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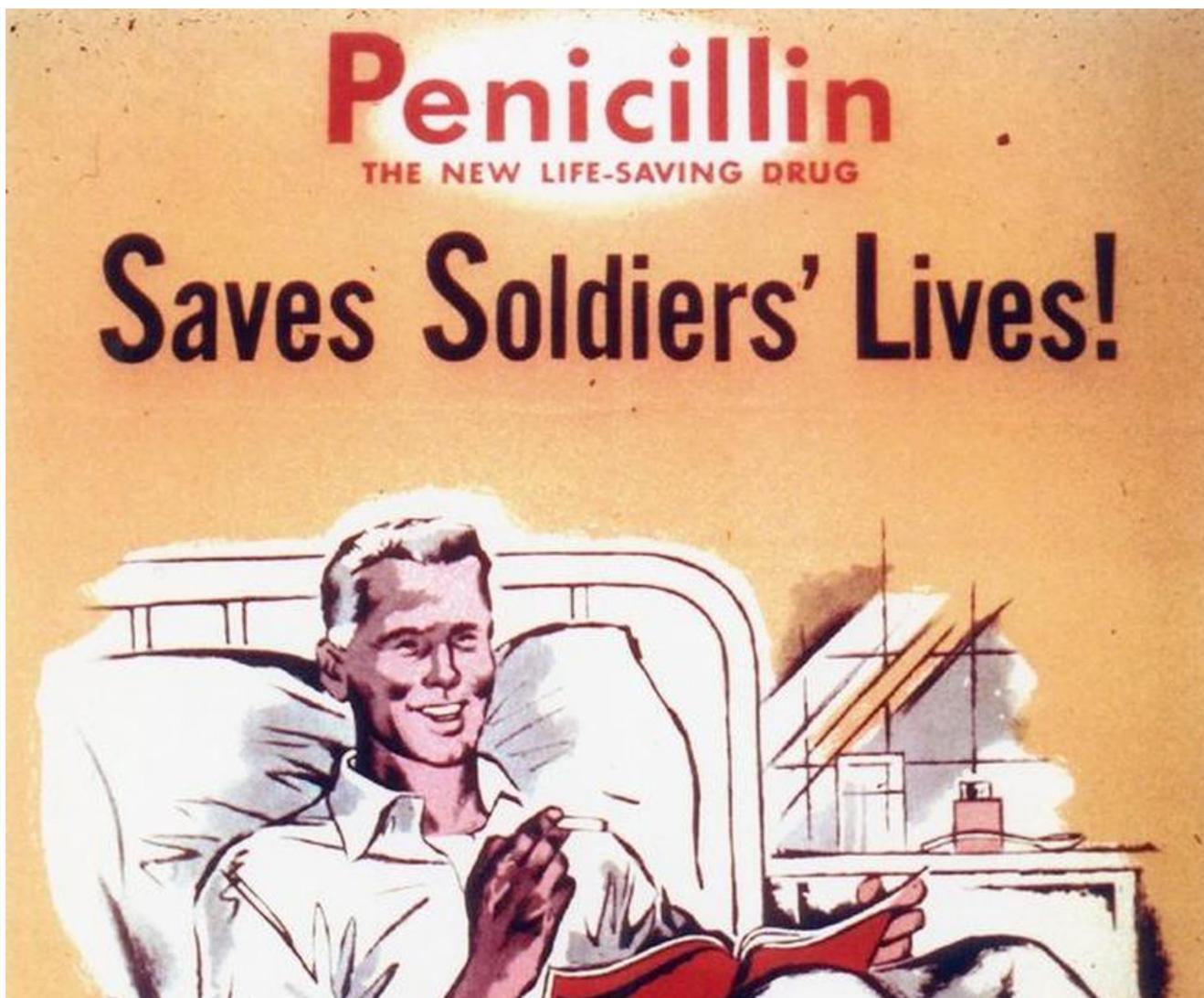
The Tragedy And Triumph Of The First Human Trials Of Penicillin



Kiona N. Smith Contributor ⓘ

Science

I cover the history of science, technology, and exploration.



WWII poster advertising the importance of penicillin, just a few years after the first human trials CHEMICAL HERITAGE FOUNDATION

In early 1941, a 50-year-old woman, whose name is lost to history, was dying of metastatic breast cancer in an Oxford hospital ward when a doctor approached her with an odd request. He was testing an injected drug called penicillin, which he and

his colleagues believed would save countless lives by killing the bacteria that caused common infections. They had tested the drug on mice, but they didn't know for sure that it was safe for humans. She had very little time left to live anyway; would she help them test the drug? She agreed.

At nearby Oxford University, Ernest Chain and Howard Florey had been working out how to purify penicillin since 1939. They had tested an injected version on mice in May 1940, and watched the drug fend off a Streptococci infection that otherwise would have been fatal. Their work looked promising, but they could only justify human testing on a terminal patient -- someone so sick they had nothing to lose by taking an untested drug.

Dr. Charles Fletcher [later recalled](#) that when he injected the first dose of penicillin on January 17, "The patient at once said that she had a curious musty taste in her mouth but suffered no other immediate harm. A blood sample taken shortly afterwards was bactericidal. A few hours later, however, she developed a rigor and her temperature rose for a few hours, but there were no other ill effects." The team tested injections on a few other terminally ill volunteers over the next few weeks. It became clear that penicillin was safe, but would it work in humans as well as it had in mice?

In December 1940, 43-year-old Constable Albert Alexander of the Oxford County police force scratched the side of his mouth while pruning his rosebushes. That sounds like the kind of injury you'd just laugh off, especially if you were a police officer in wartime Britain, but in the days before antibiotics, a small scratch could kill -- eventually. Infection set in, and Constable Alexander found himself facing blood poisoning and painful abscesses. He lost an eye that winter, and other abscesses threatened his lungs. He was dying, and he was doing so painfully.

With, in Fletcher's words, "all to gain for him in a trial of penicillin and nothing to lose," Alexander agreed to the test. He received his first 200mg injection of penicillin on February 12, and he started getting better within a day: his fever dropped, his appetite came back, and the infected wound and painful abscesses began to heal. Over the next four days, daily penicillin injections brought steady improvement. For the first time since December, things were looking up for Constable Alexander.

Then the penicillin ran out. It had taken Chain and Florey months of work in their lab to produce and refine enough of the drug to treat a human patient, and wartime supplies were tightly restricted in Britain. Doctors tried everything they could, even extracting penicillin from Constable Alexander's urine in an attempt to stretch the supply, but by February 17, they had run completely out.

It didn't take long for the infection to return. The man who had looked so likely to pull through died on March 15, 1941. Penicillin couldn't save Constable Alexander (although it likely would have, with a better supply available), and it could never have helped the unnamed cancer patient, but their final days helped prove that Chain and Florey's refined version was safe and effective in human patients, paving the way for other human trials and eventual mass distribution.

*I am a freelance science journalist, bringing you interesting science tidbits, tales of discovery and critical looks at everything from deadly diseases to space exploration. I've written, online and in print, for Air & Space, Astronomy, Ars Technica, Discover, Drone360, ... **MORE***

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