The Bill & Melinda Gates Foundation's grant-making programme for global health

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The Bill & Melinda Gates Foundation is a major contributor to global health; its influence on international health policy and the design of global health programmes and initiatives is profound. Although the foundation's contribution to global health generally receives acclaim, fairly little is known about its grant-making programme. We undertook an analysis of 1094 global health grants awarded between January, 1998, and December, 2007. We found that the total value of these grants was US$8·95 billion, of which $5·82 billion (65%) was shared by only 20 organisations. Nevertheless, a wide range of global health organisations, such as WHO, the GAVI Alliance, the World Bank, the Global Fund to Fight AIDS, Tuberculosis and Malaria, prominent universities, and non-governmental organisations received grants. $3·62 billion (40% of all funding) was given to supranational organisations. Of the remaining amount, 82% went to recipients based in the USA. Just over a third ($3·27 billion) of funding was allocated to research and development (mainly for vaccines and microbicides), or to basic science research. The findings of this report raise several questions about the foundation's global health grant-making programme, which needs further research and assessment.

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For more on the **Bill & Melinda Gates Foundation** see http://www.gatesfoundation.org

Introduction

The Bill & Melinda Gates Foundation (henceforth referred to as the Gates Foundation) is the largest private grant-making foundation in the world.[1] It has three main programmes: a US programme that focuses on secondary and post-secondary education; a global development programme that focuses on hunger and poverty (with an emphasis on small farmers and financial services for the poor); and a global health programme. The total amount paid out by the foundation for all grants in 2007 was US$2·01 billion, of which $1·22 billion (61%) was for global health.[2]

Although there is a long history of private philanthropic funding in global health—notably by the Rockefeller Foundation and the Ford Foundation—the influence of the Gates Foundation is of a different order. In 2007, the amount spent by the Gates Foundation on global health was almost as much as WHO's annual budget (approximately $1·65 billion),[3] and was substantially more than the total grant spending of the Rockefeller Foundation across all programmatic areas in the same year ($0·17 billion).[4] The Gates Foundation's effect on global health is evident in malaria research. In the late 1990s, only $84 million was spent on malaria research yearly; since 2000, the Gates Foundation has helped to roughly treble this amount.[5] However, there have been concerns about the role, effect, and lack of accountability[6–8] of the Gates Foundation (and of private foundations in general[9,10]). So far, the foundation's global health programme has not been properly assessed. In this report, therefore, we describe and discuss the foundation's grant-making programme for global health. Although we do not assess the impact or cost-effectiveness of the programme, this analysis provides a useful starting point.

Analysis

We used information published on the Gates Foundation and Grand Challenges in Global Health websites to identify all global health grants awarded by the foundation from January, 1998, to December, 2007. For each grant, we entered the name of the primary recipient, the size and length of the grant, and a brief description of the grant (as found on the websites) into a Microsoft Excel spreadsheet.

After we had completed an initial analysis, the Gates Foundation changed the way in which it organised grants information on its website; we discovered several previously unidentified grants and several grants for which the financial value had changed. We also noticed that a small number of previously identified grants had disappeared from the website. We therefore reconstructed the database and undertook a second analysis. We kept the missing grants in our database on the assumption that they had inadvertently been omitted when the website was redesigned. We also excluded several duplicate grants that had been listed on both the Grand Challenges in Global Health and Gates Foundation websites.

We classified each grant according to four variables and a set of categories as shown in the panel. This process was not straightforward for three main reasons. First, many grants could be placed in more than one category—for example, they might cover both research and service delivery, or cut across more than one disease or health issue. We therefore classified several grants according to more than one category. Second, we were unable to generate a set of discrete, non-overlapping categories. For example, there is unavoidable overlap between categories such as child health and vaccines, between programme and policy development and scientific meetings and conferences, and between sexual and reproductive health and HIV/AIDS. There were also ambiguities about the categorisation of organisations with, for example, some organisations containing both non-profit and for-profit components, or being part government and part non-government. Third, the description of many grants was brief and sometimes vague. The descriptions of grants to support health

For more on the **Grand Challenges in Global Health** see http://www.grandchallenges.org

Panel: **Variables (bold) and categories (bullet points) for classification of grants**

Geographical location of recipient
- Supranational or intergovernmental organisations
- USA
- Europe
- Other high-income country
- Middle-income country
- Low-income country

Type of organisation
- Global health partnership
- Intergovernmental organisation
  - UN agency
  - World Bank
  - Other
- Non-governmental or non-profit organisation
- University
- Public sector organisation or parastatal agency
- Private for-profit organisation
- Other

