Research Paper

Steven J. Hoffman, Clarke B. Cole, Mark Pearcey
Centre on Global Health Security | January 2015

Mapping Global Health Architecture to Inform the Future

CHATHAM HOUSE
The Royal Institute of International Affairs

Contents

Summary

As the world faces new globalized health threats and transitions from the Millennium Development Goals (MDGs) to new Sustainable Development Goals (SDGs), there is a need to understand better how well prepared the global health system is for what it will encounter. This paper sheds light on this issue in three ways. First, the paper develops an operational definition of the global health system that includes any actors working transnationally with a primary intent to improve health. Second, it uses this definition to conduct a network mapping exercise of the global health system, identifying 203 global health actors that operate within it. Third, 20 key global health actors were selected through an expert survey and were then categorized according to the functions they perform. This revealed that some functions are performed by a greater concentration of actors than others, which may not be the best configuration to match the future challenges that the global health system will face.

Key messages

- The global health system can helpfully be conceptualized as a network of those transnational actors that work with a primary intent to improve health.
- There are at least 203 global health actors, the majority of which are NGOs (n = 138), are headquartered in the United States (n = 135) and work to improve health as their sole primary purpose (n = 125).
- Many global health actors support knowledge generation and technical cooperation activities, and very few support sharing of intellectual property, guideline development and surveillance activities.

Introduction

The global health system has vastly expanded over the past few decades. This expansion is characterized by greater funding, increasingly complex health challenges, and more – and more diverse – actors operating within the system.(1–4) However, despite the expansion of global health, the research literature demonstrates little agreement over definitions of relevant concepts and their application to practice or policy.(5) From the abundance of available definitions, consensus over a consistent, operational definition needs to be reached. Moreover, the roles of emerging global health actors are unclear,(6) as are the rules, norms and expectations that govern them.(2) Who does what, how, and how well, are all questions in need of answers.

These questions are all the more important in an era of transition – specifically, one marked by the globalization of previously localized health threats, and the shift towards the new Sustainable Development Goals (SDGs), as part of the global post-2015 development agenda. The West African Ebola epidemic of 2014 is only the most recent example of how health threats can spread irrespective of national borders, and how the world increasingly relies on the global health system to prevent and address them. The increasing challenge posed by antimicrobial resistance and attempts to achieve global collective action on the matter is another example. The SDGs, on the other hand, are anticipated as the follow-up to the Millennium Development Goals (MDGs), which have defined the global development landscape for the past 15 years and which will expire in 2015. The new post-2015 development agenda is to be endorsed by world leaders at a high-level meeting of the UN General Assembly in September 2015, and will prove crucially important for health. After 25 years of considerable accomplishments, the global health system will be challenged by the new agenda not only to achieve the new set of goals, but also to ensure that progress does not stall – or even reverse – on MDGs 4 (child survival), 5 (maternal health) and 6 (HIV/AIDS, malaria and other diseases).

With a view to addressing these questions, this paper maps the current global health system in a three-part process. First, we develop an operational definition of the global health system that sets clear boundaries and can actually be used as inclusion/exclusion criteria when mapping global health actors and their relationships. Second, having used online network relationships to generate a list of 203 global health actors, we use the online world to shed light on offline network dynamics.(7)[1] Third, this list is used to analyse the functions performed by 20 key global health actors, employing this categorization drawn from the report of the 2013 Lancet Commission on Investing in Health: leadership and stewardship; ensuring provision of global public goods; management of externalities; and direct country assistance.(8) This approach is holistic in nature and aims to provide a global perspective; it does not focus on national actors or on any one sub-system of actors, but rather aims to emphasize transnational actors engaged in such matters as protecting health security, promoting human rights, responding to humanitarian crises and facilitating international development.

[1] Coscia, Hausmann and Hidalgo (2013)(7) used online information to study the structure of international aid coordination, creating and mapping a network of donor organizations, recipient countries, and development issues.

Through this three-part approach, this paper advances understanding of the global health system by presenting an operational definition of it, an initial mapping of what this system's architecture looks like, and a comprehensive analysis of the functions performed by its key actors – all in an effort to inform the future of global health architecture as we move into the hyper-globalized post-2015 era.

A note on scope

This study is the first of its kind to use a scientific approach to mapping the global health system and the functions its actors serve. As a first attempt, and in using a scientific approach, the study has several advantages and disadvantages that should be noted before its results are interpreted. First, the study is systematic, not comprehensive, which means the mapping follows a pre-defined, transparent and (hopefully) replicable methodology; it does not attempt to generate a complete list of all global health actors or all their functions. Second, the study is internally valid, not necessarily externally consistent, which means that it sets out to minimize potential biases through methodological coherency and does not necessarily reflect the current worldviews of people within the system. Third, the study is one point of entry, but not the only possible one, in probing the global health system; there are other ways of approaching this difficult exercise that may be equally as good or perhaps even better. Fourth, the study yields a map of actors, but not an assessment of their power or influence; this means that while our results may be the most scientifically valid and extensive characterization of the global health system ever generated, they are limited in terms of what features are analysed, and may miss some of the most important entities or relationships.

Defining the Global Health System

Building on the work of Slzezak et al. (2010),(4) Frenk and Moon (2013),(9) and Hoffman et al. (2012),(10) we propose the following definition for the global health system:

> The global health system includes transnational actors that have a primary intent to improve health and the polylateral arrangements for governance, finance and delivery within which these actors operate.

In this definition, transnational actors include individuals or organizations that operate in a way that transcends national political borders. Unlike the term international, which just implies that actors are stationed in at least two countries, transnational actors may be stationed in only one country so long as they intend to influence activities in at least two other countries.

Polylateral refers to the interactions among, and governance of, states and non-state actors, which includes interactions between states, between non-state actors, and between states and non-state actors.(11) While the term bilateral concerns relations between two states and the term multilateral concerns relations between three or more states, the term polylateral is more inclusive and refers to relations between states and other states or non-state entities.(11)

Definitions of global health system arrangements include:(12)

- Delivery arrangements relate to how services provided by global health actors are delivered, accessed and catered to meet local priorities, and focus on factors that determine how care is designed to meet consumers' needs, by whom care is provided, where care is provided and with what supports.
- Financial arrangements relate to how finances flow through the global health system, and focus on how the system is financed, types of funding organizations, how to remunerate providers, how products and services are purchased, and the incentive structures for consumers.
- Governance arrangements relate to how the global health system is governed, and focus on issues such as policy authority, organizational authority, commercial authority and professional authority, and how stakeholders are involved in global health system decisions and on what terms.

This proposed definition of the global health system was reached through a review of relevant research literature from global health, international relations, law, political science and public policy. This review identified an abundance of definitions for key terms related to the global health system. Terms were defined using a variety of approaches, highlighting the ability to conceptualize the global health system in different ways in order to serve different purposes.(9)

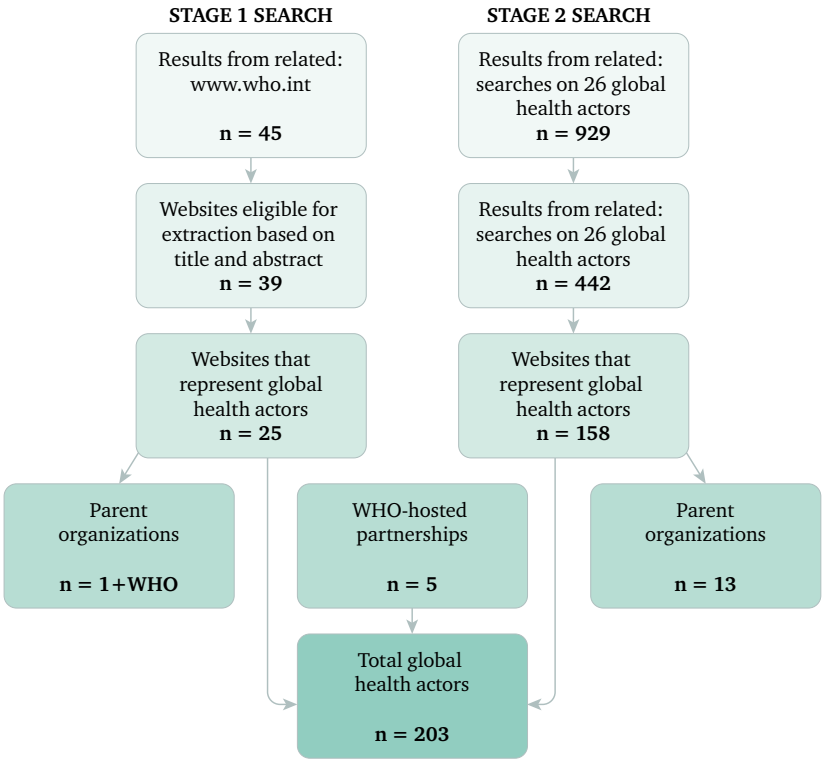
Under this proposed definition, the interactions between global health actors are influenced by the actors themselves, the internal arrangements of the system, and external forces – such as actors and arrangements from other important global policy domains. Accordingly, a global health actor is defined as an individual or organization that operates transnationally with a primary intent to improve health.

Mapping the Global Health System

Through an internet-based network mapping exercise, we identified a total of 203 global health actors. This was achieved by using Google's related search function to find the web pages of global health actors, yielding 198, and then adding five WHO-hosted partnerships (see Appendix A for a list of all actors).[2]

Related search functions use algorithms – combining connectivity analysis, content analysis and page usage – to identify websites that are topically similar but not identical to one another. This methodology assumes that a website can serve as a minimum criterion for including an actor in a preliminary list of global health actors, as most actors with a capacity to influence global health will, at a minimum, have an online presence. Actors were included if they 1) were an individual or organization that 2) influences activities in at least three countries and 3) has a primary intent to improve health.

Figure 1: Flowchart of the Google related:URL search



[2] Four of these WHO-hosted partnerships would have been impossible to find through our internet-based network mapping given that their websites are hosted on the WHO website. These include the Alliance for Health Policy and Systems Research, European Observatory on Health Systems and Policies, Global Health Workforce Alliance, and Partnership for Maternal, Newborn and Child Health. We also included UNITAID, the International Drug Purchase Facility, because it was the only remaining WHO-hosted partnership as listed in provisional agenda item 11.4 of the 134th session of the WHO Executive Board, *Hosted Health Partnerships*, which neither has a WHO-hosted website nor was found in the 'related:URL' internet searches. (13)

A first-stage search for 'related:www.who.int' was conducted, yielding 45 actors. In total 25 of these actors plus one parent organization met the inclusion criteria to be considered global health actors. Subsequently, the home page URL of each actor's website was used in a second-stage 'related:URL' search. A total of 26 independent searches were conducted and 929 results retrieved; 572 unique results were reviewed. In all, 158 websites, plus those of 13 parent organizations, met the inclusion criteria to be considered as representing global health actors. When including the World Health Organization (WHO) as the seed global health actor and its independent hosted partnerships, in total we identified 203 global health actors. All identified actors were organizations rather than individuals.[3]

