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Walzer P D, Perl D P, Krogstad D J, Rawson P G & Schultz M G. *Pneumocystis carinii* pneumonia in the United States. *Ann. Intern. Med.* 80:83-93, 1974.
[Center for Disease Control, Health Services and Mental Health Administration, Public Health Service, US Department of Health, Education, and Welfare, Atlanta, GA]

This study described the clinical, diagnostic, and epidemiologic features of 194 patients with *Pneumocystis carinii* pneumonia in the US as reported to the Centers for Disease Control over a three-year period. It is the largest series of *P. carinii* patients in the country and has served as a reference for comparison with subsequent studies, particularly those concerned with the occurrence of pneumocystosis in the acquired immunodeficiency syndrome (AIDS) [The SCJ® indicates that this paper has been cited in over 235 publications.]

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By the early 1970s, *Pneumocystis carinii* had become recognized as a major cause of life-threatening pneumonitis in immunosuppressed patients. Pentamidine isethionate, the anti-*P. carinii* treatment of choice, was not licensed in the US, so the Centers for Disease Control (CDC) established the Parasitic Disease Drug Service under the leadership of Mike Schultz to provide pentamidine and other needed agents to physicians on an investigational basis. Work with pentamidine was demanding because it involved frequent evening and weekend telephone consultations from all over the country and urgent trips to bring the drug to the airport for shipping. As a young Epidemic Intelligence Service officer assigned to the CDC's Parasitic Disease Branch, I found this to be a rather heady experience.

Since physicians who used pentamidine filled out a patient report form about the results of therapy, CDC maintained informal surveillance of pneumocystosis in this country. Karl Western, my predecessor at CDC,

had published an excellent article on the use of pentamidine.¹ It seemed logical to build on this database to write an article about the general features of *P. carinii* pneumonia; however, I did not realize how tedious and time-consuming this endeavor would be. CDC had very little primary clinical material, so physicians had to be contacted for specific questions about their patients' illnesses, for follow-up, and to obtain histopathologic specimens to confirm the diagnosis. A standardized punch-card system was developed to organize the data, and countless hours were spent in evenings at home with sewing needles in tabulating and analyzing this information. (With present-day computers, this would have been a simple and easy task!) My coauthors, particularly Don Krogstad and Dan Perl, also worked long and hard to bring the study to completion.

I had intended to submit the manuscript to *Medicine*, but, with the appearance of a review article on *P. carinii* in that journal in 1973,² I sent it to the *Annals of Internal Medicine*. I believe the study has been so frequently cited because of the general level of interest in pneumocystosis and because this is the most comprehensive analysis of the disease in this country. Interest in *P. carinii* waned in the late 1970s after the elegant work of Walter Hughes, which demonstrated the efficacy of trimethoprim-sulfamethoxazole in the treatment and prophylaxis of the disease.³ Medical concern about pneumocystosis has been rekindled in the 1980s with the discovery of the acquired immunodeficiency syndrome (AIDS). Not only is *P. carinii* the leading opportunistic pathogen and cause of mortality in AIDS, but the organism also presents unusual clinical features with new challenges in diagnosis and treatment.⁴

This study did not bring me any specific honors but did have a major impact on my career. I became fascinated with *P. carinii* and have devoted most of my research efforts since 1974 to investigating various aspects of the basic immunobiology of this organism.^{5,6}

1. Western K A, Perera D R & Schultz M G. Pentamidine isethionate in the treatment of *Pneumocystis carinii* pneumonia. *Ann. Intern. Med.* 73 695-702, 1970. (Cited 125 times.)
2. Burke B A & Good R A. *Pneumocystis carinii* infection. *Medicine* 52 23-51, 1973. (Cited 160 times.)
3. Hughes W T, Kuhn S, Chaudhary S, Feldman S, Verzosa M, Auz R J A, Pratt C & George S L. Successful chemoprophylaxis for *Pneumocystis carinii* pneumonitis. *N Engl J Med* 297 1419-26, 1977. (Cited 225 times.)
4. Kovacs J A, Hiemenz J W, Maccher A M, Stover D, Murray H W, Shelhamer J, Lane H C, Urmacher C, Hong C, Longo D L, Parker M M, Natanson C, Parrillo J E, Fauci A S, Pizzo P A & Masur H. *Pneumocystis carinii* pneumonia: a comparison between patients with the acquired immunodeficiency syndrome and patients with other immunodeficiencies. *Ann Intern Med* 100 663-71, 1984.
5. Walzer P D, Powell R D, Jr., Yoneda K, Rutledge M E & Milder J E. Growth characteristics and pathogenesis of experimental *Pneumocystis carinii* pneumonia. *Infect. Immunology* 27 928-37, 1980. (Cited 25 times.)
6. Cushman M T, Ruffolo J J, Linke M J & Walzer P D. *Pneumocystis carinii* growth variables and estimates in the A549 and WI-38 VA 13 human cell lines. *Exp Parasitol* 60 43-54, 1985.