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Global Health Transitions and Sustainable Solutions

The Role of Partnerships

PROCEEDINGS OF A WORKSHOP

Rachel M. Taylor and John Maurice, *Rapporteurs*

Forum on Public–Private Partnerships for Global Health and Safety

Board on Global Health

Health and Medicine Division

The National Academies of
SCIENCES • ENGINEERING • MEDICINE

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Although the reviewers listed above provided many constructive comments and suggestions, they were not asked to endorse the content of the proceedings nor did they see the final draft before its release. The review of this proceedings was overseen by **ENRIQUETA BOND,** QE Philanthropic Advisors. She was responsible for making certain that an independent examination of this proceedings was carried out in accordance with standards of the National Academies and that all review comments were carefully considered. Responsibility for the final content rests entirely with the rapporteurs and the National Academies.

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Contents

Boxes and Figures

BOXES

FIGURES

Acronyms and Abbreviations

CDC	U.S. Centers for Disease Control and Prevention
CLC	Community Life Center value proposition
COE	challenging operating environment
COHRED	Council on Health Research for Development
CPIA	Country Policy Institutional Assessment
DAC	Development Assistance Committee
DAH	development assistance for health
FIT	Freight in Time
Gavi	Gavi, the Vaccine Alliance
Global Fund	Global Fund to Fight AIDS, Tuberculosis and Malaria
GNI	gross national income
GPEI	Global Polio Eradication Initiative
HHS	U.S. Department of Health and Human Services
ICT	information and communications technology
IDA	International Development Association
IFC	International Finance Corporation
IPV	inactivated polio vaccine

JICA	Japan International Cooperation Agency
KEMSA	Kenya Medical Supplies Authority
LIC	low-income country
LMIC	low- and middle-income country
MCT	mother-to-child-transmission
NCD	noncommunicable disease
NHIF	National Health Insurance Fund
OPV	oral live attenuated polio vaccine
PAHO	Pan American Health Organization
PEPFAR	The U.S. President's Emergency Plan for AIDS Relief
PPP	public–private partnership
PPP Forum	Forum on Public–Private Partnerships for Global Health and Safety
RAI	Regional Artemisinin-resistance Initiative
RFI	Research Fairness Initiative
SDG	Sustainable Development Goal
STC	Sustainability, Transition, and Co-financing policy
TB	tuberculosis
TIMB	Transition Independent Monitoring Board
UHC	universal health coverage
ULIC	upper-middle-income country
UN	United Nations
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
UPS	United Parcel Service
USAID	U.S. Agency for International Development
WHO	World Health Organization

1

Introduction[1]

The global health landscape will not be the same 5 and 10 years from now. Transitions are occurring in so many ways, in so many contexts, and are creating profound changes in global health, John Lange from the United Nations (UN) Foundation remarked. These interlinked transitions are both economic and programmatic. A cohort of countries that have historically relied on development assistance for health (DAH) is transitioning into higher-income status. Increased income status triggers graduation out of several multilateral health financing initiatives. Additionally, one large program focused on disease eradication is nearing its goal and will soon end. At the same time, countries that have provided DAH are shifting focus away from traditional development assistance in favor of investments focused on value for money and global public goods.

In response, processes are under way to transition countries out of traditional bilateral and multilateral health funding mechanisms, and countries are expected to spend more of their own resources on health systems. These transition processes are often well defined in criteria and approach; however, their implications, particularly when they occur simultaneously, are not well understood. With current trends, there is the

[1] The planning committee's role was limited to planning the workshop, and the Proceedings of a Workshop has been prepared by the workshop rapporteurs as a factual summary of what occurred at the workshop. Statements, recommendations, and opinions expressed are those of individual presenters and participants, and are not necessarily endorsed or verified by the National Academies of Sciences, Engineering, and Medicine, and they should not be construed as reflecting any group consensus.

potential for 24 countries to face significant changes in access to global health financing over the next 5 years (Action, 2017). The effects on health outcomes and health systems globally could be large in scale. For example, nearly half of the projected effect of routine vaccination on deaths averted in 2016–2020 is allocated to countries projected to be phasing out Gavi, the Vaccine Alliance, funding within that period (Kallenberg et al., 2016). Some countries' health systems have been heavily dependent for decades on the "soon to sunset" Global Polio Eradication Initiative (GPEI), with 25–50 percent of staff funded through GPEI spending time on nonpolio activities in support of health systems (TIMB, 2017). The *2017 World Report on Malaria* provides a sobering picture of how quickly advances in global health can backslide when resources decline (WHO, 2017).

At the same time that countries are transitioning out of external funding mechanisms, they are facing transitions in the burden of disease, primarily the significant rise in noncommunicable diseases (NCDs) (Bollyky and Shendruk, 2017), while they are still working to control many infectious diseases. To date, DAH has largely ignored NCDs (Dieleman et al., 2015), and countries themselves are often faced with competing demands of immediate importance—often forcing complex NCD challenges to the bottom of their national agendas. As countries transition out of external funding mechanisms, the rising burden of NCDs requires increased and significant attention while, simultaneously, the health improvements supported by DAH over the past several decades need to be sustained and accelerated.

On June 13–14, 2018, the National Academies of Sciences, Engineering, and Medicine convened a multistakeholder workshop to examine the transitions affecting global health and innovative global health solutions (see Box 1-1). The goal of bringing these two topics together was to collectively explore models for innovative partnerships and private-sector engagement with the potential to support countries in transition. As individual speakers at the workshop explained, these transitions can be disruptive, but they also present opportunities. With an increased focus on domestic resource mobilization for health, countries can drive better decision making on priority health investments. Rising income levels in developing countries can create attractive environments for market-based solutions in health with the potential for sustainability and scale. Enabling advances in technology can accelerate process. Local innovators and entrepreneurs can be a source of solutions that are contextually appropriate and locally owned. Funders of traditional DAH can move away from funding direct health services and products to making catalytic investments that support sustainable solutions, and focus on investing in global public goods that require international collaboration and commitment. In this changing landscape, innovative solutions have the

BOX 1-1
Statement of Task

Economic, programmatic, and epidemiological transitions are changing the global health landscape profoundly. This changing landscape requires the global health community to develop innovative, coordinated, and sustainable solutions during and after transitions. An ad hoc committee under the auspices of the National Academies of Sciences, Engineering, and Medicine will plan a 1.5-day public workshop to examine these transitions and explore innovative industry-involved partnership models that are responsive to the changing environment. Presentations and discussion topics may include the following:

- Economic, programmatic, and epidemiological transitions affecting global health priorities: Specifically, the dual impact of economic transitions affecting access to traditional development assistance for health and the changing burden of disease in low- and middle-income countries (LMICs)
- Implications of simultaneous, uncoordinated programmatic transitions within LMICs, and partnership models to support countries during and after transitions with the objectives of maintaining and accelerating health gains, protecting vulnerable populations, and promoting health equity
- Country ownership in decision making and development of partnerships during and after transitions
- How these partnership models must differ from earlier global health partnerships to spur more sustainable investments: The incentives, expectations, and resources of new partners investing in global health, and the changing role and approaches of traditional external funders of health with a focus on leveraging knowledge and resources for sustainability

The committee will develop the workshop agenda and select and invite speakers and discussants. In developing the agenda, the committee will reflect on topics addressed and key messages from previous activities of the Forum on Public–Private Partnerships for Global Health and Safety, in particular: identifying shared value opportunities in global health, developing partnerships based on country-identified health priorities through the Sustainable Development Goals, engaging the technology sector in global health through PPPs, and the governance of global health partnerships. A proceedings of the workshop will be prepared by a designated rapporteur in accordance with institutional guidelines.

potential to sustainably support countries and maintain health gains during and after transitions.

ORGANIZATION OF THE PROCEEDINGS

An independent planning committee organized this workshop in accordance with the procedures of the National Academies of Sciences,

Engineering, and Medicine. (See Appendix B for the agenda.) The planning committee's members were Jo Ivey Boufford, Deena Buford, Jennifer Esposito, Renuka Gadde, Trevor Gunn, Ambassador John E. Lange, Amy Lin, Scott Ratzan, Katherine Taylor, and Chris West. This publication summarizes the workshop's presentations and discussions. The content of the proceedings is limited to what was presented and discussed at the workshop and does not constitute a full or exhaustive overview of the field.

Chapter 2 summarizes the workshop presentations and discussions on demographic and health transitions, multilateral program eligibility and transition policies in practice, bilateral approaches and policies for transitions, and transitions in select countries. Chapter 3 focuses on setting the stage for sustainable investments in health and summarizes workshop sessions on multisectoral engagement and sustainable solutions to support transitions, elevating health on domestic agendas, and market shaping. Chapter 4 introduces four models for sustainable partnerships and private-sector engagement presented and discussed during the workshop. The final chapter, Chapter 5, captures key messages and lessons participants shared at the end of the workshop.

In accordance with the policies of the National Academies, the workshop did not attempt to provide a full analysis of the political context related to global health transitions, a landscape of all possible models to support countries in transition, or any conclusions or recommendations about needs and future directions. The proceedings report focuses on the issues identified by the speakers and workshop participants. In addition, the organizing committee's role was limited to planning the workshop. The workshop proceedings was prepared by workshop rapporteurs Rachel M. Taylor and John Maurice as a factual summary of what occurred at the workshop.

2

Global Health Transitions

The workshop opened with a keynote presentation by Tim Evans from the World Bank Group. Evans described major transitions in global health, focusing on the interactions with demographic and economic transitions and their potential implications for policy and service design. After his presentation, Evans moderated a panel discussion on multilateral programmatic transitions occurring in global health. Adding to the health, demographic, economic, and multilateral programmatic transitions described by Evans and the first panel, a second panel followed with representatives from bilateral funding agencies sharing their agencies' approaches to transitions. A final session on transitions focused on effects at the country level. This chapter summarizes Evans's presentation, the three panels following, and the related discussions with the workshop participants.

DEMOGRAPHIC AND HEALTH TRANSITIONS

To start his presentation Evans described the relationship between development, demography, and transitions in health. The premise of this relationship is that as societies develop, they transition from high fertility to low fertility and from high mortality to low mortality. Demographic transitions significantly affect health systems and are unfolding rapidly in some countries. For example, China will have more than 100 million people over the age of 80 by 2050 (World Bank, 2018b). These population transitions, he said, can be cataclysmic in their effect on a country's ability to provide

social protection and health services. However, the anticipated effects of demographic change are often overlooked since population statistics are generally based on 10-year censuses. Linking these demographic transitions to health, Evans quoted a "theory of the epidemiology of population change" created by Abdel R. Omran at the turn of this century (Omran, 1971). Omran's theory focuses on the interface between demography and epidemiology (see Figure 2-1). This perspective is fundamental, Evans asserted, to designing health systems aligned with a population's needs.

Turning to a different type of transition, Evans noted a major programmatic transition occurring in global health—the end of the GPEI. As the world inches closer to universal certificated polio eradication, the GPEI is winding down, and as it comes to a close, Evans emphasized the importance of retaining the skills, knowledge, and human resources developed and supported through the initiative's 30-year history (the GPEI transition is described in detail later in this chapter).

While GPEI programming and support depend on disease burden and eventual eradication, the programming and support from other large global health funding initiatives are based on a country's level of development (see Box 2-1). The growing economies of formerly poor countries

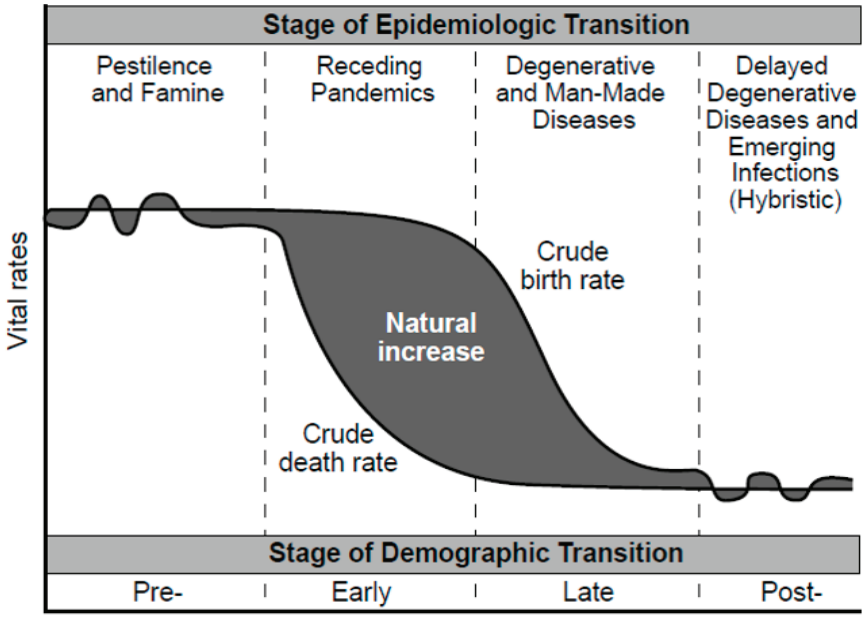

FIGURE 2-1 Demographic and epidemiological transition framework.
SOURCES: As presented by Tim Evans on June 13, 2018. From Rockett, 1999. Used with permission.

BOX 2-1
Multilateral Global Health Initiatives:
Eligibility Criteria for Country Support

The **World Bank Group** is one of the world's largest sources of funding and knowledge for developing countries. Its five institutions share a commitment to reducing poverty, increasing shared prosperity, and supporting sustainable development. Countries are eligible for International Development Association (IDA) concessional funding based on relative poverty defined as gross national income (GNI) per capita below an established threshold updated annually (in FY 2018: $1,165) and lack of creditworthiness to borrow on market terms (World Bank, 2018a). The World Bank allocates IDA concessional funding based on the Country Policy Institutional Assessment (CPIA). Through equally weighing four clusters—macroeconomic environment, structural policies, policies for social inclusion/equity, and public-sector management—composed of 16 total criteria in a given year, the CPIA measures the extent to which a country's policy and institutional framework supports sustainable growth and poverty reduction. In turn, the CPIA indicates which countries represent the most promise for effective use of IDA development assistance. Countries graduate from IDA assistance as their GNIs increase, and the IDA assesses on a case-by-case basis if transitional support is needed (World Bank, 2018c).

Gavi, the Vaccine Alliance (Gavi) is an international organization that brings together public and private sectors with the shared goal of creating equal access to new and underused vaccines for children living in the world's poorest countries. Its mission is to save children's lives and protect people's health by increasing the use of vaccines in lower-income countries. Countries are eligible for Gavi support based on GNI per capita below or equal to $1,580 on average over the last 3 years. Countries past the eligibility threshold enter the accelerated transition phase during which they phase out of Gavi support over 5 years (Gavi, 2018a).

The Global Polio Eradication Initiative (GPEI) is a public–private partnership with the goal to eradicate all polio viruses so that no child ever again suffers from paralytic poliomyelitis. GPEI will gradually decrease its resources at the country level as polio eradication nears, and it will close once eradication is achieved. GPEI is working closely with countries to help them plan for this transition out of funding and has created steps to guide the development of national plans to either integrate priority initiatives into existing public health programs or phase out less effective programs. GPEI has established the Polio Transition Independent Monitoring Board to oversee and assess the transition process (GPEI, 2018).

The Global Fund to Fight AIDS, Tuberculosis and Malaria is a partnership between governments, civil society, the private sector, and those affected by these diseases. The Global Fund raises and invests nearly $4 billion per year to support programs run by local experts in countries and communities most in need. It has saved millions of lives and provided prevention, treatment, and care services to hundreds of millions of people, and has helped to revitalize entire communities, strengthen local health systems, and improve economies. Countries are eligible for Global Fund support based on the disease burden of AIDS, tuberculosis, and malaria and on income classification as measured by the average GNI per capita over the past 3 years. The Global Fund has implemented transition funding, by which countries may receive funding for up to one additional allocation period following their change in eligibility (Global Fund, 2016).

raise questions about the eligibility of these countries to continue receiving concessional financing by the World Bank and other development assistance agencies. The World Bank, Evans explained, has developed the Country Policy Institutional Assessment (CPIA) that is used to determine a country's eligibility for concessional financing (see Figure 2-2). The CPIA draws on a number of variables rather than a single wealth threshold, such as income per capita. Other health financing institutions, such as Gavi and the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund), have different eligibility criteria that determine transitions in the levels and types of support (see Box 2-1).

Before closing, Evans acknowledged a priority on the global health agenda that is gaining momentum while these transitions are occurring: the global goal of universal health coverage (UHC) at the national level. This goal, he said, embodies the aspirations of people everywhere in the 21st century and is driving policy makers to provide comprehensive health care. Two globally accepted targets for UHC are set for 2030: (1) at least 80 percent of the poorest 40 percent of the population must have access to essential health services; and (2) financial risk protection for all. However, Evans admitted that meeting these targets will be challenging. Most LMICs' health systems are financed mainly on an out-of-pocket basis, creating an obstacle to UHC. Globally, he said, about half a trillion dollars are spent out of pocket on health annually. Devising innovative ways of prepaying and pooling these expenditures will be critical to achieving greater efficiency and equity in health expenditure and accelerating progress toward UHC. Beyond financing, Evans also noted the challenge of improving health delivery systems and services to ensure an appropriate level of quality. Before closing, Evans mentioned two recently created initiatives to help solve health financing challenges for investments in maternal, newborn, and child health (the Global Financing Facility) and for health funding during emergencies (the Pandemic Emergency Financing Facility).

In ending his presentation, Evans quoted a childhood ice hockey hero, Wayne Gretzky (a fellow Canadian), who had some advice pertinent to transitions: "Skate to where the puck is going, not where it is." Anticipating where the next challenge is will increase the likelihood of successful transitions.

MULTILATERAL PROGRAM ELIGIBILITY AND TRANSITION POLICIES IN PRACTICE

Following his presentation on the demographic and economic transitions in global health, Evans moderated a panel and discussion on the transition policies and approaches of three major multilateral organiza-

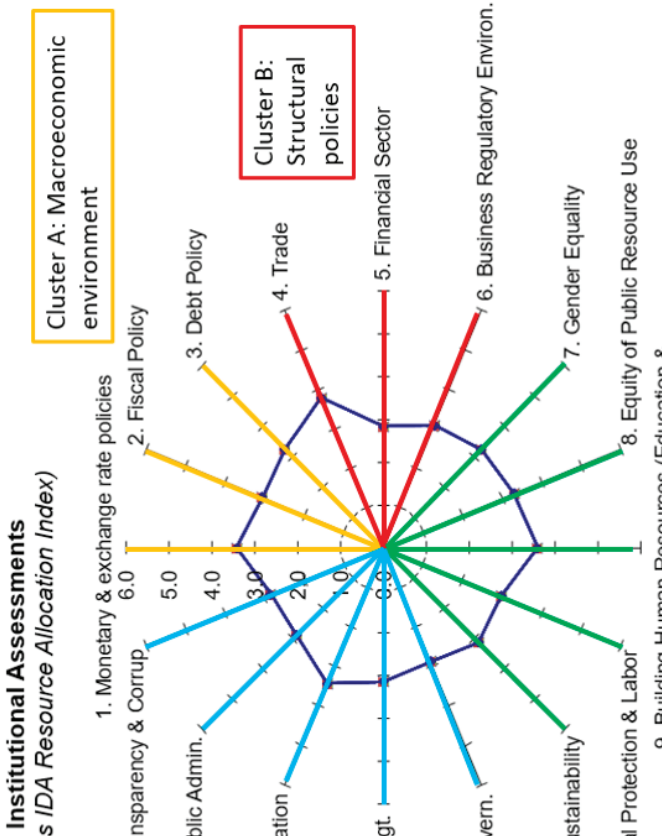

FIGURE 2-2 World Bank country policy institutional assessments.
NOTE: IDA = International Development Association.
SOURCES: As presented by Tim Evans on June 13, 2018. Created by P. Geli, World Bank Group, 2018.

tions: Gavi, GPEI, and the Global Fund. The panel included presentations with representatives from each organization covering their approaches to country eligibility and transition processes, and current and anticipated effects on countries at different stages of transition. Panelists also shared how the programs are approaching engagement with the private sector in the transition process.

Gavi, the Vaccine Alliance

Santiago Cornejo of Gavi spoke about the organization's policies and experiences with transitioning countries out of Gavi financing. To frame his remarks, Cornejo described some common programmatic and financing challenges Gavi countries face in supporting their immunization efforts. He emphasized the importance of both financing and programmatic sustainability to support a country's immunization program to allow for effective planning, budgeting, and prioritizing. Low-income countries often have weak foundations for their health and immunization systems, which are coupled with acute fiscal constraints. As countries progress to higher levels of development, their systems are relatively stronger but with institutional capacity gaps in key areas. They also frequently have growing domestic resources but inadequate processes for allocative efficiency and prioritization. As countries continue to develop, there is often correlative progress on immunization programs and financing. However, these gains are vulnerable to risks, and there are sometimes missed opportunities for broader impact and efficiencies. As these stages of development come to light, Cornejo emphasized how countries' needs evolve with their development transitions, triggering a need for evolution in the types of engagement and support offered by Gavi (see Figure 2-3).

Gavi's policy for eligibility, cofinancing, and sustainability reflects these evolving needs and guides the alliance's institutional framework for country transitions (see Figure 2-4). The policy, Cornejo noted, serves as a key mechanism for domestic resource mobilization and financial sustainability (Gavi, 2018b). Gavi's sustainability approach for country transitions recognizes the following:

- Domestic financing is key but is not enough.
- Programmatic sustainability requires critical national capacities.
- Getting the sequencing of interventions right and addressing systemic bottlenecks early on is key.
- Support should be adapted to needs and reflect a country's transition status.
- Existing systems should be leveraged where possible.

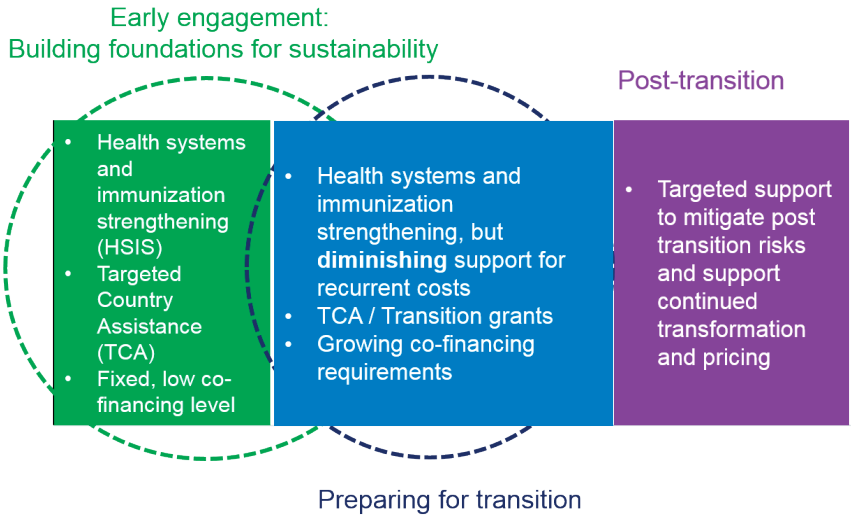

FIGURE 2-3 Gavi's transition support framework.
SOURCE: As presented by Santiago Cornejo on June 13, 2018.

To date, 16 countries have transitioned out of Gavi support, and 9 additional countries are in transition. Cornejo admitted the results from Gavi's transitions have been uneven. Some posttransition countries have maintained high vaccine coverage rates, but others have much lower rates. The poor performers are mostly postconflict countries, but even some high-coverage countries are deficient in regulatory matters, procurement, the supply chain, and data systems. In addition to challenges with adjusting to loss of financing, some posttransition countries have struggled with the loss of Gavi's technical support as well as the political status that an alliance such as Gavi confers. Cornejo shared several findings and lessons from Gavi's experiences to date with country transitions (see Box 2-2).

Cornejo provided an example of how Gavi is adapting its policies for transitions based on the lessons it is learning. The Gavi board recently decided to continue Gavi's engagement in posttransition countries. Through their continued engagement, these transitioned countries can benefit from Gavi's supportive environment to mitigate critical risks and gaps.