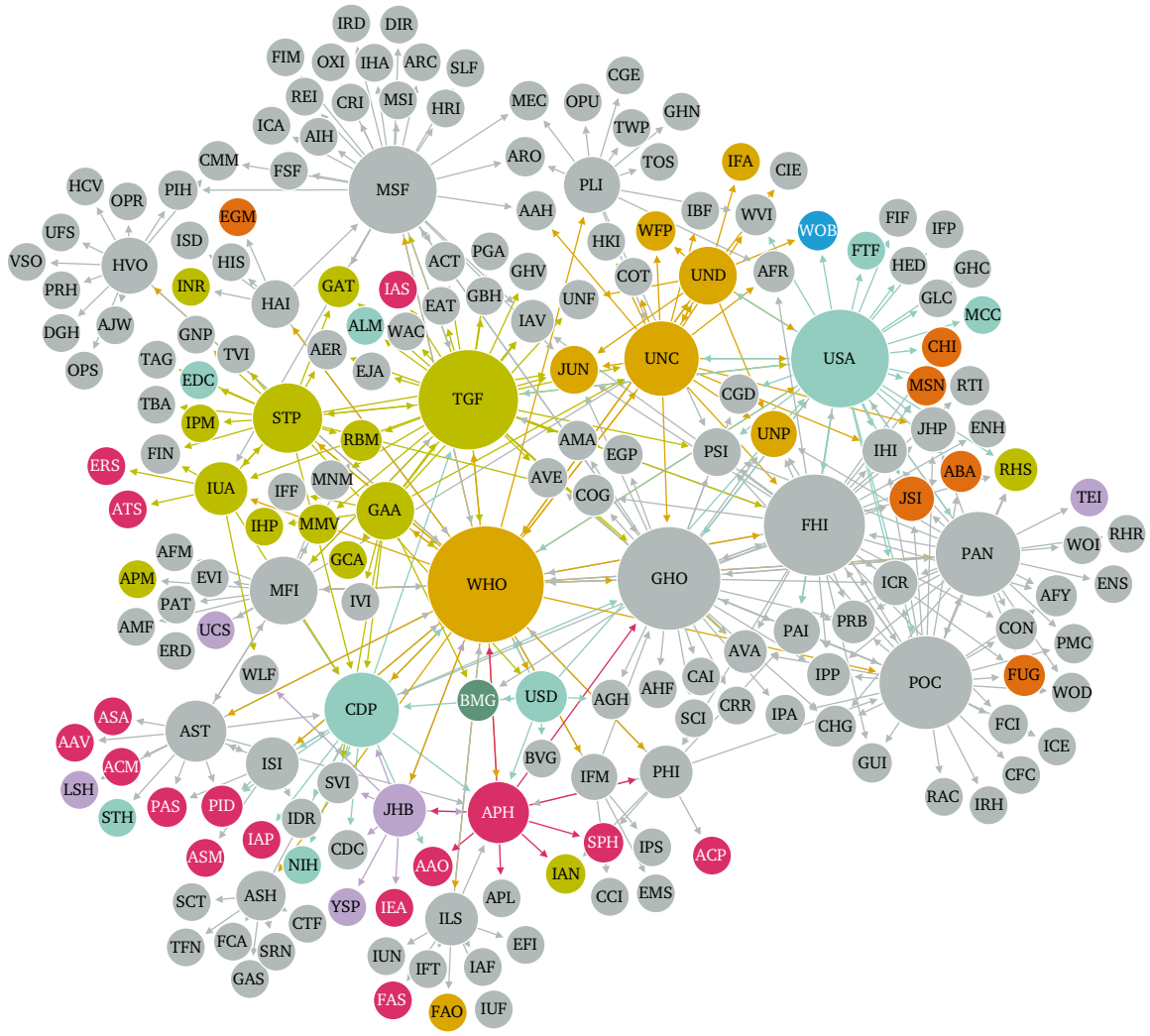
Global health actor by type of entity

The majority of identified global health actors were global civil society organizations and non-governmental organizations (NGOs, n = 138), followed by public-private partnerships (n = 18), professional associations (n = 16), UN entities and intergovernmental organizations (n = 11), national governments (n = 7), private industry (n = 6), academic institutions (n = 5), multilateral development banks (n = 1) and philanthropic institutions (n = 1) (see Figure 2).

Categorization of global health actors by type indicates the overwhelming presence of civil society organizations and NGOs in the online network of global health actors. The emergence of public-private partnerships onto the global health scene is seen through an online presence that makes up almost 9 per cent of global health actors.(9) Despite the overwhelming influence of actors such as the Bill & Melinda Gates Foundation,(13) philanthropic organizations represented only 0.5 per cent of identified global health actors. Visualization of the network by type of actor shows actors of the same type in distinct clusters, such as those of public-private partnerships, UN entities and private industry respectively, suggesting that websites of the same type of global health actors are related to one another (i.e. related by topical content and/or hyperlink connectivity). Interestingly, the pre-chosen focal point of the global health system – the WHO – is connected to all actor types with the exception of philanthropic organizations and multilateral development banks, for which only one actor was identified in each category.

[3] Other possible approaches to this mapping, which would have altered its findings, include: 1) using a different organization to perform the first related search; 2) using multiple purposively selected organizations to initiate the related search, e.g. beginning with five actors from five different countries; 3) using different national Google websites to the US version; 4) not using the internet and instead interviewing key informants to create as long a list of actors as possible; 5) performing a systematic review of existing lists; and 6) identifying authors' organizational affiliations from MEDLINE-indexed journal articles about global health issues. However, we chose the methodology described above because we thought it was better than these competing alternatives. After seeing the results and benefiting from hindsight, we think it may have been better to use multiple purposively selected organizations from a variety of countries to initiate the related search which would have used the national Google websites corresponding to their headquarters' locations.

Figure 2: Network mapping of global health actors by type*



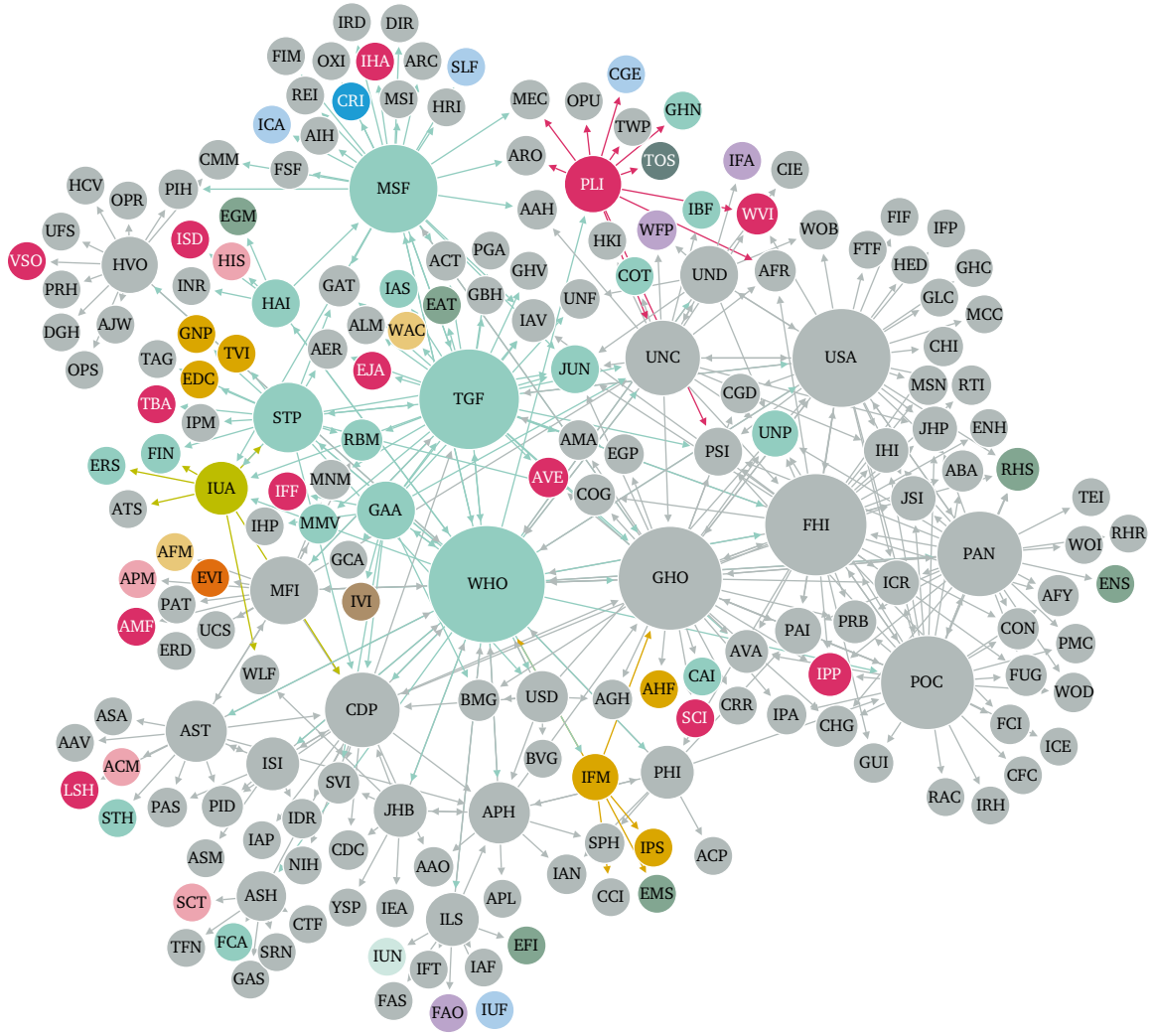
Node size is ranked by degree; node colour is partitioned by type of actor; and edges are coloured by source node.
*See Appendix A for key to actor codes.

- Global civil society organizations and NGOs
- Professional associations
- Public-private partnerships
- National governments
- UN system and intergovernmental
- Private industry
- Academic institutions
- Philanthropic organizations
- Multilateral development banks

Location of global health actors

International headquarters of the 203 global health actors were located in 73 cities in 16 countries, with 98.5 per cent of headquarters based in high-income countries. The most common countries for global health actors to headquarter themselves in were the United States (n = 135), Switzerland (n = 23), and the United Kingdom (n = 13), followed by Belgium (n = 7), the Netherlands (n = 6), and Canada (n = 4). Two actors' headquarters were located in low- and lower-middle-income countries (i.e. Syria and Senegal) and one in an upper-middle-income country (i.e. South Africa) (see Figure 3). Significantly, no actors were headquartered in the 'BRIC' countries (i.e. Brazil, Russia, India and China). The top three most common cities for headquarters were Washington, DC (n = 42), New York (n = 28) and Geneva (n = 21).

Figure 3: Network mapping of global health actors by headquarters location*



Node size is ranked by degree, node colour is partitioned by headquarters location, and edges are coloured by source node.
*See Appendix A for key to actor codes.

