

AIDS supplemental material: HOW THE EPIDEMIC STARTED

AN OUTBREAK OF A RARE PNEUMONIA. The Centers for Disease Control (CDC) in Atlanta, a branch of the U.S. Public Health Service, publishes *Morbidity and Mortality Weekly Report (MMWR)* which communicates news of infectious or environmental illness. In early June of 1981 Gottlieb and co-workers recorded the cases of five young men, previously in good health, who were treated for *Pneumocystis carinii** pneumonia in Los Angeles hospitals [MMWR 30:250, 1981]. This fungus only infects people opportunistically, that is, when their immune system is impaired. Previously, *Pneumocystis* infection had been limited to patients with congenital immune deficiency, or on immunosuppressive therapy, or with immune deficiency secondary to cancer or its treatment. These patients had no such history, so this was a surprise. The other surprising finding was that all five patients were homosexual.

Very soon after this publication came another [MMWR 30:305, 1981] about 18 young homosexual males from California with a peculiar tumor, Kaposi's sarcoma, and a report [*Lancet* 11:598, 1981] of 8 more cases from New York. This was disturbing: Kaposi's sarcoma was, until then, one of the rarest tumors known. About 25 cases had been reported annually in the USA, and almost all of them were in elderly men. Furthermore, while the tumor in older people behaves rather benignly, the KS in the young men was unusually disseminated and virulent.

Were these isolated incidents? Were they related? By August of that year we knew that many of the KS patients also had *Pneumocystis* pneumonia (PCP), so the two conditions were happening in the same risk group. We also knew that other opportunistic infections were being seen in these patients, which implicated immune deficiency rather than the emergence of an unusually virulent *Pneumocystis* strain. And 70 cases had now been reported.

Most immunologists and other workers did not know what to make of this, if indeed they had heard of it at all. In April 1982, one of the authors of the first report, Andrew Saxon of UCLA, came to Denver to describe "An Epidemic of Infectious Immunodeficiency in Male Homosexuals". By then, 273 cases had been reported to the CDC, and the character of the epidemic was beginning to take shape. The disease had been named "GRID," for Gay-Related Immunodeficiency Disease. Eight percent of the patients were not gay, though: they were intravenous drug abusers. This pattern was enough to make workers think that this was an infectious disease spread by sexual contact and by blood, much like hepatitis. This suspicion was confirmed by a report in July 1982 [MMWR 31:365, 1982] of *Pneumocystis* and other opportunistic infections in 3 patients with hemophilia, all of whom had received large amounts of pooled blood products for the treatment of their clotting abnormality.

* It was subsequently found that the species was misidentified; *P. carinii* is a rat pathogen. So it was renamed *Pneumocystis jirovecii*, after Otto Jirovec, who described the pneumonia in 1952. Later, it was shown to be a fungus, not a protozoan, and so, in according with the usage of the botanical world, it became *P. jirovecii*.

Another syndrome was quickly identified and called “GRAD”, for Gay-Related ADenopathy. These patients, mostly homosexual males or drug users, had chronically enlarged lymph nodes (adenopathy) and often severe weakness and fatigue, but did not manifest opportunistic infections or Kaposi’s. It was felt that this might represent an early form of the disease, and in fact some patients had had GRAD for several years before developing GRID. So another disturbing aspect of this disease was identified: it runs a very long course.

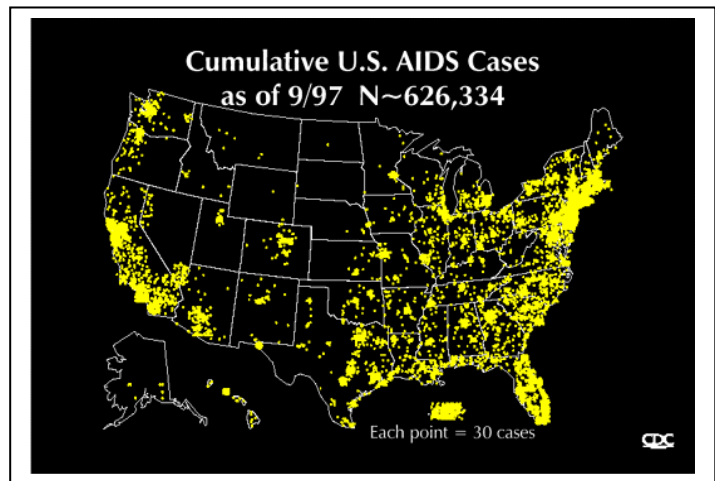
The epidemiology of GRID was clarified by a field team from CDC, who showed that of the first 18 patients in San Francisco, 11 had had sexual contact with one another. The odds of this happening by chance in a city with 250,000 homosexuals were infinitesimal; these men were definitely transmitting a disease by sexual contact.

Was this a new disease, or, like Legionnaires’ disease, a newly-identified old disease? It’s a new disease, because all cases of *Pneumocystis* infection had at that time to be reported to CDC in order to obtain experimental drugs, and there had been no unusual requests before 1981. Also, Kaposi’s sarcoma, which was reported in about 40% of GRID patients, had previously been vanishingly rare, and almost all cases had been in older men.

As it became obvious that homosexuals were not the only group at risk, the disease was renamed AIDS, for Acquired Immune Deficiency Syndrome, and GRAD was renamed ARC for AIDS-Related Complex or CLS for Chronic Lymphadenopathy Syndrome.

INCIDENCE. Careful histories taken from the earliest patients indicate when the illnesses began. Here are the cumulative case numbers in the USA for the first years:

1979	First Half:	1
	Second Half:	6
1980	First Half:	17
	Second Half:	26
1981	First Half:	66
	Second Half:	141
1982	First Half:	249
	Second Half:	509



And 15 years later...

So very soon it was established that the disease was spreading at a geometric rate, with total cases doubling about every six months.

By 1983/4, Montagnier’s group in France and Gallo’s in the US had identified the virus. Although they and their governments later agreed that it was a codiscovery, only Montagnier and his colleague Françoise Barré-Sinoussi received the 2008 Nobel prize.