

# Concept note for an investment case for primary health care

BY THE JOEP LANGE INSTITUTE, SEEK  
DEVELOPMENT AND THE CENTER FOR  
POLICY IMPACT IN GLOBAL HEALTH, DUKE  
UNIVERSITY

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## Executive summary

An investment of US\$1.9–US\$3.8 billion per year in new development assistance for health has the potential to transform primary health care and thereby dramatically accelerate progress on the Sustainable Development Goals for health while strengthening the ability of low- and middle-income countries to prepare for future pandemics.

This concept note proposes a new way of thinking about investing in PHC that is built on one of the key insights of the efforts to address HIV, tuberculosis, malaria, and vaccines and immunizations: that it is possible to drive large-scale change by using additional donor financing to support a limited number of evidence-based, high-impact investment areas and to catalyze domestic resource mobilization. This concept note sets out to answer the question of whether it is possible to identify a package of priority investments in PHC that can drive transformational change and that can be delivered for a reasonable price tag to donors.

The proposed set of investment areas were identified by reviewing the evidence on a large number of PHC approaches. They were then prioritized based on a proven record of impact if brought to sufficient scale (or, for newer approaches such as some digital technologies, promising signs of impact), their ability to promote convergence in health outcomes (e.g., to improve equity), their contribution to future-proofing health systems, and the extent to which they are amenable to donor financing.

The result of this analysis is a package of three investment areas: a new model of people-centered primary care, next generation community health, and empowering communities and individuals to engage in health decision-making. In each of these, new technologies are creating promising opportunities to leapfrog traditional constraints and scale up the delivery of quality health services.

Across the world, countries—often with support of external partners—are already demonstrating what is possible with these approaches. The challenge has been that these efforts often remain small scale—and that is likely to remain the case without a concerted push to accelerate progress.

Domestic resources ultimately must be the primary source of financing for these PHC approaches. But in the short-term development assistance for health has a crucial role to play in supporting countries with making this push, particularly because many of the investments needed are in areas such as digital technology that have significant start-up costs that may prove difficult to cover from domestic budgets impacted by the pandemic. External support in these areas will also benefit existing donor investments, as they will tackle the bottlenecks that are increasingly recognized as at the heart of the challenges faced by global health initiatives (GHIs) such as Gavi, the Global Financing Facility, and the Global Fund to Fight AIDS, Tuberculosis and Malaria in their work to improve health outcomes.

These GHIs already provide considerable financing for PHC and have proven track records of investing large sums of resources quickly and effectively, so setting up a new financing mechanism would not be the most efficient or effective way to increase financing for PHC. Instead, the GHIs should be at the center of the effort to increase external support for PHC, alongside increased bilateral financing.

Working out the precise package of investments and how additional external resources for these areas would flow is beyond the scope of this note. A full-fledged investment case process that brings together a range of stakeholders, including low- and middle-income countries, donors, GHIs, key UN agencies, and civil society should be launched to work through these issues.

Two decades of enormous progress in global health are today looking very fragile. Even before the worst pandemic in a century, many countries were not on track to achieve the SDG targets for health, with progress having largely plateaued in areas such as expanding access to vaccinations and immunizations, TB treatment, and family planning. COVID-19 has made the situation dramatically worse by disrupting services, causing massive rises in poverty, and blowing huge holes in government budgets precisely when they most need resources.

Unless the world unites behind a concerted push on PHC it is hard to see how we will get on a trajectory to achieve the SDG targets or prepare for the next pandemic. COVID-19 has shown how quickly the world can move and the volume of resources that can be mobilized on short notice: the investment package proposed in this concept note represents a mere 0.01%–0.04% of the more than US\$16 trillion in fiscal stimulus provided over the past year in response to the pandemic. This concept note makes it clear that there is a path to success—what is needed now is the political will to walk down it.

## 1 Introduction: Why the world needs an investment case for primary health care

The adoption of the Sustainable Development Goals in 2015 was a landmark moment, with the global community coming together behind a shared vision of a more equitable, healthier, better educated, and cleaner world. The SDGs set out a bold aspiration of ensuring healthy lives and promoting well-being for all at all ages.

This vision was built on a foundation of remarkable progress over the preceding 25 years. New technologies, better evidence, and a huge increase in funding from both domestic and international sources resulted in under-five mortality rate dropping from 91 deaths per 1,000 live births in 1990 to 43 in 2015,<sup>1</sup> while annual deaths from AIDS fell by more than half from their peak.<sup>2</sup>

However, there is still a long way to go, and since 2015, progress has slowed rather than accelerated. The World Health Organization (WHO) estimates that only between one third and one half of the world's population was able to obtain essential health services in 2017.<sup>3</sup>

In 2018, the *Lancet* Commission on Investing in Health estimated when the world could achieve a reduction in deaths from HIV, TB, and maternal and child health conditions down to levels seen in the best-performing middle-income countries.<sup>4</sup> The Commission found that if trends in mortality from 2010-2016 were to continue, the convergence targets for HIV and child mortality would be reached by around 2035, but not until 2067 for maternal mortality and 2074 for TB. Weak health delivery systems are a key factor in explaining this poor progress.

These dismaying figures reflect life before the most disruptive pandemic in a century, which is threatening to put the SDG targets completely out of reach. Healthcare systems around the world redirected their resources to responding to COVID-19 at the expense of routine care and critical interventions such as vaccination campaigns, while lockdowns prevented people from accessing needed medical care and fear of infection has kept others away from facilities.