Cornejo stated that private-sector engagement is core to Gavi's operating model. On one level, Gavi partners with the private sector for financing. On another level, it partners with the private sector to leverage specific technical experience. This second level is particularly relevant in

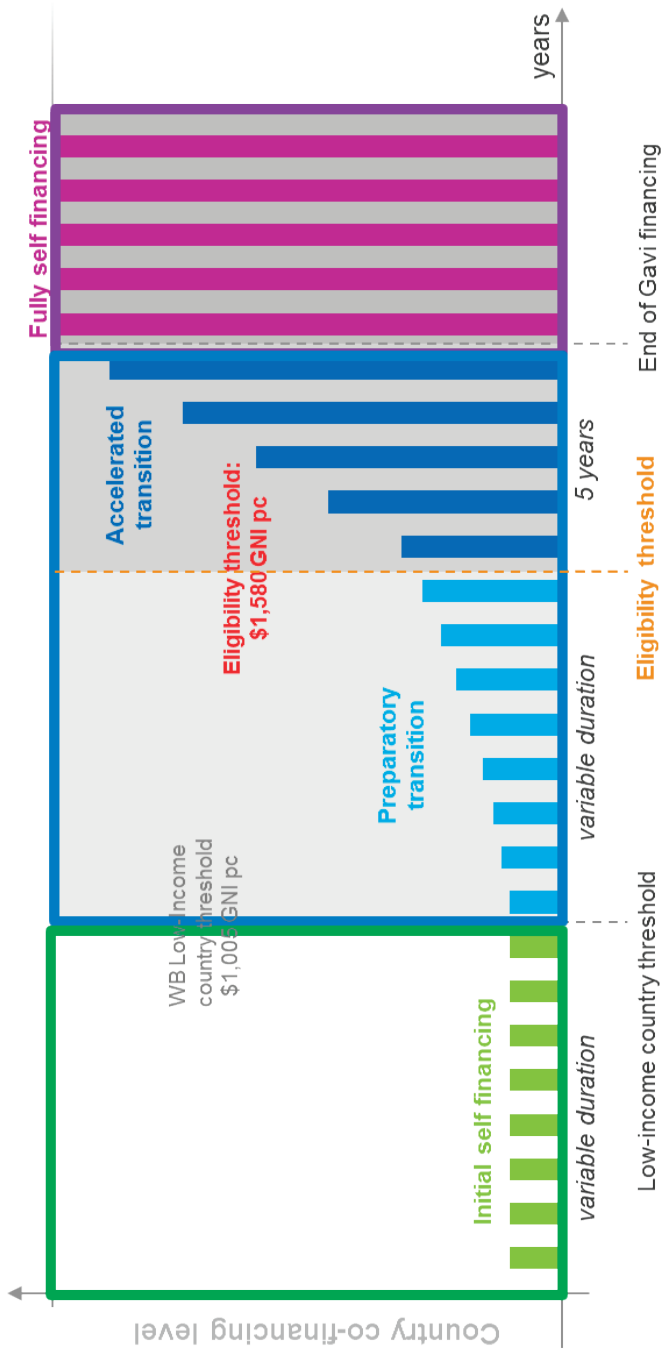

FIGURE 2-4 Gavi financing eligibility.
NOTE: GNI = gross national income; pc = per capita.
SOURCES: As presented by Santiago Cornejo on June 13, 2018. Figure available at https://www.gavi.org/about/programme-policies/eligibility-and-transition (accessed October 23, 2018).

BOX 2-2
Lessons Learned from Gavi's Experiences with Country Transitions
Presented by Santiago Cornejo

- Immunization financing: Fiscal space does not seem to be the main challenge in most of the first-wave countries. Critical issues are weak planning, budgeting and execution processes, and broader financing of the health sector.
- Program performance: Generally high-coverage programs, but important capacity gaps were observed on vaccine introductions. Also a subset with low coverage (e.g., Papua New Guinea, Republic of the Congo, Nigeria, and Angola).
- Institutional capacities: Critical gaps and areas for strengthening (e.g., regulation, procurement, supply chains, and data systems).
- Common concerns about losing supportive environment associated with being part of Gavi.
- Greater realization that engagement with subnational levels is critical for sustainable coverage and equity, which requires engagement with a wide range of stakeholders.

the context of addressing the institutional capacity issues common for transitioning countries. An example is Gavi's partnership with United Parcel Service (UPS) and Freight in Time (FIT) for supply chain management. Cornejo also emphasized the importance of partnering with the local private sector as part of a sustainability strategy in transitioning countries.

Cornejo closed his remarks by noting that there is no silver bullet for successful country transitions. Rather, he suggested the focus during transitions should be on getting the basics right: there is no substitute for appropriate regular planning, budgeting, disbursement, and execution. He also underlined the importance of including a wide range of stakeholders in the process.

The Global Polio Eradication Initiative

Rebecca Martin of the U.S. Centers for Disease Control and Prevention (CDC) began her presentation on GPEI by acknowledging that the program's biggest legacy will be a polio-free world. Thanks to GPEI, only three polio endemic countries remain: Afghanistan, Nigeria, and Pakistan. As this large-scale public–private partnership (PPP) inches closer to its end goal, it is focusing on its ramp-down strategy and, importantly, how to best use the assets it supported over the past three decades.

Before discussing the upcoming transition, Martin described the current status of GPEI. With so few endemic countries, GPEI's donors, Martin said, have asked why the initiative still requires a $1 billion annual budget. The answer is that no one in the world is safe from polio until the disease is completely eradicated. Until then, the infrastructure built up by GPEI, including surveillance systems, laboratories, and human resources, is needed to detect the polio virus wherever it might emerge as well as support the capacity for outbreak response. Currently, more than 60 countries receive funding from GPEI, with more than 95 percent allocated to 16 resource-poor countries. Potential for risks and fragility at the country level determine resource allocation decisions.

The achievement of full universal polio eradication will trigger the end of GPEI, and transition planning is now under way to plan for its eventual ramp down. GPEI maintains a transition management group, and a Transition Independent Monitoring Board (TIMB) is advising the process. Transition strategy and planning focus on three core objectives: sustaining polio eradication, managing GPEI's legacy assets, and supporting countries in their transition out of GPEI support and funding.

After the world is certified to be polio free, sustaining eradication will require a postcertification system, Martin explained. The priorities for this system will include the following:

- Keeping the virus under containment conditions that meet sound biosafety and biosecurity requirements, preventing escape from a laboratory or virus manufacturing facility
- Withdrawing the oral live attenuated polio vaccine (OPV) from use and protecting populations through immunization with inactivated polio vaccine (IPV) over the 10 years after the certification of eradication of the poliovirus
- Continuing surveillance to detect reemergence of the poliovirus and, should an outbreak occur, mounting a rapid response to prevent transmission of the virus

A second core objective of the GPEI transition is transferring its assets and lessons learned to other health programs. Martin emphasized the extensive assets developed through GPEI and noted how they can be used by programs battling other diseases. Examples that she quoted include an extensive infrastructure of global disease surveillance systems, vaccine supply and logistics networks, a worldwide network of more than 140 polio laboratories, thousands of skilled staff members, and millions of community-based health workers who can reach the most remote populations. GPEI, she pointed out, already is supporting a wide range of disease programs, such as routine measles immunization cam-

paigns, maternal and child health programs, and sanitation and hygiene programs (GPEI, 2018).

A third objective focuses on supporting countries in the current ramping down of GPEI support and funding. This includes mainstreaming polio essential functions into existing health programs, creating national action plans to map existing assets, and absorbing necessary health system functions into national budgets. As part of the process, national plans are being developed to map existing GPEI assets. No risk assessment on the effects of GPEI transitioning out of countries has been performed.

Martin gave several examples of how the polio program supports health activities for other diseases at the country level. In India, polio immunization staff joined a nationwide campaign to vaccinate all unvaccinated and partially vaccinated children in India against seven vaccine-preventable diseases. In Nigeria, a polio emergency operation center was set up to use its surveillance and contact tracing capabilities during the 2014 Ebola outbreak in West Africa. In Nepal, the polio surveillance system for immunization campaigns not only against polio but also against tuberculosis (TB), diphtheria, tetanus, pertussis, and measles. While these promising examples demonstrate how GPEI assets are supporting other health priorities, Martin pointed with caution to South Sudan; the country's immunization program is entirely funded by GPEI. Without careful planning, the effects of GPEI's withdrawal on the country's immunization program and broader health system could be immense.

Martin closed by sharing that GPEI is discussing how to use its assets for other global health initiatives, including for Gavi and the Joint External Evaluation process for the Global Health Security Agenda.

The Global Fund to Fight AIDS, Tuberculosis and Malaria

Matthew MacGregor of the Global Fund described the organization's approach to transitions from external financing and supporting countries in the process. He started his remarks by acknowledging the overlap in several of the Global Fund's observations and priorities when approaching transitions with the programs presented earlier in the panel. It is hoped, he said, that this overlap reveals useful shared lessons that can inform transition approaches for the global health community.

MacGregor described the Global Fund's Sustainability, Transition, and Co-financing (STC) policy, the guiding policy for the organization's approach to transitions from external financing and supporting countries in the process (Global Fund, 2016). The STC policy focuses on three related and inter-connected pieces: the process of transitions, the over-

arching goal of sustainability and sustained impact, and the use of co-financing as one of the tools to help achieve both. Introduced in 2016, the policy is a response to several factors:

- The changing nature of global health financing
- The need to increasingly focus Global Fund resources and investments on those countries with greatest disease burdens and least ability to pay
- Lessons learned from previous Global Fund transitions (particularly challenges related to interventions and services for key and vulnerable populations)
- Recognition that successful transitions are hard and require resources
- A commitment of the Global Fund to partner with countries to more proactively support countries to prepare for transition in order to sustain gains and continue to scale even beyond Global Fund financing

A number of overarching pillars guide the implementation of the policy:

1. A need to embed sustainability across the portfolio, regardless of where a country is on the development continuum, ensuring early attention to potential long-term transition and sustainability challenges
2. Enhanced focus on domestic financing (overall increases in funding) and co-financing of Global Fund financed interventions
3. Accelerating efforts to prepare for transition as a country moves to higher income status and/or lower disease burden, especially for all upper-middle-income countries and lower-middle-income countries with disease components that have lower disease burdens
4. Recognition that efforts to address sustainability and transition need to be flexible, given the varied financial and epidemiological contexts of countries across the development continuum
5. Systematic efforts to work with partners (including technical agencies, bilateral partners, development banks, and civil society partners) to leverage capacity, collaborate on joint priorities, and accelerate STC efforts

The STC policy formalized the concept of transition funding for disease components with existing Global Fund grants that have become newly ineligible in order to address bottlenecks in the transition process

and to allow for a more gradual transition. The policy also changed the Global Fund's approach to co-financing by requiring countries to demonstrate progressive government spending on health and co-financing of Global Fund–supported programs and by differentiating co-financing requirements for countries at different stages of development. Lower-income countries have the flexibility to focus additional co-financing commitments on health systems. As countries progress in their development, the size of co-financing commitments increases, and more requirements are placed on where co-financing commitments need to be targeted, including a progressive focus on disease programs, systemic transition and sustainability bottlenecks (often related to health systems), and programs targeting key and vulnerable populations. The inclusion of transition funding, the requirements on how Global Fund funds can be used by higher-income countries, and the thematic areas where co-financing commitments must be made reflect the Global Fund's lessons learned from previous transitions. Figure 2-5 illustrates the application of the STC policy across the spectrum of countries at different stages of development.

MacGregor reflected on the progress toward self-sufficiency of countries approaching transition. Both before and since the development of the STC policy, significant progress has been made to strengthen the sustainability of national programs and to support transitions. Countries approaching transition are assuming a significant amount of the overall disease response and many now fund and manage most national programs. In addition, the focus on sustainability and preparing for transition in the day-to-day "business" of the Global Fund has also increased. However, as detailed in Box 2-3, he acknowledged there are ongoing challenges.

MacGregor touched on the essential role of partners in supporting countries preparing to transition. Many transition challenges go beyond specific Global Fund investments or competencies and require greater engagement with a variety of in-country stakeholders, for example, Ministries of Finance and Planning and the private sector. The Global Fund works with partners to coordinate technical assistance by seeking ways of increasing countries' domestic financing, assisting in overcoming bottlenecks in the transition process, and improving the efficiency of investments. MacGregor also noted a challenge unique to the Global Fund: it is often active in places where other multilateral and bilateral donors have already transitioned. This circumstance limits the number of traditional partners on the ground and strengthens the case for identifying new, less traditional partners. As a final comment, MacGregor affirmed that successful transitions will be essential for ending epidemics. "They embody what we want and what we aspire to in country ownership."

FIGURE 2-5 Framing the Sustainability, Transition, and Co-financing (STC) policy in the Global Fund portfolio.
NOTES: Specific focus areas for any individual country or disease components will depend on and vary based on country context. COE = challenging operating environment; LIC = low-income country; LMIC = low- and middle-income country; RAI = Regional Artemisinin-resistance Initiative; STC = Sustainability, Transition, and Co-financing policy; UMIC = upper-middle-income country.
SOURCES: As presented by Matthew MacGregor on June 13, 2018. Figure created by the Global Fund.

BOX 2-3
Several Global Fund Transition Challenges
Presented by Matthew MacGregor

- **Domestic financing and co-financing:** Insufficient domestic financing and co-financing of interventions supported by the Global Fund, with a particular focus on services for key and vulnerable populations.
- **Early, country-owned planning:** Need for early, robust identification of country-specific programmatic and financial bottlenecks and country-owned transition and sustainability planning.
- **Supporting civil society:** Strengthening the capacity of civil society, including the ability to contract with governments to provide services, to engage in advocacy, and to mobilize additional resources.
- **Health systems bottlenecks:** Health systems challenges, including monitoring, evaluation, and data systems, integration of services, and procurement systems.
- **Efficiency of investments:** Strengthening efficiency of national programs.

Discussion

Simon Bland of UNAIDS opened the discussion by asking Evans about his views on human capital spending and the use of the World Bank's leverage to boost countries' domestic investments in sectors such as health. Evans assured him that he considers human capital an important prerequisite to achieving successful transitions. Investments in education and health are clearly linked to economic growth, he said (Suri et al., 2011). The World Bank has developed a human capital index to rank countries by how well they perform and the degree to which they invest in health and education. In Evans's experience, this ranking helps stratify countries in terms of their likely domestic resource mobilization. Many people, he said, view health and education as luxury items, and even the World Bank, in its early days, considered education and health "social overhead." Even today, many finance ministers do not altogether appreciate the real value of health and education, he observed. Evans shared that the World Bank categorizes capital in three areas: physical, natural/environment, and human. The expectation is for the World Bank's financing to move toward an equal one-third distribution across these areas of capital.

Ikuo Takizawa of the Japan International Cooperation Agency (JICA) expressed concern that the polio surveillance systems would be challenging for other disease programs to use given the robust level of funding polio has received versus others. In reply, Martin pointed out that other

programs have adapted and are using the polio surveillance systems not only for detection of acute flaccid paralysis but also for environmental surveillance. The funding needed for continuous use of these systems is certainly a critical issue, she conceded. Carel IJsselmuiden of the Council on Health Research for Development (COHRED) asked Martin what proportion of funds will be taken from the budgets of the 16 poorest countries currently funded by the GPEI. Martin pointed out that all 16 countries are supported by technical advisory groups, interagency coordination committees, and Gavi, which is a member of the GPEI's Transition Management Group.

Concurring with Matthew MacGregor's remark in his presentation that governments are not readily persuaded to support key and vulnerable populations or civil society organizations, Takizawa wanted to know how successful the Global Fund has been in dealing with governments on this issue. MacGregor replied that one cannot take for granted that a government will fund services for key and vulnerable populations, but there are examples that contradict that statement. An incentive for the government, he suggested, might be the way in which the Global Fund manages its cofinancing policies. The Global Fund increasingly passes its funding through government systems. As a result, the funds are on the government's budget, so that when the funding of the Global Fund diminishes, the government provides the funds needed to pay for services to the key and vulnerable populations. As for the civil society organizations, MacGregor emphasized the important advocacy role they play. They are also essential, he added, in protecting the human rights of vulnerable populations, but governments are reluctant to fund these functions. Other potential partners, he said, are required to step in and provide the needed support.

Nduku Kilonzo from Kenya's National AIDS Coordinating Council prompted MacGregor to define the term *country ownership*. MacGregor declined, acknowledging it is a challenging term with natural tensions between internal and external financing considerations. When it comes to transitions, decisions about when programs transition are made by the external funding organizations, which creates this tension. MacGregor suggested that what is important from the Global Fund's perspective in this regard is being clear and upfront about what its policy is. A second question from Kilonzo addressed country financing flows, which involve a series of well-oiled mechanisms, such as planning, approving, negotiating, and managing financial envelopes. Kilonzo asked where transitions fit into this in-country financing routine. MacGregor replied that managing a transition was a donor- and organization-driven procedure.

Evans closed the session with a few reflections on the past 20 years of health development financing and implications for transitions now and in

the future. Twenty years ago, no one would have predicted health development financing would grow to an annual sum of half a dozen billion dollars. When the billion-dollar era in global health financing occurred, Evans suggested there was an inebriated sense that with billions, everything could be accomplished. From his observations, only within the last 5 years has the realization of the global trillion-dollar health sector come. The question now is how development finance can become catalytic in contributing to the trillion-dollar challenge. Evans pointed to the 2015 Addis Ababa Financing for Development conference as the moment when the global health community came together to respond to this question.[1] He acknowledged the challenge with mobilizing domestic resources for health while providing development assistance. Proposals to shift development assistance away from grant financing and toward global public goods are being made; however, Evans emphasized that this shift will only be successful if coupled with effective domestic resource use and mobilization.

Evans suggested that the growing body of work on projections of financing for health can help to stratify countries based on likely trajectories for domestic resource mobilization.[2] These projections illuminate a small but significant minority of countries with a 40- to 50-year trajectory for developing a strong engine of national financing. Accordingly, the development community needs to orient expectations for different types of development assistance based on the likely trajectories of country needs, Evans said. Stratification of countries based on development trajectories can help structure the policy discourse toward a future with realistic horizons for different countries, increasing the likelihood of successful transitions.

BILATERAL APPROACHES AND POLICIES FOR TRANSITIONS PRESENTED AT THE WORKSHOP

The panel discussion on multilateral approaches to transitions was followed by panel presentations from bilateral funders on their approaches to supporting countries in transition. First, Ambassador

[1] See Addis Ababa Action Agenda, 2015. Available at http://www.un.org/esa/ffd/wp-content/uploads/2015/08/AAAA_Outcome.pdf (accessed October 23, 2018).

[2] See the World Health Report: Health Systems Financing, 2010. Available at http://apps.who.int/iris/bitstream/handle/10665/44371/9789241564021_eng.pdf;jsessionid=D67F8C6B1CD77D63E0F295662C3D8B0E?sequence=1 (accessed October 23, 2018). Also, see Trends in future health financing and coverage: Future health spending and universal health coverage in 188 countries, 2016–40, 2018. Available at http://www.healthdata.org/research-article/trends-future-health-financing-and-coverage-future-health-spending-and-universal (accessed October 23, 2018).

Deborah Birx described The U.S. President's Emergency Plan for AIDS Relief's (PEPFAR's) experiences with country transitions. Kerry Pelzman of the U.S. Agency for International Development (USAID) and Ikuo Takizawa of JICA followed, and each described how their governments are supporting countries experiencing transitions through their development agencies (see Box 2-4). Ambassador John Lange from the UN Foundation moderated the panel.

The President's Emergency Plan for AIDS Relief

Birx began her remarks by commenting on country ownership and leadership. To achieve progress, Birx emphasized that countries must own their epidemics and have the political will to address their unique HIV epidemic. She added that community engagement plays a critical role in fostering country ownership (see Box 2-5 on the Research Fairness Initiative for an example of supporting country ownership presented at the workshop).

BOX 2-4
Bilateral Programs

The U.S. President's Emergency Plan for AIDS Relief (PEPFAR) was established in 2003 and originally conceived as a compassionate effort to deliver lifesaving services in countries hardest hit by HIV/AIDS. It is now also undertaking the challenge of controlling the HIV/AIDS pandemic and is working to this end in more than 50 countries (PEPFAR, 2018).

The U.S. Agency for International Development (USAID) leads the U.S. government's international development and disaster assistance through partnerships and investments that save lives, reduce poverty, strengthen democratic governance, and help people emerge from humanitarian crises and progress beyond assistance. The objective of the agency is to support partners to become self-reliant by reducing the reach of conflict, preventing the spread of pandemic disease, and counteracting the drivers of violence, instability, transnational crime, and other security threats (USAID, 2018).

The Japan International Cooperation Agency (JICA) with its partners aspires to take the lead in forging bonds of trust across a world that is free, peaceful, and prosperous and where people can hope for a better future and explore their diverse potentials. JICA wishes to promote international cooperation through development cooperation that engages a wide range of actors, including the Japanese government, local Japanese governments, private companies, civil society, universities, and research institutes (JICA, 2018).

BOX 2-5
The Research Fairness Initiative
Presented by Carel IJsselmuiden

Carel IJsselmuiden, executive director of the Council on Health Research for Development (COHRED), presented the Research Fairness Initiative (RFI). In her introduction to IJsselmuiden, Jo Boufford from New York University explained the relevance of the RFI to the workshop topic. Country ownership is critical for creating sustainable solutions in transitioning countries, she said. Related to country ownership is the issue of power relationships between partners with different resources to bring to the table. The RFI addresses the issues of institutional and country ownership, power asymmetries, and fairness when partners in LMICs engage with partners from high-income countries for health research initiatives. Boufford suggested the principles and concepts of the RFI might be informative to the larger discussion on country ownership and sustainability of health partnerships in transitioning countries.

The RFI is designed as an institutional reporting system on current practices and planned improvements in creating and maintaining research partnerships, IJsselmuiden said. The reporting focuses on three domains where unfair practices could occur in these partnership arrangements: fairness of opportunity; fair process; and fair sharing of benefits, costs, and outcomes. Within these domains, IJsselmuiden gave several specific examples: managing and negotiating the financing of the research, data ownership, and sharing or transferring of technology. Using indicators within each domain, the RFI can help to identify, share, and assess such fairness issues, IJsselmuiden asserted. The reporting is voluntary. One of its objectives is to help funders identify areas where there is opportunity for improvement in their current approach and to share the information and analyze for good practices, potentially leading to the development of new standards.

Beyond addressing the fairness within specific partnerships and the related contracts, the RFI facilitates the development of research systems in LMICs, which, according to IJsselmuiden, are an essential element of sustainable health solutions. He explained that in the current global research enterprise for health, grants are largely awarded to and conducted by institutions in high-income countries. As a result, the related human capital, social capital, and business opportunities are concentrated in these high-income countries rather than in LMICs. While the products developed through the research partnerships, such as new drugs and technologies, may be used in LMICs, the rest of the research industry impact remains outside the countries where it is most needed. IJsselmuiden referred to a recent report[a] on preparedness for pandemics that emphasized the importance of research capabilities on the ground where outbreaks occur to be able to test vaccines, drugs, and technologies quickly. The report recommended strengthening internal country capacity, as well as regional capacity, to manage the clinical research for epidemic control. IJsselmuiden added that the additional research capacity needed goes well beyond health emergencies and applies to other conditions, such as non-communicable disease management and maternal child health. From a country government perspective, building this capacity has the added benefit of job creation, economic activity, and innovation.

continued

BOX 2-5 Continued

In IJsselmuiden's view, there are two primary pathways to achieve sustainable national health research systems. The first pathway is through long-term national support where government, across political boundaries, invests substantially in science and technology. The other pathway is through externally funded partnerships. However, IJsselmuiden stressed, the problem with partnership is, if they are not fair in their construction, they contribute minimally to the research system. The RFI attempts to address this issue.

[a] To view the report *Money & Microbes: Strengthening Clinical Research Capacity to Prevent Epidemics*, see http://documents.worldbank.org/curated/en/120551526675250202/pdf/126338-REVISED-27231-IVTF-Report-reduced.pdf (accessed November 1, 2018).

Turning to PEPFAR's approach to transitions, she explained that PEPFAR's country eligibility criteria are based on the burden of HIV rather than a specific country's income level. The program does not begin to approach transition until the disease has reached a steady state of epidemic control—where the epidemic is no longer expanding. PEPFAR defines epidemic control as the point in which the annual number of new infections falls below the total number of deaths of HIV-positive patients. She added that controlling the HIV pandemic, and any pandemic, is key to a country's long-term fiscal capacity.

PEPFAR's approach to program and partner management is guided by three pillars: accountability, transparency, and impact (see Figure 2-6). These three pillars prompted PEPFAR to start working intentionally with the Global Fund to align budgets, data, and resources. PEPFAR spearheaded an effort to align PEPFAR, Global Fund, and host country HIV/AIDS budgets. They completed a resource mapping exercise to provide data that are more comprehensive and that clearly define the program elements for which each entity is responsible. These data, Birx said, will strengthen joint planning, avoid duplication, and inform future programming decisions. Over the past 4 years, both PEPFAR and the Global Fund were able to double their results in a flat budget, Birx stated, demonstrating what is possible when there is political will at the government level and intentionality at the multilateral and bilateral levels.

