021**, with the course code **WC2922-111821**. The access code is **COCA111821**.
- Those who will participate in the on-demand activity and wish to receive continuing education should complete the online evaluation between **December 21, 2021**, and **December 21, 2023**, and use course code **WD2922-111821**. The access code is **COCA111821**.
- Continuing education certificates can be printed immediately upon completion of your online evaluation. A cumulative transcript of all CDC/ATSDR CEs obtained through the CDC Training & Continuing Education Online System will be maintained for each user.

Today's COCA Call Will Be Available to View On-Demand

- **When:** A few hours after the live call ends*
- **What:** Video recording
- **Where:** On the COCA Call webpage
https://emergency.cdc.gov/coca/calls/2021/callinfo_111821.asp

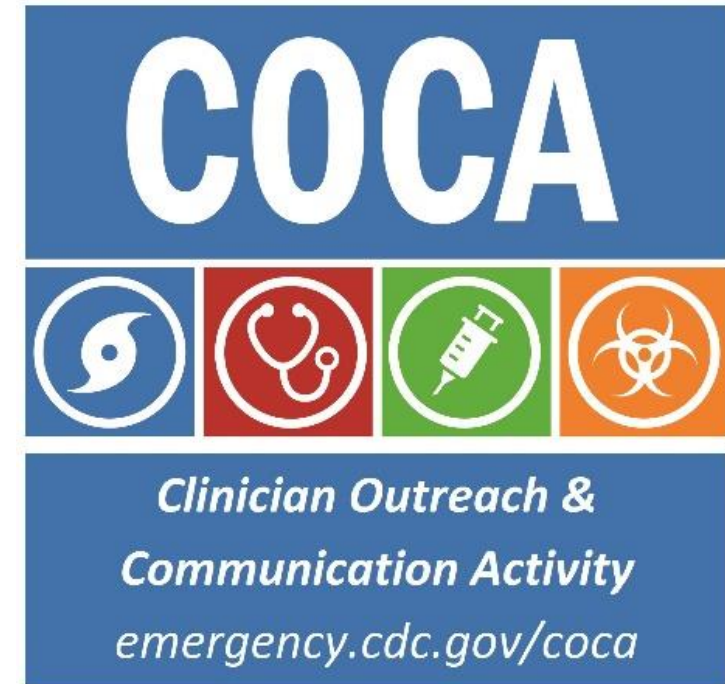
**A transcript and closed-captioned video will be available shortly after the original video recording posts at the above link.*

Upcoming COCA Calls & Additional COVID-19 Resources

- Thursday, December 9, 2021 (2-3PM ET): **Molecular Approaches for Clinical and Public Health Applications to Detect Influenza and SARS-CoV-2 Viruses** (*Free CE*) (https://emergency.cdc.gov/coca/calls/2021/callinfo_120921.asp)
- Subscribe to receive notifications about upcoming COCA calls and other COCA products and services at emergency.cdc.gov/coca/subscribe.asp.
- Share call announcements with colleagues.
- Sign up to receive weekly **COVID-19 Science Updates** by visiting cdc.gov/library/covid19/scienceupdates.html?Sort=Date%3A%3Adesc.

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The screenshot shows the Facebook profile for COCA (CDC Clinician Outreach and Communication Activity). The profile picture features a diverse group of healthcare professionals. The cover photo shows a group of six people, including nurses and doctors, smiling. The page includes a navigation menu on the left with options like Home, About, Posts, Photos, Events, and Community, along with a 'Create a Page' button. The main content area shows a 'Status' section with a text input field and a 'Posts' section featuring a recent event announcement: 'CDC Clinician Outreach and Communication Activity - COCA shared their event. October 31 at 1:18pm - Clinicians, you can earn FREE CE with this COCA Call! Join us for this COCA Call November 7, 2017 at 2:00PM.' The right sidebar displays the location 'Government Organization in Atlanta, Georgia', community statistics (21,420 likes, 21,217 followers), and a map of the Atlanta area.

COCA
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Government Organization in Atlanta, Georgia
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About See All

Thank you for joining us today!



emergency.cdc.gov/coca