



GLOBAL HEALTH CENTRE WORKING PAPER NO.18 | 2018

INVESTING FOR A RAINY DAY: CHALLENGES IN FINANCING NATIONAL PREPAREDNESS FOR OUTBREAKS

Suerie Moon and Ria Vaidya

THE
GRADUATE
INSTITUTE
GENEVA

GLOBAL
HEALTH
CENTRE

2008 – 2018
10 YEARS OF GHC

CONTENTS

Abbreviations	4
Acknowledgements	5
Executive Summary	7
1. Introduction	11
2. Background	12
a. What kind of investments contribute towards preparedness?	12
b. Where might additional financing come from?	14
3. National Financing Investments and Needs	17
4. International Financing	23
5. Discussions and Conclusions	27
Works cited	29

GLOBAL HEALTH CENTRE WORKING PAPER NO. 18 | 2018

Global Health Centre

Graduate Institute of International and Development Studies

Chemin Eugène-Rigot 2 | Case Postale 1672

1211 Geneva 21 – Switzerland

Tel + 41 22 908 4558

Fax + 41 22 908 4594

Email globalhealth@graduateinstitute.ch

graduateinstitute.ch/globalhealth

ABBREVIATIONS

AMR	Antimicrobial resistance
CAT-DDO	Catastrophe Deferred Drawdown option
CFE	Contingency Fund for Emergencies
CRW	Crisis Response Window
DAH	Development Assistance for Health
G7	Group of 7
GAVI	Global Alliance for Vaccines and Immunisation
GNI	Gross national income
GNIpc	Gross national income per capita
GHE	Government health expenditure
GHSA	Global Health Security Agenda
HIC	High-income country
HIV/AIDS	Human immunodeficiency virus infection and acquired immune deficiency syndrome
IDA	International Development Association
IRM	Immediate Response Mechanism
IHR	2005 International Health Regulations
JEE	Joint External Evaluation
LIC	Low-income country
LMC	Lower-middle income country
LMIC	Low and middle-income countries
MIC	Middle-income country
NAPHS	National Action Plan for Health Security
ODA	Official development assistance
OOP	Out-of-pocket health expenditure
PEF	Pandemic Emergency Financing Facility
UHC	Universal Health Coverage
UMC	Upper middle-income country
REMAPT	Resource mapping and impact analysis on health security investment
SDG	Sustainable Development Goals
THE	Total health expenditure
WHO	World Health Organization

ACKNOWLEDGEMENTS

This paper was initially produced as a background paper to the roundtable meeting, “Mobilizing Financing for National Preparedness,” co-organized by the Ministry of Social Affairs and Health, Finland, the Indo-Pacific Centre for Health Security, Australia, the JEE Alliance, and the Global Health Centre, Graduate Institute of International and Development Studies in May 2018. We are grateful to the Ministry of Social Affairs and Health, Finland, for supporting the development of this paper. We also thank all participants of the roundtable for the insights shared in those discussions, which informed revisions to this paper. (As the roundtable was held under the Chatham House rule, no participants are named here.) Finally, we thank Outi Kuivasniemi, Kaisa Lähdepuro, Ludy Suryantoro and Agnes Soucat for written comments received on earlier drafts of this paper, and Danielle M. Navarro for assistance preparing the manuscript. All errors, omissions and opinions expressed in this paper remain our own.

EXECUTIVE SUMMARY

Investing in national capacities to prevent, detect and respond to outbreaks of infectious disease and other potential health emergencies is a clear need, but adequate and sustainable financing remains a distant goal. Outbreak preparedness requires investing for a rainy day, when urgent problems demand attention and financing today. This paper seeks to facilitate debate and further analysis of this issue by identifying the major challenges. It offers background context on broader trends in health financing, summarizes existing publicly-available data on national funding needs for preparedness and international commitments, and highlights key information gaps, followed by a discussion.

What kind of financing contributes to national preparedness? Financing that contributes to preparedness can fall into three broad categories: “general” human health spending (including from outside the health sector, such as the military), “targeted” human health spending focused on preparedness, and animal and environmental health spending (see Figure 1). An important challenge is that financing for preparedness cuts across many budget lines, national ministries, and international actors, making it very difficult to estimate and track. The IHR core capacities provide a method of determining what should “count,” but data that do so remain extremely scarce.

Where might additional financing come from? In high-income countries, fiscal space generally exists and political will remains the key to unlock adequate investment in preparedness. In low- and middle-income countries (LMICs) the picture is less clear. Total expenditure on health in LMICs has been growing rapidly over the past two decades. For many upper middle-income countries, there should be fiscal space to increase health investments including those for preparedness, although there will be competing priorities for health budgets. In nearly all low-income countries and many lower-middle income countries, resources remain tightly constrained with DAH inflows likely to remain static – meanwhile, significant additional domestic financing for preparedness seems unlikely. Persistent gaps seem likely.

National investments and needs: information, gaps and priorities: Data is extremely scarce on the level of current national investments in preparedness and funding gaps. Although the costs of major outbreaks are fairly well-understood, the cost to prevent them is not. As a growing number of countries complete the Joint External Evaluations (JEE), these knowledge

gaps are beginning to be filled. Of the 81 countries that have completed JEEs as of August 2018, 21 have completed the subsequent costing exercises. We were able to find quantitative estimates of costs for four (Eritrea, Liberia, Tanzania and Pakistan), too small a sample to draw general conclusions, but providing some intuition. Notably, funding needs are significant relative to existing investment levels. For example, the cost estimate for Eritrea implies expenditure equivalent to 276% of annual government health spending and 252% of external (health) assistance. There is a risk that countries may publish their funding needs but receive little external assistance in response, undermining incentives to continue making such information public.

With funding shortfalls likely, priorities must be set but it remains unclear how. Clear technical guidance on priority-setting for investment, likely gains from those investments, and legitimate processes for setting priorities, are still needed.