Progress in controlling the epidemic has also been remarkably successful in several African countries, notably in Malawi, Swaziland, and Zimbabwe, Birx explained. The success, she said, stems largely from governments that have adopted the policy quickly and that worked together with their communities. Interestingly, some countries that were least suc-

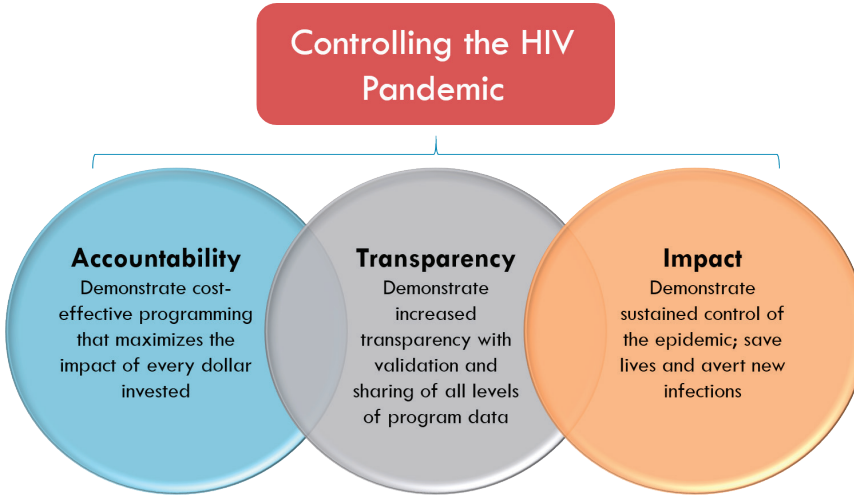

FIGURE 2-6 PEPFAR's three guiding pillars.
SOURCES: As presented by Ambassador Deborah Birx on June 13, 2018. Available at https://www.pepfar.gov/documents/organization/267809.pdf (accessed October 23, 2018).

cessful in controlling the epidemic were those that received the most funds from the Global Fund and PEPFAR, demonstrating that success is not solely a resource issue but is dependent on how those resources are used and on policies that ensure those resources have maximum impact. Other successes include a positive outcome to control a major AIDS epidemic under way in northern Namibia. The rural nature and the different languages of those affected by the epidemic complicated control efforts, but challenges were overcome with a combination of government innovation and listening and responding to the community. Despite these difficulties, almost 70 percent of community members were taking their medication, and the communities were able to attain a 68 percent viral load suppression rate, which kept them healthy and prevented them from transmitting the virus.

Returning to PEPFAR's approach to country funding based on burden of disease rather than income level, Birx contrasted the progress between a low-income and a middle-income country—Malawi and South Africa. In Malawi, both the number of new infections by an absolute number and the number of deaths by an absolute number have continued to dramatically decline despite a youth bulge and increasing population (see Figure 2-7). In South Africa, progress has been much slower (see Figure 2-8). South Africa is now investing billions in their epidemic, but they are still struggling to

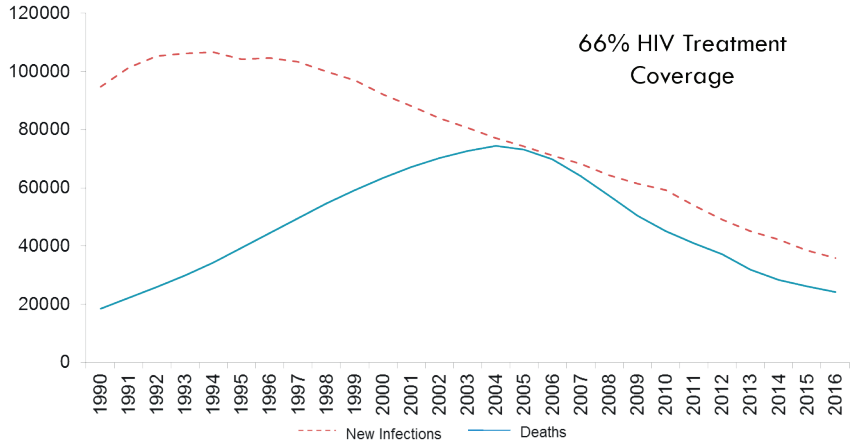

FIGURE 2-7 HIV treatment coverage in Malawi.
SOURCE: As presented by Ambassador Deborah Birx on June 13, 2018. Available at https://www.pepfar.gov/documents/organization/267809.pdf (accessed October 23, 2018).

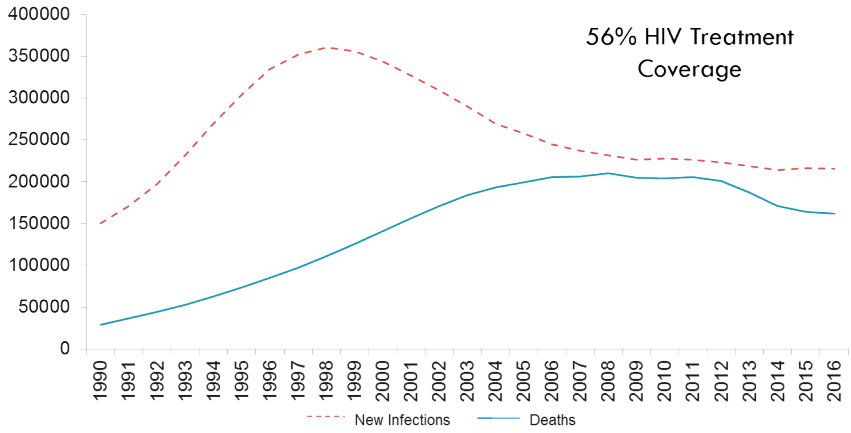

FIGURE 2-8 HIV treatment coverage in South Africa.
SOURCE: As presented by Ambassador Deborah Birx on June 13, 2018.

control the epidemic due to the depth and breadth of the pandemic that expanded during a time of less government engagement and recognition of the disease. Birx shared that 4 years ago, there was talk about transitioning South Africa, but the country still needs additional resources to address the core barriers to controlling their epidemic.

As PEPFAR continues to make programming decisions, Birx said, it relies heavily on site-level data to maximize the efficiencies of its resources. It is this level of data that enables PEPFAR to define exactly what is needed for specific populations. Barriers to epidemic control occur in pockets, and Birx feels it is PEPFAR's job to work with communities and governments to respond in specific ways that target resources for maximum results.

U.S. Agency for International Development

In opening her remarks, Pelzman noted the convergence between the workshop's focus and USAID's current priorities under Administrator Mark Green: country transitions to self-reliance and private-sector engagement. Pelzman first addressed the priority of country transitions and then turned to private-sector engagement, describing private-sector engagement as a means to achieving USAID's objectives.

While there is a renewed emphasis on country transitions at USAID, Pelzman emphasized that approaching transitions is not new for USAID's Bureau for Global Health. Since 2000, the Bureau for Global Health has engaged in strategic and deliberate processes to assess transition readiness in many of the countries where it works, establishing a precedent within the agency for how such processes should occur. A key transition began in 2006 with the graduation of countries from family planning assistance, Pelzman said. USAID implemented a carefully planned, data-informed approach to transitioning a number of Latin American countries from USAID family planning assistance. Decisions for transition included the total fertility rate and prevalence rates for modern contraceptives. USAID conducted consultative assessments to determine remaining weaknesses and gaps in the family planning programs and set timelines for program graduation. Objective and quantitative data were used in a collaborative process with host country governments and other stakeholders. The overall programmatic goal of the process was to achieve access, quality, and sustainability. The family planning graduation process normally lasted on average 4 to 6 years, with some exceptions. Pelzman shared several key lessons learned from USAID's family planning assistance transitions, noting the overlap with many of the lessons shared from the previous speakers' presentations on their organizational approaches to transitions (see Box 2-6).

For USAID, the term *transitions* does not necessarily mean USAID is ending engagement or funding in a specific country. Transitions often refer to a process of evolving a relationship between USAID and a host country to a new model of partnerships, Pelzman said. In most countries where USAID graduated programs from family planning assistance,

BOX 2-6
Lessons Learned from USAID's Family Planning Assistance Transitions
Presented by Kerry Pelzman

- Providing adequate time for planning and extensive in-depth consultative engagement was a key element for success.
- Communication was fundamental. Building a new type of relationship or partnership requires trust and mutual understanding through consultation with all relevant stakeholders, including both health and nonhealth ministers, the nongovernmental sector, and U.S. government agencies to ensure policy coherence.
- Partnering with civil society has helped ensure there is continued advocacy for vulnerable populations.

valued partnerships between USAID technical staff and local partners had been established. As part of the transition process, mechanisms were developed to continue these relationships, often evolving into communities of practice or facilitating south-to-south learning. Transition also does not necessarily equate to USAID discontinuing its investment in the health priorities of a partner country. Continued investments may include facilitating partnerships to locate new funding from other stakeholders, such as the private sector, to meet priority goals for USAID and the partner country. One innovative example is USAID's involvement in the Global Financing Facility in support of the Every Woman, Every Child Initiative.

Pelzman turned to USAID's priority focus on private-sector engagement, particularly in the context of supporting country transitions and new forms of partnerships between USAID and partner countries. Successful private-sector engagement in global health can increase impact, use USAID resources strategically, and build sustainability in programs to support countries as they transition from donor assistance, Pelzman said. Increasing private-sector engagement is a means to an end often in support of the three types of outcomes Pelzman described. To facilitate successful partnerships with the private sector, USAID recently developed a global private-sector engagement strategy. With this strategy, Pelzman said USAID seeks to best leverage private-sector resources and incentivize engagement to support countries in their path to self-reliance (see Figure 2-9).

Pelzman closed her remarks by emphasizing that each country's health journey is unique. Countries take different paths during the course

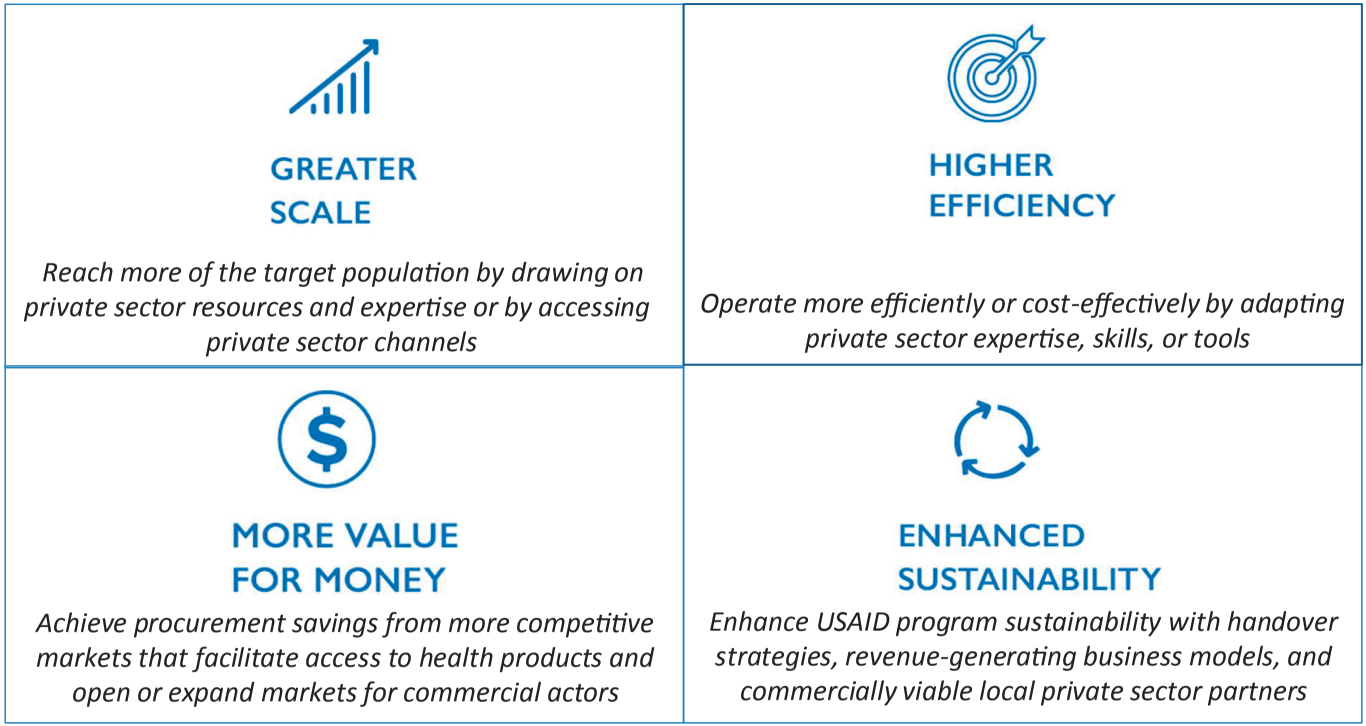

FIGURE 2-9 Effects of USAID's Bureau for Global Health's private-sector engagement activities.
SOURCES: As presented by Kerry Pelzman on June 13, 2018. Figure created by USAID's Center for Innovation and Impact.

of their journey; factors including political prioritization, stability, and unforeseen natural or human-made disasters can change or interrupt a country's journey to self-reliance. USAID continues to monitor risks and threats to its investments in countries and progress on the self-reliance journey. As a closing example, Pelzman recounted when Zika emerged in Latin America and the Caribbean in 2016. Many of these countries had transitioned out of USAID's family assistance programs. However, USAID had maintained relationships with them and those relationships provided a crucial entry in mobilizing an emergency response.

Japan International Cooperation Agency

Providing a perspective from another bilateral global health-funding agency, Takizawa described JICA's policies and approaches to country transitions. As a baseline for determining a country's eligibility for assistance, JICA follows the Development Assistance Committee (DAC) list of countries eligible for official development assistance. This list is based on income thresholds, and the approximately 140 countries currently on the list are eligible for JICA assistance. JICA's country allocation is based on the request coming from the countries and the thematic priorities defined by the Japanese government. The government's current priority for health centers on UHC and, in support of this central priority, includes strengthening, resiliency, and bolstering the health security of health systems. JICA also supports infectious disease control and maternal and newborn health. Recognizing the shifts in the burden of disease, particularly in the South Pacific Island and South Asian regions where JICA invests, JICA has begun to direct some of its resources to noncommunicable diseases. While the country requests and disease-specific and thematic priorities coupled with thresholds set for the DAC list dictate how and where JICA allocates its resources, Takizawa acknowledged that diplomatic considerations also influence the distribution of its investments. To illuminate this point, he noted that JICA provides some form of assistance in nearly all countries on the list; however, more than 60 percent of JICA's assistance for health is concentrated in approximately 20 countries.

JICA recognizes that many countries where it invests are experiencing economic transitions. To support the countries during these transitions, JICA mobilizes different modalities, Takizawa said. One of the strengths of this approach is the ability to construct the mix of this modality of assistance to suit the country's demands and needs as it transitions. These modalities range from concessional loans, grant aid, and technical assistance. In general, as countries grow in income level, they shift away from grant aid and toward concessional loans. Takizawa pointed out that JICA's terms for its loans to health-sector investments in LMICs are com-

parable to the loans through the World Bank and are more concessional in some income groups. JICA applies preferential terms specifically for the health sector.

Takizawa highlighted an example of how JICA is innovating in the use of grant and loan assistance modalities. Polio eradication has been one of JICA's major areas of assistance, and for many years it was funded primarily through grant assistance. In collaboration with the Bill & Melinda Gates Foundation, JICA has transitioned its grant assistance to loans in Pakistan and Nigeria. In this loan conversation, if the country meets agreed to performance indicators, the Gates Foundation repays the principle instead of the recipient government.

JICA is also changing its approach to technical assistance. The traditional model of technical assistance was a knowledge transfer from Japan to the host countries. However, as the host countries develop, JICA is shifting its model to more of a mutual dialogue. For example, JICA recently hosted a delegation from Kenya that included the ministry of health as well as representatives from the ministry of finance, the national parliament, and the counsel of governors for a dialogue on domestic resource mobilization to achieve UHC.

Like USAID, private-sector engagement is a priority for JICA. Takizawa described three ways JICA is approaching private-sector engagement:

1. Innovation and technical partnership to mobilize the technical expertise and resources from the Japanese private sector
2. Managerial capacity building where the private sector can offer expertise in efficiencies and management practices
3. Financial aid; Takizawa shared that since 2008 JICA has issued a bond to mobilize money from the capital market in Japan

As an overarching comment, Takizawa suggested that as all funders approach transitions within the countries where they invest and coordinate with the country and with each other, there are opportunities to better mobilize resources collectively in support of countries.

Discussion

Starting the open discussion with workshop participants, Scott Ratzan of the Anheuser-Busch InBev Foundation asked the panelists about their experiences with developing and measuring the effects of PPPs to support the sustainability of their initiatives. PEPFAR, Birx replied, has worked with many PPPs in the past. From experience, the agency has realized the importance of a clear concept of the kind of partnership needed for a specific goal.

Kate Dodson of the UN Foundation asked Pelzman to elaborate on USAID's global health strategy for private-sector engagement and share what lessons USAID has learned from past partnerships as well as share its plans for future partnerships. In response, Pelzman explained that USAID seeks out companies with corporate capacity and creative skills to bring into partnerships. An example is the Project Last Mile in South Africa, where USAID is partnering with Coca Cola for technical assistance in logistics management. Adding to Pelzman's response, Amy Lin, also with USAID, suggested all USAID teams should be briefed on what the private sector is seeking when partnering with health-sector institutions. "They are not just looking to put money on the table. They do want to bring their expertise. And they do want to bring their company people into the global health picture," she said. On the other hand, Lin noted, USAID itself might usefully give some thought to what its field staff's expectations are, what their goals are, and how they could become more creative, more strategic, and more proactive in a partnership. Moreover, she suggested that in choosing a partner, USAID should consider not only the large international companies but also in-country, for-profit channels, such as pharmacies and clinics that could facilitate contact with new types of "customers."

TRANSITIONS AT THE COUNTRY LEVEL

Jo Ivey Boufford of the New York University College of Global Public Health moderated the final panel of the day. Four speakers explored the degree to which developing countries are ready to undergo a transition that will bring to an end or reduce their dependence on donor assistance. The speakers also discussed the role that private-sector partners could play in facilitating the transition process. Muhammad Pate, former minister of health of Nigeria and now chief executive officer with Big Win Philanthropy, a UK-based foundation that invests in children and young people in developing countries to improve their lives, detailed the degree to which Nigeria is prepared to accept transitions. Naresh Goel, deputy director general at the National AIDS Council of the Ministry of Health and Family Welfare in India, outlined the health care problems posed by India's complex geopolitical governance system and the solutions found to solve them. Siddharth Chatterjee, UN resident coordinator for Kenya and UN Development Programme (UNDP) resident representative for Kenya, showed how a PPP can produce highly desirable health results. John Fitzsimmons, chief of the Revolving Fund for Vaccines of the Pan American Health Organization (PAHO) gave an account of how the 41 countries of the Americas have defeated three infectious diseases.

Nigeria

To frame his remarks on transitions affecting Nigeria, Pate described three relevant characteristics of its political system and economy: a decentralized political system, a large percentage of out-of-pocket health expenditure, and projected upward economic growth. Nigeria operates a fiscally decentralized system of government with autonomous states and limited central accountability mechanisms. Disparities across the different states are significant, Pate shared. Variations in health outcomes, not surprisingly, are also significant. For example, there is greater than a five-fold difference in full immunization coverage between the six geopolitical zones in Nigeria (NBS, 2017). Examining Nigeria and the potential effects of transitions from a national-level context, he suggested, hides vast variations within the country that often exceed the intercountry variations across the African region and even globally.

Health expenditure in Nigeria is heavily weighted toward out-of-pocket expenses, Pate shared. More than two-thirds are private, out-of-pocket expenses, and less than one-third is public—including spending from federal, state, and local governments (WHO, 2018). Less than 10 percent of the total health expenditure in Nigeria comes from external funding sources. The Nigerian economy overall is growing, and Pate noted it is projected to become a significant and economically strong country over the next several years.

After describing these contextual factors, Pate turned to the external programmatic transitions affecting Nigeria. He categorized them as three types. The first type is the transition of external financing instruments, including Gavi and the Global Fund. The second is the World Bank, which takes a more long-term and broader engagement approach than the other external financing instruments and operates at both federal and state levels as well as across sectors. The third type is GPEI and its specific focus on eradicating a single disease. How resources flow from these three types differs. Gavi and the Global Fund sign agreements with governmental and nongovernmental entities. The World Bank signs agreements with both the federal government and states. GPEI provides a significant amount of technical assistance resources through entities such as the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF).

These programs are all at different stages of transition within Nigeria, and Pate shared a few observations about how they are approaching their transitions. First, he suggested there is an opportunity for greater coordination in-country among them. Secondly, he suggested the in-county stakeholders who are key to the transition process are broader than the ministry of health—the minister that is often the central focus for discus-

sions on transition. The presidency and the parliament play a role in shaping the government's fiscal priorities over the long term. In terms of sustainability after these transitions occur, Pate suggested that gaps within the institutional systems, as well as policy and regulatory frameworks, need to be addressed. Additionally, there is the issue of human resources and domestic employment through these external programs.

Pate suggested that the support Nigeria needs to sustainably and more effectively manage its health system and services includes technical assistance in public-sector management and planning. In Nigeria, mechanisms to support the development of government efficiencies are lacking even though investments are being made to create efficiencies within externally funded programs. He pointed to the example of supply chain management. There have been initiatives to create efficiencies in the supply chain for externally financed commodities, but these initiatives do not extend into the rest of the health sector even though pharmaceuticals account for a large portion of total health spending in the country.

Before closing, Pate noted a couple of points raised in the earlier panels he believes are important considerations for transitions in Nigeria. First is community engagement. Pate emphasized how vital community engagement is as part of the evolution of donor support over time. Second is the development of new sets of instruments. Nigeria benefited immensely from the Japanese government's loan buy-down for polio, Pate said. He sees significant potential for innovative financing instruments such as this one to support countries in their transitions. He added a final point of consideration. He has observed an unevenness across external funding programs in the level of negotiation in which they engage with the governments where they are operating. He cautioned about the asymmetries that can result when there are different understandings among partners about the risks associated with agreements.

India

Significant demographic and economic transitions in India are affecting the health sector and health outcomes in the country. Goel described these transitions, the current health challenges, and the government's response.

The population of India is increasing, with some estimates predicting that by 2030, it will have the largest population in the world. The economy is also growing rapidly, currently at a rate of 7 percent. If this growth continues, the country's economy will double within approximately 10 years. Along with this growth, India has recently undergone two major economic reforms, Goel shared. One is demonetization, and the second is the Goods and Services Tax implementation, leading to an

increased use of digital financial transactions and a greater percentage of commerce shifting into the formal economy. Before moving on to the health problems in India, Goel emphasized the vastness of the country. Rather than viewing India as a single country, Goel suggested it should be viewed as a continent of 29 large nations and 7 smaller ones. Within India, some "nations"—states and provinces—are experiencing more development than others.

Urban health, Goel noted, is one serious problem in India. Adequately feeding the population is another: around 40 percent of Indian children are malnourished (NFHS, 2016). Human resources to staff primary health care centers are sorely lacking, he said. Moreover, a large proportion of health care services is provided mainly by private-sector facilities that are paid on an out-of-pocket basis. In Goel's opinion, India's problems put the quest for universal health care on the level of a "big dream." On a more positive note, Goel shared that the government has come up with a new health insurance scheme, the National Health Protection Scheme, funded by the government, that covers 500 million inhabitants living under the poverty threshold.

Switching to his specific tasks as deputy director general with the Indian ministry's National AIDS Control Organization, Goel emphasized the need to work in a partnership between the public and private sectors to "mount multisectoral responses in order to reach the largest number of people with awareness messages, preventive activities, and care and treatment." India's AIDS council has signed a partnership agreement with 16 nonhealth ministries that provide services such as awareness activities, staffing integrated counseling and testing centers, and treating sexually transmitted diseases. Partnerships were also formed with some 200 private-sector firms covering a wide range of activities that bring people into contact with AIDS health facilities.

Kenya

Kenya is a lower-middle-income country that has been proactively tackling its most pressing health challenges through government-led PPPs. Chatterjee shared how these initiatives evolved and are being implemented. Overall, he views the results achieved in Kenya as a lesson that PPPs can be successful even in low-resource settings with significant health challenges.

In 2014, the government of Kenya launched a "free maternal health care policy." The decision, he explained, was prompted by the reputation that Kenya had acquired as being among the 10 most dangerous countries for a woman giving birth. A study of the country's maternal death statistics pointed to six counties in Northeastern Kenya that had maternal death rates of more than 3,500 deaths per 100,000 live births.

Chatterjee met with representatives from several private-sector partners: Philips, a Dutch technology firm; GlaxoSmithKline, a pharmaceutical company; Safaricom, a Kenya-based communications company; Huawei, a Chinese company; and the Kenya Healthcare Federation, a Kenyan charity company committed to finding a solution to the alarmingly high maternal death rates. Together they used the study data to identify the areas with the most need. These partners were supported by a strong commitment from the Kenyan government to address maternal health, and in developing their plan of action, the partners consulted with both county governors and national authorities.

Within 30 months, the maternal death rate in these 6 high-mortality counties had fallen to 550 deaths per 100,000 live births. Chatterjee attributed this success to several key aspects of the partnership: capacity development at the county level, engagement of efficient technical staff, and strict financial accountability. Chatterjee noted a convergence of the partnership with two other critical factors for success: political will at the highest level and the right policies being translatable into action as far as the most remote villages. Buoyed by the success of the six-county experience, the Kenyan government has gone a step further in launching a "big four agenda" that covers universal health care, food security, and affordable housing and manufacturing.

Americas Region

Providing a perspective on a regional collaboration to address a specific health issue, Fitzsimmons described some of the transitions the national immunization programs in the Americas experienced since the Expanded Program on Immunization launched 40 years ago.

In 1991, the last case of polio occurred in the region, and in 1994 the region was certified as polio free. Driving this accomplishment, he said, was the commitment of health ministers and a partnership that included USAID, Rotary International, and many others. Next came the elimination of rubella and congenital rubella syndrome declared in 2015, followed by the elimination of measles, declared in 2016. Several partners, Fitzsimmons explained, were instrumental in bringing about these achievements. They implemented many catch-up immunization campaigns and surveillance activities. Fitzsimmons also praised the vaccine suppliers with whom the PAHO teams had a unique relationship. The work of Gavi, he said, in introducing new vaccines from 2000 up to the present, was a vital element. A notable recent transitional event was the agreement signed by the Haitian government to finance its own vaccines.