Type of activity
- Research and development
  - Drugs
  - Vaccines and microbicides
  - Diagnostic equipment
  - Other (eg, insecticide-treated bednets)
- Basic science research
- Enabling the supply and purchase of
  - Drugs
  - Vaccines and microbicides
  - Diagnostic equipment
  - Other (eg, insecticide-treated bednets and condoms)
- Applied health research
  - Clinical services research
  - Public health research
- Health-care delivery
  - Personal services
  - Public health delivery

(Continues in next column)

(Continued from previous column)
- Civil society development within low-income and middle-income countries
- Programme and policy development (eg, agenda setting activities, creation of technical guidelines, and undertaking policy research)
- Advocacy
- Food fortification or nutrition enhancement (research and/or delivery)
- Scientific meetings and conferences
- Formal training and education
- General organisational support
- Awards

Disease or health issue
- HIV/AIDS and related diseases
- Non-HIV sexually transmitted infections
- Tuberculosis (excluding routine immunisation with BCG)
- Malaria
- Routine vaccine-preventable illnesses
- Gastrointestinal diseases (including diarrhoeal illnesses)
- Respiratory diseases (including avian/pandemic influenza)
- Child health
- Cervical cancer
- Maternal health
- Family planning or population management
- Neglected or tropical infectious diseases (eg, filariasis, leishmaniasis, dracunculiasis)
- Malnutrition
- Disability
- Traditional health/medicine
- Humanitarian aid or emergency relief
- Sexual and reproductive health or women's health
- Non-specific general health
- Vaccines (when target disease not specified)
- Other

A more detailed description of the category definitions and rules of classification are available on request from the authors.

programmes, for example, were not always clear about the extent to which they focused on clinical as opposed to public health activities, nor the extent to which they included a research component. Often, it was necessary to look for additional information on the website of the grant recipient, or to make an educated guess based on the grant description or knowledge of the recipient. Finally, an important limitation of this study is that we only gathered data for the value of the grant as specified on the websites and not on the amount actually disbursed to or spent by recipients.

All grants were initially classified by GK, JP, and AL. Separate reviews were then done by DM and GK, at which time any errors in data entry and classification were corrected. The database was then reviewed jointly by DM and GK, at which point further corrections were made and any uncertainties or differences about classification were discussed and resolved. Finally, the 200 grants worth the largest values were reviewed again by DM and GK.

We analysed the data by use of simple tabulations. For grants that were spread across more than one category per variable, we assumed that funding would be evenly spread across each category. Our final Excel spreadsheet is freely available to other investigators who would like to undertake their own analyses. Although the Gates Foundation has its own classification system, it is less refined than the one we used because it is based on a single and more limited set of categories. Furthermore, in the Gates Foundation's classification system, few

grants are classified according to more than one category and we calculated that one in 12 is not classified at all.

The Gates Foundation's grant-making programme

Between January, 1998, and December, 2007, 1094 grants were awarded for global health by the Gates Foundation; the total value of these grants was $8·95 billion. Table 1 shows the number and total value of new global health grants awarded every year, and the actual expenditure on grants per year. The amount of funding committed to new global health grants fell from 1999 to 2002, before rising until 2006 and then falling again in 2007. Although the number and value of new grants awarded in 2007 was lower than in 2005 and 2006, actual expenditure grew.

The size of individual grants varied substantially. The smallest grant was for $3500, whereas the largest was for $750 million. The length of grants varied from less than 1 year to more than 5 years, but most (777 [71%]) were awarded for periods of between 2 years and 5 years. The 20 largest individual grants awarded for global health between 1998 and 2007 are shown in table 2.

65% ($5·82 billion) of all Gates Foundation global health funding was shared by 20 organisations (table 3), including five global health partnerships—such as the Global Fund to Fight AIDS, Tuberculosis and Malaria and GAVI Alliance, which together received a quarter of all funding through ten grants. Global health partnerships were the second largest category of recipient (figure 1). Other global health partnerships that received funding between 1998 and 2007 were the Global Alliance for Improved Nutrition (which directly received about $58 million but also benefited from a grant of $50 million that was channelled through the World Bank), the International Partnership for Microbicides (about $60 million), the International Trachoma Initiative (about $31 million), and the Global Alliance to Eliminate Lymphatic Filariasis (about $20 million, but channelled through the World Bank).

