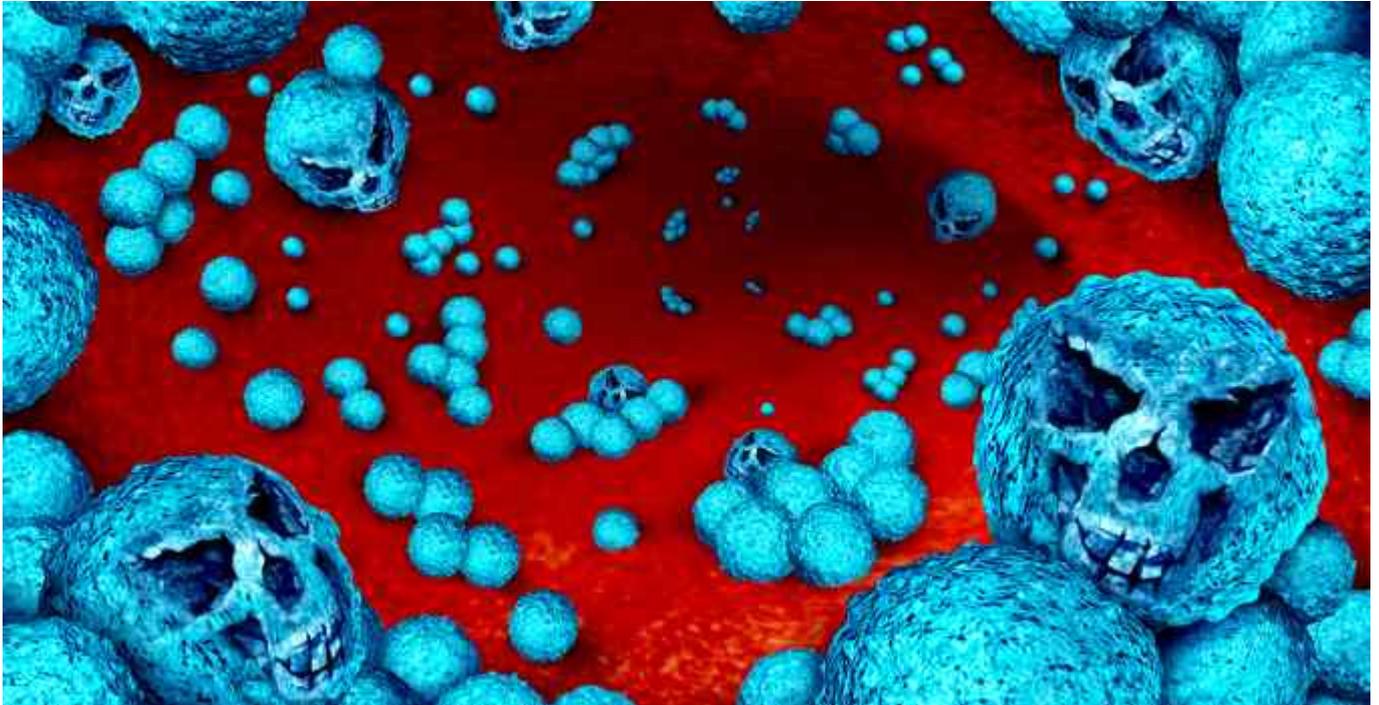


The Next Pandemic Is Here – Antimicrobial Resistance



By [Dr. Joseph Mercola](#) | [The Defender](#)

Story at-a-glance:

- Antimicrobial resistance (AMR) has been declared one of the top 10 global public health threats to humanity, but it rarely makes front-page news, especially now that COVID has entered the arena.
- Not only has the COVID-19 pandemic – and its unprecedented promotion of hand sanitizer, antimicrobials, and disinfectants – made AMR worse, but it continues to overshadow the growing threat of AMR.
- The incidence of carbapenem-resistant Enterobacterales colonization increased from 6.7% in 2019 to 50% in March to April 2020.
- Antibiotic use increased throughout the pandemic; about 79% to 96% of people who reported taking antibiotics didn't have COVID-19 but were taking them in the hopes

of preventing infection, even though antibiotics don't work against viral infections.

- While about 15% of people with severe COVID-19 may develop a bacterial co-infection that would require antibiotics, 75% of COVID-19 patients were actually receiving such drugs.
- Antibiotic resistance (AR) and antimicrobial resistance (AMR) took a backseat to the [COVID-19](#) pandemic, but it hasn't gone away. It remains "one of the biggest public health challenges of our time," as even the [U.S. Centers for Disease Control and Prevention \(CDC\) admits](#).

While antibiotic resistance [refers to](#) bacteria resistant to antibiotics, antimicrobial resistance is a broader term used to describe resistance to drugs among a variety of microbes, including parasites, viruses, and fungi.