Generally speaking, three factors were key to the successes of the countries' immunization programs, Fitzsimmons said. One was the adher-

ence to an annual, multiyear plan and to a regional plan to facilitate technical cooperation between PAHO and its partners in supporting the immunization programs of the region. A second key was drawing up a budget line and legislation to support it. The third key was an effective management structure that underpinned a reliable system for managing countries' vaccine needs and for negotiating with suppliers for the lowest prices for vaccines and syringes. PAHO's Revolving Fund was also a key factor in facilitating vaccine payment issues. A recent development, Fitzsimmons noted, is the creation of a capital fund for the 41 countries of the region. It gives each country a credit line enabling it to purchase vaccines regardless of the country's size. This capital fund holds $200 million currently.

Discussion

The open discussion with the workshop participants started with questions from Simon Bland of UNAIDS to Pate. Bland asked Pate if the Nigerian government is effectively allocating resources for private-sector engagement and what role the private sector could play in aiding decisions on resource allocation. Addressing the first question, Pate said that during his presentation, he spoke of efficiency with regard not only to the amounts being allocated but also to how third-party resources are allocated to support the efficiency of governments. With regard to the role of the private sector, Pate shared that with the support of the Bill & Melinda Gates Foundation, he has garnered a group of private-sector entities to create the Private Sector Health Alliance of Nigeria, a platform for leveraging the innovative health-related capabilities of the private sector. The crucial element, Pate emphasized, is an organized platform to facilitate the mobilization of private-sector resources, ideas, skills and approaches, and expertise for the benefit of the public sector. Picking up on the platform approach, Goel mentioned a Sustainable Development Goals (SDGs) platform that he and his colleagues established in 2017. The platform is co-chaired by the Indian Minister of Health and the UN resident coordinator, and it comprises partners from the private sector, the public sector, and civil society.

Nduku Kilonzo of the National AIDS Coordinating Council in Kenya asked Pate what he sees as the realities of transition and what role the private sector can play within them. In response, Pate noted that transition means many things to many people or sectors. The Global Fund and Gavi, for example, approach transition from the viewpoints of their organizational missions. Other multilateral organizations, such as the World Bank, see transition as a conversation with links to many areas of organizational interest. JICA takes into account the diplomatic consequences

of transition. To answer Kilonzo's question about the role of the private sector, Pate pointed out that the private sector has the competence, skills, and mindset to do what many governments are unable to do efficiently. The private sector, he said, can help governments to plan, budget, and implement.

3

Setting the Stage for Sustainable Investments in Health

Following the presentations and discussion on transitions affecting global health, the second session of the workshop turned to setting the stage for sustainable investments in health. Divided into three topical discussions, the session covered the following:

1. Challenges and potential areas for partnerships to support countries in the transition out of external funding programs
2. PPPs as a mechanism to develop health care infrastructure in countries managing transitions and addressing other pressing health needs
3. How market shaping and market-based interventions can play a role in having an effect, value for money, and sustainability

MULTISECTORAL ENGAGEMENT AND SUSTAINABLE SOLUTIONS TO SUPPORT TRANSITIONS

Peter Sands of the Global Fund to fight AIDS, Tuberculosis and Malaria (Global Fund) described his organization's challenges when transitioning countries out of Global Fund support as well as several areas where he sees potential for partnerships to support countries and sustainability in the process. To begin, he shared three overarching challenges the Global Fund encounters in the transition process. The first challenge is where to draw the line for the eligibility criteria. While, in Sands's opinion, all stakeholders agree that development assistance for health should focus on

the populations with the heaviest disease burdens and the poorest economies, the question is where to draw the cutoff line for support. Wherever the line is drawn will be a source of controversy.

The second overarching challenge, he noted, is how to go from a model highly dependent on external assistance to a model owned and financed by the country's domestic resources. Sands stated that the right sustainable solution for providing health in a country is for it to be provided through domestic resources: "Whatever the model is, it should be a country-owned solution to health services." The question is how to get there.

The third overarching challenge for Global Fund transitions is being the "last one standing." The Global Fund's threshold for eligibility is higher than most other programs; thus, Sands noted, developing partnerships in the transition process is difficult when so many other partners have already left the country. Inevitably, transition will always be hard and will always involve difficult trade-offs and frictions, Sands maintained.

Sands then described several challenges when implementing the transition process in country. Transition in some countries, he noted, can be more difficult and less successful simply because planning has been poor or undertaken too late. Early planning and preparation are prerequisites for the transition procedure, he insisted. Often it requires legislative actions, skilled planning, integration across the different sectors of the government, and resolution of weaknesses in service delivery. The Global Fund broaches the possibility of a transition with governments many years before actually implementing the procedure, Sands explained.

Another common challenge with transitioning countries is procurement. When countries transition out of the Global Fund's procurement system, they often face issues of quality control, stock outs, and price. To help address the procurement issues, Sands would like transitioned countries to have access to the Global Fund's pooled purchasing mechanism, but he admitted that this arrangement may not be as simple as it sounds. There can be registration or technical problems or legal barriers to accessing international pooled purchasing mechanism systems. When addressing the procurements challenges, Sands noted countries are given little technical assistance.

The third challenge during the transition process that Sands presented is continuing services for key and vulnerable subpopulations. These subpopulations suffer from concentrated HIV and TB epidemics that can spread rapidly across a country whose overall population has very low infection rates. Civil society organizations are often critical for reaching these populations. The Global Fund encourages governments to work through civil society in providing services to these key and vulnerable populations. These efforts have been successful in some countries, he said, but not all.

A fourth challenge Sands acknowledged is political will. He pointed to malaria to illuminate the challenge. Sustaining efforts to eradicate malaria, Sands said, is very expensive on a per case basis, especially as the political momentum is flagging. That said, there are still successes to be proud of, he pointed out. Paraguay has just been certified malaria free, and several countries are on the way to reaching the finish line. Without a sustained political commitment, though, progress can quickly backslide. Sands emphasized that the political will of top-level government officials to solve these problems is the most fundamental determinant of a successful transition.

The fifth challenge Sands noted with transitioning countries is financing. Some countries may have the required money to transition, but the issue is not on their priority list. However, many countries have simply too narrow a fiscal base. Even if they prioritize the issue, their starting resource envelope is simply not big enough to ensure their fiscal sustainability.

The final challenge Sands acknowledged is how country specific each transition will be. Political systems and population sizes will vary. Often within countries, disparities between regions or between the capital city and rural areas are significant.

Given these challenges in the journey to successfully transitioning countries out of Global Fund support, Sands suggested three areas for potential partnerships to support countries in the process: (1) technical assistance for building health systems capacity, including procurement; (2) developing sustainable financing mechanisms; and (3) supporting civil society to reach key and vulnerable populations.

ELEVATING HEALTH ON DOMESTIC AGENDAS: LINKING HEALTH AND ECONOMIC GROWTH

Following Sands's presentation, Trevor Gunn from Medtronic and Mark Halliday from the International Finance Corporation (IFC) jointly presented on investments in health care infrastructure and the merits of PPPs for these investments in countries transitioning away from development assistance and toward self-sufficiency. To set the stage, Gunn described some of the relevant changes these countries are experiencing. First is the rise in NCDs. At the same time these countries are grappling with how to finance health services for infectious diseases that were previously supported by external funding programs, they are also experiencing a rise, in some cases an explosion, of NCDs. With less than 1 percent of all global health funding allocated to NCDs, Gunn pointed out that governments themselves must tackle both prevention and access to services. Second is the push for UHC. The push for UHC is being driven

on two fronts—by the global goals and by the expanding middle-class populations—with both elevating the expectations for the health services that governments will deliver.

To provide the health services required to meet the demands of supporting previously externally financed programs, tackling NCDs, and increasing coverage, Gunn said countries need health care infrastructure—both human capacity and physical infrastructure. Beyond meeting the human demands of their populations, health care infrastructure also supports economic growth through foreign direct investment, he said. Both Gunn and Halliday recounted examples where investment decisions of multinational companies were determined based on the availability and quality of the health care infrastructure for their employees or potential customers. However, he noted, health care generally is not considered part of infrastructure. When it is, it typically is only in connection with large tertiary health care facilities. Health care infrastructure, he said, can be as small as a cardiac catheter laboratory or a clinician's practice.

Infrastructure development is inextricably linked to PPPs, Gunn said. Health care infrastructure should be the same; however, the number of PPPs in health care is much lower than in other sectors. Halliday explained how the IFC facilitates the development of these PPPs: the IFC is the part of the World Bank Group that goes beyond traditional development assistance to mobilizing the private sector. IFC advises governments on PPPs, particularly for infrastructure development. Since the late 1980s, he noted, the IFC has performed about 350 transactions in emerging nations, with nearly 20 percent being in the health sector. Of these transactions, about 30 percent involved large tertiary hospitals, 20 percent involved diagnostic imaging equipment, a further 20 percent involved dialysis equipment, and 6 percent involved health insurance schemes. The rest, he said, was a mix of clinical and other interventions.

Halliday shared some lessons learned from advising governments on health care PPPs. First, there is a cost associated with structuring and tendering PPPs. The essential trade-off for government is the value they achieve in improved infrastructure and services versus the cost of the transaction. Halliday emphasized having the right people engaged in the process is key to balancing this trade-off. The second lesson he shared is health care done badly, such as the over-prescription of opioids, can be highly destructive and expensive, so getting it right is critical for society. The third lesson is the importance of governments developing a strategy and then determining how specific PPPs fit within it rather than engaging in one-off projects. The final lesson Halliday shared is the value of standardization. If processes can be standardized in a positive, efficient way, the costs of transitions can be reduced in the long term and the benefits maximized.

Discussion

In the discussion that followed Gunn's and Halliday's presentation, Amy Lin of USAID asked Halliday if he expects the transitions of countries out of development assistance to affect the types of projects the IFC facilitates. Halliday believes the IFC will probably address more programmatic issues and less single projects, advising governments on strategic long-term health care needs. Furthermore, regardless of the effect of country transitions, the way health care is provided will change radically in future years. He predicts that in a few years, the most important medical device will be the mobile phone; information and technology companies are radically changing the health care system.

Leigh Verbios from the U.S. Food and Drug Administration commented on the role of strong regulatory systems. To ensure the quality of products a country will need after a transition, a strong regulatory system must be in place to assure consumer protection. Halliday was in complete agreement with Verbios's statement, saying, "Good regulation is transparent, so those coming into a market can feel that they have an equal shot."

SHAPING THE MARKET FOR INVESTMENTS IN HEALTH

The final discussion regarding health investments in transitioning countries focused on market shaping and market-shaping interventions. Amy Lin from USAID facilitated the discussion. Amanda Glassman from the Center for Global Development described how procurement procedures and the market for health commodities could be made more effective and efficient. Johanna Ralston from the World Obesity Federation offered her perspective on the growing burden of NCDs and several approaches to address it.

Lin began the discussion by defining market shaping[1] and highlighting its importance in enabling sustainable health-sector investment solutions during and after country transitions. Market shaping, she explained, can make health care markets more efficient and effective in delivering lifesaving health products, commodities, and services required by LMICs. Moreover, market shaping can foster greater access to health care services and greater reliability of market products and services, Lin noted. She

[1] USAID defines market shaping, in the context of serving the public good, as optimizing the market to maximize public health impact performed through examining the interaction of public, private, and nonprofit actors in the market and how they interact and make choices at the level of the whole market. Market shaping ultimately addresses deep-rooted issues of supply and demand, and a successful market-shaping intervention requires a "thorough inventory of the benefits, trade-offs, and unintended consequences from multiple perspectives in the market" (USAID, 2014).

went on to posit that market-shaping interventions can help reduce breakdowns in complex health markets, thereby allowing global heath donors and actors to more efficiently allocate their investments.

To date, market-shaping interventions in global health have focused primarily on ensuring availability and affordability of products procured through a few large buyers focused on infectious disease control, Lin noted. With the advent of more decentralized country procurement and the rise in NCDs, a task for the health community, she said, is to explore how to expand the focus of market-shaping activities. Lin emphasized this expansion includes broadening the focus to planning for programmatic and services delivery as well as product procurement.

Lin then detailed several successful market-shaping interventions USAID has supported. These interventions include agreements on ceiling prices, volume guarantees, advance-purchase commitments, copayments, strategies for engaging suppliers, and aggregate demand forecasting. As an example, Lin described how third-generation indoor residual sprays to combat malaria now reach the market faster and are deployed more rapidly than before. As a result, an additional 15 million people who otherwise would have been exposed are now protected from the disease. Lin also noted that purchasing of contraceptive implants more than doubled over the past 2 years thanks to an agreement reached between several donors to purchase a set volume of implants in exchange for a significant price reduction. A similar approach is under way for antimalarial therapies.

While these examples of progress are exciting, Lin emphasized the importance of learning from each attempt, continuing to perform rigorous market analyses, and honestly addressing any problems identified along the way. Effective market shaping, she said, requires coordination between the public and private sectors to ensure incentives and interventions are appropriately aligned. She added that beyond ensuring products are available and affordable, market shaping needs to focus on planning for programmatic and services delivery.

Following Lin's introduction to market shaping, Glassman described some of the procurement challenges countries are facing in the context of transitions. She noted that donors or external funders procure about 50 percent of the medicines available in low-income countries. Governments account for 10 percent, and the remaining 40 percent is through out-of-pocket spending. Public spending on medicines, she said, does not compensate for the drop in donor aid following transitions. Out-of-pocket spending is likely to remain a sizable portion of the total in the immediate future. The challenge, she said, is to know how to retain the availability of health care commodities in the private sector while, at the same time, inducing the public sector to subsidize essential medicines for the poor.

Failure to achieve this objective will inevitably produce a state of inequity, she said. To illuminate the challenges with these transitions, Glassman described the situation in a few specific countries. In Ghana, 1 month's supply of generic medicines for diabetes costs about 17 days' wages for the lowest paid, unskilled, public-sector employee (WHO, 2015). In Afghanistan, 15 percent of the total health expenditure in the public sector is financed through GPEI. In Mozambique, PEPFAR accounts for about 25 percent of total health expenditures in the public sector (Health Policy Project, 2016).

Glassman referred to a study in Ghana where people were buying a statin at a price about 20 times greater than that paid by the UK National Health Service. This example highlights the weak procurement practices in many LMICs. Procurement in both the public sector and out of pocket is often fragmented and disorganized. An additional challenge when countries are transitioning out of aid funding for commodities is the increased preference for local manufacturers, introducing quality control issues. Providing a promising example, Cameroon, she noted, has a procurement agency that helps purchasers to structure public and private spending. The agency buys products for the public sector and, after going through a quality assurance process, sells them wholesale to private pharmacies.

After laying out these challenges, Glassman presented two suggestions for addressing them. First, if domestic procurement of commodities will be the reality, she proposed the global health community should consider comprehensive programs for reform and policy dialogue with countries on regulatory reform, procurement strengthening, and improving competition among quality-assured generic manufacturers. The second suggestion is reformulating and reprioritizing the use of development aid within this new context. Glassman proposed three priority areas for aid going forward: (1) pooling and copayment agreements to facilitate access to innovative products, (2) investments in global public goods, and (3) supporting key and vulnerable populations.

Following Glassman's presentation, Ralston provided a perspective on NCDs within the context of transitions. NCDs cause about 70 percent of all deaths in the world, yet only 1–2 percent of development assistance for health is spent on NCDs. So the question is, how do countries transition from no funding to addressing this heavy burden of disease while at the same time adjusting to losses in external funding for infectious diseases?

Regarding global initiatives to address NCDs, Ralston pointed to one positive outcome of the lack of funding and prioritization of NCDs. The gap helped to create an NCDs coalition across advocates and others focused on the discrete areas of cancer control, cardiovascular disease,

diabetes, and chronic respiratory disease. Recognizing that all of these areas are under-prioritized and share common risk factors, the coalition fostered a collective approach focused on long-term mutual benefit over individual short-term interests. This collective approach has enabled a focus on policy interventions to address the underlying shared risk factors.

She pointed out that WHO has produced a document listing "the 16 best buys" for interventions on NCDs. The interventions are based on a set of targets that identify the most feasible and effective interventions and those most likely to produce the highest returns on investments. The WHO document also lists options for interventions against each of the four key NCD risk factors, namely tobacco, harmful use of alcohol, an unhealthy diet, and physical inactivity, and also for the four major disease areas—cardiovascular diseases, diabetes, cancer, and chronic respiratory diseases (WHO, 2017). Some interventions, she said, include treatments, and others include physical activities. The report also focuses on tax interventions and the concept of STAX—taxes on sugar, tobacco, and alcohol. These taxes, Ralston said, create a win/win/win in reducing demand, reducing consumption, and generating public-sector revenue.

Another promising area for addressing NCDs is through integration into existing programs. Integration can be included within the health sector, for example, as part of UHC. However, integration can go further into other sectors such as urbanization, climate change, and transport. Ralston recounted an example of a bridge built in Scotland that was praised for coming in well under budget. However, the cost-cutting measure included eliminating sidewalks. Many infrastructure projects in LMICs are supported with World Bank loans, and these loans can be an opportunity to integrate NCD prevention, ensuring physical activity and accessibility are integrated in the design.

Lastly, Ralston emphasized that people are not silos. Individuals experience both communicable diseases and NCDs. Going forward, she suggested that interventions should be designed with the users in mind.

Discussion

To start the discussion, moderator Lin asked Glassman what she proposes the global health community should do to help countries take more control over their procurement decisions. Glassman would first advise the global health community to standardize and serialize medical products, with a view to increasing the visibility of markets in both the public and the private sectors. There is no track-and-trace system in most health systems of middle-income countries today, she noted. She also expressed concern about markets holding too much inventory at one

time, a situation that could incur a huge cost or prevent accurate demand forecasting. Choosing what products to buy is also a subject of concern, she added. Should governments, she asked, take the whole set of products that donors are buying today? Countries might benefit from support in doing health technology assessments, cost-effectiveness calculations, and budget impact analyses. Glassman would like to see regulatory reforms that would facilitate access to the market of manufacturers of nonbranded quality generics.

Turning to Ralston, Lin noted some public-sector partnerships and PPPs can be controversial, depending on which sector is engaging with which type of company. She asked Ralston to comment on this issue because there may be implications for the NCD arena regarding sugar-sweetened beverages and agricultural products. Ralston replied that there are health-harming industries that can become health positive, especially in the food sector. However, some other health-harming industries, such as tobacco, are a nonstarter.

Alleyne remarked that most people speak of the 41 million people who die from NCDs every year, but few speak of the 3–4 billion living with NCDs. The narrative, he said, needs to transition to focus on those who are living. Focusing on the dead is an old narrative based out of the infectious disease community, he said. For NCDs, he urged the community to focus the narrative on the living. Reflecting on the example Glassman shared about the price difference for statins between Ghana and the United Kingdom, he asked her if partnerships can be forged between countries so that each country knows what the other is paying for the same product. As a final remark, Alleyne pointed out the scheme in the Americas for joint harmonization of regulation and suggested other regions should consider similar models.

John Monahan of Georgetown University asked Glassman which international partners have supported these countries in strengthening their health care procurement operations. Glassman said that the World Bank or regional development banks would provide support in this area.

Takizawa commented to Glassman that Japan is struggling to develop a policy for countries implementing private health insurance. These countries, he said, often have health-related discrepancies or inequalities. Glassman suggested that if the government of a country can only fund a certain proportion of health insurance, private health insurance or private pooling could be a means of curbing out-of-pocket expenses. Brazil and South Africa, she noted, have enrolled all of their public employees in private health insurance, leaving the rest of the population to use the national health service. She remarked that countries should be regulating private health insurance as a way of contributing to UHC.

Following the remark made by Alleyne that the focus of the global health community on NCDs should cover not only the deaths from NCDs but also the people living with NCDs, Jennifer Healy, with the U.S. Department of Health and Human Services, asked Ralston how the lives of people living with NCDs could be extended. Ralston replied that the treatment given to NCD patients should be more than just medication. Food, she noted, is very much a part of the treatment. Many diseases, she remarked, are a logical response to the environment in which people are living. For example, air pollution is associated with respiratory and cardiovascular diseases. A holistic approach to the management of NCDs, she added, would certainly contribute to extending the lives of NCD patients.

4

Several Models for Sustainable Partnerships and Private-Sector Engagement

The third workshop session focused on four models of private-sector engagement and PPPs and their potential as sustainable, scalable solutions in the current global health environment. The four models explored were catalyzing and scaling promising social enterprises, leveraging core competencies of private-sector companies, engaging other industries, and using technology to increase access.

CATALYZING AND SCALING PROMISING SOCIAL ENTERPRISES

Chris West of Sumerian Partners moderated a discussion with Liza Kimbo of LiveWell in Kenya and Caroline Bressan of Open Road Alliance on catalyzing and scaling promising health-sector social enterprises in LMICs. Kimbo gave an account of her journey from running a retail pharmacy chain to becoming the founder of a health enterprise and one of the largest chains of health clinics in Kenya. Bressan spoke about the fragile existence of health care social enterprises and her work in assisting innovative companies to overcome roadblocks that hamper the path to scale.

Before turning the floor to Kimbo and Bressan, West set the stage by describing the current state of the social enterprise market. Social enterprises are organizations that apply market-based approaches to the provision of products and services that benefit poorer communities. A social purpose is embedded in their mission regardless of whether they are structured as nonprofits or for-profits. In Africa, his recent research identified 267 organizations that self-identify as social enterprises providing health care to

low-income communities with about half operating as for-profit organizations and the other half as nonprofit. Figure 4-1 displays the breakdown on the market focus of the health care social enterprises in Africa.

This market has evolved primarily in the past decade, and West suggested three reasons for its growth:

1. There is increasing demand from low-income communities for good-quality, affordable services and products, and some members of these communities are now more willing and able to pay out-of-pocket for them.
2. Secondly, many not-for-profit organizations that require subsidies are struggling to find them, and they are trying to accommodate the decrease in income by charging for products and services that previously were given away for free or at discounted prices. In other words, they are trying to adopt or integrate market-based approaches into what was traditionally a not-for-profit service model.
3. Thirdly, younger people are far more interested than previous generations in setting up businesses with a social purpose.

West then described the stages of development for these social enterprises:

- Innovation stage: Concept developed but not implemented
- Growth stage: Moved beyond concept, implemented and generating some level of revenue

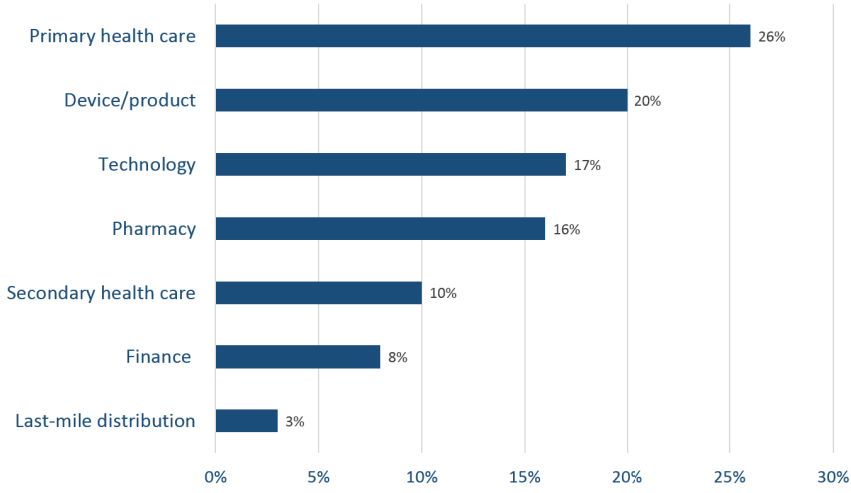

FIGURE 4-1 Issue focus in Africa.
SOURCE: As presented by Chris West on June 14, 2018.

- Early stage: Implemented and generating regularized income stream but not yet profitable
- Scale stage: Implemented, financially viable, and expanding

Of these four stages, more than 70 percent are in the innovation phase of their development, and less than 1 percent have reached scale (see Figure 4-2). West shared four factors he believes are necessary for social enterprises to reach scale: an enabling policy environment, appropriate funding, business and technical skills support, and market linkages. To scale, they require an enabling environment to operate and deploy their market-based approach. Appropriate funding is needed but in a form and duration consistent with the need to make an impact and boost scale-up. Business and technical skills are also needed, as are links with other enterprises in the private or public sector or with civil society organizations. Generally speaking, the market in Africa, in West's view, is vibrant, sizeable, and diversified, but it lacks the four factors needed for social enterprises to scale and the market to reach its potential. In terms of support available for social enterprises, West shared that support generally exists as short-term grants during the innovation stage and investments seeking return on capital when organizations have scaled. He emphasized the lack of support available during the growth and early stages.

