



Alice Brennan

WHEN MULTIPLE BUGS STRIKE: THE STORY OF ALICE BRENNAN

A healthy immune system may be all the protection someone needs to overcome a bacterial infection, but once one disease takes hold, it may beget more illnesses. Such is often the case with *Clostridium difficile*, a potentially deadly bacterium that can flourish in the wake of other infections. Senior citizens, such as Alice Brennan, are particularly vulnerable and serve as a reminder that new and powerful antibiotics are needed as protection from dangerous bacterial threats.

***C. difficile*-associated infections claimed the lives of nearly 45,000 Americans over an 11-year period.**

Alice Brennan was a sharp and mobile 88-year-old woman who lived independently in a two-story home in western New York. In late July 2009, however, Mrs. Brennan felt ill and went to the emergency room. Upon examination, doctors detected methicillin-resistant *Staphylococcus aureus* in her urinary tract. Also known as MRSA, this multidrug-resistant “superbug” is responsible for an estimated 19,000 deaths and 360,000 hospitalizations each year.¹ Because MRSA is more difficult to combat than conventional infections,

doctors treated Mrs. Brennan with multiple antibiotics.

Even under such aggressive treatment, her condition worsened, and doctors

suspected their patient might be fighting more than just MRSA. Tests confirmed their hunch; she had contracted a *C. difficile* infection, another disease with few treatment options.

C. difficile resides in the intestines of up to 3 percent of healthy adults without causing any symptoms. That can change if a patient takes antibiotics to treat another infection because those drugs may suppress the normal intestinal bacteria that keep *C. difficile* in check. When circumstances allow *C. difficile* to flourish, toxins that cause severe diarrhea and inflammation of the colon are released.² *C. difficile*-associated infections claimed the lives of nearly 45,000 Americans over an 11-year period, climbing from 793 deaths in 1999 to 7,285 in 2009.³

On August 22, after enduring four ineffective courses of antibiotic treatments, Mrs. Brennan was transferred to a hospice, where she died from complications related to her infections one week later.

Says her daughter, Mary Brennan Taylor, “If there was a magic pill that would have been able to turn this around, I would have given my right arm for that.”

In May 2011, the U.S. Food and Drug Administration approved a new antibiotic to treat infections associated with *C. difficile*, some strains of which had become resistant to existing treatments.⁴ As bacteria continue to evolve and new drug-resistant superbugs emerge, Mrs. Brennan’s story makes evident the ongoing need for new lifesaving antibiotics.

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The Pew Health Group’s Antibiotics and Innovation Project addresses the growing public health challenge of multidrug-resistant infections by supporting policies that stimulate and encourage the development of antibiotics to treat life-threatening illnesses.

¹ Agency for Healthcare Research and Quality, “Infections with Methicillin-Resistant *Staphylococcus Aureus* (MRSA) in U.S. Hospitals, 1993–2005,” Center for Delivery, Organization, and Markets, Healthcare Costs and Utilization Project, Nationwide Inpatient Sample, 1993–2005.

² R. Ricciardi et al., “Increasing prevalence and severity of *Clostridium difficile* colitis in hospitalized patients in the United States,” *Arch Surg* 142, no. 7 (2007): 624–31, discussion 31; F. Barbut and J. C. Petit, “Epidemiology of *Clostridium difficile*-associated Infections,” *Clin Microbiol Infect* 7, no. 8 (2001): 405–10; V. K. Viswanathan, M. J. Mallozzi, and G. Vedantam, “*Clostridium difficile* infection: An overview of the disease and its pathogenesis, epidemiology and interventions,” *Gut Microbes* 1, no. 4 (2010): 234–42.

³ National Vital Statistics System, Centers for Disease Control and Prevention, “GMWKI: Total deaths for each cause by 5-year age groups, United States, 1999–2006+,” last updated November 12, 2009, www.cdc.gov/nchs/nvss/mortality/gmwki.htm; J. Xu et al., “Deaths: Final Data for 2007,” *National Vital Statistics Reports* 58, no. 19 (2010); K.D. Kochanek et al., “Deaths: Preliminary Data for 2009,” *National Vital Statistics Reports* 59, no. 4 (2011).

⁴ T. Pelaez et al., “Reassessment of *Clostridium Difficile* Susceptibility to Metronidazole and Vancomycin,” *Antimicrob Agents Chemother* 46, no. 6 (2002): 1647–50; A. Dworzynski, B. Sokol, and F. Meisel-Mikolajczyk, “Antibiotic resistance of *Clostridium difficile* isolates,” *Cytobios* 65, no. 262–263 (1991).