The category of organisation that received the largest proportion of funding was non-governmental or non-profit organisations. Between 1998 and 2007, the Gates Foundation awarded grants worth $3·30 billion to a wide range of over 100 such organisations, including those that are mainly research-based, those that are mainly involved in health-care delivery, and those with a focus on public awareness or advocacy. The non-governmental or non-profit organisation that received the most amount of funding was the Program for Appropriate Technology in Health (PATH; Seattle, WA, USA), which was awarded 47 grants worth a total of $949 million, mostly for medical research and development. The Gates Foundation has helped to increase PATH's annual expenditure from less than $20 million to over $150 million during the past decade.[11] The next three largest recipients in this category were the Institute for OneWorld Health (a non-profit pharmaceutical company set up in San Francisco, CA, USA, to discover and develop new drugs for neglected diseases), the Save the Children Federation, and the Aeras Global TB Vaccine Foundation (a non-profit product development partnership focused on tuberculosis). Other non-governmental organisations that received large amounts of funding were Family Health International, Care International, and World Vision, which received grants worth $56 million, $41 million, and $8 million, respectively.

Public awareness and advocacy organisations were also major recipients. The US-based ONE Campaign, which focuses on poverty and preventable global disease, received a grant worth $22 million in 2007; and DATA, an advocacy organisation for Africa, received two grants (in 2003 and 2006) worth a total of $26 million. In 2008, the ONE Campaign and DATA merged to become a single organisation known as ONE, which is now led by a former executive of the Gates Foundation. The International HIV/AIDS Alliance, which supports community action within developing countries as well as international research, policy analysis, and advocacy, received grants worth about $42 million. ActionAid International received a grant of just under $11 million to develop a network of non-governmental organisations to monitor and lobby European governments and the European Commission to support the right to health.

For more on **ONE** see http://www.one.org/about/

The Gates Foundation also funded several think tanks or policy research institutes, including the Center for Global Development (Washington, DC, USA; $26 million over 5 years), the International Food Policy Research Institute (Washington, DC; a single $25 million grant in 2003), and the National Academy of Sciences (Washington, DC; $23 million over 5 years). Finally, the Gates Foundation funds other foundations, including the United Nations Foundation, which was established with an endowment from the media mogul Ted Turner ($69 million), the Clinton Foundation ($21 million), and the Elizabeth Glaser Paediatric AIDS Foundation ($33 million).

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Total
Number of new grants	34	68	81	68	72	108	137	200	197	129	1094
Total value of grants awarded (US$, millions)	151	1132	632	388	338	477	780	1981	1991	1079	8949
Amount disbursed (US$, millions)*	..	686	554	856	507	577	442	844	916	1220	6602

Data for annual disbursements were obtained from annual reports or financial statements on the Gates Foundation website. The Gates Foundation's operational and administrative costs are excluded. *The amount disbursed in 1998 was unavailable on the Gates Foundation website.

Table 1: **Number and total value of new global health grants between 1998 and 2007 (and total disbursements per year) made by the Bill & Melinda Gates Foundation**

	Year	Total value of grant (US$)	Length of grant (months)	Purpose of grant*
GAVI Alliance	1999	750 000 000	60	To purchase new vaccines
GAVI Alliance	2005	750 000 000	120	General operating support
Global Fund to Fight AIDS, Tuberculosis and Malaria	2006	500 000 000	43	To support the Global Fund
Aeras Global TB Vaccine Foundation	2007	200 665 210	72	To develop and license an improved vaccine against tuberculosis for use in high-burden countries
Medicines for Malaria Venture	2005	137 000 000	60	To further develop and accelerate antimalarial discovery and development projects
PATH	1998	125 000 000	120	To support the Children's Vaccine Program
PATH	2005	107 626 290	72	For clinical development of the RTS,S malaria vaccine
University of Washington (Seattle, WA, USA)	2007	105 228 184	120	To create the Health Metrics Institute at the University of Washington
Global Alliance for TB Drug Development	2006	104 403 823	60	To decrease tuberculosis mortality by developing new antituberculosis treatments
International AIDS Vaccine Initiative	2001	100 000 000	60	To accelerate the global effort to create and distribute AIDS vaccine via vaccine design studies, clinical infrastructure, and non-human primate studies
Global Fund to Fight AIDS, Tuberculosis and Malaria	2002	100 000 000	120	For general operating support
PATH	2004	100 000 000	48	To support the continuation and expansion of the work of the Malaria Vaccine Initiative
Aeras Global TB Vaccine Foundation	2004	82 906 199	60	To develop and license an improved tuberculosis vaccine for use in high-burden countries
Johns Hopkins University (Baltimore, MD, USA)	2004	82 159 064	84	To develop, evaluate, and promote new applications to reduce the incidence of tuberculosis in populations with high HIV prevalence
PATH	2006	75 000 000	60	To support a portfolio of pneumococcal vaccine projects
PATH	2001	70 000 000	120	Supporting the elimination of epidemic meningitis in sub-Saharan Africa
Foundation for Innovative New Diagnostics	2007	62 630 901	60	To accelerate the late stage development of diagnostic tests for neglected infectious diseases such as tuberculosis
University of Washington (Seattle, WA, USA)	2007	61 223 271	72	To undertake a placebo-controlled phase III trial of the safety and efficacy of TDF and FTC/TDF in reducing HIV acquisition within heterosexual HIV-discordant couples
International Partnership for Microbicides	2003	60 127 319	60	Strengthening capacity in microbicide development
Save the Children Federation	2005	60 000 000	72	To test and evaluate a critical set of newborn health-care tools and technologies