Following West's description of the health care social enterprise market in Africa, Kimbo shared her experience as a social entrepreneur operating within the sector. Her journey started 20 years ago when she

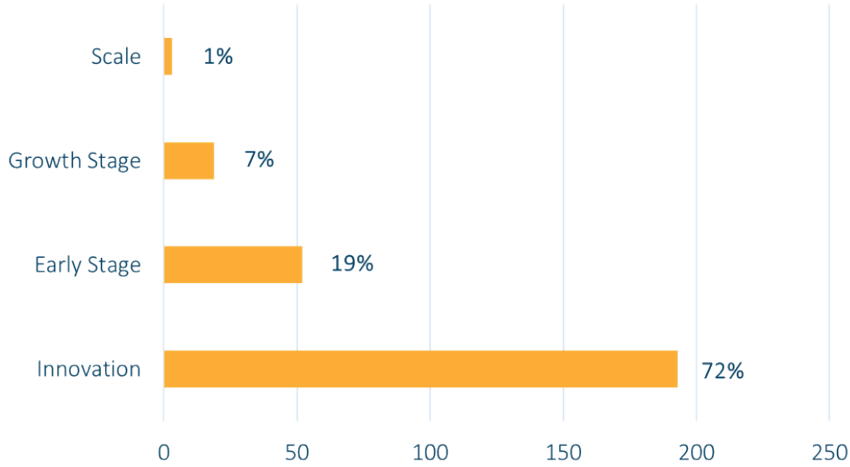

FIGURE 4-2 Stages of social enterprise development in Africa.
SOURCE: As presented by Chris West on June 14, 2018.

opened a chain of seven retail pharmacies in Nairobi. Her initial motivation for opening the pharmacies was purely a business decision. She quickly realized that about half of the people who walked into her pharmacies walked out without having their prescriptions filled because of the high cost of her branded products. Recognizing the failure in this business model, she sought out good-quality generic drugs that would be affordable for the community, thereby expanding her market base. Eventually, she joined another entrepreneur to collectively set up community drug shops in rural areas. This business model evolved into several franchised primary health care drug shops and ultimately expanded to primary health care clinics staffed initially with community health workers and finally with nurses. The clinics are still running. "That is one of the most exciting things that I have done," she professed. She started her enterprise on a for-profit basis for the wealthy who could afford expensive medicines and eventually ended up on a nonprofit basis for people who could afford to pay only a small sum of money.

This nonprofit model, she said, survived through donors and enabled her to create LiveWell, a sustainable network of clinics and hospitals. LiveWell's first objective was to provide primary health care services to the poor communities of Nairobi, where she opened five clinics providing primary health care services, especially for mothers with young children living close to the clinics. After going through many transitions on a learning curve, she decided to take over a small 30-bed hospital from a large flower farm company in a rural area of Kenya. The flower farm companies in the area, she said, wanted their workers to receive basic primary care at an affordable cost. The flower farm companies, therefore, support the hospital by paying a statutory fee for their 4,500 workers. Kimbo extends her hospital's health care services to the community and their families. The workers are also covered by Kenya's National Health Insurance Fund (NHIF), which pays them about $1.00 for outpatient services and certain inpatient services. The hospital is open 24 hours per day and works closely with the Ministry of Health, which provides vaccines and family planning commodities and functions as a reference hospital. The NHIF covers the hospital's outpatient and inpatient services. USAID partners have set up a comprehensive care clinic at the hospital and have provided support for its staffing and for HIV commodities and TB products. Kimbo's ambition is to set up a much-needed mini-surgery center; currently, her hospital refers three to five women per week for cesarean sections that could be performed onsite if there were a surgery center.

The next speaker, Bressan, drew laughter from the workshop participants by saying that social enterprises are the working poor of the business world. But the reality is, she said, one shock and they drop below the poverty line. They live hand to hand, and even in the United States, they

cannot find affordable capital, and when they do, it requires collateral that is often overly cumbersome. She described the growth pattern for social enterprises as: growth, growth, disaster; growth, growth, disaster; and constantly needing to rebound without any safety net.

This is where Open Road Alliance fits in, Bressan explained. The organization is a private philanthropic initiative founded to keep social enterprises and their impact on track. It provides contingency financing in the form of grants and loans when unexpected roadblocks occur. About one in five projects experiences an unexpected need of funding. Much of its work is in sub-Saharan Africa.

Open Road Alliance has data, she said, that identify the types of roadblocks social enterprises experience.[1] Ultimately, the organization will develop a robust dataset that can predict what the top three roadblocks a health care social enterprise, for example, is likely to run into, what its roadblocks might be, and what solutions can be applied. From the currently collected data, Bressan said one of the most frequently identified roadblocks is delayed fund disbursements. Bressan cited an example of a company in Nairobi that Open Road funded recently. The company uses ambulances that must reach a point of medical assistance within 15 minutes of an emergency. There are plenty of ambulances in Nairobi, but, so far, there has been no method of ensuring that the ambulance closest to the emergency is the one dispatched to it. The company therefore created a central system that works across different private hospitals and ambulance providers to dispatch the ambulance closest to the location of an emergency. When the company was raising its seed round of investment their lead investor had a heart attack. Open Road stepped in with a bridge (short-term) loan to keep their impact on track.

Another example she gave involved an organization in Rwanda, similar to Liza Kimbo's LiveWell, called One Family Health. The organization, Bressan explained, is run as a franchise clinic model that works with rural clinics operated and owned by skilled nurses and integrated in the county's national health insurance program. The organization serves about 10 percent of the population. Unfortunately, the government of Rwanda sometimes delays its payments, so the organization needed a bridge loan to purchase the equipment and drugs in order to continue providing their services. Delayed receivables are also frequently encountered by social enterprises, Bressan noted. They are caused, she said, when a company does not have access to a working credit line from a local bank. The result is a freeze up of the whole company. Another roadblock

[1] To view the Open Road Alliance's Roadblock Analysis, see https://openroadalliance.org/wp-content/uploads/2018/04/ORA-RoadblockAnalysis-DigitalPDF-Final-4.23.18.pdf (accessed October 23, 2018).

occurs when a social enterprise unexpectedly receives a large purchase order and does not have the financing to deliver on it. This situation is an opportunity for scale where Open Road can step in.

A second set of roadblocks, Bressan continued, is caused by mishaps to the organization. Bressan cited as an example a chief executive officer in Ghana who contracted dengue and had to leave the tropics for good. Robberies in the offices of an enterprise are also in this set of roadblocks, as are health care partner problems, which are beyond the organization's control. The third set of roadblocks is what Bressan calls acts of God or economics. This category includes weather events, currency devaluations, and changes in government policy that create liabilities overnight.

As a philanthropic initiative, Open Road believes most of the funds it disburses should accrue to the social entrepreneur. Therefore, the organization offers the loans at below-market interest rates.

Discussion

The discussion opened with a question from James Jones, executive director of the ExxonMobil Foundation. He noted that there are more than 1 billion women in the world lacking access to financial services. He questioned Bressan if this discrepancy existed in the social enterprise sector. Bressan said that her portfolio gave a figure of about 16 percent for the proportion of women founders in the United States. Only 3 percent of female founders are receiving funds, she said. She mentioned that at the 2018 Skoll World Forum on Social Entrepreneurship the discussion turned to sexual harassment of female founders. All of the female founders who participated in the discussion said they had experienced some form of sexual harassment in the course of their fundraising activities. On the issue, Chris West said that over the past 10 years of setting up and funding more than 150 social enterprises run by men and women, he has found no difference in the quality or competency of the organizations; however, women were significantly less funded than men.

David Greeley with the American International Health Alliance asked Kimbo about how successful the USAID support of social franchising and social marketing programs has been. Kimbo confirmed that the USAID funds were crucial and, in addition to the funds, USAID provided technical assistance that was extremely helpful in the training and setting up of the necessary systems. USAID's technical assistance, she said, was well tailored to the recipient organization's level of development and its needs. Lin explained that USAID, as a donor agency, is exploring how best to help bridge the "valley of death" (i.e., the difficulty of covering the negative cash flow in the early stages of a startup before their new product or service is bringing in revenue) so that social enterprises can reach the scaling stage.

Kimbo admitted she is obsessed with scale issues and what they imply for her enterprise. Many of the investors that she meets are keenly interested when she is at the innovation stage, and they expect that over the next 5 to 7 years, she would have achieved scale and have graduated from assistance. She says that LiveWell is still far from scale. She notes also that her experience with roadblocks differs somewhat from the delayed disbursements that Bressan mentioned. Kimbo puts disruptive changes in donor strategy at the top of her list.

Ending the discussion, West shared that he believes there is a fundamental misperception of the risk in the market for financing social enterprises. He feels it is on the global health community—the public sector, donors, and investors—to collect the data and better understand the market risks and potential.

LEVERAGING CORE COMPETENCIES OF PRIVATE-SECTOR COMPANIES

Simon Bland of the Joint United Nations Programme on HIV/AIDS (UNAIDS) moderated a discussion on how the private sector can partner with governments and communities to address health needs. Nduku Kilonzo of the National AIDS Coordinating Council of Kenya described the government's health priorities and approaches to engaging the private sector to address them. Ties Kroezen from Philips explained the company's transition from a technology to a health and well-being business and ultimately how this journey led to PPPs to reach new populations in Africa. Allison Goldberg from the AB InBev Foundation described the foundation's efforts to reduce NCDs by addressing the underlying risk factors of alcohol misuse. Leandro Piquet from the University of São Paulo shared his experiences engaging with the AB InBev Foundation in Brazil as part of this initiative. Westley Clark from Santa Clara University explored the conflicting tensions that can arise when industry engages in global health and how companies with potentially health harming products can contribute to public health.

Leveraging the Private Sector to Meet Kenya's Goal of Universal Health Coverage

Kilonzo began her presentation by sharing the Kenyan president's big four agenda: food security, affordable housing, manufacturing, and affordable health care for all. The goal of universal affordable health care includes three specific targets:

1. Insurance coverage and access to services for the country's 51.5 million population by 2022
2. Delivery of all quality services
3. No more than 12 percent of out-of-pocket household expenditures used for health services by 2022

The government has identified 11 drivers for achieving these targets grouped under three focus areas: coverage, access to services, and financing. Kilonzo pointed to one specific driver—attracting $2 billion of private-sector investment for the country's health sector. While it may seem Kenya is only focused on bringing in private-sector funding, she emphasized the importance of leveraging private-sector expertise to achieve universal health coverage. The leveraging of this expertise typically manifests through PPPs, and Kilonzo explained there are several entry points for where PPP engagement can begin. Figure 4-3 illuminates these different gateways for engagement by illustrating how the way in which the Ministry of Health is organized offers opportunities for different forms of engagement. The examples of different forms of engagement are listed in Figure 4-3.

Before sharing several examples of how Kenya is already engaging with the private sector, Kilonzo described the transitions the country is

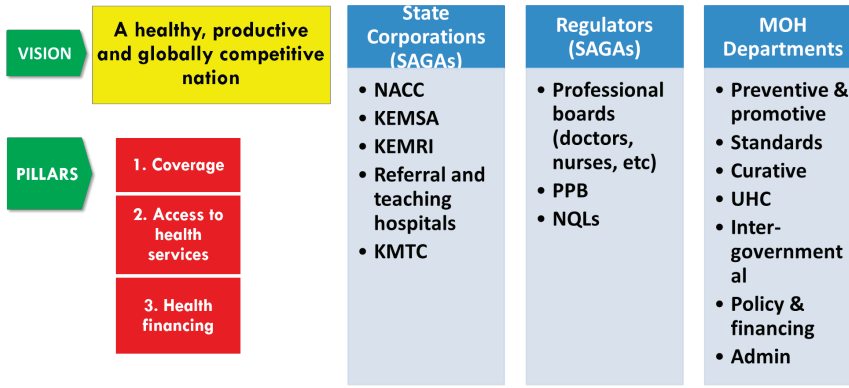

FIGURE 4-3 Gateways for public–private partnership engagement under the ministry of health.
NOTE: KEMRI = Kenya Medical Research Institute; KEMSA = Kenya Medical Supplies Authority; KMTC = Kenya Medical Training College; MOH = ministry of health; NACC = National AIDS Control Council; NQL = National Quality Control Laboratory; PPB = Pharmacy and Poisons Board; SAGA = semi-autonomous government agencies; UHC = universal health coverage.
SOURCE: As presented by Nduku Kilonzo on June 14, 2018.

experiencing and the current state of private-sector provisions for health services and financing. Kenya has a fast-growing economy, Kilonzo noted, and by 2030 the country hopes to achieve a middle-income development status. Seventy percent of the population is under the age of 35. The country has also experienced a number of epidemiological transitions, including considerable declines in child, maternal, and adult mortality rates, as well as declines in the burden of HIV and malaria. Deaths from NCDs, however, have escalated over the same period. A big question for Kenya is how the private sector can help address this rising burden of NCDs.

Turning to the current public–private mix of health facilities and health financing, Kilonzo shared that the private sector owns slightly more than half of the country's health facilities, but most are low-level facilities, such as clinics, dispensaries, and nursing homes. With regard to domestic financing, the private-sector contribution, which includes out-of-pocket expenditures, accounts for almost 60 percent of domestic health financing. Donors account for 31 percent. The government's share of health expenditures increased from 34 percent to 40 percent between 2012 and 2015.

Kilonzo then described several examples of how the ministry of health is engaging with the private sector. The ministry is currently engaged in a $1 billion medical equipment supplies PPP program that leverages the private sector for a variety of hospital items linked to product management and capacity building. The implementation of the program started in 2014–2015, and it will extend over 7 years. The program manages the supply of all manner of equipment in various facilities around the country, from an intensive care unit to radiology equipment to a central sterile services department. Another project is a pilot e-health project run by three business corporations: Huawei, Philips, and Safaricom. The project provides electronic medical records and a video-conferencing application to facilitate communication between doctors. The project is being tested in one remote county.

A third example Kilonzo shared is the first lady of Kenya's Beyond Zero movement to leverage resources from the private sector to fund clinics and mobilize political support to create awareness of the need to stem mother-to-child transmission (MCT) of HIV. As a result of the contribution, Kilonzo noted, MCT rates almost halved between 2013 and 2018.

Kilonzo then described two of Kenya's semi-autonomous agencies. One is the Kenya Medical Supply Authority that manages the national health commodities and procurements. The authority successfully transitioned into a business model, with the government selling products to the ministry of health at below-market prices and acting as a single supply chain for the country. With good forecasting and quantification systems, this supply chain has not had stock-outs of strategic commodities in the

past 4 years, Kilonzo said. Kenya's second semi-autonomous agency is the National AIDS Control Council and a Kenya HIV and Health Analytics Platform established through an engagement with UNAIDS and IvEDIX, a digital technology company. The analytics platform uses artificial intelligence to provide visual graphics of many HIV indicators. It draws data from several different sources: the ministry of health, the Kenya Medical Supplies Authority (KEMSA), Hom (a logistics and supply company), and a community data system that is run by the National AIDS Control Council. The platform gathers these indicator sources into a single ongoing format. This, again, is a private-sector partnership. Kenya's national hospitals have various private-sector engagements and some large facilities, such as multispecialty hospitals.

In closing her presentation, Kilonzo reflected on several challenges and considerations. Engaging with the private sector for domestic financing requires finding the win–win solution to balance what a country needs and what a private-sector company wants to give. Related is the question of country ownership: What is country ownership and who defines it? A final point is: Is the global health community actually ready for a new system in which countries have transitioned to fully financing their full health systems?

Philips's Journey to Primary Care in Kenya

Providing an example of leveraging a private-sector company's competencies to support a country's health priorities, Kroezen presented Philips's journey into primary care in Kenya. In this journey, Philips is using its competencies in innovation—both technical and business model innovation—as well as its willingness to take risks and its ability to execute at scale.

Before sharing the journey into primary care, Kroezen provided some background on Philips. Philips is a multinational company that, over time, transformed from a diversified technology company into a company focused on health and well-being. In 2010 Philips redefined its mission to improving the lives of people through meaningful innovation and set a target of improving 3 billion lives annually by the year 2025. By 2017, Kroezen shared, the company was reaching 2.2 billion people. Its goal now is to reach an additional 800 million people over the next 7 to 8 years. Philips realizes those 800 million people will mostly be in LMICs living in new operating environments for the company. With this realization, Philips decided to focus on Africa, the region where the company's footprint is the smallest.

Five years ago, Philips began to develop innovations specifically targeted for reaching new communities in Africa. Kroezen shared that

the company decided to focus on primary care, which is where it saw the most efficient and effective opportunities for improving health outcomes among the health care system in Africa. The company's research into primary health care indicated a number of challenges to be addressed in order to bring sustainable improvement. As a result, Philips developed a holistic solution for community and primary care—the Community Life Center value proposition, or CLC (see Figure 4-4). This modular solution combines infrastructure, equipment, and information telecommunications services with the aim of improving health outputs and outcomes. Currently, Philips operates five community life centers with projects operational in Kenya, the Democratic Republic of the Congo, and South Africa, and it has a pipeline of approximately 25 projects in development. Kroezen emphasized that Philips is motivated to expand the model for business as well as social impact reasons. The company expects that the primary care model can develop into a large and profitable business for Philips over the coming years.

In rolling out the CLC solution, Philips learned it needed different business models depending on the county, scope, and source of financ-

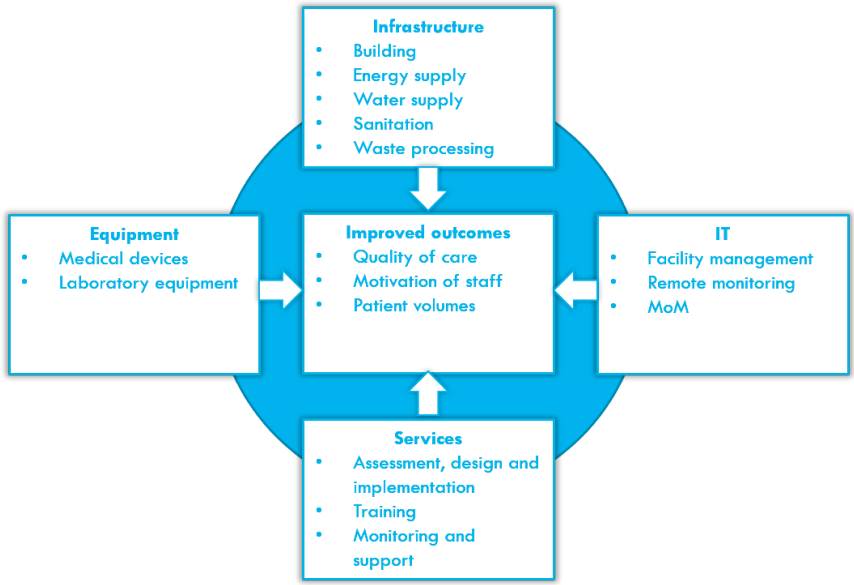

FIGURE 4-4 The Community Life Center value proposition for primary care.
NOTE: IT = information technology; MoM = mobile obstetric monitoring (Philips application to improve management of pregnancies across multiple levels of care).
SOURCE: As presented by Ties Kroezen on June 14, 2018.

ing. Kroezen described these different models. For the large-scale project model, Philips's role is to either build or improve existing facilities. The government pays for the investment, often with financial support from donors, and in most cases, a service contract is included to ensure operational sustainability beyond the implementation. In a managed service equipment model, Philips sells its solution as a service at a fixed service fee, including financing of the initial investment, ongoing training of users, and maintenance. This model was used for upgrading hospitals in Kenya and is now being explored as an application in primary care. In a third model, the PPP model, Philips bears significant risk and management responsibility, and its remuneration is linked to performance.

Kroezen described a PPP model for primary care that is being implemented in Makueni County in Kenya. Philips developed this PPP model with Amref, the largest African-based health nongovernmental organization, and the government of Makueni County, 1 of the 47 counties in Kenya. This model seeks to improve the primary care system in a number of ways, including building community health units, aligning the portfolio of services with the national standard, and upgrading facilities with the CLC solution. The government is outsourcing management of the facilities to Amref and Philips. To make the model financially sustainable, Kroezen shared, it will introduce new revenue streams, including a capitation fee from the NHIF. The feasibility of the model is being tested in three facilities in Makueni County with plans to scale it to other facilities in Makueni and beyond. Philips is working with the SDGs Partnership Platform in Kenya to test and scale the model. Kroezen emphasized that a private company like Philips cannot work alone to develop a new business solution in this market. Partners to complement the company's competencies, Kroezen said, are necessary to develop a solution.

Discussion

A workshop participant asked Kroezen how the company counted the number of people whose lives it had improved. Kroezen replied that the measurement of lives the company has improved is based on the number of products the company sells. Every Philips product carries a specific indicator, he said, that allows the count to be made. Kroezen said that there is an explanation on the company's website of the measurement procedure. Another question to Kroezen came from Katherine Taylor from the University of Notre Dame. She wanted to know if Philips had a commitment with the Kenyan government to provide more skilled workers. Kroezen explained that the company will hire and train health workers in Kenya's Makueni County. Initially they will still be employed by the government but funded by Philips. Ralston asked Kroezen if his company

was coordinating its engagement with the many other companies engaging in Kenya. Kilonzo responded, noting that coordination of engagements of the private sector is an issue that is emerging, especially with development partners and nongovernmental organizations. In regard to the hiring of trained workers, Kilonzo said that the issue goes beyond the hiring of additional staff; it also concerns the retooling of existing staff. When Philips adds health care workers, she said, they will have to operate in accordance with the "people with significant control" guidelines on human resources.

Partnerships to Address Harmful Alcohol Use

Goldberg, Piquet, and Clark collectively presented a PPP model focused on addressing an underlying risk factor for NCDs—harmful alcohol use. The partnership model presented was instigated as part of AB InBev's Global Smart Drinking Goals. One of AB InBev's four Global Smart Drinking Goals is to reduce the harmful use of alcohol by 10 percent in six cities around the world by 2020 and to share best practices by 2025. Partnerships to reduce harmful alcohol use have been implemented in the following cities: Jiangshan, China; Zacatecas, Mexico; Columbus, Ohio, USA; Leuven, Belgium; Brasília, Brazil; and Johannesburg, South Africa.

The PPP model presented engages the alcohol company, AB InBev, the AB InBev Foundation, academia, local government, civil society, and other local organizations to reduce the harmful use of alcohol in Brasília. Before turning to Piquet to describe how the partnership in Brasília is operating, Goldberg explained the motivation for the AB InBev Foundation to address the harmful use of alcohol. The partnerships that it supports present an opportunity to meld its public health goals with the approaches and resources of a range of actors, including a large public corporation, to address harmful alcohol use. With the caveat that she cannot speak for the company, Goldberg also shared some of the publicly stated reasons why AB InBev supports the Global Smart Drinking Goals, including that the company recognizes that the harmful use of its products is bad for its consumers, governments, and society.

Piquet then described the partnership in Brasília. Starting in 2016, the PPP has been operating through a local steering committee that includes the federal district government, local and national nongovernmental organizations, Brazilian universities, AB InBev, and the AB InBev Foundation. The partnership focuses on addressing three areas: road safety, screening and brief interventions in health care settings, and underage drinking. The steering committee makes decisions on how to guide the partnership, Piquet explained, and consultants have day-to-day contact with local authorities to monitor activities.

Piquet described the partnership's activities to address underage drinking. In collaboration with the local board of education, the partnership runs a school-based initiative for students 13 to 17 years old. Piquet's team is developing educational programs with the support of local nongovernmental organizations that target teenagers living in the most vulnerable neighborhoods surrounding Brasília. Alcohol sales outlets are being trained to raise awareness of underage alcohol consumption, and social norms campaigns are being implemented to reduce underage drinking. A performance indicator used for this initiative is the percentage of alcohol consumed by people under 18 years old as measured by an annual survey independently conducted by HBSA, the leading measurement and evaluation partner of the Global Smart Drinking Goals program, that is supported by the AB InBev Foundation. Piquet also emphasized the success of the Global Smart Drinking Goals' road safety program, which, according to the government, has averted an estimated 144 deaths during the 16 months that the program has been running. The program uses a data management system with consolidated data from civil police recurrence reports, state morgue death declarations, and the Health and Public Safety Secretaries in order to measure trends in road safety on a monthly scale (AB InBev, 2018). This program is in the process of being independently evaluated by HBSA.

Following Piquet's description of one of the city partnerships the AB InBev Foundation is supporting, Clark addressed the question of whether a company that makes potentially health-harming products can contribute positively to public health. Based on his 30-year career in the public sector, Clark knows government alone cannot fund all of the needed public health research or practical solutions. While some may prefer a pure public-sector model, Clark feels "perfect" should not be the enemy of "good." There are ways the private sector can contribute to public health; however, there are important risks that the public health community needs to safeguard against when engaging with industry.

Clark emphasized the value of engaging the public sector for filling the gap in public-sector resources and providing long-term thinking and strategy. However, the public health community, he said, should recommend and monitor how to minimize potential for conflicts when industry is engaged. Conflicts arise when there is the potential for financial gain or professional advancement, the desire to do favors for colleagues, and the tendency for individuals and organizations to want to please those who are paying for their work. Clark suggested that conflicts can be mitigated through transparency about who is funded by whom, who decides how much is funded, how the programs operate, who makes the programmatic decisions, and also about exercising recusal when appropriate. When a partnership engages a company through its core competencies,

several additional steps are needed to manage potential risks, Clark said. These steps include education and communication to ensure program goals remain constant, robust and fully independent evaluation, and scrutiny of public health advisors. Global Smart Drinking Goals has a technical advisory group, of which Clark is a member, that provides scientific review of the activities, monitors potential for conflicts and risks, and also provides technical guidance.

