

## BRIEF HISTORICAL PERSPECTIVES

## Emerging infectious diseases – 1970s

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Forty years ago is not ancient history in the medical field. However, being an eye witness to the emergence of three new infectious diseases in the northeastern United States in the 1970s left a deep impression on this author. I will relate a small portion of the amazing events that caught the attention of the medical establishment and the general public in a roughly 5-year period of medical discovery.

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Having medically grown up in the 1970s, primarily in the northeast of the United States, I had the opportunity, first, as an internal medicine resident, and later, as a junior faculty member, to witness, in real time, the emergence of three totally new infectious diseases from three unknown or unappreciated organisms – a spirochete, a newly discovered bacterium, and a virus. There is not much we do not know about these entities in 2016, unlike the mysteries when they were emerging. New infectious diseases may emerge as environments, both biological and social, evolve but may also appear anew for no apparent reason beyond the simplest – their time has come. It is important for health professionals to be alert, humble, and wary. It usually starts with reporting cases, the foundation for new medical discoveries (1).

### 1975 – Epidemic of juvenile rheumatoid arthritis in rural Connecticut

An alert citizen in 1975 notified the Connecticut Health Department about her children (as well as others in the community) being diagnosed with juvenile rheumatoid arthritis. This was in a geographic region bounded by the broad Connecticut River in a rural wooded area that included the towns of Lyme and E. Haddam. Although more cases were diagnosed in other towns, Lyme disease stuck (not unlike the illogical methods one finds in the naming of some eponyms (2)).

Allen Steer, a rheumatology trainee at nearby Yale, with a background in the Epidemiologic Intelligence Service at the Center for Disease Control (CDC) was notified and began to investigate. Eventually, more than 50 individuals were identified; many of whom complained

of an additional skin rash. The rash seemed similar to previous outbreaks of tick-borne diseases in Europe (3, 4).

Organisms were not identifiable in afflicted patients, but serodiagnostic testing through western blot technology developed from previously infected patients worked to diagnose the disease. Diffuse clinical manifestations including cardiac and neurological were appreciated as was further epidemiological spread to the United States beyond Connecticut. In the town, in central Connecticut (west of the Connecticut River) where I lived at the time, Lyme became a big business in an effort to rid the community of ticks, even though it was thought that the east side of the Connecticut River was considered the problem area because that is where the infected deer population lived.

In 1981, *Borrelia burgdorferi*, a spirochete, was identified as the causative agent, via deer tick transmission.

### 1976 – Outbreak of hotel-acquired pneumonia in Philadelphia

The 1976 annual convention of military veterans was held at the Bellevue-Stratford Hotel in Philadelphia for 3 days and was attended by more than 2,000 American Legionnaires. The convention ended uneventfully. However, within a few days, 10 of those attending died suddenly with symptoms of tiredness, chest congestion, and chest pain. Most of these older individuals were presumed to have been struck by heart attacks. A primary care physician who had been the doctor for some of these victims, contacted the Pennsylvania Health Department. Within a week, 25 had died. Lay press headlines in Philadelphia and around the country were alarmist (5, 6). The CDC intervened.

In January 1977, the *Legionella* bacterium was identified and isolated. The source of the organism was found to be the cooling tower of the hotel's air conditioning system. The bacterium was called *Legionella pneumophila*.

**1979 – Gathering storm of acquired immunodeficiency in New York and Los Angeles**  
 Beginning in 1979, there were reports from Los Angeles and New York City of outbreaks of *Pneumocystis carinii*

pneumonia and/or Kaposi's sarcoma among previously healthy men (7, 8). The symptoms seemed to have emerged early in 1979 and exploded the following year. Many in the cohort died within 2 years (9, Fig. 1). Initially, acquired immunodeficiency syndrome (AIDS) involved primarily gay men. However, this changed rapidly, with the inclusion of injecting drug users followed by hemophiliacs and others receiving blood product transfusions, and men from Haiti. Subsequently, it appeared to be spreading

