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Austrian R & Gold J. Pneumococcal bacteremia with especial reference to bacteremic pneumococcal pneumonia. *Ann. Intern. Med.* 60:759-76, 1964.
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Analysis of bacteremic pneumococcal pneumonia treated with antibiotics reveals the continuing seriousness of this infection, with case fatality rates exceeding 25 percent in persons at high risk. Inability of drugs to alter outcome in those irreversibly injured early in illness suggests the value of prophylactic vaccination. [The SC⁷⁰ indicates that this paper has been cited in over 290 publications.]

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The advent of penicillin and of other antibiotics in the 1940s was followed by dramatic improvement in the prognosis of many bacterial infections, among them pneumococcal pneumonia. Concomitantly, exaggerated optimism among physicians, optimism not always based soundly on microbiologic and epidemiologic data, was widespread. Abandonment of microbiologic techniques for isolating and typing pneumococci, essential to serotherapy, led rapidly to declining recognition of the organism in hospital laboratories and to the belief that pneumococcal infection was no longer prevalent or serious. In 1952 these views were typified at a 3,500-bed New York City hospital by the impression that only four cases of pneumococcal pneumonia were being admitted annually to its wards.

Pursuing an interest in pneumonia developed as a student at Johns Hopkins, I was supported by Perrin H. Long in establishing a laboratory in Brooklyn for isolating and typing pneumococci. This measure and the collection of specimens for bacteriologic study before treatment demonstrated quickly the absence of a significant decline in the incidence of pneumococcal infection and that, rather than four, 400 cases of putative pneumococcal

pneumonia were being admitted annually to the hospital.

A move from Brooklyn to Philadelphia in 1962 provided the occasion to review with Jerome Gold the experience of the previous decade at Brooklyn's Kings County Hospital. Because of the unequivocal role of pneumococci in bacteremic infection, the more than 500 cases seen between 1952 and 1962 were analyzed. The findings showed that 17 percent of adults with uncomplicated bacteremic pneumococcal pneumonia treated with penicillin succumbed and that, in the elderly or in those with chronic systemic illnesses, case fatality rates exceeded 25 percent. Comparison of survival curves of those given antibiotics with those treated symptomatically or with serum showed no differences in case fatality rates among those dying within five days of onset of illness.¹ This last finding and the lack of available therapeutic measures to alter it provided the impetus to redevelop a pneumococcal vaccine.

The report was submitted first to and rejected by the *New England Journal of Medicine*. After its subsequent acceptance by the *Journal of the American Medical Association*, it was withdrawn because of the latter's inability to include the tables. The text, published in its entirety in the *Annals of Internal Medicine*, seems to have been viewed initially as something of a curiosity, describing a phenomenon in a foreign land (a wag once characterized Brooklyn as "a city opposite the US"). Despite earlier and later confirmatory reports, skepticism persisted. It required four years after the paper's publication to initiate support for the ultimate redevelopment of pneumococcal vaccine. Even after the vaccine's relicensure, negative views regarding its role continued to be expressed. Only in the past year has its wider acceptance seemed reasonably assured.

Interest in the report appears directed to the method of analysis and to demonstrations of the persistent seriousness of pneumococcal infection and the limitations of antibacterial drugs in the presence of advanced physiologic injury.²⁻⁶

1. Tilghman R C & Finland M. Clinical significance of bacteremia in pneumococcal pneumonia. *Arch. Intern. Med.* 59:602-19, 1937. (Cited 65 times since 1955.)
2. Austrian R. Pneumococcal infections. (Germanier R, ed.) *Bacterial vaccines*. Orlando, FL: Academic Press, 1984. p. 257-88.
3. ———. Editorial retrospective. A reassessment of pneumococcal vaccine. *N. Engl. J. Med.* 310:651-3, 1984.
4. Shapiro E D & Clemens J D. A controlled evaluation of the protective efficacy of pneumococcal vaccine for patients at high risk of serious pneumococcal infections. *Ann. Intern. Med.* 101:325-30, 1985.
5. Bolan G, Broome C V, Facklam R R, Plikaytis B D, Fraser D W & Schlech W F III. Pneumococcal vaccine efficacy in selected populations in the United States. *Ann. Intern. Med.* 104:1-6, 1986.
6. Health and Public Policy Committee, American College of Physicians. Pneumococcal vaccine. *Ann. Intern. Med.* 104:118-20, 1986.