ENGAGING INDUSTRIES IN OTHER SECTORS

Katherine Taylor of the University of Notre Dame moderated a discussion panel that illuminated the motivations and opportunities for private-sector companies in industries outside of the traditional health sector to engage in activities to improve health in LMICs. Two speakers from ExxonMobil, James Jones and Deena Buford, presented a dynamic account of how ExxonMobil engages in health-related activities and gave perspective on the company's internal collaborative model for global health engagement. The final speaker on the panel, Benjamin Makai from Safaricom, explained why and how the Kenya-based telecommunications company expanded its focus to include partnerships with the government to address health.

ExxonMobil's Approach to Global Health

Jones began by stating three points he and Buford wanted to convey to the audience. First, ExxonMobil's approach to global health is born out of business imperatives. He is often questioned, he said, about why a multinational oil company makes significant investments in health. ExxonMobil's engagement in global health started in earnest with the merger in 2000 of Exxon Corporation and Mobil Corporation, Jones recalled. At that time, the company was constructing a pipeline from Chad through Cameroon to the sea. The main cause of loss of productivity among the pipeline workers was malaria. These productivity statistics made senior management take notice of the health threats to the company's business.

The second point is that ExxonMobil's approach to global health is holistic and integrated across the company. Both Jones and Buford hold integral roles within this approach, but it goes beyond them. Jones showed a chart of the different parts of the company that are part of the approach (see Figure 4-5). The third point Jones and Buford wanted to convey is the importance of the company's work through the foundation and grants that support the other functions and objectives of the company.

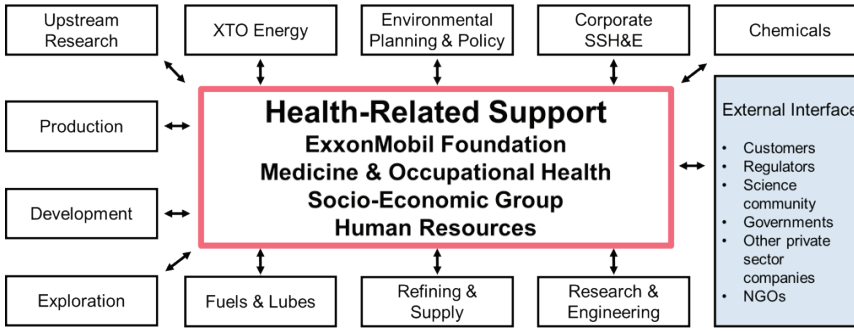

FIGURE 4-5 ExxonMobil's health-related support.
NOTE: NGO = nongovernmental organization; SSH&E = safety, security, health and environmental performance; XTO Energy is an ExxonMobil subsidiary.
SOURCE: As presented by James Jones and Deena Buford on June 14, 2018.

Buford then described her role as global medical director within ExxonMobil's approach. Buford provides oversight and guidance to the company's Medicine and Occupational Health Department. Her department is tasked with providing health support wherever ExxonMobil is operating in the world. The company maintains a contingent of 90 clinics across 30 countries. A call for support, she said, could come from a platform in the North Sea or from a seismic vessel offshore in Vietnam or from the Arctic Circle. It could literally be anywhere, she said. Wherever they are located, she notes, there must be a health plan in place to address the needs of any caller. Clinical services account for a major share of the department's activities, Buford shared. The service required could be on a primary health care level and could be needed where a local health care delivery system is unable to respond. The company also has an industrial hygiene unit that provides information about ambient conditions that could be detrimental to workers' occupational health and safety and that require safety measures against exposure to chemicals, radiation, and other hazards. The medical department also has a substance abuse and testing unit and an infectious disease unit. Often, if there is an outbreak somewhere in the world, it will probably affect one or more of the company's operations, she asserted.

A technical operations and support unit is also part of the Internal Medicine and Occupational Health Department. ExxonMobil, she noted, is, in a sense, a conglomerate of different companies, each with its own mission and its own way of working. They operate in different areas, encountering different hazards and coping with different health care needs. Before thinking about the company's external partnerships,

ExxonMobil personnel have to think about the company's internal partners, about who they are, what are they doing, where are they doing it, and what they need. It is a very dynamic operating environment, she notes, and this underscores the company's business imperative for investing in global health.

Safaricom's Health Partnerships

Makai began his presentation by noting that Safaricom is a much smaller company than ExxonMobil, and it primarily focuses its engagement in health within Kenya, where the company is based. Makai explained that Safaricom is a for-profit telecommunications business that recognizes its mission to address the unmet needs of society that extend beyond its core mobile communications services. Makai is often asked why Safaricom engages in health partnerships, and, in response, he emphasizes the company's purpose-driven mission, which prompted Safaricom to embrace the SDGs as an operating strategy. When the company made the decision to embrace the global goals, the first question that arose, he said, was what the SGDs could do for Safaricom.

A glance at the company's strategy and mission turned the question around to what Safaricom can do for others. Indeed, he said, the company's mission is to transform the lives of its subscribers, who are mostly Kenyans, and to identify specific SDGs that align with the company's overall strategy. The firm identified nine SDGs, he said, and aligned them to Safaricom's corporate vision. The company has gone a step further, Makai noted, to ensure that all its employees link their work to an SDG. This step, he said, has changed the employees' outlook on their work and on their lives. Safaricom is effective in providing financial services, in setting up pay stations, and in making sure that a call can be made between one person and another. But how does it respond, he asks, to a woman who needs a nurturing continuum from the time she became pregnant to the time her baby is 5 years old? Safaricom attempts to address this question through its engagement in health.

Most Africans have a mobile phone, Makai notes, and Safaricom is taking advantage of the extensive deployment of mobile phones to ensure that its subscribers have access to quality health care. It engages in a number of strategic partnerships with the Kenyan government to bring its technology solutions to the health issues the government is trying to address. From its beginnings as a mobile phone company, it has undergone a metamorphosis that brings it into new areas of interest, such as health, education, and agriculture.

Discussion

Taylor began the discussion by asking Jones and Buford how the ExxonMobil Corporation and foundation work together. Jones replied that the ExxonMobil Foundation does not take direction from the corporation. It has a board of trustees that approves a 3- to 5-year plan. The plan determines what the foundation should be funding. Jones explained the foundation's strategy has shifted over time, and the current focus is primarily on health care infrastructure and capacity building in the areas where it is operating. Jones emphasized the fact that the foundation's support does not replace that of governments, agencies, or international health authorities.

The programs that the foundation is supporting help with government relations, advocacy, communications, media relations, advertising, project management, fundraising, chemical engineering, technical assistance, epidemiology, monitoring and evaluation, procurement, and human resources. The foundation, he added, has one of the largest repositories of malaria blood samples in Africa, he said. Buford explained that ExxonMobil's Medicine and Occupational Health Unit does not provide grants. However, its clinics build relationships with local communities' health systems across all of the locations where the company is operating. The chances are, she said, that whatever problems these communities are experiencing are probably very similar to those that her unit is experiencing, so that when her unit has found a solution to the problem, they can share it with the community's health professionals.

Taylor asked Makai to describe how Safaricom structures its engagement in health. Responding, Makai explained that Safaricom encompasses a business and a foundation, and the two incarnations work hand in hand. The essence of what Safaricom does, he continued, is to work with people in delivering a desired solution. The organization's expertise is in mobile phone technology, but partners, he said, usually come with solutions that are specific to health, education, or agriculture. The organization judges a solution from either a business perspective or a social goods perspective. If the solution is likely to have a commercial potential, it is moved into the business unit. If it does not have an immediate commercial prospect, it is incubated through the foundation.

ADVANCING DIGITAL DEVELOPMENT AND ACCESS FOR HEALTH

Jennifer Esposito from Intel moderated a panel on digital health, the workshop's fourth and final panel. Esposito opened by relating the excitement about the recent acceleration in interest in digital technology

for global health. She pointed to the digital health resolution, sponsored by India and several other countries, that the World Health Assembly passed as one example of the recent increases in attention to the topic. She also mentioned a forthcoming report from the Broadband Commission, spearheaded by the Intel and Novartis Foundations, focused on providing practical recommendations for scalability around digital health.

Turning to the panel session, Esposito listed the main topics that would be covered in the discussion: national strategies for digital health; creating digital PPPs, particularly in transitioning countries; and increasing donor collaboration for digital goods. The panelists included Olasupo Oyedepo from the Health Strategy and Development's Information and Communications Technology (ICT) for Health Project in Nigeria, Brendan Smith from Vital Wave, and David Stanton from USAID.

Oyedepo began by describing the current state of digital health initiatives in Nigeria. In April 2016, Nigeria's National Council on Health, the country's highest policy-making body in health, approved a national digital health strategy. Following its approval, the minister of health set up an ICT department and, within the ICT department, a national e-health program management office charged with the day-to-day operations of the implementation. Since that time, the ministry of health, under the leadership of the minister, has set up the necessary governance structures called for in the national strategy.

Oyedepo shared that it has not been a smooth journey, and one of the biggest challenges has been capacity building. However, he also highlighted the progress achieved. The governance is in place, political will from the minister has been strong, the minister of health and the minister of communications are chairing a national e-health steering committee, and the national e-health program management office is starting to take a lead and provide coordination and guidance in digital health investments across the country. The national e-health program management office is multisectoral and includes staff from the departments within both the ministry of health and the ministry of ICT. Oyedepo also reported that a number of Nigerian states have implemented digital health programs. Frequently, Oyedepo said, these programs are in the form of PPPs.

Government leadership on digital health is, in Oyedepo's opinion, the primary reason for these successes, particularly for PPP implementation. In his experience, the private sector's biggest challenge in working with the public sector has been a lack of direction and a lack of commitment from government. When there is direction, governance, coordination, and commitment, transparency is not too far down the road, he said. Once there is transparency, there is a better sense of a level playing field, and the private sector is a lot more comfortable entering the market.

Building on this issue of political leadership and will, Oyedepo shared a reflection on the state of donor transitions in Africa. He recounted that political will on the part of host governments was brought up multiple times throughout the workshop as necessary for successful transitions. The question Oyedepo had is this: Do the donors and other partners have the political will to make these transitions successful and sustainable? In his opinion, no matter how large the investments donors make in health, these investments will all come to naught if a transition is made without making sure there is an appropriate skill set and capacity in place on the ground after the transition. Oyedepo used the example of the skilled labor force that has been developed in countries to support externally funded programs. When donors transition out, a labor force is left behind that is accustomed to earning sizably higher wages than the typical domestic wage earner earns, he said. What will happen? Oyedepo suggested these workers would leave the country. New infrastructure and programs may be left behind by donors but without the appropriate labor force to run them.

As his final point, Oyedepo emphasized the value of PPPs that capitalize on private-sector knowledge and expertise. He mentioned a digital health leadership program being developed across the continent with the goal of training a skilled digital health public-sector workforce in Africa. This program presented a ripe opportunity for building partnerships with the private sector for skills training through mentorships. Through such mentorship, private-sector experts can transfer basic efficiency skills to help public-sector employees perform their jobs better and ultimately deliver higher-quality outputs.

Turning to the next speaker, Smith discussed the challenges with developing business models for digital health PPPs and shared use case examples of both where it has and has not worked well. When Smith first started working in digital health one decade ago, he said it was assumed that for any projects to reach long-term scale or financial sustainability, they cannot be over-reliant on grant funding, and the private sector would need to be involved. Digital health programs develop, launch, and maintain complex software and hardware solutions, which is an area that goes well beyond the core competency of most ministries of health or, indeed, many areas of government. Business expertise about how to launch and maintain software is necessary in many digital health programs. However, many private-sector companies have been challenged trying to develop successful long-term business models for their engagement in digital health.

The idea that PPPs could be playing a big role in digital health intrigues Smith, but he cautioned it is important to think about the use cases where they could be a successful business model. He shared a few

use cases that have been promising for sustainable PPPs. The first use he shared is the use of mobile phones for tracking the distribution of drugs in a mass drug administration campaign. In this case, pharmaceutical companies are the private-sector actors with incentive to invest in the model. The PPP might give them valuable data on how their supplies are being distributed, as well as allow them to track and manage counterfeits in the market and get on top of that problem. Another use case Smith shared is in telemedicine, wherein medical equipment manufacturers have an incentive to participate in these types of solutions. Smith pointed to the PPP presented earlier by Philips as an example of this use case.

In other use cases, Smith said the potential for a sustainable business model for the private sector is much less probable. National-level systems for collecting and aggregating data, Smith said, have the potential to monetize data, but the incentives are much weaker than the two previous use cases Smith described. These systems are often extremely expensive to roll out in low- and middle-income countries, he said, and require deploying hardware, establishing connectivity to facilities, training a workforce, maintaining software, and updating it over time. For these examples, Smith emphasized the importance of teasing apart use cases and evaluating the ones for which PPPs might really make sense.

Smith then addressed the issue of country context in determining the feasibility of digital health PPPs. Countries such as India, Kenya, and Nigeria are examples of places where there is a lot happening in digital health, and some scale is being achieved. Smith noted these countries have receptive environments for foreign multinational companies as well as robust local private sectors. However, he said, when you look at other countries, the environment for PPPs is very different. He pointed to the example of Ethiopia. The country has an impressive ability to mobilize resources in the public health system, but the private sector is weak. The limited private-sector environment is not conducive to PPPs.

Following Smith's remarks, Stanton described recent action within the donor community for digital health to support more sustainable solutions. Stanton is a long-serving development professional who has only recently started working in the digital health space. He shared that as somebody who has worked in development for years, he was amazed when he learned about the appetite of individuals in LMICs to solve development problems through digital solutions. However, as he learned more, he discovered the sobering picture of fragmentation in the digital health ecosystem. Recently, donors have begun to recognize the consequences of uncoordinated and unsustainable investments in digital health.

Fortunately, there has been action to address this issue, Stanton shared, through the development of donor principles for digital devel-

opment, wherein a number of donors came together to collectively address how they can better and more sustainably support countries in advancing digital solutions. The donors started with the principles for digital development that were developed 8 years ago.[2] These principles, Stanton explained, outline what a good digital system should look like and address issues regarding privacy and interoperability. However, the donors recognized that a missing component was a set of principles for how donors should interact with host governments.

The group developed a set of donor principles for digital development, and Stanton shared that the main principle is to start by supporting a national strategy. If a national strategy is not already in place, the donors pledge to invest in creating one. The logic for the focus on a national strategy stems from the donors' realization that without an overarching, coordinating function at the national level, they are likely to repeat the same mistakes that had initially led to the state of fragmentation.

Stanton noted that the donor principles align with the USAID administrator's principles for the agency. Of the five USAID principles, number one is to foster self-reliance, and number five is to protect the taxpayers' investments. The donor principles fit within these principles, establishing a road map for more sustainable and efficient digital health investments.

Discussion

Esposito opened the discussion by noting how many of the technologies and models being implemented in digital health are new. Given this, what is needed in terms of evidence generation to prove their value and ability to scale? Oyedepo suggested digital health programs should be implemented with an iterative improvement strategy of learning quickly and adjusting along the way. Smith agreed and added that one of the big causes of handwringing in the digital health space has been the lack of an evidence base. There has been enormous excitement around the potential of these tools to improve health outcomes and to strengthen health systems, and next to that mountain of excitement, the actual evidence has looked a little bit like a molehill. He noted that the evidence base directly showing the effect that digital tools have on health system outputs and outcomes is quite thin. However, these tools are often implemented as part of a larger business process, and Smith wonders if it may be a bit self-defeating to try to isolate the effect of the introduction of the specific tool. He suggested more effort should be made to evaluate the effect of the larger set of changes in which the digital tool is being used. Stanton

[2] To view the principles for digital development, see https://digitalprinciples.org/wp-content/uploads/From_Principle_to_Practice_v5.pdf (accessed October 23, 2018).

added that evidence is vital for donors who need to show the effect of their investments. He feels a starting place would be to sit down with everyone involved from the outset to discuss metrics and time frames and go from there.

Esposito then asked the panelists how they think digital health strategies, PPPs, and donor funding differ depending on the economic status of a country where they are operating. Smith referred back to his earlier comment that PPPs will be dependent on how large and active the private sector is within a country. This factor, he feels, is more important than the overall level of economic development within the country. He has seen relatively low-resource countries implement successful PPPs by having an appropriate governance structure in place. Nigeria, the Philippines, and Rwanda are examples of countries that have built robust governance structures for their digital health architecture into which various solutions based on common standards can be plugged. The achievement of common standards by itself is a big incentive to the private sector to start participating in a sustained way because they need that predictability, Smith said.

To close the discussion, Esposito asked each panelist to give a final comment. Oyedepo stated that PPPs will work only when there is trust and respect. Smith remarked that as countries transition, the global health community needs to adjust its orientation and expectations for what the private sector's role will be. The private sector may fill some gaps when donors leave, but expectations should be measured about what it will look like. Stanton commented that the global health community does not yet know what the role of the private sector will be in the next decade. As donors, there is a responsibility not to close any doors but to stay open to opportunities to achieve mutual goals through partnerships.

5

Key Messages and the Way Forward[1]

To close the workshop, Jo Boufford and John Lange facilitated a discussion on the key messages and questions for the future that resonated with the participants. Boufford started the discussion by providing a brief summary of key points identified by members of the workshop planning committee. Following Boufford's overview, Lange invited workshop participants to share their own key take-away messages.

First, Boufford summarized the purpose of the workshop: to highlight the key funding transitions occurring in global health, how both donors and countries are managing these transitions, and what potential roles the private sector can play. Starting with the transitions, Boufford remarked how surprised many participants were to learn about the number of transitions occurring. Visibility on the programmatic transitions and their effects is somewhat limited for those who are not engaged in them directly, she said. The potential risks associated with not planning or coordinating these transitions were raised several times. In listening to the donors speak about their challenges with transitioning countries, a common concern Boufford heard was ensuring continued services and protection for key and vulnerable populations. One workshop speaker made the comment

[1] In accordance with the policies of the National Academies of Sciences, Engineering, and Medicine, the workshop did not attempt to provide a full analysis of the political context related to global health transitions, a landscape of all possible models to support countries in transition, or establish any conclusions or recommendations about needs and future directions. The key messages and way forward focus on the issues identified by the speakers and workshop participants.

that external funding programs often prioritize these populations precisely because they were previously marginalized and lack access to services. Numerous speakers emphasized the importance of supporting civil society to reach these populations after funders leave. Boufford also observed how the question of the changing role of donors, particularly bilateral donors, was raised several times. Should donors focus on funding global public goods or supporting capacity building in the public sector?

Country ownership and country-led solutions was another issue raised by multiple speakers. Different perspectives on what it means were offered, but a common thread was the importance of political will to sustain health progress that has been made and support new solutions going forward. Several speakers emphasized the importance of community engagement for fostering political will. Others provided examples of strong high-level government leadership for addressing health issues.

It also became clear from the workshop, Boufford said, that there are important opportunities for the private sector, but there are also challenges. A key question was: How can the role of private-sector organizations and private-sector financing help to manage these transitions? Boufford noted the discussions on private-sector engagement focused on both financing and country capacity building. A strong theme Boufford heard during the workshop was the value the private sector can bring through sharing know-how and business expertise. Another issue raised was how to get health on the agenda of companies outside of the traditional health sector.

Boufford noted that the tensions with private-sector engagement were explored during the workshop. While global agreements, including the Sustainable Development Goals, explicitly call for private-sector engagement, Boufford acknowledged that tension still exists. During the workshop, the issue on engaging with different types of companies was raised. Some companies do well and others do harm, and there are companies that may do harm but want to make positive contributions. It can be very difficult to positively engage them if they are shut out from the initial conversation, Boufford said.

Boufford noted the issue of NCDs and the acknowledgment during the workshop that only 1 percent of development funding is allocated to NCDs. Addressing NCDs means starting from nothing. She flagged the suggestion made during the workshop to focus on the living and not just the dead to activate resources for NCDs. As a final point, Boufford noted the call during the workshop to focus on primary care systems and prevention to address complex and overlapping health needs.

Following Boufford's overview, workshop participants offered several additional key messages and questions for the way forward. Below is a list of the additional points raised by individual workshop participants:

- Value of platforms in countries to develop and coordinate PPPs.
- Need to explore further where these platforms can exist and how they can provide a space to identify opportunities and facilitate negotiation.
- Need to examine if such platforms can exist at the regional or global level as well as the country level.
- Opportunity for the United Nations to play a PPP facilitating role at the country level, particularly through the UN resident coordinator.
- Importance of focusing on scaling. There are many examples of PPPs in the small, innovative, proof of concept phase. The focus should be on what is succeeding in scaling.
- Potential to distill common elements of an enabling or favorable policy and regulatory environment to facilitate sustainable solutions in countries.
- Need for a clearer understanding of the sequence of transitions occurring in specific countries and how transitioning programs are coordinating with each other and other stakeholders.
- Importance of the role of government in regulating and monitoring the influx of new partners crowding into countries to ensure accountability, coherence, and impact.
- Opportunity to engage new partners outside of the health sector coupled with the need to help them understand the health sector, which can be hard for outsiders to wrap their heads around.

To close the workshop, Lange noted from his own perspective how it was striking to hear all of these transitions brought together in one meeting. There are many changes coming in global health. The timetable and predictability for some are defined, and others are much less clear. The different ways in which PPPs can be creative and contribute during and after these transitions provide many opportunities as well as questions that still need to be explored.

Appendix A

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Appendix B

Workshop Agenda

Forum on Public–Private Partnerships for Global Health and Safety
Global Health Transitions and Sustainable Solutions:
The Role of Partnerships
June 13–14, 2018
The National Academies of Sciences, Engineering, and Medicine
500 Fifth Street, NW, Washington, DC 20001

AGENDA

Economic and programmatic transitions are changing the global health landscape profoundly. A cohort of countries that have historically relied on development assistance for health (DAH) is transitioning into higher-income status. At the same time, countries that have provided DAH are shifting focus away from traditional development assistance in favor of investments focused on value for money and global public goods. Additionally, one large program focused on disease eradication is nearing its goal and will soon end. In response, processes are under way to transition countries out of traditional bilateral and multilateral health-funding mechanisms, and countries are expected to spend more of their own resources on health systems. These transition processes are often well defined in criteria and approach; however, their implications, particularly when they occur simultaneously, are not well understood. Furthermore, approaches to these transitions often do not recognize the aging of the population and changes in the burden of disease, notably the increase in noncommunicable diseases that introduce new financing demands on the same countries losing sources of DAH for communicable diseases that still demand significant investments. Another factor is the dramatic urbanization occurring most rapidly in low- and middle-income countries (LMICs) with major implications for service design and access. In this changing landscape, the global health community is exploring innovative and coordinated solutions that have the potential to sustainably support

countries and maintain health gains during and after transitions. Planned by an ad hoc expert committee, this public workshop held by the National Academies of Sciences, Engineering, and Medicine will examine these transitions and innovative solutions in the current global health context.

Presentations and discussion topics will focus on the following:

- Economic and programmatic transitions affecting global health, including the implications of simultaneous transitions
- The impacts of transitions on access to traditional DAH and the burden of disease in LMICs with a focus on several case examples of countries experiencing different stages of transition
- Promising models for innovative partnerships and private-sector engagement to sustainably support countries while maintaining and accelerating health gains, protecting vulnerable populations, and promoting health equity
- Country ownership in decision making and considerations for private-sector engagement and partnerships during and after transitions
- Developing sustainable solutions in the current global health context

The Forum on Public–Private Partnerships for Global Health and Safety (PPP Forum) fosters a collaborative community of multisectoral leaders from business, government, foundations, humanitarian and professional organizations, academia, and civil society to leverage the strengths of multiple sectors and disciplines to yield benefits for global health and safety. The PPP Forum is premised on the understanding that partnerships among these stakeholders can facilitate dialogue and knowledge exchange; use technological and process efficiencies; promote innovation; and synergistically advance humanitarian, international development, and global health interests. The U.S. National Academies of Sciences, Engineering, and Medicine provides a neutral evidence-based platform through which the PPP Forum is convened.

The intended audience for this workshop is the PPP Forum members and the organizations they represent, other public and private entities that have participated in or are considering collaboration across sectors to further global health and safety, and academics and researchers across multiple disciplines who are focused on understanding the value proposition and effect of various models of PPPs to improve global health.

WORKSHOP NOTES

- This workshop is being recorded. Please identify your name and affiliation when asking questions.
- We are webcasting this event live online; a link can be found on our webpage: https://bit.ly/2FjkdJP.
- Please use hashtag **#PPPGlobalForum** to tweet about this event.
- Soon after the meeting an archive of the video webcast and presentation slides will be available on our webpage.
- A proceedings of the workshop will be published by the National Academies Press.
- Sign up at nas.edu/PPPGlobalForum for updates from the PPP Forum.