FTC=emtricitabine. PATH=Programme for Appropriate Technology in Health. TDF=tenofovir disoproxil fumarate. *As described on Gates Foundation website.

Table 2: **Recipients of the 20 largest individual grants awarded by the Bill & Melinda Gates Foundation's global health programme between 1998 and 2007**

The third biggest category of recipient was universities. Between 1998 and 2007, nearly $1·80 billion worth of grants was awarded to 76 universities. However, about 59% of this funding went to just eight universities (table 3), five of which were in the USA with the remaining three in the UK. Overall, just under 70% of university funding went to US-based universities.

Intergovernmental organisations were the fourth biggest category of recipient, accounting for about 8% of all funding. Most of this money was given to WHO, which received 69 grants worth a total of $336 million (4% of all funding). The Gates Foundation is now one of the biggest donors to WHO, exceeding the contributions of most G20 governments. The five biggest grants awarded to WHO were to support the Health Metrics Network ($50 million); to support polio eradication ($40 million and $25 million); to strengthen the scale-up of maternal, neonatal, and child health interventions in Africa ($35 million); and to scale up the procurement and production of drugs for HIV/AIDS, tuberculosis, and malaria ($20 million). The second largest intergovernmental organisation recipient of funding was the International Bank for Reconstruction and Development (World Bank Group), which received 12 grants ($135 million). Several of these grants were used to channel funding to other recipients. For example, a $50 million grant was awarded to support the Global Alliance for Improved Nutrition and $20 million for the Global Alliance to Eliminate Lymphatic Filariasis. A grant of $29 million was also awarded to the Dracunculiasis Eradication Trust Fund, of which $15 million, $9 million, and $5 million were designated for the Carter Center, World Bank, and WHO, respectively. Other grants seem to have been awarded to support World Bank activities related to disease control and health systems development. Additionally, two grants (worth $6 million in total) were awarded to the International Finance Corporation, the arm of the World Bank that supports private sector development.

Two other intergovernmental organisations that received substantial amounts of funding were the International Vaccine Institute ($114 million) based in Korea, and UNICEF ($71 million channelled through the United States Fund for UNICEF). The three largest grants received by UNICEF were to support the global initiative to eliminate maternal and neonatal tetanus ($26 million); to eliminate iodine deficiency through universal salt iodisation ($15 million); and to accelerate the elimination of maternal and neonatal tetanus ($10 million).

Government agencies and for-profit companies were infrequent recipients of Gates Foundation grants. The governmental organisation that received most funding was the US National Institutes of Health, which received several grants worth $57 million in total. The Chinese Ministry of Health received two grants related to HIV/AIDS worth $20 million in total. The three largest individual grants awarded to private for-profit companies were given to the General Hospital Corporation (Boston, MA, USA) to support research towards the development of an HIV vaccine ($21 million), Aktiv-Dry LLC (Boulder, CO, USA) for the development of needle-free vaccines ($20 million), and Beth Israel Deaconess Medical Center (Boston, MA) for biomedical research ($18 million).

In terms of the geographical location of primary recipients, $3·62 billion (40%) of all funding was awarded to supranational organisations such as global health partnerships and intergovernmental organisations. Of the remaining amount, 82% ($4·39 billion) went to recipients based in the USA, 13% ($0·70 billion) to recipients in Europe and other high-income countries (eg, Australia), and 5% ($0·24 billion) to recipients in low-income and middle-income countries. Of the 659 grants awarded to non-governmental or non-profit organisations, 560 went to organisations in high-income countries, primarily in the USA. Only 37 grants were made to non-governmental or non-profit organisations based in low-income and middle-income countries. Similarly, of the 231 grants given to universities, only 12 were awarded to universities in low-income and middle-income countries.

Table 4 shows the distribution of funding by type of activity. Most (37%) funding was allocated to research and development (mainly of vaccines and microbicides), or to basic science research. Funding for this type of activity increased between 1999 and 2007, whereas funding for health-care delivery decreased from 2000 to 2007 (figure 2).