International funding: Information on international funding is also challenging to find, but more available than for national level. Various estimates exist, but they differ widely. Most outbreak related funding has focused on response rather than preparedness. Several donors have made significant new financial commitments, and the World Bank offers a range of financing instruments. But overall, international funding levels seem insufficient. Several challenges inherent in development assistance, broadly, are relevant for international financing of preparedness, including: possible tension between the priorities of recipient countries and donors; coordinating autonomous donors to avoid duplication and gaps; whether donors are willing to fund only capital costs or also recurring expenses such as health workers; whether donors are willing to provide grants in addition to loans – and relatedly, whether countries are willing to increase their indebtedness to invest in preparedness; whether absorptive capacity exists when international financing is made available; and the pros and cons of ring-fencing funding for preparedness versus taking broader approaches to financing health systems.

Discussion and Conclusions: There is significant activity to assess capacities, estimate funding needs, track activities and mobilize financing at national and international levels. However, timely, specific, publicly-available data on investments and financing flows remains elusive. Systematic mapping of existing resources has been done in some countries, but more is needed.

Wide financing gaps are likely. Selecting priorities for investments in preparedness is therefore critical, but debate remains on what those priorities should be and how they should be set.

Ideally, investments should build both capacities to respond to emergencies and deliver day-to-day benefits for populations, but research is urgently needed on whether, which and how investments in preparedness can do so. High-level political commitment that crosses multiple ministries and sectors is needed to mobilize and sustain adequate investment in preparedness. Using fiscal policy to raise funds from non-health sectors with a direct interest in preventing outbreaks, such as tourism, agriculture or other export industries, could supplement tight health budgets.

Despite the many formidable challenges, there are important opportunities in sustained political attention to preparedness and UHC, in strengthened country ownership, and in economic growth in many LMICs. The persistent challenge in investing for a “rainy day” is to maintain high-level political commitment and mobilize new financing both within and beyond the health sector, when multiple important needs compete for attention and funds. There also remains significant need for enhanced monitoring and accountability for levels of financing and understanding the results of those investments for both outbreak preparedness, and health systems more broadly.

Key Words

outbreaks, global health security, preparedness, financing, health emergency, development assistance

1. INTRODUCTION

Investing in national capacities to prevent, detect and respond to outbreaks of infectious disease and other potential health emergencies is a clear need, underscored by the 2013-6 West African Ebola crisis and a steady series of outbreaks that have occurred before and since^{1,2}. Despite strong consensus, heightened political attention, increased investment, and significant activity in recent years, sustainable financing of preparedness remains a major challenge.

Many factors contribute to this state of affairs: First, the unpredictable and episodic nature of many health threats raises persistent difficulties in sustaining financing, with investments likely to ebb and flow with political attention cycles. Second, timely detailed estimates of current investment levels and funding gaps are elusive – particularly at national level – in part because investments for preparedness overlap with broader health system strengthening efforts and targeted activities such as immunization. The need for multi-sectoral collaboration and a One Health approach encompassing animal and environmental health further increases the complexity of mapping and allocating financing. We do not yet have clear global financing targets or ways to track progress towards such goals, making monitoring and accountability even more difficult. Third, nearly all countries struggle to invest adequately in health as disease burdens shift, populations age, new health technologies become available and societies move towards universal health coverage (UHC). But in most low-income countries, investment levels still do not meet basic immediate health needs. And in many middle-income countries, the flatlining of development assistance for health (DAH) and the withdrawal of donor funding poses additional complexities. In other words, outbreak preparedness requires investing for a rainy day, when urgent problems demand attention and financing today.

How can we ensure adequate, impactful investment for preparedness? Can it deliver both immediate, day-to-day local benefits for people in need of health services, as well as build capacity to prevent, detect and respond to episodic outbreaks?

This paper seeks to facilitate debate and further analysis by identifying the major challenges of financing national preparedness. It offers background context on broader trends in health financing, summarizes existing publicly-available data on national funding needs for preparedness and international commitments, and highlights key information gaps, followed by a discussion.

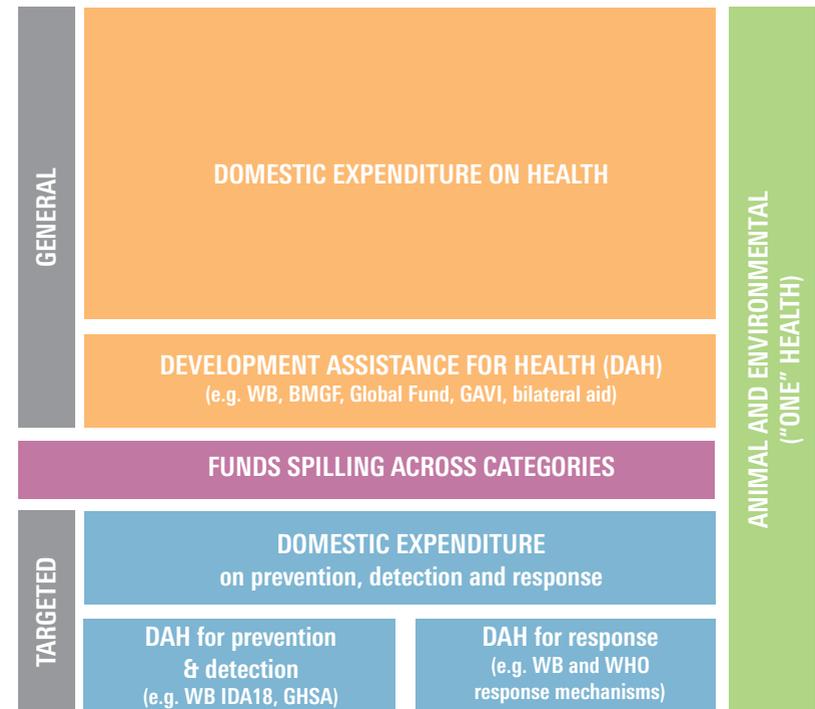
2. BACKGROUND

a. What kind of investments contribute to preparedness?