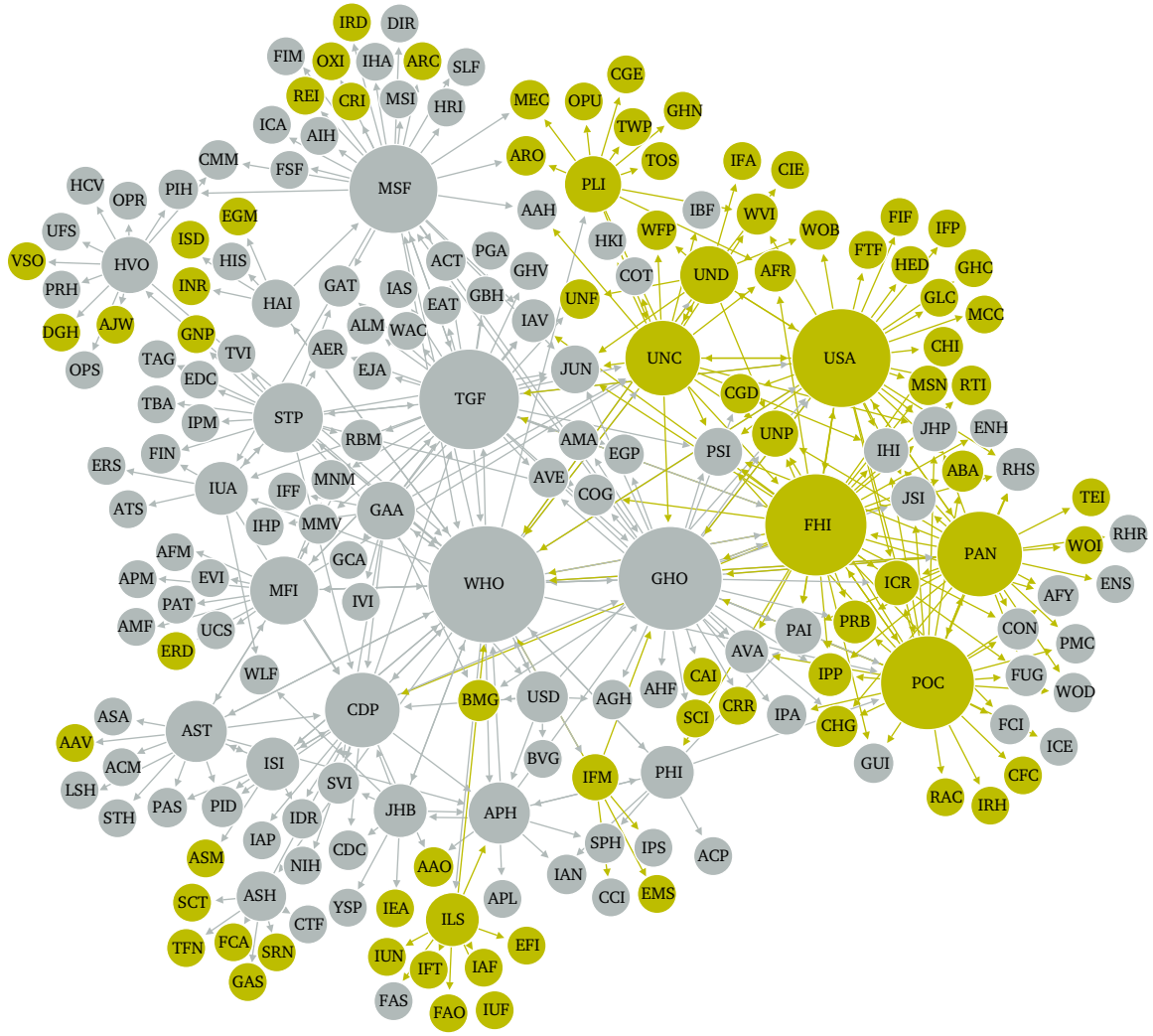
US	Belgium	South Africa	France
Switzerland	Canada	Germany	Austria
UK	Australia	Senegal	Syria
Netherlands	Italy	Vatican City	Republic of Korea

Geographical distribution of international headquarters, spanning a multitude of cities across many countries, points to the global nature of the system. However, the overwhelming presence of actors' headquarters in high-income countries clearly suggests an uneven distribution of actor headquarters globally. Several 'hotspots' of activity were identified. This reflects the location of various influential actors – in global health and non-global health – around which global health actors have decided to co-locate. For example, the US government and World Bank are headquartered in Washington, DC, the UN in New York, and the WHO in Geneva. A large majority of the 203 identified global health actors were located in the United States.

Primary intent

In total, 61.6 per cent of global health actors (n = 125) listed improving health as the primary intent of their organization, compared with 38.4 per cent of actors (n = 78) who listed improving health as one of multiple primary intents. This ratio illustrates the complex interaction between health and other global policy domains – such as international development, trade and environmental protection. Network visualization shows some clustering according to primary intent, such as in the high number of actors for which improving health was not the primary intent that were connected to the US Agency for International Development and the International Life Sciences Institute, respectively (see Figure 4).

Figure 4: Network mapping of global health actors by intent to improve health*



Node size is ranked by degree; node colour is partitioned by whether or not improving health is the primary intent of the organization; and edges are coloured by source node.
*See Appendix A for key to actor codes.

Yes No

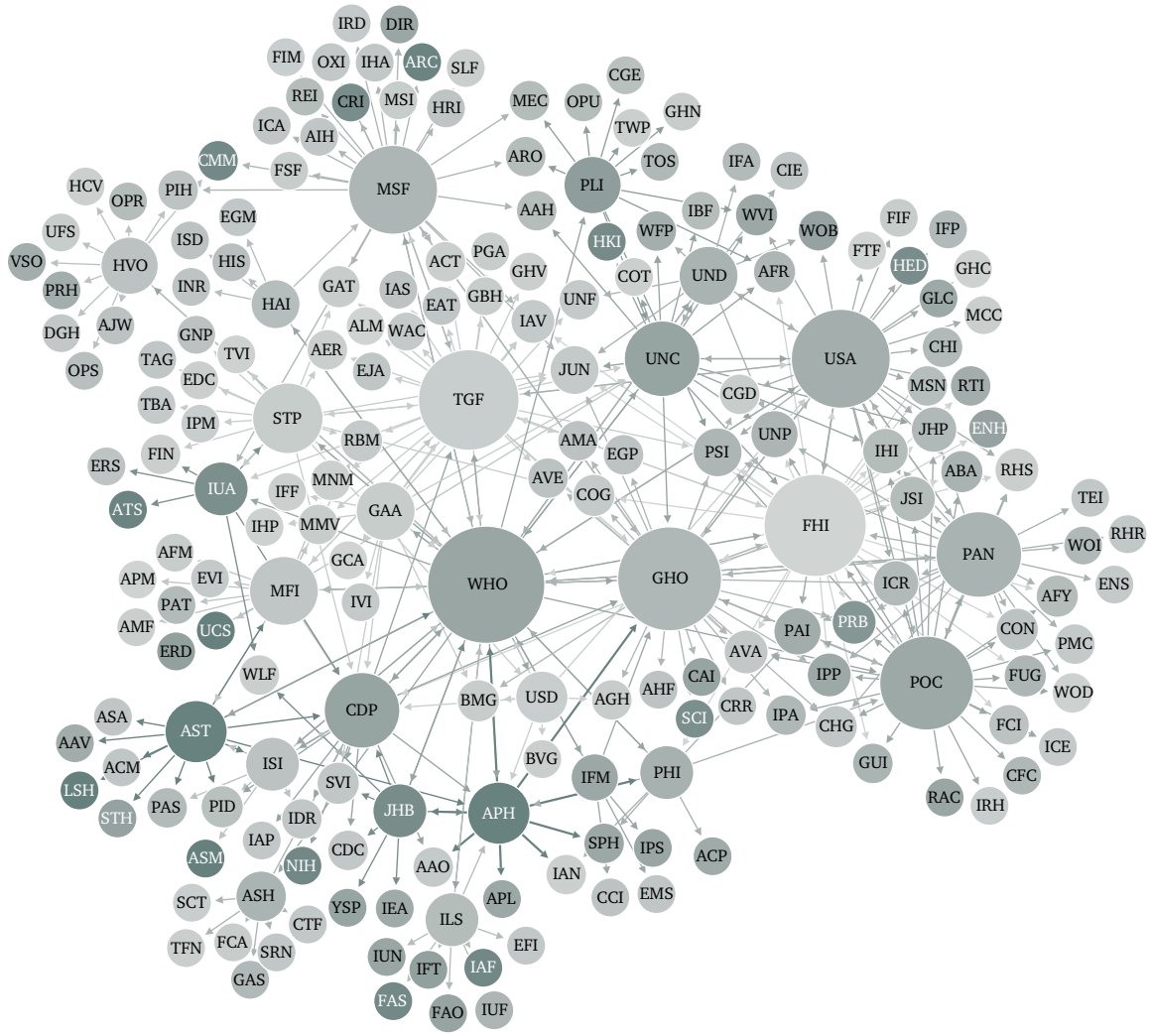
Year of inception

Identified global health actors were created between 1864 and 2011, with the number of organizations founded in each decade displayed in Table 1 and Figure 5. The depiction of the inception of global health actors over time indicates three distinct surges in numbers of newly created entities. An increase in actors was seen during the 1940s and through the 1950s, coinciding with the establishment from 1945 of the UN system. New global health actors may have been created as part of the nascent UN system itself, or else in tandem with its development and also with that of other important multilateral organizations. A second surge starts in the 1970s and lasts through the 1980s, reflecting increased interest at that time in international economic development. Last, an increase in actors emerges in the 1990s and continues into the 2000s, coinciding with a quintupling of global health financing. Each surge in the creation of new actors is larger than the previous one, perhaps reflecting exponential growth of the global health system over time. A lull in the inception of new actors is shown after 2010, due in part to the present decade being incomplete, but also perhaps reflecting the impact of the 2008 global financial crisis, and how emerging actors' websites may need time to gain relevance and popularity online. Visualization of the network by year of inception shows newer global health actors in positions with a high degree of connectivity (see Figure 5) and older organizations on the periphery of the network, indicating that the most influential actors in the global health system may not necessarily be the most established ones.

Table 1: Global health actors by decade of inception

Years	New actors
Before 1900	7
1900–09	2
1910–19	7
1920–29	2
1930–39	2
1940–49	14
1950–59	14
1960–69	9
1970–79	28
1980–89	23
1990–99	48
2000–09	45
2010–present	2

Figure 5: Network mapping of global health actors by year of inception*



Node size is ranked by degree; node colour ranked by year of inception, where darker tones indicate an earlier year of inception and lighter ones indicate newer actors.
*See Appendix A for key to actor codes.

Older — Newer

Potential biases

We are aware of at least three biases that may have resulted from our use of Google technology and of this methodology. First, the default 'international' Google search engine prioritizes results that are most relevant to people searching from the United States, which is where Google was founded and is headquartered. There is no way to conduct a Google search that is geographically neutral. This may have biased results in favour of US actors. Second, the WHO has strict internal policies governing which hyperlinks may be put on its websites, for fear of being seen to endorse the views, messages or actions of the entities to which they connect. Since hyperlinks represent one of three inputs for Google's algorithm to identify related websites, this means that the first-stage search for

'related:www.who.int' may have biased results in favour of traditional and non-controversial actors such as other UN entities to which the WHO's website developers are allowed to link. Third, the default language of the WHO's website is English. Since text-based analysis of websites' content is one of three inputs for Google's algorithm to identify related websites, the initial search may have biased results against actors whose default websites are not in English. This would include many important bilateral development agencies (for example, the Norwegian governmental agency Norad) and global health actors in developing countries (such as Brazil's Fiocruz).

Categorizing 20 Key Global Health Actors by Function

From the list of 203 global health actors, we identified 20 key actors through a survey of nine global health experts who individually and independently identified which 20 actors that they believed were among the most important for health. These results were aggregated and ranked, resulting in a list of 20 global health actors,[4] displayed in Table 2:

Table 2: 20 key global health actors as voted by nine global health experts

World Health Organization	9 votes
Bill & Melinda Gates Foundation	9 votes
Gavi, the Vaccine Alliance	9 votes
The Global Fund to Fight AIDS, Tuberculosis and Malaria	9 votes
Médecins Sans Frontières	9 votes
UN Children's Fund	9 votes
World Bank	8 votes
Centers for Disease Control and Prevention	7 votes
Joint UN Programme on HIV/AIDS	7 votes
UNITAID	6 votes
National Institutes of Health	6 votes
Roll Back Malaria Partnership	6 votes
Save the Children International	6 votes
US Agency for International Development	6 votes
Stop TB Partnership	5 votes
UN Population Fund	5 votes
Food and Agricultural Organization of the UN	4 votes
Partnership for Maternal, Newborn and Child Health	4 votes
PATH	4 votes
UN Development Programme	4 votes

Each of these 20 key global health actors individually categorized according to the functions they performed in the global health system, including: leadership and stewardship; ensuring provision of global public goods; managing externalities and direct country assistance. This categorization was conducted by three research assistants, who independently analysed the websites of these global health actors, independently made category selections and then resolved any disagreements among themselves by consensus. Categorizations were reviewed by two authors (SJH/MP), and disagreements were resolved with additional searches by the three research assistants to gather

[4] Alternative lists have been generated with different methodologies and approaches. Included in Appendix B is a list of actors presented by Frenk and Moon (2013), categorized according to type (e.g. national government, UN system, public-private partnership).(9)

additional confirmatory or refuting evidence. Results were sent to staff at each of the 20 actors as a final check; we received replies from staff at six actors and conducted additional independent searches to gather confirmatory or refuting evidence for any revisions they suggested. Findings from this categorization were used to perform an analysis of the global health system, focusing on its strengths, weaknesses, opportunities and threats.