According to our analysis, 75% of all global health funding between 1998 and 2007 was allocated to six categories of diseases or health issues: HIV/AIDS, malaria, vaccine-preventable diseases, child health, tuberculosis, and other tropical diseases and neglected diseases (figure 3). Other health issues, including maternal health, malnutrition, family planning, and cervical cancer were, by contrast, less well funded.

Discussion

The findings presented here should be interpreted with caution. First, some assumptions and interpretations had to be made about the nature of individual grants. Second, we report on the amount awarded for each grant, not on final expenditure. Third, the system of classification is imperfect because of the overlapping nature of the categories used. Finally, we do not account for the sub-recipients of Gates Foundation grants,

	Type of organisation	Number of grants	Cumulative amount awarded (US$)
GAVI Alliance	Global health partnership	5	1 512 838 000
PATH	Non-governmental/ non-profit organisation	47	949 603 525
Global Fund to Fight AIDS, Tuberculosis and Malaria	Global health partnership	5	651 047 850
WHO	UN agency	69	335 888 331
University of Washington (Seattle, WA, USA)	University	12	279 162 976
Medicines for Malaria Venture	Global health partnership	3	202 000 000
Johns Hopkins University (Baltimore, MD, USA)	University	21	228 273 765
International AIDS Vaccine Institute	Global health partnership	6	155 280 244
Institute for OneWorld Health	Non-governmental/ non-profit organisation	9	146 324 286
International Bank for Reconstruction and Development	World Bank	12	134 486 883
Global Alliance for TB Drug Development	Global health partnership	3	129 423 823
Save the Children Federation	Non-governmental/ non-profit organisation	26	126 317 495
International Vaccine Institute	Intergovernmental organisation	3	113 990 173
Liverpool School of Tropical Medicine (Liverpool, UK)	University	4	109 147 462
Aeras Global TB Vaccine Foundation	Non-governmental/ non-profit organisation	4	308 571 409
Harvard University (Cambridge, MA, USA)	University	18	90 587 678
Columbia University (New York, NY, USA)	University	15	93 425 838
London School of Hygiene and Tropical Medicine (London, UK)	University	10	89 924 649
Imperial College London (London, UK)	University	9	83 605 989
CONRAD/Eastern Virginia Medical School (Norfolk, VA, USA)	University	5	79 792 344
Total	..	..	5 819 692 720

PATH=Programme for Appropriate Technology in Health.

Table 3: **Top 20 recipients by cumulative total of grants awarded by the Bill & Melinda Gates Foundation's global health programme during 1998–2007**

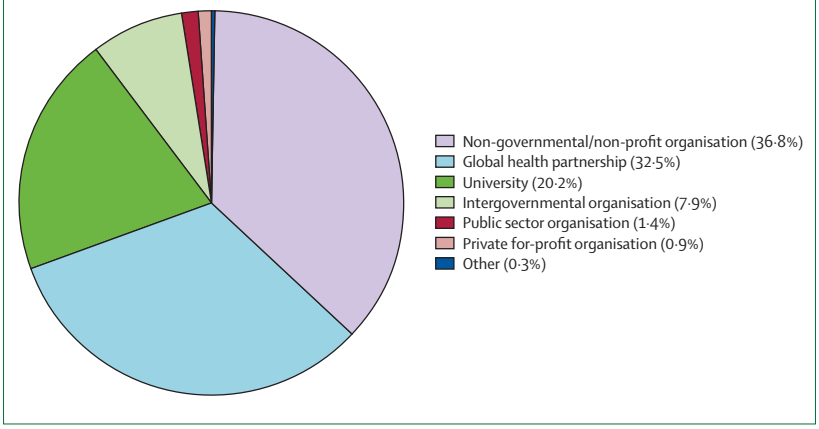

Figure 1: **Distribution of global health grants given by the Bill & Melinda Gates Foundation during 1998–2007 by type of recipient**

	Total amount awarded (US$)	Proportion of total funding (%)*
Research and development, basic science	3 268 712 950	36·5%
(Vaccines and microbicides	2 278 035 980	25·5%)
(Drugs	627 985 813	7·0%)
Health-care delivery	2 155 678 125	24·1%
(Public health	1 145 759 906	12·8%)
(Personal services	1 009 918 220	11·3%)
Enabling supply and purchasing	1 573 160 635	17·6%
(Vaccines and microbicides	1 010 953 801	11·3%)
(Drugs	329 806 359	3·7%)
Applied health research	1 019 924 149	11·4%
(Health services research	421 270 304	4·7%)
(Public health research	598 653 845	6·7%)
Advocacy	312 695 352	3·5%
Food fortification and agricultural research	232 471 933	2·6%
Programme and policy development	173 572 073	1·9%
Other†	140 821 186	1·6%
Civil society development in developing countries	72 383 806	0·8%

*The total value of all global health grants awarded between 1998 and 2007 was $8·949 billion. †Includes scientific meetings and conferences, formal training and education, general organisational support, and awards.