Investments that contribute to preparedness can fall across many categories, which we divide into three broad conceptual categories of “general” human health, “targeted” human health, and animal and environmental health (see Figure 1 below). General financing for human health includes domestic public and private expenditure on health (e.g. government-financed individual and population-wide health services, private health insurance, out-of-pocket payments) and DAH (e.g. disease-specific program support, health system strengthening, health technology procurement). Targeted financing for human health includes investments to prevent, detect and respond to outbreaks of infectious disease and other potential health emergencies, from both domestic and external sources. Finally, investments in animal and environmental health (“One Health”), both general and targeted, are also included to reflect their contribution to human health security.

A challenge for tracking health security financing is that relevant financial flows spill across multiple categories (as illustrated by the central box in Figure 1). For example, human immunization is often financed through routine health expenditure (domestic and external) but also contributes to outbreak prevention and control; similarly, animal immunization may be funded by government agricultural ministries or by private owners, while contributing to societal health security. Another example is the important collaboration for health security between WHO, the Food and Agriculture Organization and World Organization for Animal Health. In other words, financing for preparedness cuts across many budget lines, national ministries, and international actors, without any clear method to track it.

Figure 1. Conceptual framework: What kind of financing contributes to preparedness? (categories not to scale)



Unlike in many other health areas, we do not have publicly-available, authoritative, regularly-updated granular estimates of current investments in preparedness, nor of financing gaps. The World Health Organization’s Strategic Partnerships Portal includes a wealth of information on activities contributing to preparedness by country and funder, but specific information on funding amounts is often not publicly-available. Researchers have begun working in this area, with some initial results but with widely-differing approaches, results, and public-availability. For example, WHO has developed a tool for national governments to track investments and funding flows related to IHR capacity-strengthening (REMAPT); however, the tool is for countries’ internal use and does not provide publicly-accessible investment data³. Schaferhoff et al. estimate a total of \$3.6 billion was provided by donors for health security at national/regional levels in 2015 (notably a high-spending year linked to the West African Ebola outbreak), \$1.5 billion of which was channeled through the health sector and \$1.9 billion outside the health sector (during health emergencies). Most of the funding was for

response activities, and only \$0.6 billion (2.6% of DAH) went to “proactive preparedness efforts”⁴. The Center for Global Health Science and Security at Georgetown University has developed a Global Health Security Funding Tracking Dashboard, which includes estimates of which pre-existing general DAH and ODA financial flows contribute to health security as well as more targeted funding⁵. It estimated that the ten largest funders contributed 35.62 billion USD to health security from 2014-2018 – if annualized, this is much higher than the Schaferhoff et al. estimate. The differences between these two estimates underscores the absence of a commonly-used definition or methodology for tracking spending in this area. Furthermore, the utility of aggregated global estimates of investments or funding needs is debated – some have argued that such targets are important for monitoring and accountability at the global level, whereas others have argued that more specific country-level financing data is far more practical. While different types of data will be of interest to different audiences, the broader point remains that the picture we have of current investment levels and gaps remains too murky at both national and global levels.

b. Where might additional financing come from? Broader trends in health financing

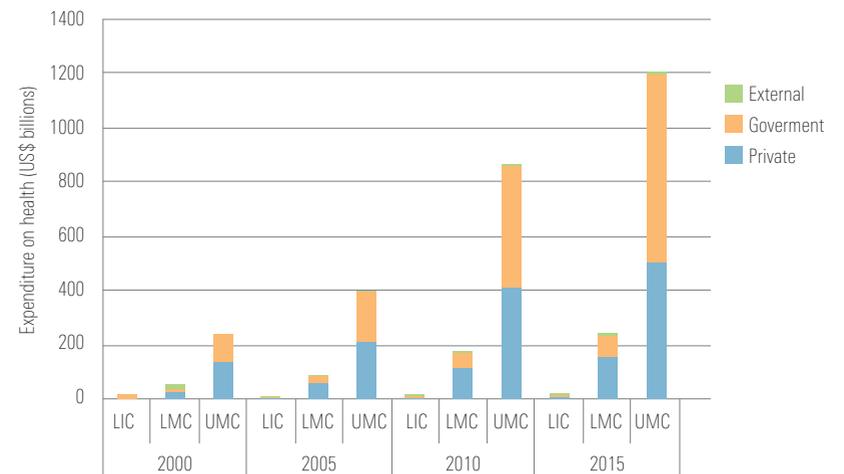
In order to provide some intuition regarding possible sources of financing for preparedness, we provide here a brief **overview of recent trends** in human health financing:

Health spending worldwide comprises about one-tenth of the global economy, or US\$7.8 trillion in 2014. Absolute spending in high-income countries (HICs) continues to dwarf that of LMICs (HICs spend almost four times as much in total), but health spending in LMICs is growing at a much faster pace. From 1995-2014, LMIC health spending increased by 679% from \$244 billion to \$1.659 trillion (compared to 259% in HICs) (see Figure 2). There are major differences between country groups, however, with low-income countries (under \$1005 GNI per capita (pc)) spending just \$35 per capita on health, lower-middle income countries (GNIpc \$1005-3955) at \$83, upper-middle income countries (GNIpc \$3956-\$12,235) at \$470, and high-income countries (GNIpc over \$12,236) spending \$5050.

Furthermore, investments in preparedness provide a public good and therefore most likely need to come from national governments or donors, rather than through out-of-pocket expenditure by individuals or from the private for-profit sector. Government spending on health is less than half of total health spending in both LICs and LMCs, and just over half in UMCs (see Figures 2 and 3).

It has been estimated that achieving universal health coverage in 67 LMICs by 2030 will require an estimated additional investment of \$41-\$58 per person per year, which implies major increases above current investment levels for LICs and LMCs⁶.