Findings and analysis are presented below according to functions identified by the Lancet Commission on Investing in Health:

1. Leadership and stewardship
    a) Convening for negotiation and consensus building
    b) Consensus building on policy
    c) Cross-sectoral advocacy
    d) Agency for the dispossessed
    e) Advocating for health[5]
2. Ensuring provision of global public goods
    a) Discovery, development and delivery of new health tools
    b) Implementation research, extended cost-effectiveness analyses, research priority-setting tools and survey methodologies
    c) Knowledge generation and sharing
    d) Sharing of intellectual property
    e) Harmonized norms, standards and guidelines
    f) Market shaping
3. Management of externalities
    a) Responding to global threats
    b) Surveillance and information sharing
4. Direct country assistance
    a) Technical cooperation at national level
    b) Development assistance for health
    c) Emergency humanitarian assistance

[5] This example was modified from the Lancet Commission on Investing in Health's report, which listed it as 'advocating for sustainability and the environment'.(8)

Leadership and stewardship

Table 3: Leadership and stewardship

Actor (code)*	Leadership and stewardship				
	Convening for negotiation and consensus building	*Consensus building on policy*	*Cross-sectoral advocacy*	*Agency for the dispossessed*	*Advocating for health*
BMG					●
CDP					●
FAO	●	●	●	●	
GAA					●
IDP					
JUN	●	●	●	●	●
MSF				●	●
NIH					
PMN	●	●		●	●
PAT				●	●
RBM	●	●			●
SCI				●	●
STP	●	●	●	●	●
TGF				●	●
WOB			●	●	
UNC	●	●	●	●	●
UND		●	●	●	
UNP	●	●	●	●	
USA			●	●	●
WHO	●	●	●	●	●
TOTAL	**8**	**9**	**9**	**14**	**14**

*See Appendix A for key to actor codes.

Strengths: This analysis supports the view that the WHO – despite a shrinking budget (15) – continues to play the central role in the leadership and stewardship of global health, meeting all five responsibilities associated with this function. In addition to the major role of the WHO in the leadership and stewardship of global health, 13 other global health actors serve as an agency for the dispossessed, and 13 other global health actors advocate for health.

Weaknesses: Despite its major role, it is questionable whether the WHO's budget is sufficiently large and flexible for it to fulfil its mandate. For example, while the WHO's two-year 2014–15 programme budget was almost $4 billion,(15) the Bill & Melinda Gates Foundation disbursed $3.6 billion in grant payments alone in 2013 (see Appendix C).(16) Moreover, of the $1.9 billion in voluntary contributions made to the WHO's General Fund in 2013, almost $1.8 billion in were earmarked.(17) These funds are less flexible than mandatory contributions and other types of voluntary contributions (e.g. core voluntary contributions),(18) limiting the WHO in its ability to direct them to emerging priority areas.

Of the 20 global health actors analysed, only nine were involved in cross-sectoral advocacy; eight in convening for negotiation and consensus building, and nine in consensus building on policy. These numbers could be related to the major role of the WHO in the leadership and stewardship of global health, 'as the directing and coordinating authority on international health work'.(19) Alternatively, it could indicate a gap in the performance of key global health system functions.

Opportunities: The complexity of the global health system makes the future leadership and stewardship of global health unclear, especially at a time when the WHO is heavily criticized and is undergoing a reform process.(20–22) This lack of clarity is, however, an opportunity to define new roles in the leadership function, and to strengthen areas that could benefit from more attention. For example, in an increasingly interconnected and globalized world, there is scope for broader and deeper levels of engagement in cross-sectoral advocacy that address the health impacts of non-health spheres such as trade, migration and the environment.

Threats: Commentators have highlighted criticisms about the internal governance of several global health actors in addition to the WHO – such as the Global Fund(23) UNICEF(24) and UNFPA(25) – raising questions about accountability and trust. For example, allegations in 2010 of theft in recipient countries were a factor leading the Global Fund temporarily to suspend project financing in 2011,(23, 26) and to initiate a reform process that included strengthening its management and financial supervision.(27)

Ensuring global public goods

Table 4: Ensuring global public goods

Actor (code)*	Ensuring provision of global public goods					
	Discovery, development, and delivery of new health tools	*Implementation research, cost-effectiveness analyses, research priority-setting tools and survey methodologies*	*Knowledge generation and sharing*	*Sharing of intellectual property*	*Harmonized norms, standards and guidelines*	*Market shaping*
BMG	●	●	●			●
CDP			●			
FAO		●	●		●	
GAA	●	●	●			●
IDP	●		●	●		●
JUN		●	●		●	
MSF				●		●
NIH	●	●	●			
PMN			●			
PAT	●		●	●		
RBM	●	●	●			●
SCI						
STP	●	●	●			●
TGF	●	●				●
WOB		●	●			
UNC		●	●		●	●
UND		●	●			●
UNP		●	●		●	●
USA	●	●	●	●	●	●
WHO		●	●	●	●	
TOTAL	**9**	**14**	**17**	**5**	**6**	**11**

* See Appendix A for key to actor codes.

Strengths: A large majority of the 20 key actors are involved in knowledge generation and sharing (n = 17), while 14 global health actors are involved in implementation research, extended cost-effectiveness analyses, research priority-setting tools and survey methodologies. Moreover, the WHO

plays an important role in setting norms, standards and guidelines in public health(28) by serving as a forum for states to come to agreement on these issues, thus minimizing a percieved gap in the number of global health actors involved in this example of this function.

Weaknesses: Relatively few global health actors are involved in ensuring global public goods. In fact, only five global health actors are involved in the sharing of intellectual property. The small number of global health actors involved in the sharing of intellectual property could be a reflection of political and economic interests around research and development for new health technologies; specifically, the challenge of balancing access to global public goods with the incentivization of new drug development.

Opportunities: In an increasingly complex global health system, ensuring global public goods will rely on innovative approaches that build common interests between actors. To achieve this, it will be important to demonstrate the shared benefits of global public goods, and show how, by working together, states and non-state actors can achieve such benefits more cheaply. Over the past two decades, global health actors have begun experimenting with this through innovative new approaches such as patent pooling (e.g. UNITAID through its Medicines Patent Pool) and the creation of new partnerships to leverage existing funds.

Threats: The global health system is still in a process of learning how to ensure the production of and access to global public goods; and short-term economic and political self-interest risks curtailing potential achievements. Ensuring global public goods will depend on maintaining investment and availability of resources, as well as on continued high-end performance of global health actors to find innovative solutions to collective action problems and to minimize the potential for corruption.

Management of externalities

Table 5: Management of externalities

Actor (code)*	Management of externalities	
	Responding to global threats	*Surveillance and information sharing*
BMG		
CDP	●	●
FAO	●	●
GAA		●
IDP	●	
JUN		●
MSF	●	
NIH		
PMN		
PAT	●	●
RBM	●	●
SCI		
STP		
TGF		
WOB		
UNC	●	
UND	●	
UNP	●	●
USA	●	●
WHO	●	●
TOTAL	**11**	**9**

*See Appendix A for key to actor codes.

Strengths: Seven global health actors performed both examples of managing externalities – i.e. responding to global threats and engaging in surveillance and information sharing. Several actors were directly and heavily involved in responding to global threats, such as the 2014 outbreak of Ebola in West Africa. Although these total numbers are small relative to the involvement of global health actors in other functions, these actors are among the best-funded organizations in the global-health system.

Weaknesses: Only nine global health actors are involved in surveillance and information sharing, the most prominent of which is the WHO. From 2009–10 to 2014–15, however, the WHO's two-year organizational budget fell from almost $5 billion to almost $4 billion, and its slow initial response to the 2014 West Africa Ebola outbreak has been partially blamed on these cuts.(14)

Commentators consistently point to the need for stronger health systems with improved surveillance and information-sharing capacities, especially in sub-Saharan Africa.(29–31) Another weakness is the concept of an externality itself, as some states perceive health threats as transnational issues whereas others perceive them as domestic concerns. Thus, there is not always consensus on which issues require global action.

Opportunities: Over the past 15 years a series of global health threats such as SARS, H1N1 influenza and Ebola have highlighted the importance of managing externalities in an age of increasing interconnectivity. There is an opportunity here to recognize health as truly global, and to catalyse changes to the global governance of health threats and improve surveillance and information sharing. The World Economic Forum made a similar point in 2006, which indicated that additional resources would be required over the long term to reverse decaying health infrastructure and information networks.(32) A more recent report of the World Economic Forum identified antimicrobial resistance as one of the top global risks in need of urgent attention.(33)

Threats: Disease outbreaks highlight the limitations of the current global health system to address externalities; for example, the WHO and bilateral donor agencies were criticized for moving slowly on the 2014 West Africa Ebola outbreak. Slow responses to disease outbreaks suggest a lack of surge capacity at the global level, highlighted by systems that lack resilience and responsiveness. Moreover, the global health system is still limited in its ability to hold states to account in terms of international laws and regulations when confronted by questions of economic and/or political self-interest.

Direct country assistance

Table 6: Direct country assistance

Actor (code)*	Direct country assistance		
	Technical cooperation at national level	*Development assistance for health*	*Emergency humanitarian assistance*
BMG	●	●	●
CDP	●	●	●
FAO	●	●	●
GAA	●	●	
IDP		●	
JUN	●		
MSF			●
NIH			
PMN			
PAT	●		
RBM	●	●	●
SCI	●		●
STP	●	●	
TGF		●	
WOB	●	●	●
UNC	●	●	●
UND	●		
UNP	●	●	●
USA	●	●	●
WHO	●	●	●
TOTAL	**15**	**13**	**11**

*See Appendix A for key to actor codes.

Strengths: For each of the three examples of this function, more than half of the global health actors were involved. Of note, these global health actors were especially involved in direct country assistance related to MDGs 4, 5 and 6 (e.g. the Global Fund, Stop TB Partnership, Roll Back Malaria Partnership, UNDP, UNAIDS and Save the Children). Moreover, investments in global health have increased five-fold since 1990, to reach $31.3 billion in 2013.(34)

Weaknesses: Perhaps too large a number of the 20 key global health actors are involved in direct country assistance. This is reflective of the massive scale-up in development assistance for health over the past two decades. Six of the 20 key global health actors were established in or after 2000. However, this surge in funding and actors has also been associated with system complexity and an increase in the bureaucratic hurdles that recipient countries are required to navigate in order to access funds. In addition to this issue, expansion in targeted disease funding risks non-alignment between donor funding and the self-identified needs of recipient countries.(35)

Opportunites: Over time, direct country assistance could become less important as the economies of low- and middle-income countries grow, resulting, it is hoped, in dramatic increases in domestic fiscal space for health and its social determinants. Such a change would signal a shift away from development assistance, and one towards greater attention to domestic financing and increased investments in global public goods and management of externalities.(8)

Threats: The considerable focus on addressing MDGs 4, 5 and 6 has been criticized for coming at the cost of other important health issues, such as the provision of direct country assistance for health systems strengthening. While development assistance continues to grow, reports have noted a gradual slowdown in this growth,(34) raising questions about the political sustainability of direct country assistance over the long term.

Conclusion

This paper provided an operational definition of the global health system, which it used to perform a mapping exercise of the global health actors involved in it. The exercise generated a list of 203 global health actors, which shed light on the type of actors engaged in the system, their geographic distribution and their primary intentions, as well as their year of inception. From this list, 20 key global health actors were identified through a survey of global health experts, and were then categorized according to the four functions of the global health system. This categorization was then used to perform an analysis of the strengths, weaknesses, opportunities and threats facing the global health system.

There are at least four key findings from the mapping exercise.