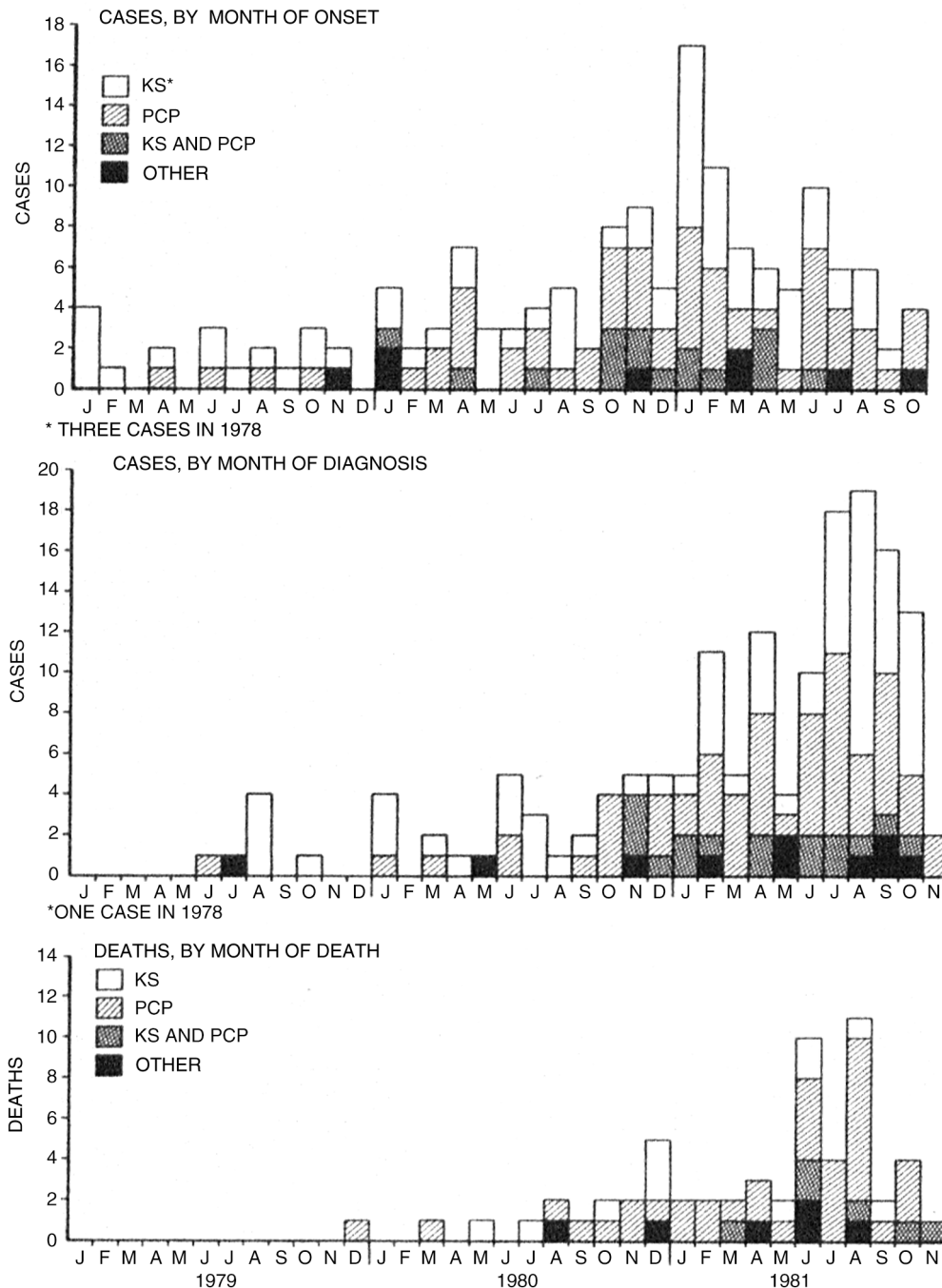


Fig. 1. Incidence of Kaposi's Sarcoma (KS), Pneumocystis carinii Pneumonia (PCP), and Other Opportunistic infections in the United States, 1979–1981.

heterosexually, male to female and transplacentally in pregnant women.

Since the observation that group sexual behavior was a very high-risk activity for gay men, drastic public health measures were taken in New York and California to reduce risk (10). In 1982, the CDC used the term AIDS. In 1983, the French discovered a retrovirus labeled lymphadenopathy-associated virus as the likely cause of AIDS. The National Cancer institute in 1984 identified the HTLV-3 virus as the cause for AIDS and that it was identical to the French discovery. The HTLV-3 name was later changed to HIV. In 1985, the CDC licensed the first commercial assay for HIV screening and blood banks started screening.

### Why the 70's

Were there reasons why these three important infectious diseases occurred when they did in relatively rapid succession? Probably not in the case of Lyme and Legionnaire. The emergence of a clinical entity was evident only in hindsight. Global considerations take time to be understood. In the case of AIDS, we need to look back at possible behavioral changes that occurred years before as we now know the natural history of HIV infection including the typical 10+ years needed after initial infection to develop a sufficiently low CD4 count to be at risk.

During the 1970s, there were opportunities to learn life lessons. Observing unexplained cases with a balanced approach should be guided by the principles of good medicine. Invariably, good detective work and follow-up are needed when chasing a menace. If one hypothesis falters, try another. In Connecticut, expert epidemiologic work solved the riddle. In Philadelphia, a new bacterium, growing in a cooling tower, was not initially at the top of many lists. And, in the case of AIDS, a personal contact of mine at the time, who saw many of these patients at his Greenwich Village office, was certain that the epidemic of immunosuppression was recreational drug related. Eventually he was among those who found the right answer.

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The author has not received any funding or benefits from industry or elsewhere to conduct this study.

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