Figure 2 – Total expenditure on health in low-, lower-middle-, and upper-middle-income countries (2000-2015) disaggregated by private, government and external sources



Source: Authors' calculations, data from World Bank, World Development Indicators, 2018

Development assistance for health (DAH) has also grown rapidly over the past two decades (See Figure 3). In absolute terms, both low- and middle-income countries received substantial amounts of external resources for health. However, after a surge in the 2000s, DAH grew at an annual rate of only 1.2% between 2010-15⁷. Based on previous trends, experts have concluded that DAH is ‘no longer an expanding resource for developing country health budgets’⁸. (In comparison, after a period of stagnation, total Official Development Assistance (ODA) has begun to grow again, increasing from \$121 billion in 2013 by 17% to \$144 billion in 2017⁹.)

While some increase in DAH is feasible, countries transitioning from low- to middle-income status are likely to start receiving less external financing, and may face difficulties compensating for the deficit with domestic resources. At the same time, many middle-income countries are experiencing significant economic growth and DAH already comprises a small fraction of their total health expenditure (THE). Figure 4 illustrates the proportion of THE coming from different sources in high-, upper-middle-, lower-middle- and low-income countries (‘other’ sources refers to out-of-pocket and

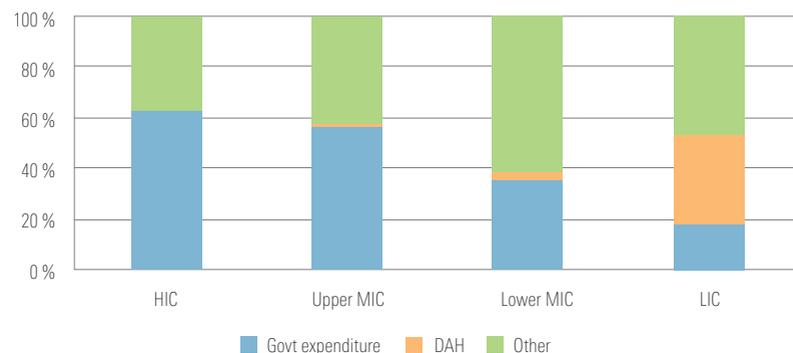
prepaid private expenditures on health). In 2014, 35.7% of THE in LICs was financed through DAH, while domestic government spending comprised 18%. In LMCs, DAH is a much smaller proportion – comprising 3% of THE – and in UMCs it is smaller still at 0.3% of THE.

Overall, the presence of counteracting trends make predictions difficult. While domestic health expenditure is growing rapidly in MICs suggesting the potential to increase financing for preparedness, so are competing demands as societal expectations for health services increase. In LICs, resources remain tightly constrained with DAH inflows likely to remain static – significant additional domestic financing for preparedness seems unlikely. Any increase in total financing for preparedness across LMICs will most likely need to come from domestic MIC resources.

The picture painted here is incomplete, as the discussion has focused on human health sector spending, and not taken into account investment levels and needs related to animal or environmental health. We did not find global estimates of preparedness financing needs in animal or environmental health; methodologies and data sources appear to be even less developed than for the human health sector.

Furthermore, given that outbreaks and other health emergencies can often have wide-ranging consequences beyond the health sector, it is important to consider the possibility of financing from elsewhere. Using fiscal policy to raise funds from non-health sectors with a direct interest in preventing outbreaks, such as tourism, agriculture or other export industries, could supplement tight health budgets.

Figure 3 - Sources of funding as a % of total health expenditure, 2014



Source: Authors' calculations of data from Global Burden of Disease Health Financing Collaborator Network, 2017

3. NATIONAL FINANCING INVESTMENTS AND NEEDS: WHAT DO (OR DON'T) WE KNOW? WHAT ARE THE PRIORITIES?

One model has estimated that, in aggregate, \$3.4 billion per year is needed to strengthen national health systems capacities in LMICs for health emergencies¹⁰. However, for most countries we do not have clear estimates of national investments currently contributing to preparedness, a mapping of existing resources across sectors, nor do we have country-level estimates of the financing gaps. Although the costs of inaction and major outbreaks are fairly well-understood, the cost to prevent them is not. As a growing number of countries complete the Joint External Evaluations (JEE) of national capacities to prevent, detect and rapidly respond to public health threats, these knowledge gaps are beginning to be filled. Table 1 lists the 81 countries that have completed JEEs as of August 2018. Countries in green (n=21) are those that had completed the National Action Plan for Health Security (NAPHS) costing exercise. Countries in orange are those in which NAPHS planning and the costing exercise were underway.

Table 1. Countries that have conducted JEEs (as of August 2018)

Afghanistan	Comoros	Latvia	Niger	South Sudan
Albania	Cote d'Ivoire	Lebanon	Nigeria	Sri Lanka
Armenia	Djibouti	Lesotho	Oman	Sudan
Australia	DR Congo	Liberia	Pakistan	Swaziland
Bahrain	Eritrea	Libya	Philippines	Switzerland
Bangladesh	Ethiopia	Liechtenstein	Qatar	Tanzania
Belgium	Finland	Madagascar	Rwanda	Thailand
Belize	Gambia	Maldives	Saudi Arabia	Togo
Benin	Ghana	Mali	Senegal	Tunisia
Bhutan	Guinea	Mauritania	Seychelles	Turkmenistan
Botswana	Indonesia	Micronesia	Sierra Leone	Uganda
Burkina Faso	Japan	Mongolia	Singapore	UAE
Burundi	Jordan	Morocco	Slovenia	USA
Cambodia	Kenya	Mozambique	Somalia	Vietnam
Cameroon	Kuwait	Myanmar	South Africa	Zambia
Canada	Kyrgyzstan	Namibia	South Korea	Zimbabwe
Chad	Lao			

The JEE also provide one approach to identifying what should “count” as an activity contributing to national preparedness¹¹, and therefore a method for calculating the amounts that are already being invested or are still needed. Indicators in the JEE tool reflect capacities outlined in the International Health Regulations (IHR).