- First, the large majority of identified actors in the global health system are NGOs (n = 138); by contrast, the next largest actor-type is public-private partnerships (n = 18).
- Second, the United States is the most popular location for global health actors' headquarters (n = 135), with 42 actors headquartered in Washington, DC, and 28 in New York.
- Third, 61.6 per cent of global health actors (n = 125) list improving health as their sole primary intent, emphasizing how most actors work only on health issues, but also that there are still many opportunities for cross-sectoral work through the 38.4 per cent of existing actors (n = 78) who list health as only one of their primary intents.
- Fourth, the creation of new global health actors has occurred in waves – in 1940–59 (n = 28), 1970–89 (n = 51) and especially 1990–2009 (n = 93) – providing evidence for actor proliferation being determined by external stimuli such as political events and available financing.

There are at least five key findings from the categorization and functional analysis of the 20 key global health actors.

- First, the WHO continues to play the major role in the leadership and stewardship of global health, but the extent to which it can fulfil this role is being challenged by a shrinking budget that is increasingly reliant on inflexible, earmarked funding.
- Second, relatively few global health actors are involved in cross-sectoral advocacy. This issue area could become more important in the post-2015 era, with an increasingly interconnected global community and what are likely to be interdependent development goals that connect different fields.
- Third, few global health actors are involved in the sharing of intellectual propoerty, and in harmonized norms, standards and guidelines.
- Fourth, few global health actors are involved in the management of externalities. Recent decreases in the WHO's budget contribute to this weakness, and have already been associated with slow responses to the 2014 Ebola outbreak. More attention from more actors is likely to be needed in order to serve this function effectively.

- Fifth, the number of global health actors engaged in direct country assistance has grown exponentially since the 1990s along with increases in available funding. However, much of this funding that has encouraged a proliferation of actors has been directed to disease silos, inhibiting horizontal funding for issues such as strengthening health systems.

Rationalization and better coordination of development-oriented global health actors may be needed to maximize the benefits of constructive competition and minimize opportunities for destructive competition.

Appendix A: List of 203 Global Health Actors

Actor		Code	URL	Type*	Headquarters location		Health as primary intent?	Year of inception
1	Abt Associates	ABA	abtassociates.com	7	Cambridge, MA	US	No	1965
2	Accordia Global Health Foundation	AGH	accordiafoundation.org	6	Washington, DC	US	Yes	2000
3	ACTION (Global Health Advocacy Partnership)	ACT	action.org	6	Washington, DC	US	Yes	2004
4	Action Against Hunger International	AAH	actionagainsthunger.org	6	New York	US	Yes	1979
5	Action on Smoking and Health	ASH	ash.org	6	Washington, DC	US	Yes	1967
6	Advocates for Youth	AFY	advocatesforyouth.org	6	Washington, DC	US	Yes	1980
7	Aeras	AER	aeras.org	6	Rockville, MD	US	Yes	2003
8	Africa Fighting Malaria	AFM	fightingmalaria.org	6	Durban	South Africa	Yes	2000
9	African Leaders Malaria Alliance	ALM	alma2015.org	2	New York	US	Yes	2009
10	Africare	AFR	africare.org	6	Washington, DC	US	No	1970
11	Against Malaria Foundation	AMF	againstmalaria.com	6	St Albans	UK	Yes	2004
12	AIDS Healthcare Foundation	AHF	aidshealth.org	6	Amsterdam	Netherlands	Yes	1987
13	Alliance for Health Policy and Systems Research	AHP	who.int/alliance-hpsr	4	Geneva	Switzerland	Yes	1999
14	America Association of Occupational Health Nurses	AAO	aaohn.org	8	Pensacola, FL	US	No	1998
15	American Association of Veterinary Parasitologists	AAV	aavp.org	8	Shawnee, KS	US	No	1956
16	American College of Preventive Medicine	ACP	acpm.org	8	Washington, DC	US	Yes	1954
17	American International Health Alliance	AIH	aiha.com	6	Washington, DC	US	Yes	1992
18	American Jewish World Service	AJW	ajws.org	6	New York	US	No	1985
19	American Public Health Association	APH	apha.org	8	Washington, DC	US	Yes	1872
20	American Red Cross	ARC	redcross.org	6	Washington, DC	US	No	1881
21	American Refugee Committee	ARO	arcrelief.org	6	Minneapolis, MN	US	No	1979
22	American Society for Microbiology	ASM	www.asm.org	8	Washington, DC	US	No	1899
23	American Society of Tropical Medicine and Hygiene	AST	astmh.org	6	Deerfield, IL	US	Yes	1903
24	American Thoracic Society	ATS	thoracic.org	8	New York	US	Yes	1905
25	amfAR (Foundation for AIDS Research)	AMA	amfar.org	6	New York	US	Yes	1985
26	Anaerobe Society of the Americas	ASA	anaerobe.org	8	Los Angeles, CA	US	Yes	1992
27	Asia Pacific Malaria Elimination Network	APM	apmen.org	4	Herston	Australia	Yes	2009

Actor		Code	URL	Type*	Headquarters location		Health as primary intent?	Year of inception
28	Association of Public Health Laboratories	APL	aphl.org	6	Silver Spring, MD	US	Yes	1951
29	Australasian College of Tropical Medicine	ACM	tropmed.org	8	Brisbane	Australia	Yes	1991
30	AVAC: Global Advocacy for HIV Prevention	AVA	avac.org	6	New York	US	Yes	1995
31	AVERT	AVE	avert.org	6	Horsham	UK	Yes	1986
32	Bill & Melinda Gates Foundation	BMG	gatesfoundation.org	5	Seattle, WA	US	No	2000
33	BIO Ventures for Global Health	BVG	bvgh.org	6	Seattle, WA	US	Yes	2004
34	Campaign for Tobacco-Free Kids	CTF	global.tobaccofreekids.org	6	Washington, DC	US	Yes	1995
35	CARE International	CAI	care-international.org	6	Geneva	Switzerland	No	1945
36	Caritas International	CRI	caritas.org	6	Vatican City	Vatican City State	No	1897
37	Catholic Medical Mission Board	CMM	cmmb.org	6	New York	US	Yes	1912
38	Catholics for Choice	CFC	catholicsforchoice.org	6	Washington, DC	US	No	1973
39	CDC Foundation	CDC	cdcfoundation.org	6	Atlanta, GA	US	Yes	1995
40	Center for Global Development	CGD	cgdev.org	6	Washington, DC	US	No	2001
41	Center for Health and Gender Equity	CHG	genderhealth.org	6	Washington, DC	US	No	1994
42	Center for International Environmental Law	CIE	ciel.org	6	Washington, DC	US	No	1989
43	Center for Reproductive Rights	CRR	reproductiverights.org	6	New York	US	No	1992
44	Centers for Disease Control and Prevention	CDP	cdc.gov	1	Atlanta, GA	US	Yes	1946
45	Chemonics International	CHI	chemonics.com	7	Washington, DC	US	No	1975
46	Christian Connections for International Health	CCI	ccih.org	6	McLean, VA	US	Yes	1987
47	CONRAD	CON	conrad.org	6	Arlington, VA	US	Yes	1986
48	Consultative Group on Early Childhood Care and Development	CGE	ecdgroup.com	6	Toronto	Canada	No	1984
49	CORE Group	COG	coregroup.org	6	Washington, DC	US	Yes	1997
50	Countdown to 2015	COT	countdown2015mnch.org	6	Geneva	Switzerland	Yes	2005
51	Direct Relief	DIR	directrelief.org	6	Santa Barbara, CA	US	Yes	1948
52	Doctors for Global Health	DGH	dghonline.org	6	Decatur, GA	US	No	1995
53	Elizabeth Glaser Pediatric AIDS Foundation	EGP	pedaids.org	6	Washington, DC	US	Yes	1988
54	Elton John AIDS Foundation	EJA	ejaf.org	6	London	UK	Yes	1992
55	EngenderHealth	ENH	engenderhealth.org	6	New York	US	Yes	1943
56	Episcopal Relief & Development	ERD	episcopalrelief.org	6	New York	US	No	1940
57	European and Developing Countries Clinical Trials Partnership	EDC	edctp.org	2	The Hague	Netherlands	Yes	2003
58	European AIDS Treatment Group	EAT	eatg.org	6	Brussels	Belgium	Yes	1992
59	European Food Information Council	EFI	eufic.org	6	Brussels	Belgium	No	1995

Actor		Code	URL	Type*	Headquarters location		Health as primary intent?	Year of inception
60	European Generic Medicines Association	EGM	egagenerics.com	7	Brussels	Belgium	No	1993
61	European Medical Students' Association	EMS	emsa-europe.org	6	Brussels	Belgium	No	1991
62	European NGOs for Sexual and Reproductive Health and Rights, Population and Development	ENS	eurongos.org	6	Brussels	Belgium	Yes	1996
63	European Observatory on Health Systems and Policies	EOH	euro.who.int/en/about-us/partners/observatory	4	Brussels	Belgium	Yes	1998
64	European Respiratory Society	ERS	ersnet.org	8	Lausanne	Switzerland	Yes	1990
65	European Vaccine Initiative	EVI	euvaccine.eu	6	Heidelberg	Germany	Yes	1998
66	Family Care International	FCI	familycareintl.org	6	New York	US	Yes	1986
67	Federation of American Societies for Experimental Biology	FAS	faseb.org	8	Bethesda, OH	US	Yes	1912
68	Feed the Future	FTF	feedthefuture.gov	1	Washington, DC	US	No	2010
69	FHI 360 (formerly Family Health International)	FHI	fhi360.org	6	Durham, NC	US	No	2011
70	Firelight Foundation	FIF	firelightfoundation.org	6	Santa Cruz, CA	US	No	2000
71	Fistula Foundation	FSF	fistulafoundation.org	6	San Jose, CA	US	Yes	2000
72	Food and Agriculture Organization of the UN	FAO	fao.org	2	Rome	Italy	No	1945
73	Foundation for Innovative New Diagnostics	FIN	finddiagnostics.org	6	Geneva	Switzerland	Yes	2003
74	Foundation for International Medical Relief of Children	FIM	fimrc.org	6	Philadelphia, PA	US	Yes	2002
75	Framework Convention Alliance for Tobacco Control	FCA	fctc.org	6	Geneva	Switzerland	No	1999
76	Futures Group	FUG	futuresgroup.com	7	Washington, DC	US	Yes	1971
77	Gavi, the Vaccine Alliance	GAA	gavialliance.org	4	Geneva	Switzerland	Yes	1999
78	GBCHealth	GBH	gbchealth.org	6	New York	US	Yes	2001
79	Global Advisors Smokefree Policy	GAS	njgasp.org	6	Summit, NJ	US	No	1974
80	Global Alliance for TB Drug Development	GAT	tballiance.org	4	New York	US	Yes	2000
81	Global Coalition Against Child Pneumonia	GCA	worldpneumoniaday.org	4	Baltimore, MD	US	Yes	2009
82	Global Communities	GLC	globalcommunities.org	6	Silver Spring, MD	US	No	1952
83	Global Health Corps	GHC	ghcorps.org	6	New York	US	No	2008
84	Global Health Council	GHO	globalhealth.org	6	Washington, DC	US	Yes	1972
85	Global Health Workforce Alliance	GHW	who.int/workforcealliance/en	4	Geneva	Switzerland	Yes	2006
86	Global HIV Vaccine Enterprise	GHV	vaccineenterprise.org	6	New York	US	Yes	2004
87	Global Hope Network International	GHN	globalhopenetwork.org	6	Geneva	Switzerland	No	1999

