

ANTIBIOTIC-RESISTANT INFECTIONS AND CANCER

The time has never been so hopeful for people diagnosed with cancer. New treatments are extending survival and improving the quality of life of cancer patients. Yet, the rise of infections caused by antibiotic-resistant bacteria threaten to undermine much of this progress.

Antibiotics are drugs that kill or inhibit bacteria and are uniquely effective for treating bacterial infections. However, because antibiotics have been overused and, in some cases, misused for so long, many bacteria have evolved mechanisms that make them impervious to the effects of the drugs. We call these antibiotic-resistant bacteria superbugs.

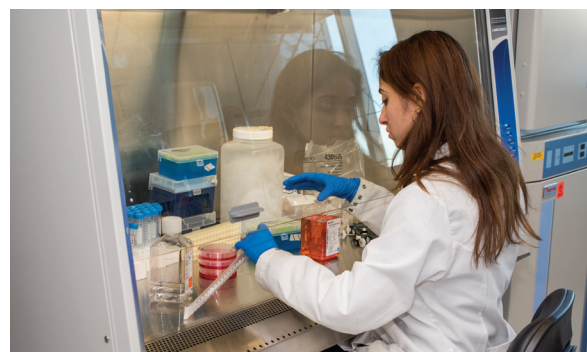
Examples of How Antibiotic Resistance Threatens Cancer Patients

Antibiotic resistance poses a threat to everyone, but cancer patients are at particular risk:

Approximately one out of 11 cancer patients die of bacterial blood infections, called sepsis. Antibiotics are critical to treating sepsis. As rates of sepsis caused by superbugs increase, we expect the number of cancer patients dying of these infections to increase too.

Antibiotics are important facilitators of chemotherapies and surgeries needed to treat cancer. Success of these treatments are often dependent on antibiotics to protect patients. Many chemotherapies wreak havoc on the immune system – knocking out the patient's natural defenses against bacteria. Without effective antibiotics, these patients will be at higher risk of dying of bacterial infections during treatment.





Blood cancer patients have the greatest risk for superbug infections, because our immune defense system's most valuable players are blood cells. When cancer or cancer treatments kill off these cells, patients become extremely susceptible to bacterial infections and need antibiotics to protect them.

The gastrointestinal tract, or GI, is home to trillions of bacteria. While many of these are beneficial to us, they can be life threatening when they move to other parts of our bodies. Therefore, when an individual is undergoing surgery for GI cancers, doctors use antibiotics to knock back these bacteria and protect patients from infection. However, as more and more people carry superbugs in the GIs, these preventative antibiotics could become ineffective and the procedures will become extremely risky.

Even routine procedures like prostate biopsies have become more dangerous in recent years because of superbugs. Collecting a prostate biopsy requires that the doctor push a needle through the GI into the prostate. Preventative antibiotics previously made this a relatively safe procedure, but today there are examples of patients who have died because they carried superbug strains of *E. coli* in their GI that were pushed into their prostate and bloodstream during the procedure.

These are just some of the ways that superbugs threaten how we diagnose and treat cancer, but we don't have to let superbugs reverse decades of progress for cancer patients. We can curb the rise of antibiotic-resistant bacteria and preserve antibiotics for cancer patients on four fronts:

- **Outreach and Engagement** - we must create a campaign on the scale of Pink Ribbon and *StandUpToCancer* to engage the public, policymakers and philanthropists on the growing threat of antibiotic resistance.
- **Technological Advancements** - we must develop new tools and therapies to treat infections and prevent the spread of antibiotic-resistant bacteria.
- **Policy and Practice** - we must develop public and private policies that eliminate unnecessary antibiotic use in people and animals and stop fueling the proliferation of superbugs.
- **Research and Training** - we must prepare the next generation of researchers and health professionals who will develop novel strategies to stop antibiotic-resistant infections.

Join the Antibiotic Resistance Action Center in our battle against superbugs.
Visit battlesuperbugs.org to learn more.

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