Figure 5 – Indicators of Joint External Evaluation (JEE) tool

Prevent	Detect	Respond	Other IHR hazards
<ul style="list-style-type: none"> → P.1 National legislation, policy and financing → P.2 IHR coordination, communication and advocacy → P.3 Antimicrobial resistance → P.4 Zoonotic disease → P.5 Food safety → P.6 Biosafety and biosecurity → P.7 Immunization 	<ul style="list-style-type: none"> → D.1 National laboratory systems → D.2 Real-time surveillance → D.3 Reporting → D.4 Workforce development 	<ul style="list-style-type: none"> → R.1 Preparedness → R.2 Emergency operations centers → R.3 Linking public health with law and multisectoral rapid response → R.4 Medical Countermeasures and personnel deployment → R.5 Risk communication 	<ul style="list-style-type: none"> → O.1 Points of entry → O.2 Chemical events → O.3 Radiation emergencies

The JEE framework also underscores that investments in preparedness can contribute to other health objectives. For example, immunization (P.7) is an important component of UHC, as is managing antimicrobial resistance (P.3) and a functional national laboratory system (D.1). Workforce development (D.4) such as training medical professionals and lab technicians is an essential component of any health system; expansion and training the health workforce to pivot as required during an outbreak can yield both short- and long-term benefits. However, these categories may be too broad to capture important distinctions between, for example, lab capacity for day-to-day health services and lab capacity to conduct surveillance and respond to outbreaks. There is an urgent need to identify in a granular and concrete way whether, how, and to what extent investments in preparedness can strengthen the day-to-day functioning of health systems.

Of the 21 countries that have completed post-JEE costing exercises, we located publicly-available quantitative estimates for four: Eritrea, Liberia, Pakistan and Tanzania. We note that some countries, such as Finland, may undergo a JEE but not generate quantitative costing estimates. The costing data is summarized below in Table 2.

Table 2. Country-level estimated funding needs

	Eritrea		Liberia		Pakistan		Tanzania	
	Population: 4.47 mil		Population: 4.61 mil		Population: 193.20 mil		Population: 55.57 mil	
	GNI per capita (2011): \$520		GNI per capita (2016): \$370		GNI per capita (2016): \$1,500		GNI per capita (2016): \$900	
	JEE Score*	Cost (US\$)	JEE Score*	Cost (US\$)	JEE Score*	Cost (US\$)	JEE Score*	Cost (US\$)
PREVENT								
P.1 National Legislation	2	181,097	2	142,700	2.5	3,593,252	2.5	164,318
P.2 IHR Coordination	2	372,231	3	4,510,088	3	3,572,010	3	788,805
P.3 AMR	2.25	1,997,224	1.25	2,350,245	1	6,890,750	1.5	3,403,830
P.4 Zoonotic Disease	3	65,243	2	6,532,750	2.67	91,609,608	2.33	4,779,094
P.5 Food Safety	2	1,350,952	1	6,836,485	2	37,231,636	2	1,999,376
P.6 Biosafety/Biosecurity	2	419,639	2	363,950	2	56,967,862	2.5	4,218,107
P.7 Immunization	4.5	3,452,292	3.5	4,035,625	2.67	24,661,618	4	6,701,200
Sub-total		7,838,678		24,771,845		224,526,736		22,054,730
DETECT								
D.1 National Laboratory System	3	900,275	2	25,522,515	2.25	56,707,712	2.75	31,429,402
D.2 Real Time Surveillance	3.33	1,075,166	3.5	34,678,870	2.75	72,815,770	3.25	6,899,134
D.3 Reporting	2	3,093,157	2	958,700	2	9,133,544	2	41,723
D.4 Workforce Development	3.33	4,189,120	2	39,948,620	2.67	107,050,607	2.67	11,959,114
Sub-total		9,257,718		101,108,705		245,707,633		50,329,373
RESPOND								
R.1 Preparedness	1.5	2,755,366	1.5	8,848,123	1	66,613,880	2	432,761
R.2 Emergency Response Operations	1.25	1,289,072	3.25	1,328,140	2.25	7,860,830	2	2,767,341
R.3 Linking Public Health and Security	3	1,364,283	4	5,751,850	3	814,076	2	297,863
R.4 Medical Countermeasures	2	12,025,873	4	704,080	4	3,954,280	2	373,282
R.5 Risk Communication	3	3,979,917	3.2	4,509,051	2.2	4,477,160	2	979,534
Sub-total		21,414,511		21,131,244		83,720,226		4,850,781

* Where a JEE category had multiple sub-categories, an average of the score across sub-categories is provided. For original JEE scores see WHO’s Strategic Partnership Portal: <https://extranet.who.int/sph/>

	Eritrea		Liberia		Pakistan		Tanzania	
	Population: 4.47 mil		Population: 4.61 mil		Population: 193.20 mil		Population: 55.57 mil	
	GNI per capita (2011): \$520		GNI per capita (2016): \$370		GNI per capita (2016): \$1,500		GNI per capita (2016): \$900	
	JEE Score*	Cost (US\$)	JEE Score*	Cost (US\$)	JEE Score*	Cost (US\$)	JEE Score*	Cost (US\$)
OTHER								
0.1 PoE	2	7,343,009	1.5	1,517,095	2	45,944,554	2	6,386,634
0.2 Chemical Events	1.5	2,349,268	1	3,458,965	2	55,046,450	3	978,057
0.3 Radiation Emergencies	1	5,492,549	1	2,394,825	5	1,165,128	2.5	1,916,809
Misc costs								69,955
Sub-total		15,184,826		7,370,885		102,156,132		9,351,455
TOTAL		53,695,733		154,382,676		656,110,727		86,586,339
VACCINES						253,896,000		516,797,073
TOTAL as % of gov't health expenditure		276.4% (of \$19.4M)		668% (of \$23M)		32.9% (of \$1,997M)		8.8% (of \$986 M)
TOTAL as % of external health financing		251.8% (of \$21.3M)		70% (of \$221M)		240.4% (of \$273M)		8.5% (of \$1,024M)

* Where a JEE category had multiple sub-categories, an average of the score across sub-categories is provided. For original JEE scores see WHO's Strategic Partnership Portal: <https://extranet.who.int/sph/>

While the data are quite limited, covering only four countries, some initial observations can be made. First, there is significant variation in which line-items seem to entail the highest costs. Both Pakistan and Tanzania estimate that the least costly subgroup of activities will be response activities, while in Eritrea this is the costliest subgroup.

