- nosocomial Legionnaires' disease. J Clin Microbiol. 2003;41: 838–40. http://dx.doi.org/10.1128/JCM.41.2.838-840.2003
- Mandell LA, Wunderink RG, Anzueto A, Bartlett JG, Campbell GD, Dean NC, et al.; Infectious Diseases Society of America; American Thoracic Society. Infectious Diseases Society of America/American Thoracic Society consensus guidelines on the management of community-acquired pneumonia in adults. Clin Infect Dis. 2007;44(Suppl 2):S27–72. http://dx.doi.org/ 10.1086/511159
- Garin N, Genné D, Carballo S, Chuard C, Eich G, Hugli O, et al. β-Lactam monotherapy vs β-lactam–macrolide combination treatment in moderately severe community-acquired pneumonia: a randomized noninferiority trial. JAMA Intern Med. 2014;174: 1894–901. http://dx.doi.org/10.1001/jamainternmed.2014.4887
- Neuhauser MM, Weinstein RA, Rydman R, Danziger LH, Karam G, Quinn JP. Antibiotic resistance among gram-negative bacilli in US intensive care units: implications for fluoroquinolone use. JAMA. 2003;289:885–8. http://dx.doi.org/10.1001/jama.289.7.885

- Davidson R, Cavalcanti R, Brunton JL, Bast DJ, de Azavedo JC, Kibsey P, et al. Resistance to levofloxacin and failure of treatment of pneumococcal pneumonia. N Engl J Med. 2002;346:747–50. http://dx.doi.org/10.1056/NEJMoa012122
- Malhotra-Kumar S, Lammens C, Coenen S, Van Herck K, Goossens H. Effect of azithromycin and clarithromycin therapy on pharyngeal carriage of macrolide-resistant streptococci in healthy volunteers: a randomised, double-blind, placebo-controlled study. Lancet. 2007;369:482–90. http://dx.doi.org/10.1016/ S0140-6736(07)60235-9
- Fuller JD, Low DE. A review of Streptococcus pneumoniae infection treatment failures associated with fluoroquinolone resistance. Clin Infect Dis. 2005;41:118–21. http://dx.doi.org/10.1086/430829

Address for correspondence: Philip M. Polgreen, Division of Infectious Diseases, Carver College of Medicine, University of Iowa, 200 Hawkins Dr, Iowa City, IA 52242, USA; email: philip-polgreen@uiowa.edu

<u>etymologia</u>

Legionella pneumophila [le"jə-nel'ə noo"mo-fil'ə] Ronnie Henry

In the summer of 1976, as the United States was celebrating the bicentennial of the Declaration of Independence, a mysterious acute respiratory illness developed in attendees at an American Legion convention in Philadelphia shortly after the attendees returned from the convention. In total, 182 Legionnaires became ill, and 29 died.

Researchers in the Leprosy and Rickettsia Branch at the Centers for Disease Control (CDC), headed by Charles C. Shepard, observed that guinea pigs became ill after being inoculated with lung tissues from patients who died. A few gram-negative bacilli were seen in guinea pig tissues, but these were believed to be normal flora or contaminants. The bacteria could not at first be isolated in embryonated eggs because the standard procedure for isolating rickettsiae at the time was to include penicillin and streptomycin to prevent contamination.



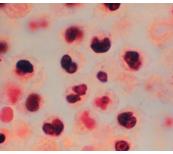


Figure: Left, Joseph McDade, CDC scientist who discovered the cause of Legionnaires' disease. Right, Lung cells with intra-alveolar exudate containing macrophages and polymorphonuclear leukocytes after infection with *Legionella pneumophila*, the causative agent of Legionnaires' disease. Photos: McDade, R.E. Bates/CDC; photomicrograph, F.W. Chandler/CDC.

Returning to work after Christmas 1976, CDC microbiologist Joseph McDade was bothered by these unexplained findings. He again attempted to grow the bacteria in embryonated eggs, this time without antibiotics, and successfully isolated a large inoculum of pure culture that could be grown on agar. These bacteria were determined to be the etiologic organism of Legionnaires' disease and were eventually named *Legionella* (for the Legionnaires) *pneumophila* (Greek *pneumon* [lung] + *philos* [loving]).

Sources

- McDade JE, Shepard CC, Fraser DW, Tsai TR, Redus MA, Dowdle WR. Legionnaires' disease: isolation of a bacterium and demonstration of its role in other respiratory disease. N Engl J Med. 1977;297:1197–203. http://dx.doi.org/10.1056/ NEJM197712012972202
- Winn WC Jr. Legionnaires disease: historical perspective. Clin Microbiol Rev. 1988;1:60–81. http://dx.doi.org/10.1128/ CMR.1.1.60

Address for correspondence: Ronnie Henry, Centers for Disease Control and Prevention, 1600 Clifton Rd NE, Mailstop E03, Atlanta, GA 30329-4027, USA; email: boq3@cdc.gov

DOI: https://doi.org/10.3201/eid2311.ET2311