Table 4: **Allocation of funding by the Bill & Melinda Gates Foundation across different types of activity, 1998–2007**

which means that the number of beneficiaries from developing countries is substantially under-represented. For example, much of the funding to the Global Fund and GAVI Alliance is passed on to recipients in low-income and middle-income countries, including governments. However, despite these limitations, we believe that this report raises several interesting findings.

The Gates Foundation funds a wide range of contributors to global health, extending from UN agencies to global health partnerships, the World Bank, universities, and non-profit and non-governmental organisations. All the key contributors to global health have an association with the Gates Foundation through some sort of funding arrangement. Coupled with the large amount of money involved, these relations give the foundation a great degree of influence over both the architecture and policy agenda of global health. Through its funding of non-governmental organisations and policy think tanks, the foundation also confers power and influence on a selected number of organisations and in doing so, establishes some leverage over the voice of civil society.

These observations are pertinent because the Gates Foundation is not a passive donor. The foundation actively engages in policy making and agenda setting activities; it has representatives that sit on the governing structures of many global health partnerships;[8] it is part of a self-appointed group of global health leaders known as the H8 (together with WHO, the World Bank, GAVI Alliance, the Global Fund, UNICEF, the United Nations Population Fund [UNFPA], and UNAIDS);[12] and has been involved in setting the health agenda for the G8.[13] The Gates Foundation is also involved in setting the research agenda of several public health priorities, a role that was controversially criticised by the former head of WHO's malaria programme, who complained that the dominance of the Gates Foundation in malaria research risked stifling the diversity of views among scientists.[14]

The Gates Foundation is itself a well-funded organisation with a workforce of about 733 employees.[15] Its operating and administrative expenses in 2007 amounted to $264 million, which covered employee human resources costs ($69 million); compensation of officers, directors, and trustees ($3 million); legal and accounting fees ($2 million); and professional fees ($124 million).[16] Work done by the consulting group McKinsey and Company, which has a close working relationship with the foundation, is probably considered a professional fee since the company is not on the foundation's grants database.

Another striking finding is the large number of US-based recipients of grants, a feature that is common among US foundations in general.[17] Once supranational recipients were excluded from the analysis, US-based recipients accounted for 82% of the total amount paid out between 1998 and 2007. Furthermore, a small number of universities and non-profit or non-governmental organisations received a substantial proportion of all funding. The finding that one organisation, PATH, was awarded nearly $1 billion stands out and raises the question as to whether some organisations might be better characterised as agents of the foundation rather than as independent grantees.

The University of Washington (also based in Seattle), received grants worth nearly $280 million in the same period, and the Institute for OneWorld Health, together with Johns Hopkins University, Harvard University, and Columbia University were together given grants worth a total of $559 million. This large amount of funding concentrated within a small number of US-based institutions raises questions about their privileged status among organisations operating in global health.

Grant making by the Gates Foundation seems to be largely managed through an informal system of personal networks and relationships rather than by a more transparent process based on independent and technical peer review. Although a panel of six individuals exists to advise on and assess the foundation's strategies, the process by which individual proposals for projects are solicited, adjudicated, and funded is unclear.

WHO, as the fourth largest single recipient of funding, is also a prominent grantee. However, by contrast with

some recipients, WHO has been funded through a multiplicity of separate Gates Foundation grant agreements (69 between 1998 and 2007), which suggests that the foundation is adding to the problem of WHO being largely funded by governments through conditional, donor-determined grants.

The funding of the World Bank is also noteworthy. Although some grants given to the World Bank are used as a conduit for channelling funds to other recipients, there seems to be some direct funding of World Bank activities. More controversial is the award of two grants to the International Finance Corporation, whose mandate is to support private sector development. The reasons why the International Finance Corporation needs philanthropic funding are not clear, but this donation suggests that the Gates Foundation is keen to promote the growth of private health-care providers in low-income and middle-income countries, and is consistent with views that have been expressed by the foundation[18] and the observation that private foundations generally view the public sector with scepticism and disinterest.[17] However, the promotion of the private sector, including for-profit companies, also raises a more fundamental question about the mandate and role of a foundation in promoting and shaping policies on core health systems issues. Additionally, one could ask to whom is the Gates Foundation accountable for the promotion of such policies?

Recent changes to collaboration in global health have been characterised by the emergence of loose horizontal networks, where it is unclear who is making decisions and who is accountable to whom.[19] Indeed, the Gates Foundation has helped to promote the emergence of these networks. One investigation that would bring greater clarity to the structure of global health governance is the critical examination of the nature and effects of the relationship between the Gates Foundation and the World Bank, WHO, and key global health partnerships.

