

How Much Is the World Investing in an HIV Vaccine?: Estimates for 2002

With over 60 million people already infected and 14,000 new infections each day,ⁱ the HIV pandemic has become the greatest public health crisis facing the world since the 13th century. Expanded prevention and treatment programs can slow its spread and mitigate its impact, but the best hope to end the pandemic is a safe and effective preventive HIV vaccine.

The active engagement of academic, not-for-profit, public and private institutions is needed to accelerate the development and widespread use of preventive HIV vaccines. There is increasing scientific confidence that a vaccine is possible and moving forward will require a significant investment in funding for HIV vaccine research and development (R&D).

IAVI launched the HIV Vaccine Resource Tracking Project in 2003 to improve the collection, analysis and dissemination of information regarding HIV vaccine R&D funding. This brief summarizes the first Policy Research Working Paper issued under the project, which presents estimates of global investment and expenditures on preventive HIV vaccines in 2002. IAVI is currently working with others to prepare estimates of investments and expenditures for the period 2000-2005.

For a more detailed discussion of the methods and resources used to generate these estimates, please consult the IAVI publication, *“Global Investment and Expenditures on Preventive HIV Vaccines: Methods and Results for 2002”* (see www.iavi.org).

I. Total global investment in 2002

Global investment, or the amount of money made available, in HIV vaccine R&D in 2002 was estimated to be US\$ 646 million, the mid-point of low and high estimates of US\$ 624 and 670 million.ⁱⁱ It should be noted, however, that this figure includes a US\$ 100 million multi-year grant from the Bill & Melinda Gates Foundation to IAVI, the full sum of which was transferred to IAVI in 2002.

| | Amount (millions US\$) | Percentage of total |
|---|------------------------|---------------------|
| Public Sector | | |
| - US Public Sector | 382 | 59.1 |
| - Europe Public Sector | 41.3 | 6.4 |
| - Other Public Sector | 9.6 | 1.5 |
| - Multilateral Agencies | 1.9 | 0.3 |
| Public sector subtotal | 434.8 | 67.3 |
| Industry | | |
| - Pharmaceutical companies | 57 | 8.8 |
| - Biotechnology companies | 42 | 6.5 |
| Industry subtotal | 99 | 15.3 |
| Philanthropic sector | | |
| - Foundations | 110 | 17.0 |
| - Corporate donations & private individuals | 2.7 | 0.4 |
| Philanthropic subtotal | 112.7 | 17.4 |
| Total investment | 646.5 | 100.0 |

All funders of HIV vaccine R&D were allocated to one of three categories: the public sector, industry, and the philanthropic sector.ⁱⁱⁱ The public sector accounted for 67.3% of the funds invested, industry for 15.3% and the philanthropic sector for 17.4% (see Figure 1 and Table 1).

a. Public sector

The public sector provided the most funding for HIV vaccine R&D in 2002, accounting for US\$ 435 million, or 67.3% of total funds invested in 2002.^{iv} Over 20 countries were identified that had provided funding for HIV vaccine R&D (see Table 2). The largest of these funders was the US government which accounted for 88% of the total public sector funding.

b. Private sector

Private sector investment in 2002, excluding government grants and contracts to industry, was estimated to be US\$ 99 million, and accounted for 15.3% of total investment.^v Three companies invested more than US\$ 10 million of their own funds (Aventis-Pasteur SA, Merck & Co. and VaxGen, Inc.) and another three invested more than US\$ 3 million (Chiron Corp., GlaxoSmithKline and Wyeth). Of total industry investment, just over half came from pharmaceuticals and the remainder from biotechnology companies.^{vi}

c. Philanthropic sector

Philanthropic organizations, corporate donations, individual bequests, and fund-raising activities provided around US\$ 113 million for HIV vaccine R&D in 2002. The majority of philanthropic funding, 89%, came from the Bill & Melinda Gates Foundation which awarded a US\$ 100 million multi-year grant to IAVI in 2002. Most philanthropic organizations made grants of under US\$ 100,000, and only three other foundations were identified that provided funds of more than US\$ 250,000 in 2002: the American Foundation for AIDS Research, the Elizabeth Glaser Pediatric AIDS Foundation, and the Starr Foundation.

Figure 1. Global investment in HIV vaccine R&D in 2002 by source

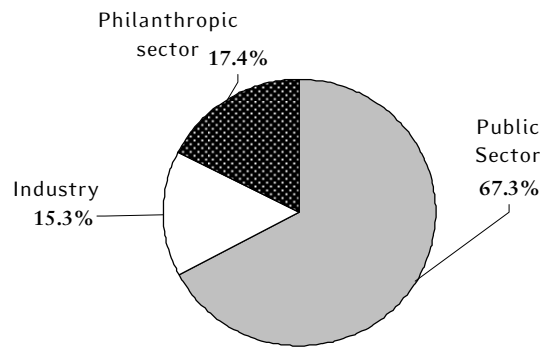


Table 2. Public sector investment in 2002 by country

| Greater than US\$ 4 million | Between US \$ 1-4 million | Under US\$ 1 million |
|-----------------------------|---------------------------|----------------------|
| France | Canada | Australia |
| Netherlands | Denmark | Brazil |
| United Kingdom | Finland | Cuba |
| United States | Germany | India |
| | Italy | Ireland |
| | Japan | Russia |
| | Norway | Sweden |
| | South Africa | Switzerland |
| | | Thailand |