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Not only has the COVID-19 pandemic – and its unprecedented promotion of hand sanitizer, antimicrobials, and disinfectants – [made AMR worse](#), but it continues to overshadow the growing threat of AMR, which will likely surpass the number of COVID-19 deaths by at least threefold – annually – by 2050. As [noted by NewStatesman](#):

"The scary thing is, [AMR is] insidious and silent. The latest figures suggest AMR will cause over 10 million deaths per year by 2050. This is more than deaths from cancer and diabetes combined, and triple the current Covid-19 death toll of 3.4 million deaths worldwide since 2019."

Antimicrobial resistance increased during the COVID-19 pandemic

While the world stopped due to COVID-19, the use of antimicrobial agents – for [disinfecting surfaces](#) and public

spaces and treating patients – increased. The high rates of antimicrobial agent usage in COVID-19 patients are now being blamed for a rapid rise in multidrug-resistant organisms (MDROs), [including](#):

- Extended-spectrum β -lactamase (ESBL)-producing *Klebsiella pneumoniae*.
- Carbapenem-resistant New Delhi metallo- β -lactamase (NDM)-producing Enterobacterales.
- *Acinetobacter baumannii*.
- Methicillin-resistant *Staphylococcus aureus* (MRSA).
- Pan-echinocandin-resistant *Candida glabrata*.
- Multitriazole-resistant *Aspergillus fumigatus*.
- In many cases, COVID-19 patients have presented with secondary infections with multidrug-resistant organisms. Fungal co-infections in COVID-19 patients are also common, as is antibiotic treatment, with [one report](#) from China suggesting that more than 70% of COVID-19 patients received antibiotics.
- Other research [suggested](#) 84.7% of hospitalized COVID-19 patients received intravenous antibiotic therapy, while a report published in the *Journal of Antimicrobial Chemotherapy* stated that up to 95% of COVID-19 patients in hospitals are prescribed antibiotics.

As for why so many patients were excessively treated with antibiotics, despite COVID-19 being caused by a virus (SARS-CoV-2), researchers suggested that co-bacterial fungal or secondary infections were only part of the reason. Others [included](#):

- Since the symptoms of COVID-19, such as cough and fever, may also occur in bacterial pneumonia “clinicians empirically add a broad-spectrum antibiotic despite the suspicion of a viral origin.”
- Anxiety and uncertainty regarding COVID-19 and an absence of effective SARS-CoV-2 treatments potentially drove “widespread and excessive prescription of

antibiotics.”

Multiple [reports](#) point to increased AMR during the pandemic. For instance, the incidence of carbapenem-resistant Enterobacteriales colonization increased from 6.7% in 2019 to 50% in March to April 2020.

Excessive antimicrobials during pandemic affect the environment

AMR has clear [toxicological effects](#) on the environment, in part because patients excrete a large proportion of drugs they ingest into wastewater, which allows drug residues and drug metabolites to be released into rivers and coastal waters.

A team from the University of Plymouth in England conducted a [risk assessment](#) to determine the potential environmental impact of prescribing COVID-19 patients antibiotics, which revealed, “The data for amoxicillin indicate a potential environmental concern for the selection of AMR ...” The team [urged such assessments](#) be carried out in the future to keep tabs on the potentially disastrous effects of pandemic prescribing habits on AMIR:

“We recommend more extensive environmental assessments be undertaken for all antimicrobial medicines used during pandemics. This will facilitate the development of a robust evidence base in order to guide antibiotic prescribing choices that are less likely to increase AMR and have the least environmental impact ...”

Even the World Health Organization (WHO) made it clear that countries were at risk of the accelerated spread of AMR due to the COVID-19 pandemic. They [cited data](#) showing that [antibiotic use](#) increased throughout the pandemic. About 79% to 96% of people who reported taking antibiotics didn't have COVID-19 but were taking them in the hopes of preventing infection (antibiotics don't work against viral infections).

Further, [WHO noted](#) that while about 15% of people with severe COVID-19 may develop a bacterial co-infection that would require antibiotics, 75% of COVID-19 patients were actually receiving such drugs.

Why the development of new antibiotics isn't the answer

Clearly alternatives to antibiotics are needed – and fast. It's [been estimated](#) that the pharmaceutical industry will need upward of \$37 billion over the next decade to replace antibiotics that no longer work. However, drug companies have a little financial incentive to innovate new antibiotics, so unless taxpayers end up footing the bill, it's unlikely that such products will enter the market anytime soon.

There are 43 antibiotics in clinical development, but none of them show much promise for solving rapidly rising AMR, as innovation is stagnant – most “new” antibiotics brought to the market are variations of drug classes that have been around since the 1980s. WHO's [annual Antibacterial Pipeline Report](#) also found that antibiotics currently in development are insufficient to tackle AMR:

“The 2020 report reveals a near static pipeline with only a few antibiotics being approved by regulatory agencies in recent years. Most of these agents in development offer limited clinical benefit over existing treatments, with 82% of the recently approved antibiotics being derivatives of existing antibiotic classes with well-established drug resistance. Therefore, the rapid emergence of drug resistance to these new agents is expected.”