Second, from this small dataset there is no obvious relationship between the JEE score of a subgroup of activities and the cost estimate for that subgroup. That is, a low score does not necessarily imply a high cost, and vice versa. It is not possible to conclude whether or not there is any significant correlation based on the very limited amount of data, however.

Third, the most costly activities are not the same from country to country, indicating that there is no one-size-fits-all approach to preparedness financing and that such costing exercises are necessary for governments to pinpoint their own requirements. In Liberia, the highest-cost activities are surveillance and workforce development, whereas in Eritrea (with a similar population size and roughly equivalent GNI per capita), they are medical countermeasures and points of entry.

Fourth, the data do not allow us to assume that relatively lower or higher-income countries will face lower or higher costs. Poorer countries that most lack basic infrastructure may face higher costs to bring their systems up to critical standards; conversely, relatively wealthier countries may face higher costs to operate and strengthen their health systems. Pakistan's costs are the highest of the four countries, and its per capita income is also highest; this can potentially be explained by its large population and the fact that it will need to invest more in activities such as workforce development to meet the needs of its population size. But relationships between cost and other country variables are difficult to discern at this early stage.

Fifth, it is not clear which specific items should be included in cost estimates, such as whether both human and animal health should be included, for example, or whether all immunization costs should be included. In both Tanzania and Pakistan, the cost of vaccines drove up the total cost of the NAPHS significantly, increasing Tanzania's costs by \$516 million (driven by animal vaccines in particular) and Pakistan's costs by \$243 million.

Finally, the financing gaps are significant relative to existing investment levels. In Liberia, total costs are equivalent to 668% of annual government health spending; in Eritrea they are 252% of external health assistance. For Pakistan, the gap is equivalent to 32.9% of annual GHE and 240% of external assistance. The proportions are much smaller for Tanzania, at 8.8% and 8.5%, respectively – but these are still significant increases. It is unlikely that external assistance will fully meet these gaps.

However, there is also a risk that if countries publish their financing needs but receive little external assistance in response, incentives to continue making such information public will be undermined.

Overall, these costing estimates provide some intuition, but do not allow us to draw any firm conclusions regarding investment levels or gaps as the data are too limited.

The costing exercises are a starting point in preparedness efforts. No country has secured all funding or fully implemented the activities outlined in their respective NAPHS. Given the many needs identified in the JEEs and the high costs associated with many of them, priority setting becomes critical. However, it remains unclear who should decide on priorities – particularly in countries where external donors fund a significant proportion of the health sector (i.e. many low-income countries) – and how those priorities should be decided. Sierra Leone provides one example of a priority-setting process that may be useful for other countries facing high preparedness costs: after its costing exercise, the government conducted a resource-mapping workshop of stakeholders with support from WHO, and identified a short list of priorities based on its own criteria. Technical support for priority-setting – and legitimate processes for doing so – remain critical.

4. INTERNATIONAL FINANCING

There is relatively more information available on international financing for preparedness as compared to national level. However, in general, we faced similar challenges as for national level in painting a clear picture of current investments and funding gaps: it was not clear which investments should be counted, given overlap with other objectives such as health system strengthening; data sources were not uniform and sometimes difficult to access; and there was no widely-used methodology to track commitments, disbursements, or targets specific to preparedness. Therefore, we provide below a sketch of international financing that specifically target outbreaks, but as with national financing, the picture is incomplete and provides only intuition rather than any solid conclusions. We focused on the largest bilateral and multilateral funders, but did not seek to compile a comprehensive list nor to capture the large number of non-state actors also contributing financing, such as foundations. (The WHO Strategic Partnership Portal provides a list of international donors funding preparedness efforts.) We also did not include flows of DAH that may impact preparedness as a result of other health sector investments, such as investments of the GAVI Alliance or Global Fund to Fight HIV/AIDS, Tuberculosis and Malaria in health technologies or systems. Finally, we did not include international financing outside the human health sector – such as for animal or environmental health, military, public communications, food safety, and others -- that could reasonably contribute to preparedness. The overall picture is incomplete.

Global partnerships in support of health security

A prominent global initiative that has driven preparedness efforts is the Global Health Security Agenda (GHS). Launched in 2014, the GHS is a collaborative effort between over 60 countries to accelerate national-level compliance with health security frameworks¹². The GHS was instrumental in piloting the concept of external evaluations. Through the GHS platform, several donor countries have committed funds in the form of development assistance for health, summarized in Table 3. The JEE Alliance brings together an array of different actors to support the external evaluations and national action plans for building health security in countries.

Table 3. Donor commitments targeting health security (under GHSA umbrella)

Donor country	Amount (US\$)	Time-frame	Name of initiative	Focus areas/objectives	Recipient countries
USA	1 billion	2014-2019	various	Laboratory systems, surveillance, workforce development, biosafety/biosecurity, AMR, zoonotic, reporting and information systems, and more	Uganda, Liberia, Guinea, Cameroon, Pakistan, DR Congo, Burkina Faso, Kenya, Vietnam, Ethiopia, Sierra Leone
Australia	240 million	2017-2022	Health Security Initiative	Early detection capacity, strengthening partnerships for rapid response, R&D for drugs	Indo-Pacific region, including Papua New Guinea, Indonesia, Timor-Leste, Vietnam, Myanmar
South Korea	100 million	2016-2020	Safe Life for All Initiative	Strengthening national prevention capacity	Sierra Leone, Liberia, Guinea, Mali, Ivory Coast, DR Congo, Ghana, Ethiopia, Peru, Uzbekistan, Jordan, Cambodia, Lao
Spain/Italy	3 million	2015-2018	Project 46	CBRN first response, biosafety and biosecurity, raising awareness, legal frameworks	Brunei, Cambodia, Indonesia, Lao, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam
Canada	20 million	n/a	n/a	n/a	15 countries
Denmark	1 million	n/a	n/a	National laboratories	n/a
Norway	n/a	n/a	n/a	AMR, real-time surveillance	n/a
Nordic countries	n/a	n/a	n/a	n/a	10 countries

Group of 7

At the 2016 G7 summit, the group (Canada, France, Germany, Italy, Japan, UK, US) committed to assisting 76 countries and regions to develop national plans for strengthening prevention and preparedness against public health emergencies. However, specific funding was not committed, making it difficult to track progress through the G7 framework toward this pledge. There were no further commitments made at the 2017 or 2018 summits. We note that Canada, Italy and the US made specific funding commitments under the GHSA umbrella, and that Germany and Japan have made other bilateral contributions listed in this paper. However, the absence of specific G7 follow-up makes tracking the financial contributions of all group members challenging.