PLANNING COMMITTEE ROSTER

Jo Ivey Boufford (*Co-Chair*), Clinical Professor, New York University College of Global Public Health; Immediate Past President, The New York Academy of Medicine
Ambassador John E. Lange (*Co-Chair*), Senior Fellow, Global Health Diplomacy, United Nations Foundation
Deena Buford, Global Medical Director, Medicine and Occupational Health Department, ExxonMobil Corporation
Jennifer Esposito, Worldwide General Manager, Health and Life Sciences Group, Intel Corporation
Renuka Gadde, Vice President, Global Health, Becton, Dickinson and Company
Trevor Gunn, Vice President, International Relations, Medtronic
Amy Lin, Acting Deputy Director, Center for Innovation and Impact, U.S. Agency for International Development
Scott Ratzan, President, Anheuser-Busch InBev Foundation
Katherine Taylor, Associate Director, Director of Global Health Training, Eck Institute of Global Health, University of Notre Dame
Chris West, Partner, Sumerian Partners

STAFF

Rachel M. Taylor, Forum Director
Priyanka Nalamada, Research Associate
Katherine Perez, Senior Program Assistant

DAY 1—JUNE 13, 2018

1:10P **Keynote: Programmatic and Economic Transitions in Global Health**

TIM EVANS
Senior Director of Health, Nutrition, and Population
World Bank

SESSION 1: GLOBAL HEALTH TRANSITIONS

1:35P **Multilateral Program Eligibility and Transition Policies in Practice Objectives:**

- Present the approaches of global health funding programs to country eligibility and transition processes.
- Examine current and anticipated effects on countries at different stages of transition, including maintaining and accelerating health gains, protecting vulnerable populations, and promoting health equity.
- Discuss implications of simultaneous programmatic transitions within countries.
- Discuss how programs are approaching engagement with the private sector in the transition process.
- Discuss how (if) these programs are transitioning in their scope or approach to address epidemiological, demographic, and environmental changes affecting countries where they provide financing and technical assistance.

Moderator: TIM EVANS, World Bank

REBECCA MARTIN
Director, Center for Global Health
U.S. Centers for Disease Control and Prevention
Steering Committee Member, Global Polio Eradication Initiative

SANTIAGO CORNEJO
Director, Immunization Financing & Sustainability
Gavi, the Vaccine Alliance

MATTHEW MACGREGOR
Senior Project Lead for Sustainability, Transition, and Co-Financing
The Global Fund to Fight AIDS, Tuberculosis and Malaria

2:45P **BREAK**

3:00P **The Research Fairness Initiative (RFI): Fairness in Global Health Research Partnerships as an Essential Element in Achieving Sustainable Health Improvement**
CAREL IJSSELMUIDEN
Executive Director
Council on Health Research for Development (COHRED)

3:25P **Bilateral Approaches and Policies for Transitions**
Objectives:

- Present the approaches of bilateral funders to supporting countries in transition.
- Discuss how bilateral funders are shifting priorities and models of engagement to align with the SDG call for country-led solutions as they support countries in transition.
- Discuss how bilateral funders are approaching partnerships with the private sector to support country and agency objectives in the transition process.
- Discuss how (if) these programs are transitioning in their scope or approach to address epidemiological, demographic, and environmental changes affecting the burden of disease and economic conditions in countries where they provide financing and technical assistance.

Moderator: AMBASSADOR JOHN E. LANGE, United Nations Foundation

AMBASSADOR DEBORAH L. BIRX
U.S. Global AIDS Coordinator and U.S. Special Representative for Global Health Diplomacy
U.S. Department of State

KERRY PELZMAN
Deputy Assistant Administrator for Global Health
U.S. Agency for International Development

IKUO TAKIZAWA
Deputy Director General, Human Development Department
Japan International Cooperation Agency (JICA)

4:35P **BREAK**

4:50P Transitions at the Country Level

Objectives: Through case examples of countries undergoing different stages of transitions, panelists will discuss the following:

- Country priorities and approaches during and after transitions.
- Approaches and potential limitations to domestic resource mobilization for health.
- How other sectors can support countries to facilitate effective transitions.
- How countries are approaching engagement with the private sector.

Moderator: JO IVEY BOUFFORD, New York University

MUHAMMAD PATE
Chief Executive Officer
Big Win Philanthropy

NARESH GOEL
Deputy Director General
National AIDS Council
Ministry of Health and Family Welfare, India

JOHN FITZSIMMONS
Chief, Revolving Fund for Vaccines
Pan American Health Organization

SIDDHARTH CHATTERJEE
United Nations Resident Coordinator—Kenya
United Nations Development Programme Resident Representative—Kenya
United Nations

6:00P Wrap Up and Day 2 Preview

AMBASSADOR JOHN E. LANGE, United Nations Foundation

6:10P ADJOURN DAY 1 TO INFORMAL RECEPTION

DAY 2—JUNE 14, 2018

8:00A Day 2 Opening

JO IVEY BOUFFORD, New York University

SESSION 2: SUSTAINABLE SOLUTIONS AND GLOBAL HEALTH TRANSITIONS

PART A: Setting the Stage for Sustainable Investments in Health
Objectives:

- Discuss the role of the private sector, multilateral and bilateral programs, and governments in supporting transitions out of DAH and the development of sustainable solutions to maintain and accelerate health gains, protect vulnerable populations, and promote health equity.
- Discuss how the economic case for investments in health can drive more sustainable and effective investments.
- Discuss how market shaping and market-based interventions can play a role in generating impact, value for money, and sustainability, especially in supporting countries undergoing transitions, enabling strategic private-sector engagement, and developing sustainable solutions.

8:15A Multisectoral Engagement and Sustainable Solutions to Support Transitions
PETER SANDS
Executive Director
The Global Fund to Fight AIDS, Tuberculosis and Malaria

8:35A Elevating Health on Domestic Agendas: Linking Health and Economic Growth
TREVOR GUNN
Vice President
International Relations
Medtronic

MARK HALLIDAY
Global Head, Healthcare PPP Advisory
International Finance Corporation
World Bank Group

9:20A Shaping the Market for Investments in Health
Moderator: AMY LIN, U.S. Agency for International Development

AMANDA GLASSMAN
Chief Operating Officer and Senior Fellow
Center for Global Development

JOHANNA RALSTON
Chief Executive Officer
World Obesity Federation

10:20A BREAK

PART B: Promising Models for Sustainable Partnerships and Private-Sector Engagement

Objectives: Through dynamic sessions on promising models that engage the private sector, explore their potential as sustainable, scalable solutions in the current global health environment based on the following:

- Lessons from successful applications of these models: What has contributed to success?
- Are there examples of how these models have or can reach vulnerable populations and those at the bottom of the pyramid?
- How might the application of these models differ based on the economic status of countries where they are being implemented?
- What are the potential hurdles with advancing these models? Are there strategies for managing them?
- What is the potential to implement these models in the current environment, and what support is needed?
- What is the role of the public sector?
- What do companies and investors need to determine where and how to invest and engage?
- What data and evidence are needed to support implementation and scale?

10:40A Sourcing Capital to Catalyze and Scale Promising Social Enterprises

Moderator: CHRIS WEST, Sumerian Partners

CAROLINE BRESSAN
Director of Social Investments
Open Road Alliance

LIZA KIMBO
Director
LiveWell—Kenya

11:40A Leveraging Core Competencies of Private-Sector Companies
Moderator: SIMON BLAND, UNAIDS

NDUKU KILONZO
Chief Executive Officer
National AIDS Coordinating Council, Kenya

TIES KROEZEN
Business Development Manager
Philips

ALLISON GOLDBERG
Vice President
Anheuser-Busch InBev Foundation

LEANDRO PIQUET
Professor of Political Science
University of São Paulo

H. WESTLEY CLARK
Dean's Executive Professor of Public Health
Santa Clara University

1:10P LUNCH

2:10P Engaging Industries in Other Sectors
Moderator: KATHERINE TAYLOR, University of Notre Dame

DEENA BUFORD
Global Medical Director
ExxonMobil Corporation

JAMES JONES
Executive Director
ExxonMobil Foundation

BENJAMIN MAKAI
Senior Manager, Social Innovation
Safaricom

3:10P Advancing Digital Development and Access for Health
Moderator: JENNIFER ESPOSITO, Intel Corporation

OLASUPO OYEDEPO
Director
ICT4Health, Nigeria and African Alliance of Digital Health Networks

BRENDAN SMITH
Vice President of Professional Services
Vital Wave Consulting

DAVID STANTON
Senior Global Health Advisor
U.S. Agency for International Development

4:10P BREAK

SESSION 3: IDENTIFYING KEY MESSAGES AND ACTIONABLE RECOMMENDATIONS FOR MOVING FORWARD

4:30P Closing Session—Facilitated Discussion
JO IVEY BOUFFORD, New York University
AMBASSADOR JOHN E. LANGE, United Nations Foundation

- What are the key take-aways from the workshop discussions on how transitions are affecting global health?
- What are the characteristics of promising models for innovative partnerships and private-sector engagement to sustainably support countries and maintain health gains in the context of transitions?
- What information, resources, and actions are needed to be able to identify, scale up, and coordinate these models?
- What are the remaining unanswered questions?

5:15P Closing Remarks

5:30P ADJOURN WORKSHOP

Appendix C

Speaker and Moderator Biographical Sketches

Ambassador-at-Large Deborah L. Birx, M.D., is the Coordinator of the United States Government Activities to Combat HIV/AIDS and U.S. Special Representative for Global Health diplomacy. Her three-decade-long career has focused on HIV/AIDS immunology, vaccine research, and global health. As the U.S. Global AIDS Coordinator, Ambassador Birx oversees the implementation of The U.S. President's Emergency Plan for AIDS Relief and all U.S. government engagement with the Global Fund to Fight AIDS, Tuberculosis and Malaria. Serving as the U.S. Special Representative for Global Health Diplomacy, she aligns the U.S. government's diplomacy with foreign assistance programs that address global health challenges and accelerate progress toward achieving an AIDS-free generation; ending preventable child and maternal deaths; and preventing, detecting, and responding to infectious disease threats.

Simon Bland, M.S., CBE, joined UNAIDS in 2013 as its Director in New York. Prior to joining UNAIDS, Mr. Bland was a senior civil servant in the United Kingdom's Department for International Development (DFID) and, most recently, headed its Global Funds Department. In this role he was responsible for the United Kingdom's policies, programs, financial management, and shareholder relations with Global Funds and Innovative Finance in health and education. He represented the United Kingdom on the Boards of the Global Fund to Fight AIDS, Tuberculosis and Malaria; Gavi; UNITAID; and the Global Partnership for Education. From 2011 to 2013, Mr. Bland was Chair of the Board of the Global Fund to

Fight AIDS, Tuberculosis and Malaria and oversaw a substantial transformation culminating in the introduction of a new funding model and strengthened partnership approach. Mr. Bland's early background was in marine sciences and natural resources management, later branching out into development economics and management. He has spent most of the past 30 years working in developing countries in Africa, Asia, and the Pacific. He has led DFID country programs in Russia, Ukraine, Kenya, and Somalia before moving to Geneva to work on global health, education, and humanitarian affairs. Mr. Bland now sits on the Boards of Roll Back Malaria, Malaria No More (UK), and the Global Health Council, and serves on the Programme Advisory Council of Health Right International. Mr. Bland was made a Commander of the British Empire in the Queen's Birthday Honours list in 2013 for service to Global Health.

Jo Ivey Boufford, M.D., is Co-Chair of the Forum on Public–Private Partnerships for Global Health and Safety and immediate past President of The New York Academy of Medicine. As of January 1, 2018, she is a Clinical Professor of Global Public Health at the College of Global Public Health at New York University, where she is also Professor of Public Service, Health Policy and Management at the Robert F. Wagner Graduate School of Public Service and Clinical Professor of Pediatrics at the New York University School of Medicine. She served as Dean of the Robert F. Wagner Graduate School of Public Service at New York University from June 1997 to November 2002. Prior to that, she served as Principal Deputy Assistant Secretary for Health in the U.S. Department of Health and Human Services (HHS) from November 1993 to January 1997, and as Acting Assistant Secretary from January 1997 to May 1997. While at HHS, she was the U.S. representative on the Executive Board of the World Health Organization (WHO) from 1994 to 1997. She served in a variety of senior positions and as President of the New York City Health and Hospitals Corporation, the largest municipal system in the United States, from December 1985 until October 1989. Dr. Boufford was awarded a Robert Wood Johnson Health Policy Fellowship at the National Academy of Medicine in Washington, DC, for 1979–1980. She currently serves on the boards of the United Hospital Fund and the Health Effects Institute. She was elected to membership in the National Academy of Medicine in 1992 and served on its Board on Global Health and Board on African Science Academy Development. She served two 4-year terms as the Foreign Secretary of the National Academy of Medicine between 2010 and 2014 and was elected to membership for the National Academy of Public Administration in 2015. She received an Honorary Doctorate of Science degrees from the State University of New York, Brooklyn (1992), New York Medical College (2007), Pace University (2011), and Toledo University (2012).

She has been a Fellow of The New York Academy of Medicine since 1988 and a Trustee since 2004. Dr. Boufford attended Wellesley College for 2 years and received her B.A. in Psychology magna cum laude from the University of Michigan, and her M.D., with distinction, from the University of Michigan Medical School. She is board certified in pediatrics.

Caroline Bressan, M.B.A., is the Director of Social Investments at Open Road Alliance, which she joined in 2015. She leads Open Road's Social Investment team, where she manages both the grant and loan portfolios, funding unexpected roadblocks for nonprofits and social enterprises. Prior to Open Road, Ms. Bressan was an Investment Principal at Dalberg Capital, the investment advisory wing of Dalberg. There, she focused on Dalberg Capital's impact investment advisory offerings, building a pipeline of investment opportunities in sub-Saharan Africa, specifically in energy and agriculture. Ms. Bressan also worked on the design and structuring of innovative financing mechanisms, including impact bonds and social impact insurance. Previously, Ms. Bressan was an Investment Officer at Calvert Impact Capital (formerly Calvert Foundation) where she managed its $20 million portfolio, mainly focused on Latin America. At Calvert, she originated and managed a pipeline of lending and investment deals focused on the sustainable trade, social enterprise, and financial inclusion sectors. In addition, Ms. Bressan designed and launched a revolving line of credit product, which was the first of its kind for Calvert, and helped launch the international component of the Women Investing in Women Initiative (WIN-WIN). She also sat on the investment committee of the Haitian Emergency Liquidity Fund, created to provide funding to microfinance institutions in the aftermath of the 2009 earthquake. Ms. Bressan received her M.B.A. from Dartmouth's Tuck School of Business and holds a bachelor's degree in Business Administration from the University of Michigan. She speaks English and Spanish.

Deena L. Buford, M.D., M.Sc., is currently the Global Medical Director of the Medicine and Occupational Health Department for ExxonMobil Corporation. The department delivers services to more than 80,000 ExxonMobil and affiliate employees worldwide. In addition to traditional work-related occupational health services, their service portfolio includes emergency response, travel medicine, industrial hygiene, drug testing, infectious disease support, and health promotion services delivered across a global network of more than 90 clinics. Dr. Buford completed her undergraduate education at Duke University, obtaining degrees in Psychology and Chemistry. While at Duke, she received an undergraduate research grant from the Department of Neuroanatomy, and her work contributed to a publication in the *Journal of Comparative Neurology*. She attended

medical school at Meharry Medical College in Nashville, Tennessee, completed a residency in Occupational Medicine, and obtained a Master's of Science in Public Health at the same institution. She is board certified in Occupational Medicine. Dr. Buford is a member of the Alpha Omega Alpha Medical Honor Society, the American College of Occupational and Environmental Medicine, and the American Public Health Association. She also serves on the Society of Petroleum Engineers Health, Safety, Security, Environmental and Social Responsibility Committee and the International Corporate Health Leadership Council.

Siddharth "Sid" Chatterjee, M.P.P., has been the Resident Coordinator and Resident Representative in Kenya since August 2016. Prior to this appointment, he served as the Representative for the United Nations Population Fund (UNFPA) for Kenya (2014–2016). Before he joined UNFPA, he was the Chief Diplomat and Head of Strategic Partnerships and Resource Mobilization at the International Federation of the Red Cross and Red Crescent Societies (2011–2014). He was Regional Director for United Nations Office of Project Services in the Middle East, Europe, and Central Asian Republics (2009–2010). Mr. Chatterjee has spent most of his career in the United Nations (UN), working in fragile states and complex emergencies, serving in various capacities with the UN Mission in Iraq; the United Nations Children's Fund offices in Somalia, South Sudan, Sudan (Darfur), and Indonesia; and the UN Peace Keeping Operations in Bosnia, Herzegovina, and Iraqi Kurdistan. A frequent contributor to humanitarian and development issues, he has a blog in *Huffington Post* and *Reuters*, and his articles have been featured in *The Guardian*, CNN, *Al Jazeera*, and the *Global Observatory*, as well as in mainstream Kenyan and Indian journals. In his early career, Mr. Chatterjee served in the Special Forces of the Indian Army. He holds a Master's in Public Policy from the Woodrow Wilson School of Public and International Affairs at Princeton University and a B.Sc. from the National Defence Academy in India.

H. Westley Clark, M.D., M.P.H., J.D., is currently the Dean's Executive Professor of Public Health at Santa Clara University in Santa Clara, California. He is formerly the Director of the Center for Substance Abuse Treatment, Substance Abuse and Mental Health Services Administration, U.S. Department of Health and Human Services (HHS), where he led the agency's national effort to provide effective and accessible treatment to all Americans with addictive disorders. Dr. Clark was also the former chief of the Associated Substance Abuse Programs at the U.S. Department of Veterans Affairs Medical Center in San Francisco, California, and a former associate clinical professor in the Department of Psychiatry at the University of California, San Francisco. Dr. Clark served as a senior

program consultant to the Robert Wood Johnson Substance Abuse Policy Program and as a co-investigator on a number of the National Institute on Drug Abuse–funded research grants. He worked for Senator Edward Kennedy as a health counsel on the U.S. Senate Committee of Labor and Human Resources. He has received numerous awards for his contributions to the field of substance abuse treatment, including the 2015 James Ralph Memorial Award for Outstanding Public Service from the Black Psychiatrists of America; a 2015 Annual Award, American Society of Addiction Medicine; a 2013 Friend of the Field Award from AATOD; a 2013 Life Time Achievement Award, American Public Health Association, ATOD section; the 2013 Public Policy Award, American Society of Addiction Medicine; the 2011 Gold Key Award, National Council on Alcoholism and Drug Dependence; a 2008 President Rank of Distinguished Executive Award; and a 2003 President Rank of Meritorious Executive Award in the Senior Executive Service. He was awarded the 2008 John P. McGovern Award from the American Society of Addiction Medicine for his contributions toward increased understanding of the relationship between addiction and society. Other awards include HHS's Award for Distinguished Service and the Vernelle Fox Award from the California Society of Addiction Medicine for Excellence in Addiction Medicine, Education, and Public Service in 2000. Dr. Clark received a B.A. in Chemistry from Wayne State University in Detroit, Michigan. He holds a Medical Degree and a Master's in Public Health from the University of Michigan, Ann Arbor, where he completed a Psychiatric Residency at University Hospital, Neuropsychiatric Institute. He obtained his Juris Doctorate from Harvard University Law School and completed a 2-year Substance Abuse Fellowship at the U.S. Department of Veterans Affairs Medical Center in San Francisco. Dr. Clark received his board certification from the American Board of Psychiatry and Neurology in Psychiatry and subspecialty certifications in Addiction Psychiatry. Dr. Clark is licensed to practice medicine in California, Maryland, Massachusetts, and Michigan. He is also a member of the Washington, DC, bar.

Santiago Cornejo, M.A., is the Director for Immunization Financing and Sustainability who works with Gavi, the Vaccine Alliance, to enable the sustainability of immunization achievements in Gavi's transitioning countries. Mr. Cornejo coordinates the implementation and Alliance support to Gavi's cofinancing, eligibility, and transition policies. Mr. Cornejo joined Gavi in 2008, and during his time he has led the development of Gavi's policies, including cofinancing, transition and eligibility, and transparency and accountability. Mr. Cornejo also served as Senior Portfolio Manager for Latin America and Lusophone (Portuguese speaking) countries and was acting Director for Country Grants and Renewals, overseeing Gavi's

review process for country proposals, monitoring progress and renewal of support. Mr. Cornejo has more than 18 years of cumulative work experience in the field of health and immunization financing. He started his career in 1999 with the Pan American Health Organization in Washington, DC. He has successively held roles with the World Health Organization, the Vaccine Fund, and the World Bank. Mr. Cornejo also worked in academia at the Center for Global Health at George Washington University. He holds a master's degree in International Economic Development with a specialization in International Public Health Policy from George Washington University.

Jennifer Esposito, M.S., is an executive with more than 20 years of experience in global health care IT and the health and life sciences industry. Ms. Esposito worked for more than 13 years at GE Healthcare and is now Worldwide General Manager of Health and Life Sciences at Intel Corporation. Ms. Esposito has led commercial organizations, sales, marketing and service operations, profit and loss statements, as well as both upstream and downstream strategy and marketing—in all cases driving new business growth and organizational transformation. Ms. Esposito has extensive experience working with governments, intergovernmental agencies, industry organizations, and others to influence and drive policy related to the use of information and communication technologies in health care and health security. At Intel, Ms. Esposito leads a worldwide team of industry and technology leaders, subject-matter experts, account executives, scale managers, industry technical specialists, and solution architects to develop solutions that use information and communication technology to solve the most pressing challenges facing the health and life sciences industry (e.g., making personalized medicine a practical reality, securing health systems from data breaches, and integrating digital solutions in hospitals and health systems to improve care, access, and lower costs). Together with the Novartis Foundation, Ms. Esposito co-chairs the UN Broadband Commission for Sustainable Development Working Group on Digital Health for Non-Communicable Diseases. Ms. Esposito is on the Steering Committee of the Global Health Security Agenda Private Sector Roundtable (PSRT) and chairs the PSRT's Technology and Analytics Working Group. Ms. Esposito holds a graduate degree in Epidemiology and Biostatistics from the Dartmouth Institute for Health Policy and Clinical Practice, and a B.A. from Dartmouth College. Ms. Esposito is a certified Six Sigma Black Belt and is a member of the American Association of Physicists in Medicine.

Tim Evans, M.D., D.Phil., is the Senior Director of Health, Nutrition, and Population at the World Bank Group. From 2010 to 2013, Dr. Evans was

dean of the James P. Grant School of Public Health at BRAC University in Bangladesh and senior advisor to the BRAC Health Program. From 2003 to 2010, he was Assistant Director General at the World Health Organization (WHO). Prior to this, he served as director of the Health Equity Theme at the Rockefeller Foundation. Earlier in his career he was an attending physician of internal medicine at Brigham and Women's Hospital in Boston and was assistant professor in international health economics at the Harvard T.H. Chan School of Public Health. He is a board member of a number of international health alliances. Dr. Evans has been at the forefront of advancing global health equity and strengthening health systems delivery for more than 20 years. At WHO, he led the Commission on Social Determinants of Health and oversaw the production of the annual *World Health Report*. He has been a cofounder of many partnerships, including the Global Alliance on Vaccines and Immunization, as well as efforts to increase access to HIV treatment for mothers and innovative approaches to training community-based midwives in Bangladesh. Dr. Evans received his medical degree from McMaster University in Canada and was a research and internal medicine resident at Brigham and Women's Hospital. He earned a D.Phil. in Agricultural Economics from University of Oxford, where he was a Rhodes scholar.

John Fitzsimmons, MURP, has a public health career in the expanded program of immunizations, including periods of service with the Pan American Health Organization/World Health Organization (1981–1994, 2001–2007, and from 2016 to present) with the South-East Asia Regional Office of the World Health Organization in New Delhi (1997–2001) and with the U.S. Centers for Disease Control and Prevention in Atlanta (2007–2016). In these technical, operational, and vaccine supply chain positions he supported achievements by national immunization programs to meet regional and global public health goals for polio eradication, measles and rubella elimination, and the control of vaccine-preventable diseases overall. Mr. Fitzsimmons holds a master's degree from the University of Pittsburgh, and his published work focuses on the sustainability of national immunization programs and vaccine supply chains.

Amanda Glassman, M.Sc., is Chief Operating Officer and Senior Fellow at the Center for Global Development (CGD) and also serves as Secretary of the board. Her research focuses on priority setting, resource allocation, and value for money in global health, as well as data for development. Prior to her current position, she served as director for global health policy at CGD from 2010 to 2016, and has more than 25 years of experience working on health and social protection policy and programs in Latin America and elsewhere in the developing world. Prior to joining

CGD, Ms. Glassman was principal technical lead for health at the Inter-American Development Bank, where she led policy dialogue with member countries, designed the results-based grant program Salud Mesoamerica 2015, and served as team leader for conditional cash transfer programs such as Mexico's *Oportunidades* and Colombia's *Familias en Accion*. From 2005 to 2007, Ms. Glassman was deputy director of the Global Health Financing Initiative at Brookings and carried out policy research on aid effectiveness and domestic financing issues in the health sector in low-income countries. Before joining the Brookings Institution, Ms. Glassman designed, supervised, and evaluated health and social protection loans at the Inter-American Development Bank and worked as a Population Reference Bureau Fellow at the U.S. Agency for International Development. Ms. Glassman holds an M.Sc. from the Harvard T.H. Chan School of Public Health and a B.A. from Brown University, has published on a wide range of health and social protection finance and policy topics, and is editor and co-author of the books *Millions Saved: New Cases of Proven Success in Global Health* (Center for Global Development, 2016); *From Few to Many: A Decade of Health Insurance Expansion in Colombia* (IDB and Brookings, 2010); and *The Health of Women in Latin America and the Caribbean* (World Bank, 2001).