A notable finding was that 42% of all funding was spent on either health-care delivery (including humanitarian relief) or increasing access to drugs, vaccines, and other medical commodities. However, the foundation's reputation for focusing on biotechnological developments was also confirmed. More than a third (37%) of funding was for research and development, or basic sciences research. Furthermore, the size of grants for research and development seems to have increased in recent years compared with those for health-care delivery. Similar findings were reported in a previous analysis of the foundation's support for child health research, which concluded that funding was disproportionately allocated to the development of new technologies rather than towards overcoming the barriers to the use of existing technologies.[20] This technological bias reflects the priorities of Bill Gates himself. In his recent annual letter, he stated that "optimism about technology is a fundamental part of the foundation's approach" and he described the key approach to eliminating the main causes of early childhood mortality as "the invention of a handful of new vaccines and getting them into widespread usage".[21] Although we did not calculate a composite figure for all vaccine-related funding (ie, for research and development, basic science research, health-care delivery, purchase and supply, advocacy or policy development), we estimate that at least half of all funding was linked to vaccination.

The allocation of funding by disease or health issue reflects the explicit strategy of the Gates Foundation to

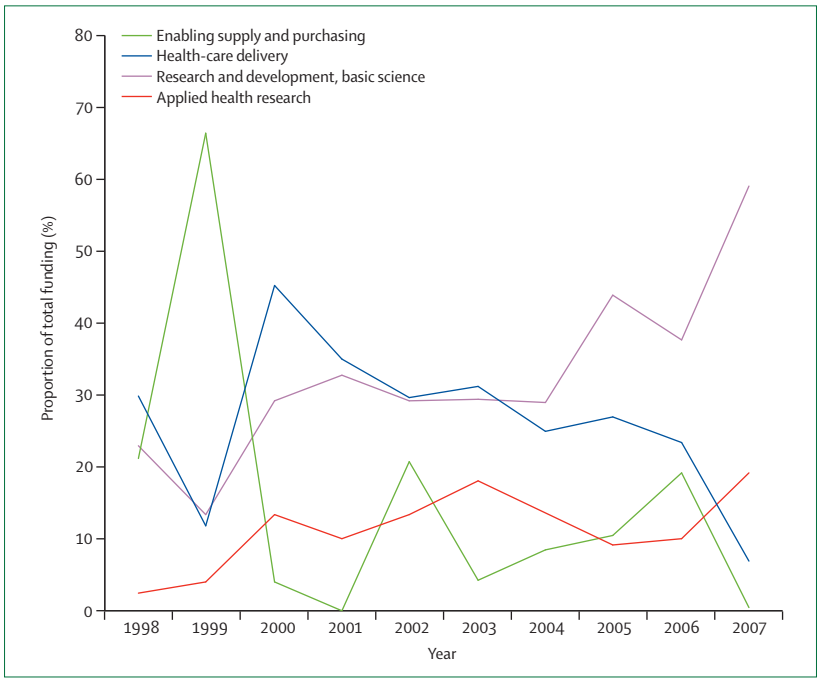

***Figure 2*: Annual trends in global health grants given by the Bill & Melinda Gates Foundation during 1998–2007 by activity**

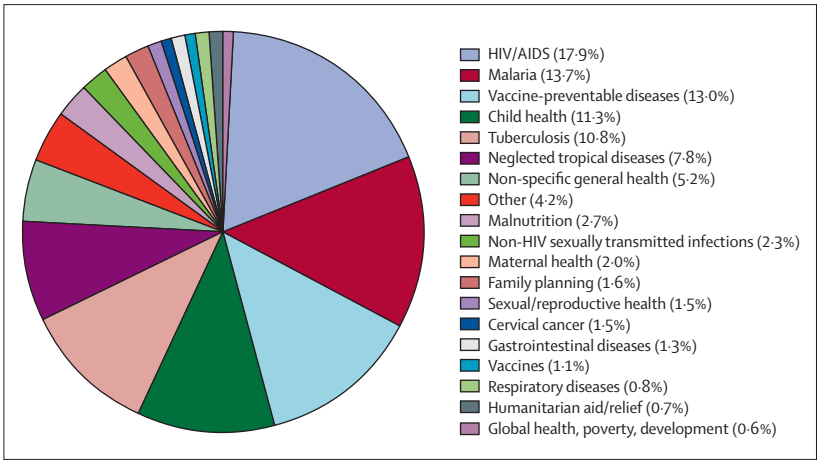

***Figure 3*: Allocation of grants from the Bill & Melinda Gates Foundation during 1998–2007 by disease or health issue**

Other includes grants categorised for disability, traditional medicine, and hepatitis C. Vaccines relate to grants for vaccine development for which no target diseases or target population groups were specified. Non-specific general health covers grants that were aimed at general health improvement through, for example, health systems strengthening activities or general social-economic development.

focus on several priority diseases—namely, diarrhoeal disease, pneumonia, malaria, HIV/AIDS, and tuberculosis, as well as vaccine-preventable diseases in general. A key question that emerges from these data is whether the foundation allocates its funding according to need, both in selection of diseases and health issues, and in the focus on vaccines and technology.