World Bank

The World Bank is a key financier of health security. A brief summary of its preparedness-related financing mechanisms follows: The Bank’s International Development Association (IDA) provides loans to the world’s 77 poorest countries and is replenished every three years. IDA18, the current round of funding, is supporting at least 25 countries to develop multi-sectoral pandemic preparedness plans. This builds upon the updated action plans drawn up by countries following their JEEs, and includes costing and financing plans. IDA also supports regional initiatives, including the East Africa Public Health Laboratory Networking project (\$64M) to establish public health laboratories for the diagnoses and surveillance of tuberculosis and other infectious diseases, and the Southern Africa Tuberculosis and Health Systems Support Project (\$122M) to improve coverage and quality of tuberculosis control. In addition, the International Working Group on Financing Preparedness, supported by the World Bank and the Wellcome Trust, made 12 recommendations in 2017 outlining a framework for roles and responsibilities in tackling pandemic preparedness. One recommendation suggested that the Bank include an assessment of pandemic preparedness capacity in the formula for IDA allocations, and recommended that other multilateral development banks consider introducing equivalent mechanisms to incentivize investment in preparedness.

The World Bank also has a variety of financing mechanisms for **responding** to public health emergencies, including:

- The **Pandemic Emergency Financing Facility (PEF)**: funded by Germany and Japan, launched in June 2017 to offer grants through a 50M EUR cash window and \$425M insurance window in order to rapidly allow funds to reach emergency-affected countries and international responders, thereby preventing outbreaks from turning into pandemics¹³.
- The **Crisis Response Window (CRW)** was created by IDA16 in 2011 to provide assistance to crises, including the declaration of public health emergencies by governments and WHO. The World Bank specifies that the CRW is meant to be a ‘last resort’ financing option¹⁴.
- The **Catastrophe Deferred Drawdown option (CAT-DDO)** allows countries to access up to \$500m or 0.25% of GDP (whichever is less) for a disaster before the crisis strikes. In order to qualify for CAT-DDO, countries must implement a disaster risk management programme¹⁵. It is financed by the IDA and IBRD.
- The **Immediate Response Mechanism (IRM)** is available to the 77 IDA countries to immediately access up to 5 per cent of their undisbursed IDA investment project funds in the weeks following a crisis. The IRM is meant to complement longer-term response tools such as the CRW, which provides funds within months following an emergency.

World Health Organization

WHO is a key actor in global outbreak preparedness, though its primary role is not as a funder. Its relatively small funding role is primarily through the WHO Contingency Fund for Emergencies (CFE), which was created in 2015 to enable the WHO to provide immediate funds for rapid response to outbreaks and health-related humanitarian crises while donor funds are still being mobilized. The fund has received \$47.2m from 11 WHO Member States since its inception¹⁶. In 2017, the average amount released by the CFE was \$580,000, and more than 80% of allocations were released within 24 hours of an emergency. It has made at least 44 emergency allocations. The fund did not reach its goal of securing \$100m for the 2015-2017 biennium. The fund's goal is to be replenished with \$25-50m annually¹⁷, but during a pledging conference in March 2018, donors committed only an additional \$15.3m¹⁸. (WHO's role in responding to outbreaks through its operational Health Emergencies Programme, and the financing challenges facing the programme and WHO more broadly, is beyond the scope of this paper's focus on national-level preparedness.)

More importantly than its direct funding role, WHO has a central role in supporting countries to map existing investments, capacities and gaps; estimate funding needs; identify priorities; and implement actions for preparedness. Given its wide mandate in health, WHO also has an important role to play as a provider of technical guidance on how to ensure investments in preparedness also support other health system objectives such as universal health coverage or health promotion.

Issues in international-level financing

Several challenges inherent in development assistance, broadly, are relevant for international financing of preparedness. These include: possible tension between the priorities of recipient countries and donors; coordinating autonomous donors to avoid duplication and gaps; whether donors are willing to finance only capital costs or also recurring expenses such as health workers; whether donors are willing to provide grants in addition to loans – and relatedly, whether countries are willing to increase their indebtedness to invest in preparedness; whether absorptive capacity exists when international financing is made available; and the pros and cons of ring-fencing funding for preparedness versus providing funding for health systems more broadly. Beyond these perennial issues, there are also challenges specific to preparedness: as noted above, it remains unclear which investments are a priority for individual countries and will deliver meaningful change in levels of preparedness.

5. DISCUSSION AND CONCLUSIONS

We have found that there is significant activity to assess investments and existing resources, estimate funding gaps, and mobilize financing at national and international levels for preparedness. However, tracking these efforts is challenging, and timely, concrete, publicly-available data remains elusive. That said, wide funding gaps remain likely. It will therefore be critical to set priorities for investments in preparedness, and to ensure that such investments – to the maximum extent possible – deliver day-to-day benefits for populations in addition to building reserve capacity for a rainy day.

The need for monitoring and accountability for financing preparedness has received significant attention and prompted action. WHO provides important information about preparedness activities and funding through the Strategic Partnership Portal. GHSA members have also discussed the importance of creating a tracking mechanism for their commitments and achievements. And in 2018, a Global Preparedness Monitoring Board was jointly created by the World Bank and WHO, intended to operate independently to strengthen global accountability for preparedness. An important function of this Board will be to identify means to improve data on financing flows, allocations, and benefits.