Pesticides make antibiotic resistance worse

The overuse of antimicrobials during the COVID-19 pandemic is a driving factor making AMR worse, but it's only one piece of the puzzle. Widely used herbicides like [glyphosate](#) (Roundup) and [dicamba](#) (Kamba) also play a role.

Research from the University of Canterbury [researchers revealed](#) that [agrichemicals and antibiotics in combination](#) increase the evolution of antibiotic resistance, such that bacteria may develop antibiotic resistance up to 100,000 times faster when they're exposed to certain herbicides in the environment.

[Herbicides promote antibiotic resistance](#) by [priming pathogens](#) to more readily become resistant to antibiotics. This includes [Roundup](#) (the actual formulation of Roundup, not just its active ingredient glyphosate in isolation), which was shown to increase the antibiotic-resistant prowess of E. coli and salmonella, along with dicamba and 2,4-D. [Rodale News reported](#):

“The way Roundup causes this effect is likely by causing the bacteria to turn on a set of genes that are normally off, [study author] Heinemann says. ‘These genes are for ‘pumps’ or ‘porins,’ proteins that pump out toxic compounds or reduce the rate at which they get inside of the bacteria ...’

“Once these genes are turned on by the herbicide, then the bacteria can also resist antibiotics. If bacteria were to encounter only the antibiotic, they would instead have been killed.

“In a sense, the herbicide is ‘immunizing’ the bacteria to the antibiotic ... This change occurs at levels commonly used on farm field crops, lawns, gardens, and parks.”

In the U.S., industrial agriculture even uses the antibiotics oxytetracycline and streptomycin as pesticides on agricultural plants, a practice that's banned in the EU and Brazil due to rising concerns over antibiotic resistance. But in the U.S., the Environmental Protection Agency [approved the “maximum level”](#) of [oxytetracycline for use in citrus fruits](#) in December 2018 – just days after [approving residues](#) of the drug on fruit.

Agricultural antibiotics cannot be ignored

Industrially raised farm animals living on concentrated animal feeding operations (CAFOs) have emerged as another major [reservoir of antibiotic-resistant bacteria](#). Due to [poor farming practices](#), including the use of low doses of antibiotics in animal feed for purposes of growth promotion, antibiotic resistance in farm animals is on the rise, threatening human and animal health along with food production sustainability.

Worldwide, most antibiotics are used not for human illness or companion pets but for livestock. Overall, [73% of the antibiotics sold globally](#) are used in farm animals raised for food, typically on CAFOs. Researchers [explained](#) the glaring role of CAFOs in antibiotic resistance in Environmental Health Perspectives:

“This prolonged use of antibiotics, especially at low levels, presents a risk of not killing the bacteria while promoting their resistance by selecting for resistant populations.

“The resistance genes can pass readily from one kind of bacteria to another. Thus, workers in the animal units may become colonized with resistant organisms and can pass them on to co-workers and family members, or friends.

“Consumers of meat may also become colonized through mishandling of raw meat or through insufficient cooking. Ultimately, these genes may pass into pathogens, and diseases that were formerly treatable will be capable of causing severe illness or death.”

In addition, most antibiotics ingested by animals are not metabolized but, rather, excreted. This waste is then applied to soil as a fertilizer, which may then be sprayed with herbicide. The antibiotic-resistant microbes can also be carried elsewhere by [houseflies](#).

Pandemic ‘stretched the limits’ of optimal antibiotics usage

Increased AMR is yet another fallout of the COVID-19 pandemic, which will combine with the already perilous AMR pandemic in progress, resulting in further deaths and environmental destruction. Writing in the International Journal of Antimicrobial Agents, [researchers stated](#), “the ongoing pandemic is stretching the limits of optimal antibiotic stewardship” and [called for](#) an end to unnecessary use of antimicrobial agents:

“Moreover, unnecessary use of antimicrobial agents would be associated with a significant economic burden on healthcare systems, which could be directly caused by the drug itself and indirectly caused by healthcare costs for the management of drug-related adverse events ... continuing this intervention to curb inappropriate antibiotic usage and surveying the reasons for guideline non-adherence should be conducted within hospitals.”

Beyond this, choosing [organic foods](#), including grass-fed meats and dairy products, can help you avoid exposure to antibiotic residues in the food supply, while also supporting food growers who are not contributing to AMR. Unfortunately, as the world continues to put all of its [attention on COVID-19](#), the catastrophe of AMR is getting worse instead of better.

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The views and opinions expressed in this article are those of the authors and do not necessarily reflect the views of Children’s Health Defense.



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