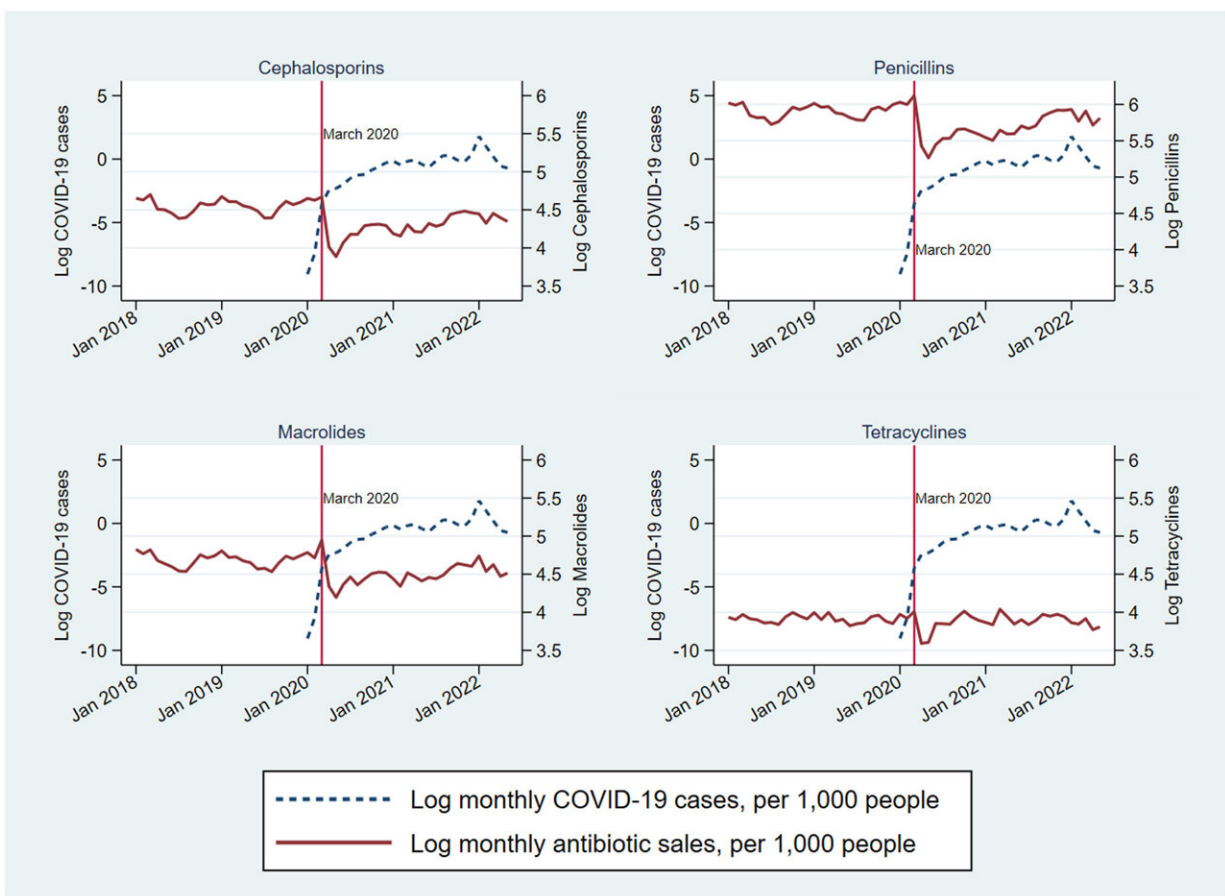


# Global pharmaceutical sales data reveal that as COVID-19 cases increased, so did purchases of antibiotics

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COVID-19 cases and oral broad-spectrum antibiotic use in 71 countries, January 2018–May 2022. Note: Data are monthly global (71 countries) averages, obtained from IQVIA MIDAS and Our World in Data. Credit: *eClinicalMedicine* (2023). DOI: 10.1016/j.eclinm.2023.101848

Globally, during the first two years of the COVID-19 pandemic, antibiotics were prescribed to 75 percent of COVID-19 patients despite bacterial coinfection rates averaging less than 10 percent. Unnecessary use of antibiotics potentially aggravates antimicrobial resistance (AMR), which happens as pathogens, such as bacteria, evolve over time and stop responding to medicines, making infections tough to treat and raising the risk of disease spread, serious illness, and death.

To understand this relationship in the context of COVID-19 treatment, OHT researchers and collaborators reviewed associations of COVID-19 cases and immunizations with global antibiotic sales from March 2020 to May 2022.

Researchers affiliated with the One Health Trust, the Population Council, GlaxoSmithKline, and the Harvard T.H. Chan School of Public Health, sourced monthly data on broad-spectrum antibiotic sales volumes (cephalosporins, penicillins, macrolides, and tetracyclines) in 71 countries from the IQVIA MIDAS database.

These data were integrated with Our World in Data's country-month-level COVID-19 case and vaccination data. To evaluate the relationships between antibiotic sales volumes and COVID-19 cases and vaccines per 1,000 individuals, researchers utilized least squares and fixed-effects panel data regression models, accounting for country level factors. To our knowledge, this is the first multi-country study to examine clinical and community [antibiotic use](#) during the pandemic.

The study shows that during 2020–2022, antibiotic sales increased along with increases in COVID-19 cases worldwide despite decreases in other common infections that would necessitate the use of [antibiotics](#). The findings indicate the need for antibiotic stewardship in the context for COVID-19 treatment.

Overall, this study found:

- Sales of all antibiotics studied had a steep decline in April and May 2020, which was followed by a slow increase to levels that were almost prepandemic by May 2022.
- A 10 percent rise in monthly COVID-19 cases was linked to 0.2 percent–0.3 percent higher sales of cephalosporin, 0.2 percent–0.3 percent higher sales of penicillin, 0.4 percent–0.6 percent higher sales of macrolides, and 0.3 percent higher sales of all four antibiotics combined per 1,000 individuals.
- For sales of macrolides, a 10 percent rise in monthly COVID-19 cases was linked to increases of 0.8 percent, 1.3 percent, and 1.5 percent in Europe, North America, and Africa, respectively.
- There were no discernible links found between COVID-19 vaccines and antibiotic sales.
- The pandemic's overall impact on rising aggregate broad-spectrum antibiotic use has been small, perhaps due to fewer non-COVID illnesses resulting from COVID-19 mitigation measures.
- Antibiotics should not be used in COVID-19 cases unless absolutely necessary, in order to prevent COVID-19 from turning into another influenza-like illness for which antibiotics are routinely and inappropriately prescribed. It is likely that COVID-19 will become endemic and be as virulent as the common cold so it is imperative that medical guidelines and governmental policies be put in place to promote proper antibiotic stewardship.

According to study co-author, Dr. Arindam Nandi, a Visiting Fellow at the One Health Trust and a researcher at the Population Council, "In a major setback to the global efforts for tackling AMR, billions of excess antibiotic doses may have been prescribed and consumed during the pandemic. The time to act is now."

The research is published in the journal *eClinicalMedicine*.

**More information:** Arindam Nandi et al, Global antibiotic use during the COVID-19 pandemic: analysis of pharmaceutical sales data from 71 countries, 2020–2022, *eClinicalMedicine* (2023). [DOI: 10.1016/j.eclinm.2023.101848](https://doi.org/10.1016/j.eclinm.2023.101848)

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