

## 1 **The problem with overusing antibiotics**

2 When they were developed nearly a century ago, antibiotics were intended as a last resort. But between 2000 and 2015, antibiotic  
3 use more than doubled worldwide, according to a study by the Center for Disease Dynamics, Economics and Policy (CDC), which  
4 has found that at least 30 percent of antibiotics **prescribed** to outpatients are unnecessary. By 2050, some **projections** now  
5 suggest that infections resistant to antibiotics could **surpass** cancer as the top cause of death worldwide, causing as many as 10  
6 million **fatalities** a year. If use of antibiotics goes unchanged, the **issue** will lead to a world where few, if any, current antibiotic  
7 **treatments** are effective.

## 8 **What is antibiotic resistance?**

9 Bacterial infections once were a death sentence. Then, in 1928, Scottish bacteriologist Alexander Fleming discovered penicillin,  
10 and soon, antibiotics were widely prescribed to treat everything from strep throat to Lyme disease. But less than a century later,  
11 the global overuse of antibiotics has led to a rise in **resistance** to the drugs. Simply put, the more antibiotics you use, the more  
12 your body normalizes them, and the faster resistance to them will **emerge**. When the drugs stop working, people can die of once-  
13 **treatable** infections, like pneumonia or gonorrhea. In their latest study based on data from 76 countries, researchers from the CDC  
14 found that people took 35 billion defined doses of antibiotics worldwide every day in 2016. That is a 39-percent increase in  
15 **consumption** rate compared to 16 years ago.

## 16 **Why has antibiotic use grown?**

17 Many researchers suspect this growth is driven by overprescription. But it also stems from **expanded** and **unregulated** use of  
18 antibiotics in low- and middle-**income** countries, said Eili Klein, one of the study's authors. Nonetheless, overuse is a global  
19 problem and the biggest issue according to Klein is that **surveillance** data that **monitors** antibiotic use and resistance is not being  
20 used effectively. Identifying emerging biological **threats** is difficult because nations may not use the same definitions to monitor  
21 and identify emerging threat of antibiotic-resistant infections. "We know many of these antibiotics are being used  
22 **inappropriately**," Klein said, yet there is no **comprehensive** body that **is in charge of** measuring exactly where or how.

## 23 **How much does antibiotic resistance cost?**

24 According to a study published in Health Affairs, antibiotic-resistant infections in the US occurred at roughly the same rate from  
25 2002 to 2014, but treatment costs nearly doubled. Each year, 23,000 Americans die from antibiotic-resistant infections, according  
26 to **estimates** from the CDC. Since 2002, health care costs have risen by \$1,383 per infection because people receive more  
27 complicated treatments and **endure** longer hospital stays to treat the infections. Another study found that 11 percent of infections  
28 were **resistant** — double what the data showed nearly decades earlier. As a result, scientists are now calling for improved  
29 **prevention efforts**, including reduced use of antibiotics, development of stronger antibiotics and vaccines that could stem the  
30 **spread** of potentially uncontrollable infections. But in recent years, the CDC has **devoted** fewer resources to finding answers to  
31 this growing threat. "CDC will continue to work with state and local health departments to protect Americans from the growing  
32 threat of antibiotic resistance, but will focus resources on States with demonstrated **performance** and highest need, reducing  
33 investments in research," the agency said in its proposed **budget** for 2019.

## 34 **Where do we go from here?**

35 The World Health Organization's director for antimicrobial resistance said he has watched this growing threat for years.

36 Among his top **priorities** are programs that:

- 37 • **Maintain** good hygiene and expand **access** to clean drinking water.
- 38 • Curb overuse of antibiotics, both in humans and in animals, where it is often employed to spur growth.
- 39 • Regulate antibiotics, both the medicine itself and how it is prescribed.
- 40 • Invest in the research and development of stronger antibiotics to fight against bacterial infections.

41 The WHO also **set** a 2019 deadline to develop a new class of drugs to combat antibiotic-resistant superbugs, a goal several teams  
42 of researchers are now chasing. Among the latest projects is a new treatment that uses synthetic retinoids instead of antibiotics to  
43 kill methicillin-resistant Staphylococcus aureus, or MRSA. This could be used to treat things like acne or certain kinds of cancer.  
44 However, researchers predict that the rate of progress in developing new drugs is unlikely to meet the expected need for the  
45 **foreseeable** future. To **reverse** worsening trends in antibiotic resistance, Sprenger said: "The responsibility is at several levels. It's  
46 not only on the government and the doctor, but it's also on the patient who goes to the doctor who has a sore throat and asks for  
47 antibiotics. This is something that really needs to change. Often, the patient doesn't need anything — just wait or use  
48 **alternatives**."

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