Actor		Code	URL	Type*	Headquarters location		Health as primary intent?	Year of inception
88	Global Network of People Living with HIV	GNP	gnpplus.net	6	Amsterdam	Netherlands	No	1986
89	Guttmacher Institute	GUI	guttmacher.org	6	New York	US	Yes	1968
90	Health Action International	HAI	haiweb.org	6	Geneva	Switzerland	Yes	1981
91	Health Skepticism Inc	HIS	healthyskepticism.org	6	Port Willunga	Australia	Yes	1983
92	Health Volunteers Overseas	HVO	hvousa.org	6	Washington, DC	US	Yes	1986
93	HealthCare Volunteer	HCV	healthcarevolunteer.com	6	Los Altos, CA	US	Yes	2005
94	HealthRight International	HRI	healthright.org	6	New York	US	Yes	1990
95	Hellen Keller International	HKI	hki.org	6	New York	US	Yes	1915
96	Higher Education for Development	HED	hedprogram.org	6	Washington, DC	US	No	1918
97	IBFAN (International Baby Food Action Network)	IBF	ibfan.org	6	Geneva	Switzerland	Yes	1979
98	Ibis Reproductive Health	IRH	ibisreproductivehealth.org	6	Cambridge, MA	US	No	2002
99	ICASCO (International Council of AIDS Service Organizations)	ICA	icaso.org	6	Toronto	Canada	Yes	1991
100	Infectious Disease Research Institute	IDR	idri.org	6	Washington, DC	US	Yes	1993
101	Institute of Food Technologists	IFT	ift.org	6	Chicago, IL	US	No	1939
102	International AIDS Society	IAS	iasociety.org	8	Geneva	Switzerland	Yes	1988
103	International AIDS Vaccine Initiative	IAV	iavi.org	6	New York	US	Yes	1996
104	International Association for Food Protection	IAF	foodprotection.org	6	Des Moines, IA	US	No	1911
105	International Association of National Public Health Institutes	IAN	ianphi.org	2	Atlanta, GA	US	Yes	2006
106	International Association of Providers of AIDS Care	IAP	iapac.org	8	Chicago, IL	US	Yes	1995
107	International Center for Research on Women	ICR	icrw.org	6	Washington, DC	US	No	1976
108	International Consortium for Emergency Contraception	ICE	cecinfo.org	6	New York	US	Yes	1996
109	UNITAID (the International Drug Purchase Facility)	IDP	unitaid.eu/en	4	Geneva	Switzerland	Yes	2006
110	International Epidemiological Association	IEA	ieaweb.org	8	Raleigh, NC	US	No	1954
111	International Federation of Medical Students' Associations	IFM	ifmsa.org	6	Amsterdam	Netherlands	No	1951
112	International Finance Facility for Immunisation	IFF	iffim.org	6	London	UK	Yes	2006
113	International Food Policy Research Institute	IFP	ifpri.org	6	Washington, DC	US	No	1975

Actor		Code	URL	Type*	Headquarters location		Health as primary intent?	Year of inception
114	International Fund for Agricultural Development	IFA	ifad.org	2	Rome	Italy	No	1977
115	International Health Partnership	IHP	internationalhealthpartnership.net	4	Washington, DC	US	Yes	2007
116	International HIV/AIDS Alliance	IHA	aidsalliance.org	6	Hove	UK	Yes	1993
117	International Life Sciences Institute	ILS	ilsi.org	6	Washington, DC	US	No	1978
118	International Network for Rational Use of Drugs	INR	inrud.org	4	Arlington, VA	US	No	1989
119	International Partnership for Microbicides	IPM	ipmglobal.org	4	Silver Spring, MD	US	Yes	2002
120	International Pharmaceutical Students' Federation	IPS	ipsf.org	6	The Hague	Netherlands	Yes	1949
121	International Planned Parenthood Federation	IPP	ippf.org	6	London	UK	No	1952
122	International Relief and Development	IRD	ird.org	6	Arlington, VA	US	No	1998
123	International Society for Infectious Diseases	ISI	isid.org	6	Brookline, MA	US	Yes	1986
124	International Society of Drug Bulletins	ISD	isdbweb.org	6	London	UK	No	1986
125	International Union Against Tuberculosis and Lung Disease	IUA	theunion.org	4	Paris	France	Yes	1920
126	International Union of Food Science and Technology	IUF	iufost.org	6	Oakville	Canada	No	1970
127	International Union of Nutritional Sciences	IUN	iuns.org	6	Vienna	Austria	No	1948
128	International Vaccine Institute	IVI	ivi.int	6	Seoul	Republic of Korea	Yes	1996
129	IntraHealth International	IHI	intrahealth.org	6	Chapel Hill, NC	US	Yes	1979
130	Ipas (formerly International Pregnancy Advisory Services)	IPA	ipas.org	6	Chapel Hill, NC	US	Yes	1973
131	Jhpiego	JHP	jhpiego.org	6	Baltimore, MD	US	Yes	1974
132	John Snow, Inc.	JSI	jsi.com	7	Boston, MA	US	Yes	1978
133	Johns Hopkins Bloomberg School of Public Health	JHB	jhsph.edu	9	Baltimore, MD	US	Yes	1916
134	Joint UN Programme on HIV/AIDS	JUN	unaids.org	2	Geneva	Switzerland	Yes	1996
135	London School of Hygiene and Tropical Medicine	LSH	www.lshtm.ac.uk	9	London	UK	Yes	1899
136	Malaria Foundation International	MFI	malaria.org	6	Stone Mountain, GA	US	Yes	1992
137	Malaria No More	MNM	malarianomore.org	6	New York	US	Yes	2006
138	Management Systems International	MSN	msiworldwide.com	7	Washington, DC	US	No	1981
139	Médecins Sans Frontières	MSF	msf.org	6	Geneva	Switzerland	Yes	1971
140	Medicines for Malaria Venture	MMV	mmv.org	4	Geneva	Switzerland	Yes	1999
141	MediSend International	MSI	medisend.org	6	Dallas, TX	US	Yes	1999

Actor		Code	URL	Type*	Headquarters location		Health as primary intent?	Year of inception
142	Mercy Corps	MEC	mercycorps.org	6	Portland, OR	US	No	1979
143	Millennium Challenge Corporation	MCC	mcc.gov	1	Washington, DC	US	No	2004
144	National Institutes of Health	NIH	nih.gov	1	Bethesda, OH	US	Yes	1887
145	Operation Rainbow	OPR	operationrainbow.org	6	Oakland, CA	US	Yes	1978
146	Operation Smile	OPS	operationsmile.org	6	Virginia Beach, VA	US	Yes	1982
147	Operation USA	OPU	opusa.org	6	Los Angeles, CA	US	No	1979
148	Oxfam International	OXI	oxfam.org	6	Washington, DC	US	No	1995
149	Pan-American Society for Clinical Virology	PAS	pascv.org	8	Raleigh, NC	US	Yes	1977
150	Pangaea Global AIDS Foundation	PGA	pgaf.org	6	Oakland, CA	US	Yes	2001
151	Partners in Health	PIH	pih.org	6	Boston, MA	US	Yes	1987
152	Partnership for Maternal, Newborn and Child Health	PMN	who.int/pmnch/en	4	Geneva	Switzerland	Yes	2005
153	PATH	PAT	path.org	6	Seattle, WA	US	Yes	1977
154	Pathfinder International	PAI	pathfinder.org	6	Watertown, MN	US	Yes	1957
155	Pediatric Infectious Diseases Society	PID	pids.org	8	Arlington, VA	US	Yes	1984
156	Plan International	PLI	plan-international.org	6	Woking	UK	No	1937
157	Population Action International	PAN	populationaction.org	6	Washington, DC	US	No	1965
158	Population Council	POC	popcouncil.org	6	New York	US	No	1952
159	Population Media Center	PMC	populationmedia.org	6	Shelburne , MA	US	Yes	1998
160	Population Reference Bureau	PRB	prb.org	6	Washington, DC	US	No	1929
161	Population Services International	PSI	psi.org	6	Washington, DC	US	Yes	1970
162	Project HOPE	PRH	projecthope.org	6	Millwood, VA	US	Yes	1958
163	Public Health Institute	PHI	phi.org	6	Oakland, CA	US	Yes	1964
164	RAND Corporation	RAC	rand.org	6	Santa Monica, CA	US	No	1948
165	Refugees International	REI	refintl.org	6	Washington, DC	US	No	1979
166	Reproductive Health Response in Crises Consortium	RHR	rhrc.org	6	Minneapolis, MN	US	Yes	1995
167	Reproductive Health Supplies Coalition	RHS	rhsupplies.org	4	Brussels	Belgium	Yes	2004
168	Research Triangle Institute International	RTI	rti.org	6	Durham (Research Triangle Park), NC	US	No	1958
169	Roll Back Malaria Partnership	RBM	rollbackmalaria.org	4	Geneva	Switzerland	Yes	1998
170	Sabin Vaccine Institute	SVI	sabin.org	6	Washington, DC	US	Yes	1993
171	Save the Children International	SCI	savethechildren.net	6	London	UK	No	1919
172	Society for Public Health Education	SPH	sophe.org	8	Washington, DC	US	Yes	1950
173	Society for Research on Nicotine and Tobacco	SRN	srnt.org	6	Madison, WI	US	No	1994
174	Stephen Lewis Foundation	SLF	stephenlewisfoundation.org	6	Toronto	Canada	Yes	2003
175	Stop TB Partnership	STP	stoptb.org	4	Geneva	Switzerland	Yes	2001
176	Swiss Tropical and Public Health Institute	STH	swisstph.ch	1	Basel	Switzerland	Yes	1943

Actor		Code	URL	Type*	Headquarters location		Health as primary intent?	Year of inception
177	Syrian Center for Tobacco Studies	SCT	scts-sy.org	6	Aleppo	Syria	No	2002
178	TB Alert	TBA	tbalert.org	6	Brighton	UK	Yes	1998
179	The Earth Institute, Columbia University	TEI	earthinstitute.columbia.edu	9	New York	US	No	1995
180	The Global Fund to Fight AIDS, Tuberculosis and Malaria	TGF	theglobalfund.org	4	Geneva	Switzerland	Yes	2002
181	The Water Project	TWP	thewaterproject.org	6	Concord, NH	US	No	2006
182	Tobacco Free Nurses	TFN	tobaccofreenurses.org	6	Los Angeles, CA	US	No	2003
183	Tostan	TOS	tostan.org	6	Dakar	Senegal	No	1974
184	Treatment Action Group	TAG	treatmentactiongroup.org	6	New York	US	Yes	1992
185	Tuberculosis Vaccine Initiative	TVI	tbvi.eu	6	Lelystad	Netherlands	Yes	2008
186	Unite for Sight	UFS	uniteforsight.org	6	New Haven, CT	US	Yes	2000
187	UN Children's Fund	UNC	unicef.org	2	New York	US	No	1946
188	UN Development Programme	UND	undp.org	2	New York	US	No	1966
189	UN Foundation	UNF	unfoundation.org	6	Washington, DC	US	No	1998
190	UN Population Fund	UNP	unfpa.org	2	Geneva	Switzerland	No	1969
191	United States Agency for International Development	USA	usaid.gov	1	Washington, DC	US	No	1961
192	United States Department of Health and Human Services, Office of Global Affairs	USD	globalhealth.gov	1	Washington, DC	US	Yes	2002
193	University of California, San Francisco	UCS	www.ucsf.edu	9	San Francisco, CA	US	Yes	1864
194	VSO (Voluntary Service Overseas)	VSO	vso.org.uk	6	Kingston upon Thames	UK	No	1958
195	Women Deliver	WOD	womendeliver.org	6	New York	US	Yes	2007
196	World AIDS Campaign	WAC	worldaidscampaign.org	6	Cape Town	South Africa	Yes	1997
197	World Bank	WOB	worldbank.org	3	Washington, DC	US	No	1944
198	World Food Programme	WFP	wfp.org	2	Rome	Italy	No	1961
199	World Health Organization	WHO	who.int/en	2	Geneva	Switzerland	Yes	1948
200	World Lung Foundation	WLF	worldlungfoundation.org	6	New York	US	Yes	2004
201	World Vision International	WVI	wvi.org	6	Uxbridge	UK	No	1950
202	Worldwatch Institute	WOI	worldwatch.org	6	Washington, DC	US	No	1974
203	Yale School of Public Health	YSP	publichealth.yale.edu	9	New Haven, CT	US	Yes	1946

* The numerical codes in this column represent the following actor types:

1 = National governments
2 = UN system and intergovernmental
3 = Multilateral development banks
4 = Public-private partnerships
5 = Philanthropic organizations
6 = Global civil society and NGOs
7 = Private industry
8 = Professional associations
9 = Academic institutions

Appendix B: Frenk and Moon (2013) Categorization of Primary Actor Type[6](9)

Primary types of actors in the global health system, with examples

Type of actor	Examples
National governments	Ministries of health
	Ministries of foreign affairs
	Public research funders
	US National Institutes of Health
	Bilateral development cooperation agencies
	US Agency for International Development and US Department of State (global health and child survival)
	UK Department for International Development (global health)
	Norwegian Agency for Development Cooperation (health and social services)
UN system	World Health Organization
	UN Children's Fund
	UN Population Fund
	Joint UN Programme on HIV/AIDS
Multilateral development banks	World Bank (health and other social services lending)
	Regional development banks
Global health initiatives (hybrids)	The Global Fund to Fight AIDS, Tuberculosis and Malaria
	Gavi, the Vaccine Alliance
	UNITAID
Philanthropic organizations	Bill & Melinda Gates Foundation (global health)
	Rockefeller Foundation (all sectors)
	Wellcome Trust
Global civil society organizations and NGOs	Médecins Sans Frontières (Doctors without Borders)
	Oxfam International
	CARE International
Private industry	Pharmaceutical companies (global market)
Professional association	World Medical Association
Academic institutions	Post-secondary educational institutions for health professionals

[6] This table has been modified from the original.

