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A decade of AIDS literature

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The first cases of a disease later to be called acquired immunodeficiency syndrome (AIDS) were reported to the medical community on June 5, 1981 [1]. A decade later, the prevalence of AIDS and the causative infection by the human immunodeficiency virus (HIV) is having a major impact on world health and biomedical research. For U.S. males between the ages of twenty-five and forty-four, the rate of death from AIDS exceeds the rates for heart disease and neoplasia and is surpassed only by that of accidental death [2]. During 1991, AIDS was expected to become one of the five leading causes of death among U.S. women between the ages of fifteen and forty-four [3]. AIDS is known to be responsible for 113,000 deaths in the United States, and 1 million of the world's children and 8-10 million adults are believed to be infected by HIV [4-5].

The effort mounted to combat this disease has expanded rapidly, and sixteen government institutes now are involved in AIDS education and research [6]. National Institutes of Health (NIH) support for AIDS research grew from \$64 million in 1985 to over \$800 million in 1991, close to 10% of the NIH budget [7]. Total annual AIDS funding by the federal government increased from \$3 million in 1982 to an estimated \$1.1 billion in 1991 [8].

Additional insight into the impact of AIDS can be gained from a bibliometric examination of a decade of the literature. Bibliometrics is the "analysis of a body of literature to reveal the historical development of subject fields and patterns of authorship, publication, and use" [9].

AIDS LITERATURE IN MEDLINE

The National Library of Medicine's MEDLINE* database was used to analyze the AIDS literature of the past decade. Although it focuses on English-language periodicals, MEDLINE indexes more than 3,600 major medical journals published in 36 languages and 75 countries. The MRAI† database was initiated to provide a subset of MEDLINE focusing on all aspects of

AIDS. This database currently contains more than 200,000 records (1983 through mid-1991) and serves as an approximation of the total number of AIDS-related entries in MEDLINE.

For this overview, a subset of approximately 29,000 AIDS-related MEDLINE records was identified from the period 1981 through 1990. All of these entries contained at least one of the following terms: acquired immunodeficiency syndrome, acquired immune deficiency syndrome, human immunodeficiency virus, or human immune deficiency virus. Because of their ambiguity, the acronyms AIDS and HIV were not used.

The figures reported here reflect relative changes and trends in the AIDS literature over time. During 1981 and 1982 especially, AIDS was known by a variety of names, including gay-related immune deficiency and cellular immune deficiency syndrome [10]. In late 1982, the Centers for Disease Control first used the term acquired immune deficiency syndrome, which gradually became accepted along with the variation, acquired immunodeficiency syndrome [11]. Lack of a standardized term hinders the identification of AIDS articles from these early years.

GROWTH OF AIDS LITERATURE

The AIDS literature in this MEDLINE subset grew from fewer than 700 entries for the period 1981 through 1983 to a cumulative total of 29,077 entries by the end of 1990 (Table 1). The greatest relative expansion came in 1983 with a twenty-four-fold increase in new MEDLINE entries compared to the previous year. The number of records entered into the database from 1986 through 1988 increased by an average of 60% each year. Sixty-five percent of the 29,077 records were added during 1988-1990.

In 1982, articles on AIDS appeared in four languages. This number increased to twenty-two in 1984, and by the end of 1987, articles had been published in twenty-nine languages. Over the ten-year period, 83.5% of the articles in this subset were in English. The second-largest group was in German (3.9%), followed by French (3.6%), Spanish (2.4%), and Italian (1.1%). The remaining 5.5% of the entries were scattered among twenty-four languages.

Another indication of the growth in articles about AIDS is the number of countries publishing journals carrying articles on AIDS. This number increased from seven in 1982 to thirty-one in 1983. By 1987, articles on AIDS had been published in the journals of sixty-one countries, and this total continues to increase gradually. Journals published in the United States

* MEDLINE is a registered trademark of the National Library of Medicine.

† MRAI is a registered trademark of BRS Information Technologies, Inc.

Table 1
The literature of AIDS as reflected by a subset of the MEDLINE database

	Database records		Languages		Countries of publication		Journals	
	Year only	Cumulative	Year only	Cumulative	Year only	Cumulative	Year only	Cumulative
1981	0	0	0	0	0	0	0	0
1982	28	28	4	4	7	7	17	17
1983	665	693	15	16	31	32	217	229
1984	1,168	1,861	22	24	38	41	364	463
1985	1,727	3,588	21	27	43	49	510	715
1986	2,670	6,258	22	28	46	53	737	1,048
1987	4,051	10,309	26	29	54	61	927	1,357
1988	6,370	16,679	27	29	56	63	1,135	1,579
1989	6,164	22,843	25	29	52	64	1,204	1,867
1990	6,234	29,077	23	29	49	65	1,160	2,084

were responsible for 55% of the articles, followed by those published in England with 15.5%. West Germany (and later the combined Germanys) published 4.4%, France 3.6%, and Switzerland 2.9%. Six countries (Canada, Italy, the Netherlands, Spain, Denmark, and Austria) each published 1%–2% of the articles. Taken together, these 11 countries published 91% of the AIDS literature in this subset, with 54 countries contributing the remaining 9%.

The number of journals indexed by MEDLINE that published articles on AIDS rose quickly from 17 in 1982 to 217 in 1983, a 13-fold increase. Each year from 1983 through 1990, 200 to 350 MEDLINE-indexed journals published an article on AIDS for the first time. For each of the years 1987 through 1990, an average of 1,100 MEDLINE journals (approximately 30% of the total indexed) published one or more articles on AIDS. More than 2,000 journals had carried at least one AIDS article by the end of 1990.

Excluding journals devoted entirely to AIDS, *Lancet* published the largest number of AIDS-related articles during the decade with 1,054. *JAMA*, the *Journal of the American Medical Association*, was second with 728, and *Nature* third with 587.

The number of periodicals devoted to AIDS provides another measure of the disease's impact. Directories list forty-nine different titles, with thirty-five beginning publication between 1986 and 1988 [12–13]. To subscribe to all of these journals, newsletters, and bibliographic services would cost about \$5,000 annually!

SUMMARY

From 1983 through mid-1991, more than 200,000 MEDLINE entries were AIDS-related. Close to 60% of the journals indexed in MEDLINE published at least one article on AIDS during the past ten years. As reflected by a subset of 29,077 MEDLINE records,

the literature of AIDS has grown to encompass 29 languages and 65 countries. A bibliometric study of the medical literature helps to demonstrate the progression of AIDS as a world health problem and the concomitant expansion of the research effort underway to control it.

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