II. Total global expenditures in 2002

In 2002 the total expenditures, or the actual amount of funds spent, on HIV vaccine R&D was estimated to be US\$ 549 million, the mid-point of the low and high estimates of US\$ 527 to 573 million. These funds were spent in five general categories: pre-clinical research, which accounted for 43.2% of expenditures and was the largest of the five categories; clinical trials, the next largest at 28.2%; basic research at 20.7%; and ‘cohort development and clinical trial infrastructure’ and ‘vaccine education, advocacy and policy development,’ which together accounted for less than 8% (see Table 3).^{vii}

Table 3.
HIV vaccine expenditure categories

1. Basic research: Research to increase scientific knowledge of protective immune responses and host defenses against HIV to facilitate the development of vaccines that prevent and/or control HIV infection.
2. Pre-clinical research: Research and development efforts to improve vaccine design and test for safety; improve and support laboratory studies and animal models; and foster collaboration for novel vaccine designs between government, academia, NGOs, and industry.
3. Clinical trials: Support for Phase I, II, III trials to test for safety, immunogenicity, and efficacy.
4. Cohort development: Support for the development of strategies, infrastructure, and collaboration with researchers, communities, governments, international and domestic NGOs, and industry to identify trial sites, ensure adequate trial performance, and meet the prevention needs of at-risk populations.
5. Vaccine education, advocacy, and policy development: Support for the development of public and political support for the research and development of HIV vaccines.

(Definitions based on US NIH vaccine expenditure categories)^{vii}

future funding needs and the potential impact of additional spending on the probability and timing of success of the R&D pipeline. IAVI will also continue to track annual investment and expenditures, through participation in the UNAIDS' initiative to monitor funding for global AIDS, which is part of follow up on commitments to increase such funding made by governments at the UN General Assembly Special Session on AIDS.

III. Public policy implications

Given the many unknowns in developing new health technologies, it is impossible to say with certainty how much funding it will take to develop an effective HIV vaccine. While investment in HIV vaccine R&D has increased significantly in recent years, it is clear that an influx of substantially more resources will increase the likelihood of success. With over 14,000 new infections each day, speed is critical.

The UN has estimated that by 2007 US\$ 20 billion will be needed to provide HIV/AIDS prevention, treatment and care in developing countries.^{viii} In contrast, there has been no comprehensive attempt to assess what level of funding is needed to support a more ambitious global search for an AIDS vaccine.

Toward that end, IAVI is collaborating with the Bill and Melinda Gates Foundation to assess the field's

Notes and References

- ⁱ UNAIDS/WHO (2003). *AIDS Epidemic Update 2003*. Geneva.
- ⁱⁱ Excluded from these data are R&D expenditures on vaccines with primarily therapeutic applications and research not directed primarily at preventive HIV vaccines but that may have benefits or links to preventive HIV vaccines.
- ⁱⁱⁱ For each funder identified, IAVI conducted interviews and reviewed publicly available information including government reports, annual reports, SEC filings, published studies and articles, scientific presentations and website postings.
- ^{iv} Sources of public sector investment in HIV vaccine R&D included national governments (including government research bodies, international development assistance agencies, and other government funding agencies); the European Union; and multilateral agencies (the World Bank, the World Health Organization, and UNAIDS).
- ^v Most private companies are reluctant to provide any information about their funding of HIV vaccine R&D, citing proprietary business concerns. As a result, IAVI's estimates of private investment are based on an analysis of what is known about the scope of each company's HIV vaccine R&D program and interviews with industry experts.
- ^{vi} Total 2002 expenditures by the private sector were significantly greater than this as a number of the companies active in HIV vaccine R&D receive program funding from external sources (e.g. NIH).
- ^{vii} National Institutes of Health (2000). National Institutes of Health Fiscal Year 2002 Plan for HIV-Related Research. Washington, DC.
- ^{viii} UNAIDS. 2004. *Financing the Expanded Response for AIDS* (pre-publication draft). Geneva.

About IAVI: IAVI (www.iavi.org) IAVI (www.iavi.org) is a global not-for-profit organization whose mission is to ensure the development of safe, effective, accessible, preventive HIV vaccines for use throughout the world. IAVI's financial and in-kind supporters include the Bill & Melinda Gates, Rockefeller, Alfred P. Sloan and Starr foundations; the governments of Canada, Denmark, Ireland, the Netherlands, Norway, Sweden, the United Kingdom and the United States; multilateral organizations including the European Union and the World Bank; corporations such as BD (Becton, Dickinson & Co.), Continental Airlines and DHL; leading AIDS charities such as Crusaid, Deutsche AIDS Stiftung and the Until There's A Cure Foundation; and other private donors such as the Phoebe W. Haas Charitable Trust B.

Policy Brief

IAVI's Policy Brief series outlines key public policy issues in the research, development and eventual distribution of HIV vaccines.

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