A cursory look at the data suggests a prioritisation of HIV/AIDS and malaria over maternal health or mental illness, even though these conditions together make up five of the ten leading causes of disease burden in women aged 15–44 years in low-income and middle-income countries, whereas prematurity, low birthweight, birth trauma, and birth asphyxia together contribute 8% of the total burden of disease in low-income countries.[22] However, the issue of priority setting cannot be answered by looking at the Gates Foundation in isolation. The foundation might after all be choosing to fill a gap that has been neglected by the market or other funders. Additionally, the foundation's allocation of funding for research and development will be determined by factors other than measures of the burden of disease, such as the state and cost of science and the type of research and development needed. Nevertheless, other analyses of global health funding suggest a need to examine the priorities of the Gates Foundation. One study that assessed spending on global health by the World Bank, the Gates Foundation, the US Government, and the Global Fund in 2005 found that funding per death varied substantially across types of disease—for example, $1029·10 for HIV/AIDS compared with $3·21 for non-communicable diseases.[23] Another study that analysed global spending on neglected diseases (including private sector investment) found that only three diseases (HIV/AIDS, malaria, and tuberculosis) accounted for 80% of the total expenditure.[24] The investigators also found that much more was spent on drugs and vaccines than on diagnostics and calculated that the Gates Foundation contributed about a fifth of all funding for research and development for neglected diseases. They concluded that factors beyond science, technology, and opportunity were clearly playing a part in decisions about funding.

One argument used to make the case that the Gates Foundation over-emphasises technology and new vaccine development is that many existing cost-effective technologies do not reach the people who need them because of poverty or health system failings. Additionally, most of the high child mortality in poor countries results from an underlying lack of access to basic needs such as food, housing, water, and safe employment. Thus, rather than viewing the hundreds of thousands of child deaths from rotavirus infection as a clinical problem that needs a vaccine solution, a better approach might be to view it as a public health problem that needs a social, economic, or political intervention to ensure universal access to clean water and sanitation. However, these concerns about the foundation's technology-based approach need to be considered alongside three counter-arguments. First, as previously mentioned, a substantial amount of funding is spent on service delivery (albeit largely through vertical programmes) or increasing access to existing technologies. Second, the responsibility for funding and developing delivery systems belongs to governments and other types of donors. Third, the Gates Foundation has a separate programme of funding aimed at addressing malnutrition and chronic hunger through various agricultural interventions. Nonetheless, there should be more data-driven discussion about the overall effect of the Gates Foundation's approach to global health improvement. In view of its receipt of public subsidies in the form of tax exemptions, there should also be an expectation that the foundation is subject to some public scrutiny.

The Gates Foundation is a major contributor to global health with enormous financial power and policy leverage. Its decisions can have a substantial influence on other organisations. The foundation's emphasis on technology, however, can detract attention from the social determinants of health while promoting an approach to health improvement that is heavily dependent on clinical technologies. The support of vertical, disease-based programmes can undermine coherent and long-term development of health systems, and its sponsorship of global health policy networks and think tanks can diminish the capabilities of Ministries of Health in low-income and middle-income countries. Additionally, the foundation's generous funding of organisations in the UK and USA accentuates existing disparities between developed and developing countries while neglecting support for the civic and public institutional capacities of low-income and middle-income countries. Although Bill Gates' annual letter indicates a genuine desire of the foundation to help the poor and to do good,[21] further independent research and assessment is needed to ensure that this desire is translated into the right and most cost-effective set of approaches, strategies, and investments for improving the health of the poor.

Contributors

DM initiated and coordinated the design of the study, contributed to data analysis, and led the drafting of the paper. GK helped design the study, managed the database, and contributed to data analysis and drafting of the paper. JP and AL undertook much of the data extraction from the Bill & Melinda Gates Foundation website and contributed to the final drafting of the paper. DM had full access to all the data in the study and had final responsibility to submit for publication. All authors saw and approved the final version.

Conflicts of interest

We declare that we have no conflicts of interest.

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