Naresh Goel, MBBS, M.D., earned both his MBBS (Bachelor of Medicine and Bachelor of Surgery) in 1978 and his M.D. in 1990 from Maulana Azad Medical College. He has extensive experience in the field of Public Health with government, nongovernmental organizations (NGOs), and United Nations agencies, having extensively traveled throughout the world for public health programs. During his initial posting, he served as Chief Medical Officer with the Directorate of Family Welfare, Government of Delhi (for Pulse Polio Program), and Lok Nayak Hospital from 1991 to 2001. He was then posted as Assistant Commissioner (Public Health) and Assistant Commissioner (NGO) in the Ministry of Health and Family Welfare from 2001 to 2004. For more than 2 years, from November 2004 to December 2006, he worked with the World Health Organization India as the Surveillance and Monitoring Officer in immunization programs supporting the national government. Dr. Goel then served as Assistant Commissioner (Universal Immunization Programme) in the Ministry of Health and Family Welfare from 2007 to 2010. He now serves as Deputy Director General at the National AIDS Control Organisation and is in charge of mainstreaming, including public–private partnerships (PPPs) for advancing the cause of HIV/AIDS control. He is also project coordinator of the Labs for Life project, a PPP initiative of the government of India and the U.S. Centers for Disease Control and Prevention. Recently, his major responsibilities are the scale-up of viral load testing throughout India in PPPs and framing rules for the HIV/AIDS Act.

Allison Goldberg, Ph.D., is the Executive Director of the Anheuser-Busch (AB) InBev Foundation. Dr. Goldberg, who held the position of Vice President, Strategy & Programs from May 2017 to July 2018, is responsible for overseeing the execution of the Foundation's strategic vision according to its guiding principles of transparency, supporting local leadership, and maintaining academic integrity. Dr. Goldberg also serves as Secretary of the Foundation's Board of Directors. Previously, Dr. Goldberg was Director of Global Corporate Affairs at AB InBev. In this role, Dr. Goldberg worked across AB InBev and with outside experts to develop the architecture and strategy for the Global Smart Drinking Goals and the Together for Safer Roads initiative, a cross-industry coalition working to improve road safety globally. She represented AB InBev on the Health and Medicine Division's Forum on Public–Private Partnerships for Global Health and Safety and managed AB InBev's Global Advisory Council, an external board of global thought and business leaders, which provided insight and guidance to the company's executive leadership on issues critical to the business and the world. Prior to joining AB InBev, Dr. Goldberg worked at the consulting firm Abt Associates and held positions as a researcher at the International Center for AIDS Care and Treatment Programs at Columbia University. She also served as a consultant in Johnson & Johnson's Global Health Division, working with the Vice President of Global Health, to promote public health policy programs. A recognized expert in public health, Dr. Goldberg earned an interdisciplinary Ph.D. in Public Health and Political Science from Columbia University and a B.A. in Political Science from the University of Michigan. She is a 2015 Aspen Ideas Festival Scholar and holds an academic appointment as Lecturer at Columbia University.

Trevor Gunn, Ph.D., is Vice President of International Relations for Medtronic, the world's largest medical technology company. Dr. Gunn was formerly long-time Director of the Commerce Department's Business Information Service for the Newly Independent States, the clearinghouse for U.S. government information for doing business in the former Soviet Union. He has served continuously for the past 24 years as Adjunct Professor at the Center for Eurasian, Russian and East European Studies/School of Foreign Service, Georgetown University. He is a Vicennial Silver Medalist. He received his B.A. from the University of San Francisco. He received his Ph.D. in International Relations from the London School of Economics in 1992. He has worked with the Chamber of Commerce of Southern Sweden, Dover Elevator Corporation (now ThyssenKrupp of Germany), and International Executive Service Corps, and on the staffs of the former San Francisco Mayor and two U.S. Senators from California. He is the Founder and Chairman of the USA Healthcare

Alliance. He sits on the U.S. Department of State's Stakeholder Advisory Board on the Organisation for Economic Co-operation and Development Guidelines on Corporate Social Responsibility and is an official Advisor to the Office of the U.S. Trade Representative in the "Industry Trade Advisory" system of the U.S. government. Dr. Gunn chairs the International Affairs Committee at Medtech Europe, Europe's largest medical technology trade association. Furthermore, he is a Member of the Board of Directors for the U.S.–Russia Business Council and is Chair of the Executive Council on Diplomacy. He sits on the Washington Export Council (Washington, DC), the Board of Advisers of the Washington International Business Council, and the Board of the Center for Citizens Initiatives (San Francisco). He is also a member of the Health and Medicine Division's Forum on Public–Private Partnerships for Global Health and Safety and is a member of the U.S. Department of Commerce's District Export Council (Virginia). Finally, he serves on the Advisory Board of the University of Minnesota Carlson Business School's Carlson Global Institute. Dr. Gunn speaks Swedish, French, and Russian.

Mark Halliday, M.B.A., is a health care subject-matter expert based in Washington, DC. He is the global lead of the International Finance Corporation's (IFC's) advisory team focused on health care public–private partnerships (PPPs). As part of the management team, he also works with other infrastructure teams to deliver on the IFC's and World Bank Group's objectives. Previously, Mr. Halliday was the Head of PPPs at Philips Healthcare. Before that, he worked at KPMG Corporate Finance in the Global Infrastructure and Projects Group, advising governments and private clients on the implementation of infrastructure projects worldwide, including the arrangement and restructuring of debt facilities. He has commercial and public-sector experience, having been appointed to the Business Advisory Board of the United Nations Economic Commission for Europe and having spent 8 years at the UK National Audit Office as their corporate finance advisor covering health care, energy, general infrastructure, and financing.

Carel IJsselmuiden, M.D., M.P.H., FFCH (SA), is a physician, epidemiologist, public health practitioner, academic, and social entrepreneur. After spending 10 years in rural medicine, peri-urban and urban health care, and environmental health services management, he switched to academic public health research, education, and research ethics training. He has published widely in applied research and public health and was appointed as professor and Head of the Department of Community Health at the University of Pretoria in 1995, where he became the founding director of the School of Health Systems and Public Health in 1999.

He held this position until his appointment as Executive Director at the Council on Health Research for Development (COHRED) in 2004. As such, he is also an ex-officio member of the COHRED Board and President of COHRED USA. Dr. IJsselmuiden has worked and lived in Africa, Europe, the United States, and the Caribbean.

Jim Jones is the Executive Director of the ExxonMobil Foundation. In this capacity, he oversees ExxonMobil Foundation's major grant-making programs in global health (specifically in the fight against malaria), women's economic opportunities, and U.S. math and science education. Previously, he directed ExxonMobil's global brand, advertising, and integrated communications work. Prior to work in the private sector, Mr. Jones was the founding executive vice president at the Vaccine Fund (now Gavi, the Vaccine Alliance). He was also vice president of programs and policy at the Children's Defense Fund, where he oversaw the organization's work on education, juvenile justice, child welfare, and health. For 12 years, Mr. Jones served in various capacities in the U.S. Congress, including as director of communications and policy to Senator John F. Kerry, for whom he drafted major global health legislation, including the original federal spending authorizations for many product development partnerships. Mr. Jones is a graduate of Georgetown University and Oxford University and was awarded a Fulbright Scholarship to study international economics at the University of Munich.

Nduku Kilonzo, Ph.D., is passionate about promoting health and well-being of young people and women in Africa. As the Chief Executive Officer of the Kenya National AIDS Control Council (NACC), she is responsible for policy guidance, tracking progress and overall results of Kenya's HIV response as outlined in Kenya's HIV Strategic Framework, and for driving the NACC mandate while observing institutional accountability and compliance. Through her HIV work in Kenya and membership in many global technical and leadership forums and commissions, Dr. Kilonzo has made contributions that earned her acknowledgment in the Millennium Development Goal 6 Global Report. She has in the recent past been a member of the Global Review Panel of the Joint United Nations Programme on HIV and AIDS Operating Model in 2017 and the UN/Lancet Global Commission on the Future of Health in Sub-Saharan Africa. A Doctor of Philosophy holder in Tropical Medicine from the Liverpool School of Tropical Medicine, Dr. Kilonzo's professional experience spans the government, the United Nations, and private sectors with more than 20 years in public health and development. She has led policy formulation and implementation of innovative public health programs in HIV and gender-based violence prevention and control programs in

Botswana, Côte d'Ivoire, Kenya, and Malawi. An avid reader and principal or co-investigator in many studies, Dr. Kilonzo has more than 30 peer-reviewed publications in high-impact-factor journals, commissioned reports, and book chapters in the areas of HIV prevention and control for Africa.

Liza Kimbo, M.B.A., M.Sc., has more than 20 years of experience in senior- and executive-level management, mainly focused on health-related programs. Her passion is in developing enterprises that serve the health care needs of the poor. Ms. Kimbo is Kenyan and has a B.S. in Finance, an M.B.A. (United States International University), and an M.Sc. in Health Systems Management from the London School of Hygiene & Tropical Medicine. Ms. Kimbo's career spans the banking industry, health care business start-ups, and both nonprofit and for-profit organizations. She established the first primary care health franchise organization in Kenya—CFWclinics owned by Healthstore Foundation. She thereafter founded LiveWell Ltd., a chain of seven clinics and one mid-size hospital that provides low-income earners in Kenya with convenient, assured quality and affordable health care services.

Ties Kroezen, M.A., is a business development manager in the primary care business of Philips, with a focus on Africa. He specializes in developing new business models for primary care, especially public–private partnership models. In the first phase of his career, Mr. Kroezen was a business and strategy consultant working for a.o. Accenture and KPMG. He moved on to become a social entrepreneur in Africa, setting up and leading businesses in agriculture, solar, and information technology. Mr. Kroezen has a master's degree in business science from the University of Twente, the Netherlands. He is a regular speaker on primary care and doing business in Africa.

Ambassador (Retired) John E. Lange, J.D., M.S., is the Senior Fellow for Global Health Diplomacy at the United Nations Foundation. Prior to joining the Foundation in July 2013, Lange spent four years at the Bill & Melinda Gates Foundation working with African governments to improve public health. He served as co-chair of the Global Polio Eradication Initiative's Polio Partners Group from 2012 to 2016. He also served as co-chair of the National Academies' Committee on Investing in Health Systems in Low- and Middle-Income Countries and currently serves as a member of its Committee on Enhancing Global Health Security through International Biosecurity and Health Engagement Programs. Ambassador Lange had a 28-year career in the Foreign Service at the U.S. Department of State, including service as Special Representative on Avian and Pan-

demic Influenza; Deputy U.S. Global AIDS Coordinator at the inception of The U.S. President's Emergency Plan for AIDS Relief; and Ambassador to Botswana, where HIV/AIDS was his signature issue. He led the U.S. Embassy in Dar es Salaam during the August 7, 1998, terrorist bombing, for which he received the State Department's Distinguished Honor Award. Ambassador Lange earlier had tours of duty in Geneva, Lomé, Paris, and Mexico City. He has written numerous articles, including an account of pandemic influenza negotiations for a book of case studies in global health diplomacy. He has degrees from the National War College, the University of Wisconsin Law School, and the University of Wisconsin–Madison. He speaks English and Spanish and has working proficiency in French.

Amy Lin, M.B.A., M.A., is the Acting Deputy Director at the U.S. Agency for International Development's Center for Innovation and Impact (CII), where she focuses on such market-based strategies as introduction planning, market shaping, and innovative financing to accelerate adoption of high-priority health interventions. Previously, Ms. Lin was based in Mumbai with Monitor Inclusive Markets, where she developed social enterprise models that provide clean drinking water in slums. Prior to this role, Ms. Lin served as the HIV/AIDS Program Director for the Clinton Health Access Initiative (CHAI) in Liberia. Before CHAI, Ms. Lin was at the World Bank's Development Marketplace, which funds new approaches to serving the poor. Previously, Ms. Lin worked with TechnoServe in Peru, advising microbusinesses on expansion, marketing, and operational strategies to target new customer segments. Earlier, Ms. Lin was based in New York with the Boston Consulting Group, a strategy consulting firm, where she advised multinational companies in the pharmaceutical, financial services, and consumer goods industries. Ms. Lin holds an M.B.A. from the Wharton School of the University of Pennsylvania, an M.A. in International Relations from the Johns Hopkins School of Advanced International Studies, and a B.A. with Distinction in Political Science from Yale University.

Matthew MacGregor, M.A., is the Senior Project Lead for Sustainability, Transition, and Co-Financing at The Global Fund to Fight AIDS, Tuberculosis and Malaria. In this capacity, Mr. MacGregor leads the Global Fund's work to implement the Sustainability, Transition, and Co-Financing policy. Mr. MacGregor also previously served as a Fund Portfolio Manager for the Global Fund in the Latin American and Caribbean region, where he managed Global Fund grants to various countries. Before joining the Global Fund, Mr. MacGregor worked in health and development in Latin America, South East Asia, and the United States, including as the Execu-

tive Director of a U.S.-based health nongovernmental organization. He was selected as a 2008 Henry Luce Scholar, graduated Summa Cum Laude from Tufts University, and holds a master's degree from the Fletcher School of Law and Diplomacy at Tufts.

Benjamin Makai leads the Technology for Development unit at Safaricom Ltd., which works with like-minded organizations to form partnerships aimed at identifying issues and finding solutions in areas such as health, agriculture, education, and disaster management. He is responsible for building and maintaining winning partnerships with ecosystem industry stakeholders. Mr. Makai has a B.Sc. in Computer Science from Egerton University, various developing leadership capabilities training from Strathmore Business School, and was recently awarded a certificate of completion for the Rethinking Financial Inclusion Program from Harvard Business School.

Rebecca Martin, Ph.D., serves as the Director of the Center for Global Health at the U.S. Centers for Disease Control and Prevention (CDC). Dr. Martin has worked both domestically and internationally in immunization, HIV, and health system strengthening and now leads CDC's global efforts to protect and improve health globally through science, policy, partnership, and evidence-based public health action. Dr. Martin has more than 20 years of experience working in global health, having had CDC assignments in Kenya, Tanzania, and Denmark. Dr. Martin began her career with CDC in 1997 in the National Immunization Program, Epidemiology, and Surveillance Division. Prior to joining CDC, she worked at the Maryland Department of Hygiene and Mental Health in Baltimore, Maryland, as the immunization program epidemiologist.

Olasupo Oyedepo, B.Sc., is the Project Director of the Health Strategy and Delivery Foundation's ICT4HEALTH Project in Nigeria. The project has provided technical assistance and support to the Federal Ministries of Health and of Communications and other stakeholders to operationalize the country's National eHealth Strategy. He is also the Director of the African Alliance of Digital Health Networks, a peer-learning network to support the digital health ecosystem in Africa.

Muhammad Pate, M.D., M.B.A., is CEO of Big Win Philanthropy. Dr. Pate was Minister of State for Health of the Federal Republic of Nigeria from July 2011 to July 2013, and he led the successful Presidential Task Force on Polio Eradication in Nigeria and developed the results-based initiative Save One Million Lives. From 2013 to 2015, Dr. Pate was a visiting Professor at Duke University's Global Health Institute. Previously, Dr. Pate

served as the Chief Executive of Nigeria's Primary Health Care Development Agency and worked for several years at the World Bank Group in Washington, DC. He is a founding co-chair of the Board of the Private Sector Health Alliance in Nigeria and serves on Merck's Advisory Board for Merck for Mothers, Harvard's Defeating Malaria Initiative, the FHI 360 Advisory Board, and the World Economic Forum Global Agenda Council on Demographic Dynamics. He has received the Geneva Health Forum Award for 2014 and Harvard Health Leadership Award for 2012. Dr. Pate is certified by the American Board of Internal Medicine in the specialty of Internal Medicine and subspecialty of infectious diseases. He also holds an M.B.A. in Health Sector Management Concentration.

Kerry Pelzman, M.P.H., is a Senior Foreign Service Officer with 30 years of experience in public health, two-thirds of which has been spent with the U.S. Agency for International Development (USAID). She has served in six USAID missions, covering health, education, and capacity development, including in South Africa, Afghanistan, India, Iraq, the Regional Mission for Central Asia, and Russia. Prior to joining USAID in 1998, Ms. Pelzman was an international health consultant, worked to implement a family planning program in Togo, managed public health education programs for the New York City Department of Health, and served as a U.S. Peace Corps Volunteer in Mauritania. She received a Bachelor of Arts degree from Yale University and a Master's of Public Health degree from the University of Michigan's School of Public Health.

Leandro Piquet, M.A., Ph.D., is a professor of the Institute of International Relations of the University of São Paulo (USP), where he is coordinator of the Nucleus of Research in Public Policies, a research program focused on security and crime, and a member of the Group of Analysis of the International *Conjuntura* of the same university. Dr. Piquet was a professor in the Department of Political Science at USP (2000 to 2009) and a visiting researcher at the Taubman Center at the John F. Kennedy School of Government, Harvard University (2006 to 2007). He is an economist with a degree from the Federal University of Rio de Janeiro and a specialization in quantitative research methods from the University of Michigan's Inter University Consortium for Political and Social Research. Dr. Piquet holds a master's degree and a Ph.D. in Political Science from Instituto Universitário de Pesqisas do Rio de Janeiro and did postdoctoral studies at the Department of Political Science at USP. He is a member of the City Council of Rio de Janeiro and the Strategic Affairs Unit of the Advisory Office for Strategic Affairs of the Government of the State of São Paulo.

Johanna Ralston, M.A., M.P.H., has worked in global noncommunicable diseases (NCDs) and their risk factors for more than two decades. She has served as CEO of World Obesity Federation since 2017, focusing on changing the narrative and elevating obesity on the global agenda. From 2011 to 2016, Ms. Ralston served as CEO of the World Heart Federation, the main cardiovascular disease (CVD) organization in official relations with the World Health Organization (WHO) and a founder of the NCD Alliance. Ms. Ralston's work included mobilizing the CVD community around the NCD agenda and WHO initiatives, including the Global Action Plan on NCDs from 2013 to 2020 and Global HEARTS, as well as a shared strategy to address rheumatic heart disease. Ms. Ralston also served as Vice Chair, steering group member, and Interim Director of the NCD Alliance during that period, and led the communications strategy for the 2011 UN high-level meeting and strategic planning for the second business plan. From 1999 until 2011, Ms. Ralston was the Vice President of Global Strategies at the American Cancer Society, overseeing global advocacy and building the global capacity-building program to strengthen community-based cancer and tobacco control in low- and middle-income countries. She is also a fellow at the Geneva Centre for Security Policy, leading the course on global health security. A dual citizen of Sweden and the United States, Ms. Ralston is an alumna of Harvard Business School and studied public health at Johns Hopkins University, after a first degree in literature. She serves on various committees and boards, including the Lung Cancer Alliance, the World Economic Forum Global Future of Health and Healthcare Council, the WHO NCD Civil Society Working Group, the WHO Expert Advisory Panel on Surgical Care, and the WHO Bloomberg NCD Business Case Expert Group.

Peter Sands, M.P.A., is the director of the Global Fund to Fight AIDS, Tuberculosis and Malaria. Since June 2015, Mr. Sands has been a research fellow at Harvard University, dividing his time between the Mossavar-Rahmani Center for Business and Government at the Harvard Kennedy School and the Harvard Global Health Institute, part of the Harvard T.H. Chan School of Public Health. Working on a range of research projects in financial markets and regulation, fintech, and global health, Mr. Sands's engagement with global health issues includes chairing the U.S. National Academy of Medicine's Commission on a Global Health Risk Framework for the Future, which in January 2016 produced the highly influential report *The Neglected Dimension of Global Security: A Framework to Counter Infectious Disease Threats*; chairing the World Bank's International Working Group on financing preparedness, which in May 2017 published *From Panic and Neglect to Investing in Health Security: Financing Preparedness at a National Level*; authoring several papers on infectious disease crises

in the *New England Journal of Medicine*, *The Lancet*, and *British Medical Journal*; being the lead nonexecutive director between 2011 and 2017 on the Board of the United Kingdom's Department of Health, which provides oversight and policy direction to the United Kingdom's National Health Service; and being an active member on both the U.S. National Academy of Science's Committee on Ensuring Access to Affordable Drugs and the Forum on Microbial Threats. Mr. Sands is a board member or advisor to several start-ups in the fintech and meditech arenas, such as Noble Markets (U.S.) and Cera (UK). He was the group chief executive of Standard Chartered PLC from November 2006 to June 2015. He joined the Board of Standard Chartered PLC as the group finance director in May 2002, responsible for finance, strategy, risk and technology, and operations. Prior to this, Mr. Sands was a senior partner at worldwide consultants McKinsey & Co. Before joining McKinsey, he worked for the United Kingdom's Foreign and Commonwealth Office. He has served on various boards and commissions, including as a director of the World Economic Forum and co-chairman of Davos; governor of the United Kingdom's National Institute for Economic and Social Research; member of the International Advisory Board of the Monetary Authority of Singapore; member of the Browne Commission on Higher Education Funding in the United Kingdom; member of the China People's Association for Friendship with Foreign People's Global CEO Council; co-chair of the UK–India CEO Forum; board director of the Institute of International Finance; chairman of the International Monetary Conference; member of the International Advisory Board of Lingnan University, China; and trustee of the Camden Roundhouse, London. Mr. Sands graduated from Brasenose College, Oxford University, with a first class degree in politics, philosophy, and economics. He also received a Master's in Public Administration from Harvard University, where he was a Harkness Fellow.

Brendan Smith, M.Sc., leads the development of Vital Wave's strategic insights and the application of its research and analytical approaches, drawing on his in-depth knowledge of international development and various industry sectors. He has particular expertise in digital health, having led the creation of landmark reports and digital health implementations across low- and middle-income countries, including Ethiopia, South Africa, Zambia, India, and Tanzania. For example, Mr. Smith led research on how national governments can play a fundamental role in coordinating key actors from both the public and the private sectors to establish successful national digital health systems. He has also been working with the East African Community on the design and implementation of a regional road map for digital health. Lastly, Mr. Smith brings a strong background in strategic needs assessments, competitive analyses, and

industry policy and regulation. This is complemented by his experience in field research and digital-for-development program implementation.

David Stanton, M.A., is a public health leader and the former Director of the U.S. Agency for International Development's (USAID's) Office of HIV/AIDS. He has 19 years of experience working with USAID's HIV/AIDS program and more than 30 years of experience in public health, including working on sexually transmitted infections, HIV and AIDS treatment, and clinical epidemiology. Mr. Stanton has 4 years of overseas experience in West Africa. Additionally, he served on the transition team that established the Office of the U.S. Global AIDS Coordinator at the U.S. Department of State.

Ikuo Takizawa, M.Sc., graduated from the University of Tsukuba, Japan, in March 1992 with a B.A. in International Relations and then obtained his M.Sc. in Population and International Health from the Harvard T.H. Chan School of Public Health in June 1998. He joined the Japan International Cooperation Agency (JICA) in April 1992 and has since been involved in JICA's health and health-related projects in Asia, Latin America, and Africa. He worked in JICA Philippines between 2001 and 2005 as an assistant resident representative in charge of health, education, and local governance. Between 2008 and 2010, he served in JICA Kenya as a regional project formulation advisor for health and was involved in designing, monitoring, and evaluating JICA's health projects in Africa. Currently, he serves as deputy director general of the Human Development Department and oversees JICA's health portfolio in Africa, the Middle East, Europe, and Latin America. Technically, he supervises JICA's operations in health systems, strengthening including universal health coverage and infectious diseases control covering health emergency preparedness and response.

Katherine Taylor, Ph.D., M.Sc., is the Associate Director and Director of Global Health Training, Eck Institute for Global Health, University of Notre Dame. Trained as a parasite immunologist, Dr. Taylor's research experience includes 14 years living and working in Kenya where she was employed by the U.S. Centers for Disease Control and Prevention and the International Livestock Research Institute focused on malaria and trypanosomiasis in livestock. She joined the National Institute of Allergy and Infectious Diseases in 2001. There, she established and led a new Drug Development Section within the Office of Biodefense that funded a portfolio of contracts for the development of new drugs against high-priority biothreats (e.g., smallpox, anthrax, and botulinum toxin). In 2009 she joined the University of Notre Dame's Eck Institute for Global

Health. Dr. Taylor manages a number of international research relationships across a range of geographic locations, partners, and activities. Dr. Taylor also serves as the Director of Global Health Training, with primary responsibility for establishing and now leading the Master of Science in Global Health program. She is a past-President of the American Society of Tropical Medicine and Hygiene Committee for Global Health, and is a member of the National Academies' Forum on Public–Private Partnerships for Global Health and Safety. She serves on the Advisory Board of the Catholic Medical Mission Board and on the Catholic Health Association International Outreach Committee.

Chris West, Ph.D., is a co-founder of Sumerian Partners (www.sumerianpartners.com). As the former Director of the Shell Foundation, an independent charity, he helped incubate and scale up a portfolio of social enterprises operating in emerging economies. He is the author of various reports, including Shell Foundation's *Enterprise Solutions to Poverty* (2005), *Enterprise Solutions to Scale* (2010), and *Accelerating Access to Energy* (2014).