In addition to tracking investments as inputs, it will be important to improve understanding of the results of those investments for both preparedness and broader health systems. An important function of the JEEs is to track improvements over time. The World Bank has conducted analytical work to better understand the economic and social impacts of pandemics, AMR, and return on investment in pandemic preparedness. More in-depth analysis of how investment in outbreak preparedness and broader health system strengthening can be mutually beneficial is also needed.

Despite the many formidable challenges to achieving adequate financing for preparedness, the present moment also offers opportunities. Political attention to preparedness remains significant, as demonstrated by the high priority given to emergencies in WHO's 13th General Program of Work, a reflection of Member States' concerns. The US government, the single largest external funder of preparedness, has largely continued its financial commitment as of this writing due to strong political support in Congress; it remains unclear the extent to which this financing will be sustained, however. Growing country ownership in preparedness is reflected in the many countries undergoing JEEs and follow-up processes. Attention to investing in broader health systems, beyond disease-focused

programs, is being prioritized under the umbrella of UHC and SDG 3. Finally, economic growth in many LMICs will provide greater fiscal space for domestic investments in preparedness and in health more broadly.

The persistent challenge is to maintain high-level political commitment and mobilize new financing both within and beyond the health sector, and to ensure mutual accountability for adequate investment in preparedness.

WORKS CITED

1. Moon S, Sridhar D, Pate M. Will Ebola change the game? Ten essential reforms before the next pandemic. The report of the Harvard-LSHTM Independent Panel on the Global Response to Ebola. *Lancet*. 2015;(356):2204–21.
2. High-Level Panel on the Global Response to Health Crises. Protecting humanity from future health crises [Internet]. 2016. Available from: http://www.un.org/News/dh/infocus/HLP/2016-02-05_Final_Report_Global_Response_to_Health_Crises.pdf
3. WHO. Resource mapping and impact analysis on health security investment (REMAPT) [Internet]. Strategic Partnership for International Health Regulations (2005) and Health Security (SPH). Available from: <https://extranet.who.int/sph/news/resource-mapping-and-impact-analysis-health-security-investment-remapt>
4. Schaferhoff, M, Yamey, G, Kraus, J, Karakulah, K, Pineda, E, Hale, J, et al. Development assistance for health to achieve universal health coverage. SEEK Development and Duke University.; forthcoming.
5. Global Health Security Funding Tracking Dashboard [Internet]. GHS Tracking Dashboard. 2018 [cited 2018 Apr 4]. Available from: <https://tracking.ghscosting.org/>
6. Stenberg K, Hanssen O, Edejer TT, Bertram M, Brindley C, Meshreky A, et al. Financing transformative health systems towards achievement of the health Sustainable Development Goals: a model for projected resource needs in 67 low-income and middle-income countries. *Lancet Glob Health*. 2017 Sep 1;5(9):e875–87.
7. Development assistance for health: past trends, associations, and the future of international financial flows for health - ScienceDirect [Internet]. [cited 2018 Apr 13]. Available from: <https://www.sciencedirect.com/science/article/pii/S0140673616301684>
8. Global Burden of Disease Health Financing Collaborator Network. Future and potential spending on health 2015–40: development assistance for health, and government, prepaid private, and out-of-pocket health spending in 184 countries. *Lancet Lond Engl*. 2017 20;389(10083):2005–30.
9. OECD. Net ODA [Internet]. OECD Data. Available from: <https://data.oecd.org/oda/net-oda.htm#indicator-chart>
10. Sands P, Mundaca-Shah C, Dzau VJ. The Neglected Dimension of Global Security — A Framework for Countering Infectious-Disease Crises. *N Engl J Med*. 2016 Mar 31;374(13):1281–7.
11. Joint External Evaluation Tool: IHR (2005) Monitoring and Evaluation Framework [Internet]. World Health Organization; 2016. Available from: http://apps.who.int/iris/bitstream/handle/10665/204368/9789241510172_eng.pdf?sequence=1
12. Implementing the Global Health Security Agenda: Progress and Impact from U.S. Government Investments [Internet]. Global Health Security Agenda; 2018. Available from: <https://www.ghsagenda.org/docs/default-source/default-document-library/global-health-security-agenda-2017-progress-and-impact-from-u-s-investments.pdf>
13. Osewe P. Options for financing pandemic preparedness. *Bull World Health Organ* [Internet]. 2017 [cited 2018 Apr 12];95(12). Available from: <http://www.who.int/bulletin/volumes/95/12/17-199695/en/>
14. Crisis Response Window | International Development Association [Internet]. [cited 2018 Apr 12]. Available from: <http://ida.worldbank.org/financing/crisis-response-window>
15. Catastrophe Deferred Drawdown Option Product Note [Internet]. World Bank Treasury; 2011. Available from: http://treasury.worldbank.org/bdm/pdf/Handouts_Finance/CatDDO_Product_Note.pdf
16. WHO | Pledging Conference for the Contingency Fund for Emergencies (CFE) [Internet]. [cited 2018 Apr 12]. Available from: <http://www.who.int/hac/events/pledging-conf-cfe/en/>
17. Yamey G, Schäferhoff M, Aars OK, Bloom B, Carroll D, Chawla M, et al. Financing of international collective action for epidemic and pandemic preparedness. *Lancet Glob Health*. 2017 Aug 1;5(8):e742–4.
18. WHO | Donors pledge over US\$ 15 million to WHO's Contingency Fund for Emergencies [Internet]. WHO. [cited 2018 Apr 12]. Available from: <http://www.who.int/mediacentre/news/releases/2018/contingency-fund-emergencies/en/>

THE
GRADUATE
INSTITUTE
GENEVA

INSTITUT DE HAUTES
ÉTUDES INTERNATIONALES
ET DU DÉVELOPPEMENT

GRADUATE INSTITUTE
OF INTERNATIONAL AND
DEVELOPMENT STUDIES