Appendix C: Details of 20 Key Global Health Actors

Bill & Melinda Gates Foundation
http://www.gatesfoundation.org/
Year created: 2000 (35)
Total 2013 grant payments: $3.6 billion (35)
Number of staff as of September 2014: 1,227 (35)

Centers for Disease Control and Prevention (CDC)
http://www.cdc.gov/
Year created: 1946 (36)
2015 total budget request: $6.6 billion (37)
2015 global health budget request: $464 million (37)
Number of staff as of April 2014: 15,000 (36)

Food and Agriculture Organization of the United Nations (FAO)
http://www.fao.org/home/en/
Year created: 1945 (38)
2014–15 budget proposal: $2.5 billion (39)
Number of staff as of November 2013: 3,449 (40)

Gavi, the Vaccine Alliance
http://www.gavi.org/
Year created: 2000 (41)
2013 total consolidated expenses: $1.5 billion (42)
Number of staff: not available

The Global Fund to Fight AIDS, Tuberculosis and Malaria
http://www.theglobalfund.org/en/
Year created: 2002 (43)
2013 total expenditures: $3.6 billion (44)
Number of staff as of December 2013: 639 (44)

UNITAID
http://www.unitaid.eu/en/
Year created: 2006 (45)
2013 total expenses: $146.8 million (46)
Number of secretariat staff as of January 2014: 44 (47)

Joint UN Programme on HIV/AIDS (UNAIDS)
http://www.unaids.org/
Year created: 1996 (48)
2012 total expenses: $279.9 million (49)
Number of staff (date not available): 842 (50)

Médecins Sans Frontières (MSF)
http://www.msf.org
Year created: 1971 (51)
2013 total expenses: €233.6 million (52)
Number of staff (date not available): 30,000 (53)

National Institutes of Health (NIH)
http://www.nih.gov/
Year created: 1887 (54)
2015 budget request: $30.4 billion (55)
Number of staff: not available

Partnership for Maternal, Newborn and Child Health (PMNCH)
http://www.who.int/pmnch/en/
Year created: 2005 (56)
2014 budget: $12.5 million (57)
Number of staff: not available

PATH
http://www.path.org/
Year created: 1977 (58)
2013 total expenses: $314 million (59)
Number of staff (date not available): 1,200 (58)

Roll Back Malaria (RBM) Partnership
http://www.rollbackmalaria.org/
Year created: 1998 (60)
2013 total expenditure budget: $15.6 million (61)
Number of staff: not available

Save the Children International
http://www.savethechildren.net/
Year created: 1919 (62)
2013 total net income: $1.9 billion (63)
Number of staff (date not available): 14,000 (64)

Stop TB Partnership
http://www.stoptb.org/
Year created: 2001 (65)
2013 total expenditure: $78.3 million (66)
Number of staff: not available

United Nations Children's Fund (UNICEF)
http://www.unicef.org/
Year created: 1946 (67)
2013 total expenditures: $4.2 billion (68)
Number of staff (date not available): 1,197 (69)

United Nations Development Programme (UNDP)
http://www.undp.org/
Year created: 1965 (70)
2013 total programme expenditure: $4.2 billion (71)
Number of staff: not available

United Nations Population Fund (UNFPA)
http://www.unfpa.org/
Year created: 1969 (72)
2013 total expenses: $913.2 million (73)
Number of staff as of 2013: 2,471 (73)

US Agency for International Development (USAID)
http://www.usaid.gov/
Year created: 1961 (74)
2013 budgetary resources: $23.8 billion (75)
Number of staff as of 2013: 3,858 (75)

World Bank
http://www.worldbank.org/
Year created: 1944 (76)
2013 total net non-interest expenses: $1.3 billion (77)
Number of staff (date not available): 9,000 (78)

World Health Organization (WHO)
http://www.who.int/en/
Year created: 1948 (79)
2014–15 programme budget: $4 billion (15)
Number of staff (date not available): 7,000 (80)

Acronyms

AIDS	Acquired Immune Deficiency Syndrome
CDC	Centers for Disease Control and Prevention
Fiocruz	Fundação Oswaldo Cruz
Gavi	Gavi, the Vaccine Alliance
GHA	Global Health Architecture
Global Fund	The Global Fund to Fight AIDS, TB and Malaria
HIV	Human immunodeficiency virus
MDGs	Millennium Development Goals
NGOs	Non-governmental organizations
NIH	National Institutes of Health
Norad	Norwegian Agency for Development Cooperation
PATH*	
PMNCH	Partnership for Maternal, Newborn and Child Health
RBM	Roll Back Malaria
SARS	Severe acute respiratory syndrome
SDGs	Sustainable Development Goals
TB	Tuberculosis
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNDP	United Nations Development Programme
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
UNITAID**	
URL	Uniform Resource Locator

* Stand-alone acronym; PATH was formerly known as the Programme for Appropriate Technology in Health.
** Stand-alone acronym; UNITAID was founded in 2006 as the International Drug Purchase Facility.

References

1. Gostin L.O. and Mok E.A. (2009), 'Grand challenges in global health governance', *British Medical Bulletin*, 2009 Jun 1;90(1):7–18.
2. Moon S., Szlezák N.A,. Michaud C.M., Jamison D.T., Keusch G.T., Clark W.C., et al. (2010), 'The Global Health System: Lessons for a Stronger Institutional Framework', Walt G., (ed.), *PLoS Medicine*, 2010 Jan 26;7(1):e1000193.
3. Williams O.D. and Rushton S. (2011), 'Are the "Good Times" over? Looking to the future of global health governance', *Global Health Governance* 2011;5(1):1–19.
4. Szlezák N.A., Bloom B.R., Jamison D.T., Keusch G.T., Michaud C.M., Moon S., et al. (2010), 'The Global Health System: Actors, Norms, and Expectations in Transition', Walt G., (ed.), *PLoS Medicine*, 2010 Jan 5;7(1):e1000183.
5. Bettcher D. and Lee K.(2002), 'Globalisation and public health', *Journal of Epidemiology and Community Health*, 2002 Jan;56(1):8–17.
6. Dodgson R., Lee K. and Drager N. (2012), 'Global health governance: a conceptual review', website, World Health Organization (Iris), http://apps.who.int//iris/handle/10665/68934 [27 November 2014].
7. Coscia M., Hausmann R. and Hidalgo C.A. (2013), 'The Structure and Dynamics of International Development Assistance', *Journal of Globalization and Development*, 2013 Jan 27;3(2):1–42.
8. Jamieson, Dean T. Summers, Lawrence, H., Alleyne, George, Arrow, Kenneth J. Berkley, Seth, Binagwaho, Agnes, et al. (2013), 'Global health 2035: a world converging within a generation', *Lancet*, December 2013, pp. 1898–955. Report No.: 382, website, http://globalhealth2035.org/sites/default/files/report/global-health-2035.pdf.
9. Frenk J. and Moon S. (2013), 'Governance Challenges in Global Health', *New England Journal of Medicine*, 2013 March 6;368(10):936–42.
10. Hoffman S.J., Røttingen J.-A., Bennett S., Lavis J.N., Edge J.S. and Frenk J.A. (2012), 'Review of Conceptual Barriers and Opportunities Facing Health Systems Research to Inform a Strategy from the World Health Organization', website, WHO: The Alliance for Health Policy and Systems Research, World Health Organization, http://www.who.int/alliance-hpsr/alliancehpsr_backgroundpaperconceptualbarriersopportunities.pdf.
11. Acuto M. (2011), 'Diplomats in Crisis', *Diplomacy and Statecraft*, 2011 Sep;22(3):521–39.
12. McMaster Health Form (2014), Health Systems Evidence: Advanced Search,' website, McMaster Health Forum, http://www.healthsystemsevidence.org/advanced-search.aspx [27 November 2014].
13. *Lancet* (2009), 'What has the Gates Foundation done for global health?', May;373(9675):1577.
14. Renwick D. and Johnson T. (2014), 'The World Health Organization (WHO)', website, Council on Foreign Relations, http://www.cfr.org/public-health-threats-and-pandemics/world-health-organization-/p20003 [27 November 2014].
15. WHO, 'WHO's Budget: What's behind the numbers and how is it financed?', website, World Health Organization, http://www.who.int/about/funding/WHO-Budget-Financing.pdf.
16. Bill & Melinda Gates Foundation, 'Foundation Fact Sheet', website, Bill & Melinda Gates Foundation, http://www.gatesfoundation.org/Who-We-Are/General-Information/Foundation-Factsheet.

