

## Robert Austrian

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### Obituary

Robert Austrian, the John Herr Musser Emeritus Professor of Research Medicine at the University of Pennsylvania School of Medicine and a leading figure in the prevention of pneumococcal diseases, died in Philadelphia on March 25, 2007. For more than five decades beginning in the late 1940s, Austrian devoted his professional life to conquering pneumococcal pneumonia, a major killer of the elderly and chronically ill. Efforts to develop a vaccine to protect against pneumococcal pneumonia began in 1911 and were significantly advanced in 1930, when it was learned that carbohydrate molecules on the surface of the pneumococcus are important contributors to immunogenicity. By the late 1940s, two vaccines had been manufactured and were commercially available. The simultaneous development of effective antibiotics such as penicillin discouraged the vaccines' use, and they were withdrawn from the market. Austrian, however, was not convinced by prevailing medical wisdom that the pneumococcus was no longer a threat to the public's health. He suspected that serious risks from pneumococcal infection persisted despite the prevalence of antibiotics and he initiated the laborious and meticulous process to produce the evidence needed to persuade a skeptical medical community. After a study of patients in New York City's Kings County Hospital from 1952 to 1962, Austrian and Jerome Gold concluded in 1964 that highly effective antimicrobial drugs must be supplemented by [...]

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Efforts to develop a vaccine to protect against pneumococcal pneumonia began in 1911 and were significantly advanced in 1930, when it was learned that carbohydrate molecules on the surface of the pneumococcus are important contributors to immunogenicity. By the late 1940s, two vaccines had been manufactured and were commercially available. The simultaneous development of effective antibiotics such as penicillin discouraged the vaccines' use, and they were withdrawn from the market.

Austrian, however, was not convinced by prevailing medical wisdom that the pneumococcus was no longer a threat to the public's health. He suspected that serious risks from pneumococcal infection persisted despite the prevalence of antibiotics and he initiated the laborious and meticulous process to produce the evidence needed to persuade a skeptical medical community. After a study of patients in New York City's Kings County Hospital from 1952 to 1962, Austrian and Jerome Gold concluded in 1964 that highly effective antimicrobial drugs must be supplemented by other measures, both prophylactic and therapeutic, if the significant mortality still resulting from pneumococcal infection was to be reduced. Austrian identified the pneumococcal capsular types most responsible for fatalities from pneumococcal bloodstream infections and demonstrated that mortality was particularly problematic among the elderly. The fact that a mortality rate of 15% persisted despite antibiotic therapy was a sobering finding for the medical establishment that had erroneously concluded antibiotic treatment was sufficient to control the disease.

In 1962, Austrian left the State University of New York College of Medicine at Brook-

lyn to join the medical faculty of the University of Pennsylvania. There he served as the John Herr Musser Professor of Research Medicine and chair of the department. He continued his clinical and epidemiological work on vaccine development under the aegis of the National Institute of Allergy and Infectious Diseases by conducting clinical trials among gold miners in South Africa. In 1976, he reported that a capsular polysaccharide pneumococcal vaccine was both safe and efficacious. His scientific efforts culminated first in 1977, with the licensing of a vaccine containing antigens of 14 serotypes of pneumococcus, and later in 1983, with the vaccine's expansion



to contain 23 serotypes that accounted for 85% of bloodstream infections associated with pneumococcal pneumonia.

Despite skepticism in the US medical community about the vaccine's efficacy, a carefully performed case-control study in the November 21, 1991, issue of the *New England Journal of Medicine* by Austrian and colleagues conclusively established the protective efficacy of the pneumococcal vaccine.

The recent emergence of widespread resistance of pneumococcus to penicillin and many other commonly used antibiotics highlights the incredible importance

of the vaccine to the practice of medicine. Austrian's foresight and perseverance were truly remarkable. What he did to solve a major human disease problem, often almost totally by himself, is extremely rare in modern medicine.

In recent years, Austrian remained an inspiration to his colleagues and students. He was an active participant in the weekly clinical Infectious Diseases Case Management conferences held at the Hospital of the University of Pennsylvania. Incredibly, he spent part of every day, six days a week, working in his laboratory, including on Thursday, March 22, the day before he suffered a stroke. He obtained pneumococcal isolates from colleagues around the world and personally analyzed the strain types to track the epidemiology of infection, which was important to evaluate the pneumococcal types to include in future generations of the vaccine.

Austrian was born in Baltimore on April 12, 1916. He earned his AB degree from Johns Hopkins University in 1937 and his MD degree from the Johns Hopkins University School of Medicine in 1941. Among his many awards and honors are the Albert Lasker Clinical Medical Research Award in 1978; election to the National Academy of Sciences in 1979; the Bristol Award from the Infectious Diseases Society of America in 1986; election to senior membership of the Institute of Medicine, National Academy of Sciences, in 1992; and the Maxwell Finland Award for Scientific Achievement from the National Foundation of Infectious Diseases in 2001. He received an honorary degree from the University of Pennsylvania in 1987, a year after he became emeritus, and the auditorium in Penn's Clinical Research Building is named in his honor. He was a remarkable scholar, academician, scientist, and gentleman, whose efforts to develop the pneumococcal vaccine saved many thousands of lives around the world.

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