17. WHO (2014), 'Annex to the Financial Report and Audited Financial Statements for the year ended 31 December 2013', website, World Health Organization, http://www.who.int/about/resources_planning/AnnexA67–43-en.pdf [27 November 2014].
18. WHO (2006), 'Constitution of the World Health Organization', website, World Health Organization, http://www.who.int/governance/eb/who_constitution_en.pdf.
19. Sridhar D. and Gostin L.O. (2011), 'Reforming the World Health Organization', *JAMA*, 2011;305(15):1585–6.
20. Kickbusch I. (2013), 'WHO reform: A personal perspective', *Journal of Public Health Policy*, Aug;34(3):481–5.
21. Legge D. (2012), 'Future of WHO hangs in the balance', *BMJ*, 345(oct25 1):e6877–e6877.
22. *KHN* (2010), 'Global Fund Investigates Allegations That Donated Malaria Drugs Were Stolen, Resold In Some African Countries, website, *Kaiser Health News*, http://kaiserhealthnews.org/morning-breakout/gh-090710-global-fund-investigation/.
23. Collier R. (2010), 'Critics say UNICEF-Cadbury partnership is mere sugarwashing', *Canadian Medical Association Journal*, 182(18):E813–E814.
24. DFID (2012), 'Multilateral Aid Review: Assessment of United Nations Population Fund (UNFPA)', website, UK Department for International Development; https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/267152/UNFPA-1.pdf [20 November 2014].
25. EurActiv (2013), '"Difficult times" in global fight against Aids, tuberculosis and malaria', website, *Guardian*, http://www.theguardian.com/global-development/2013/apr/09/difficult-times-aids-tuberculosis-malaria [27 November 2014].
26. USAID, 'Issue Brief: The Global Fund to Fight AIDS, Tuberculosis and Malaria', website, US Agency for International Development, http://www.usaid.gov/sites/default/files/documents/1864/Gfatm_brief.pdf [28 November 2014].
27. WHO (2014), 'The role of WHO in public health', website, World Health Organization, http://www.who.int/about/role/en/ [28 November 2014].
28. WHO (2007), 'Everybody's Business: Strengthening Health Systems to Improve Health Outcomes', website, World Health Organization, http://apps.who.int/iris/bitstream/10665/43918/1/9789241596077_eng.pdf?ua = 1 [28 November 2014].
29. Frenk J. (2010), 'The Global Health System: Strengthening National Health Systems as the Next Step for Global Progress', *PLoS Medicine*, 12;7(1):e1000089.
30. Marchal B., Cavalli A., Kegels G. (2009), 'Global Health Actors Claim To Support Health System Strengthening–Is This Reality Or Rhetoric?', *PLoS Medicine* 28;6(4):e1000059.
31. World Economic Forum (2006), 'Global Governance Initiative Annual Report 2006', website, World Economic Forum, http://www.weforum.org/pdf/Initiatives/GGI_Report06.pdf.
32. Howell W.L. (2013), 'Global Risks 2013', Risk Response Network, World Economic Forum, Cologny/Geneva: World Economic Forum.
33. Dieleman J., Murray C.J.L., Haakenstad A., Leach-Kemon K., Graves C., Johnson E. et al. (2014), 'Financing Global Health 2013: Transition in an Age of Austerity', website, Seattle, WA: Institute for Health Metrics and Evaluation, https://www.healthdata.org/sites/default/files/files/policy_report/2014/FGH2013/IHME_FGH2013_Full_Report.pdf [19 November 2014].
34. Cohen J. (2006), 'The New World of Global Health', *Science*, 13;311(5758):162–7.
35. Bill & Melinda Gates Foundation (2014), 'Foundation Fact Sheet', website, Bill & Melinda Gates Foundation, http://www.gatesfoundation.org/Who-We-Are/General-Information/Foundation-Factsheet [19 November 2014].
36. CDC (2014), 'Fact Sheet', website, Centers for Disease Control and Prevention, http://www.cdc.gov/about/resources/facts.htm [18 November 2014].

37. CDC, 'Budget Request Summary – Fiscal Year 2015', website, Centers for Disease Control and Prevention, http://www.cdc.gov/fmo/topic/Budget%20Information/appropriations_budget_form_pdf/FY2015_Budget_Request_Summary.pdf [18 November 2014].
38. FAO, 'About FAO', website, Food and Agriculture Organization of the United Nations, http://www.fao.org/about/en/ [18 December 2014].
39. FAO (2013), 'The Director-General's Medium Term Plan 2014–17 and Programme of Work and Budget 2014–15', website, Food and Agriculture Organization of the United Nations, http://www.fao.org/docrep/meeting/027/mf490e.pdf.
40. FAO (2014), 'Who We Are', website, Food and Agriculture Organization of the United Nations, http://www.fao.org/about/who-we-are/en/ [18 November 2014].
41. Gavi, 'About Gavi, the Vaccine Alliance', website, Gavi, the Vaccine Alliance, http://www.gavi.org/about/ [18 December 2014].
42. Gavi (2013), 'Annual Financial Report 2013', Gavi, the Vaccine Alliance.
43. Global Fund (2014), 'About Us', website, The Global Fund to Fight AIDS, Tuberculosis and Malaria, http://www.theglobalfund.org/en/about/.
44. Global Fund (2013), 'Annual Financial Report 2013', The Global Fund to Fight AIDS, Tuberculosis and Malaria.
45. UNITAID (2014), 'About UNITAID', website, UNITAID, www.unitaid.eu/en/who/about-unitaid [18 November 2014].
46. UNITAID (2013) 'Audited Financial Report for the year end 2013', website, UNITAID, http://www.unitaid.eu/images/budget/2013%20Financial%20Statements.pdf [18 November 2014].
47. Zühr R., Schrade C. and Yamey G. (2014), 'Partnership Profile: UNITAID', website, Evidence to Policy Initiative, UCSF Global Health Sciences, http://globalhealthsciences.ucsf.edu/sites/default/files/content/ghg/e2pi-unitaid-profile.pdf [18 November 2014].
48. Knight L. (2008), *UNAIDS: the First 10 Years, 1996–2006*, Geneva: Joint United Nations Programme on HIV/AIDS, p. 286.
49. UNAIDS (2013), 'Financial report and audited financial statements for the year ended 31 December 2012', website, Joint United Nations Programme on HIV/AIDS, http://www.unaids.org/sites/default/files/en/media/unaids/contentassets/documents/pcb/2013/pcb32/agendaitems/20130516-Financial%20Reporting_En.pdf [18 November 2014].
50. Greening the Blue (2014), 'UNAIDS', website, Greening the Blue, http://www.greeningtheblue.org/what-the-un-is-doing/joint-united-nations-programme-hivaids-unaids [18 November 2014].
51. MSF, 'MSF history', website, Médecins Sans Frontières, http://www.msf.org/msf-history.
52. MSF (2013), 'Rapport Financier', website, Médecins Sans Frontières, http://msf.fr/sites/www.msf.fr/files/rapport_financier_2013.pdf_.pdf.
53. MSF (2014), 'Our Staff', website, Médecins Sans Frontières, http://www.msf.org/our-staff [19 November 2014].
54. National Institutes of Health, 'NIH History', website, National Institutes of Health, http://www.nih.gov/about/history.htm.
55. National Institutes of Health (2014), 'Fiscal Year 2015 Budget Request', website, National Institutes of Health, http://www.nih.gov/about/director/budgetrequest/fy2015testimony.htm [18 November 2014].
56. PMNCH (2014), 'PMNCH History', website, Partnership for Maternal, Newborn and Child Health, http://www.who.int/pmnch/about/history/en/.
57. PMNCH (2014), 'Workplan and Budget', website, Partnership for Maternal, Newborn and Child Health, http://www.who.int/pmnch/about/strategy/workplan_2014.pdf?ua = 1 [19 November 2014].

58. PATH (2014), 'Frequently Asked Questions', website, PATH, http://www.path.org/about/faq.php [19 November 2014].
59. PATH (2014), 'Consolidated Financial Statements for the Years Ended December 31, 2013 and 2012', website, PATH, http://www.path.org/files/PATH2013-financial-statements.pdf.
60. Roll Back Malaria Partnership (2008), 'Global malaria action plan for a malaria-free world', website, Roll Back Malaria Partnership, http://www.rollbackmalaria.org/gmap/gmap.pdf.
61. Roll Back Malaria Partnership (2013), 'Annual Report 2013', website, Roll Back Malaria Partnership, http://www.rbm.who.int/docs/2014/RBM-Annual-Report-2013.pdf [19 November 2014].
62. Save the Children (2014), 'Our Story', website, Save the Children, http://www.savethechildren.net/about-us/our-story [19 November 2014].
63. Save the Children (2013), 'Results for Children Annual Review 2013', website, Save the Children, http://www.savethechildren.net/sites/default/files/SCI_AR_2013_NotInteractive.pdf.
64. Save the Children (2014), 'Working at Save the Children', website, Save the Children, http://www.savethechildren.org/site/c.8rKLIXMGIpI4E/b.6226565/k.BFEA/Working_at_Save_the_Children.htm [19 November 2014].
65. Stop TB Partnership (2014), 'About Us: Who we are, what we do', website, Stop TB Partnership, http://www.stoptb.org/about/ [18 December 2014].
66. Stop TB Partnership (2013), 'Annual Report 2013', website, Stop TB Partnership, http://www.stoptb.org/assets/documents/resources/publications/annualreports/STOPTB_annualreport2013_Final.pdf [19 November 2014].
67. UNICEF (2014). 'About UNICEF: Who we are', website, United Nations Children's Fund, http://www.unicef.org/about/who/index_history.html [18 December 2014].
68. UNICEF (2014), 'UNICEF Annual Report 2013', website, United Nations Children's Fund, http://www.unicef.org/publications/files/UNICEF_Annual_Report_2013_web_26_June_2014.pdf [19 November 2014].
69. Greening the Blue (2014), 'UNICEF', website, Greening the Blue, http://www.greeningtheblue.org/what-the-un-is-doing/united-nations-international-children%E2%80%99s-emergency-fund-unicef [19 November 2014].
70. UNDP (2014), 'Frequently Asked Questions', website, United Nations Development Programme, http://www.undp.org/faq/ [18 December 2014].
71. UNDP (2014), 'Annual Report 2013/14: New Partnerships for Development', website, United Nations Development Programme, http://www.undp.org/content/dam/undp/library/corporate/UNDP-inaction/2014/UNDP_AR2014_english.pdf [19 November 2014].
72. UNFPA (2014), 'About us', website, United Nations Population Fund, http://www.unfpa.org/about-us [18 December 2014].
73. UNFPA (2013), 'Annual Report 2013: Realizing the Potential', website, United Nations Population Fund, http://www.unfpa.org/webdav/site/global/shared/documents/publications/2014/UNFPA%20AR%202013_LR_FINAL.pdf [20 November 2014].
74. USAID (2014), 'Who we are', website, US Agency for International Development, http://www.usaid.gov/who-we-are/usaid-history [18 December 2014].
75. USAID (2013), 'Agency Financial Report: Fiscal Year 2013', website, US Agency for International Development, http://www.usaid.gov/sites/default/files/documents/1868/USAIDFY2013AFR_508.pdf [20 November 2014].
76. World Bank (2014), 'The World Bank. History', website, World Bank, http://www.worldbank.org/en/about/history [18 December 2014].

77. World Bank (2013), 'Complete Financial Statements', website, World Bank, http://web.worldbank.org/WBSITE/EXTERNAL/EXTABOUTUS/EXTANNREP/EXTANNREP2013/0,,contentMDK:23461668~pagePK:64168445~piPK:64168309~theSitePK:9304888,00.html [20 December 2014].
78. World Bank (2012), 'About the World Bank: FAQs', website, World Bank, http://go.worldbank.org/1M3PFQQMD0 [19 November 2014].
79. WHO (2014), 'History of WHO', website, World Health Organization, http://www.who.int/about/history/en/ [18 December 2014].
80. WHO (2014), 'Its people and offices', website, World Health Organization, http://www.who.int/about/structure/en/ [20 November 2014].

About the Authors

Steven J. Hoffman is an assistant professor of law and director of the Global Strategy Lab at the University of Ottawa, with courtesy appointments as an assistant professor of clinical epidemiology and biostatistics (part-time) at McMaster University, adjunct faculty with the McMaster Health Forum, and visiting assistant professor of global health at Harvard University. He is an international lawyer licensed in both Ontario and New York, specializing in global health law, global governance and institutional design. Steven previously worked as a project manager for the WHO in Geneva, and as a fellow in the executive office of UN Secretary-General Ban Ki-moon in New York, where he offered strategic and technical input on a range of global health issues.

Clarke B. Cole is a research assistant with the Global Strategy Lab at the University of Ottawa, and an MSc candidate in international health policy at the London School of Economics and Political Science. She holds a BHSc (Hons) from McMaster University. Clarke was a student researcher with the Centre for Ethical, Social, and Cultural Risk at St Michael's Hospital in Toronto, and with the Canadian Coalition for Global Health Research. She completed an internship with Incentives for Global Health.

Mark Pearcey is a research associate with the Global Strategy Lab at the University of Ottawa, and a contract instructor in the Department of Political Science at Carleton University in Ottawa. Mark holds a PhD in political science, with a specialization in international relations. He previously worked as a research associate for the Centre for Trade Policy and Law, and as a research assistant for Dignitas International.

Independent thinking since 1920

ISBN: 978 1 78413 028 2

All Chatham House publications are printed on recycled paper.

The Royal Institute of International Affairs
Chatham House
10 St James's Square, London SW1Y 4LE
T +44 (0)20 7957 5700 F +44 (0)20 7957 5710
contact@chathamhouse.org www.chathamhouse.org

Charity Registration Number: 208223