The economic devastation may be the longest-lasting and most significant impact of the pandemic, with the World Bank estimating that 150 million people around the world could be pushed into extreme poverty.<sup>5</sup> This economic shock has a devastating effect on health, as people are unable to afford the costs of drugs, medical visits, or even transportation to health facilities. The burden will be highly unequal, disproportionately impacting women and children.

For countries to get back on track, health must be kept at the very top of the domestic and global development agendas, both during the pandemic and in the post-pandemic recovery years. A critical factor is whether countries will be able to strengthen and retool their health delivery systems, particularly primary health care (PHC).

Forty years after the landmark 1978 Declaration of Alma Ata, the world came together to support a renewed vision for PHC. There is widespread recognition that PHC is—in the words of the Director General of WHO—a “cornerstone” of efforts to achieve universal health coverage.<sup>6</sup> It will not be possible to improve access to affordable, quality health services without strengthening PHC, which is “the most cost-effective way to address comprehensive health needs close to people’s homes and communities.”<sup>7</sup>

COVID-19 has also highlighted the importance of building the systems to prepare for future pandemics, an effort that PHC has a critical role in. As the Global Pandemic Monitoring Board has put it, “[i]ntegration of core public health functions into a health system based on primary health care with universal health coverage is a precondition for preparedness.”<sup>8</sup> And while today’s focus is on pandemic preparedness, stronger PHC is essential for the broader goal of building the resilience of health systems to cope with the array of threats that are increasingly visible, such as climate change and the shifting burden of disease. PHC is also central to addressing one of the other main challenges of the era, equity. In particular it is one of the most effective—and cost-effective—ways of improving gender equity.

Despite these benefits, progress on PHC has been uneven. Many low- and middle-income countries have not prioritized it and many donors have not focused their development assistance for health (DAH) on it. The consequence has been a severe underfunding of PHC. One recent study suggests that an additional \$48 per capita needs to be spent on core elements of PHC (particularly preventive and outpatient care),<sup>9</sup> which would represent nearly a trebling of the current PHC expenditure in low-income countries.<sup>10</sup>

Most financing for PHC must come from domestic sources, which are currently responsible for more than two-thirds of health expenditure even in low-income countries (and more than 95% in middle-

income countries).<sup>11</sup> However, recent history has demonstrated how well-targeted DAH can play a critical role in catalyzing change and ultimately improving health outcomes.

In particular, external support that combines a strong focus on results with an emphasis on the delivery of evidence-based interventions has been especially influential. DAH has been critical for showing what is possible in areas such as the introduction of new technologies. Without donor financing, interventions such as antiretroviral therapy for HIV, artemisinin-based combination therapy for malaria, and the pentavalent and rotavirus vaccines would not have been scaled up nearly as rapidly as they have been. External support demonstrated what could be done, transforming the global dialogue in these areas and thereby shaping national priorities, policies, and financing allocations in numerous countries. As a result, millions of lives have been saved.

Unfortunately, DAH has lagged in recent years. From 2000 to 2011, donor financing for health increased by threefold but since then has largely plateaued.<sup>12</sup> Health appears to be dropping as a donor priority, with the share of official development assistance (ODA) spent on health falling from an average of 12.5% for the decade from 2007 to 2016 to under 10% over the past three years.<sup>13</sup> This share has fallen even though research has shown that the returns on investing in health are some of the largest of any area of global development.

Attracting donor investments in PHC has been a particular challenge. Donor support does not appear to have increased significantly despite the growing political momentum behind PHC. There are several reasons for this, including the perception that PHC is hard to define and to measure, the concern that the price tag to shift the needle on PHC is impossibly large, and a sense that efforts to address the underlying challenges of weak health systems have not yielded many results.

Another reason may be the attention over the past years on universal health coverage. While there has been strong consensus on UHC as the aspirational aim of the global community, there has also been widespread concern that the goals were too vague and ill-defined to lend themselves for effective advocacy. UHC was also considered as a goal that needed to be financed almost exclusively from domestic resources. As a result, there have been hardly any efforts by international donors to engage in serious discussions on the provision of DAH for UHC, even for those countries that do not have sufficient domestic revenue bases to finance UHC.

### Defining the key concepts

The term “primary health care” has a long history, with multiple attempts to define or characterize it. This concept note does not attempt to reconcile these efforts but instead relies on the definition endorsed as part of most recent, broad-based global process on PHC, the 2018 Global Conference on Primary Health Care in Astana, Kazakhstan led by WHO and UNICEF. That process characterized PHC as a whole-of-society approach to health that aims to maximize the level and distribution of health and well-being through three components: (a) primary care and essential public health functions as the core of integrated health services; (b) multisectoral policy and action; and (c) empowered people and communities.

PHC is related but conceptually distinct from two other terms that are used in this note: universal health coverage (UHC) and health systems strengthening (HSS). Both of these terms also suffer from definitional debates as well as contested relationships with PHC.

UHC is frequently discussed as the progressive expansion of coverage of key services while minimizing the financial burden of healthcare. Arguments have been made both that PHC is a critical component of UHC (e.g., because PHC is an important means by which service coverage is expanded) and that PHC is broader than UHC (e.g., because PHC brings in a wide vision that includes elements such as multisectoral action, which is beyond the scope of UHC).

There is even less agreement around HSS (including on the term itself). It is often defined in relation to vertical (disease-focused) programs, in which context it generally refers to efforts to build systems that go beyond one disease and typically also improve multiple levels of the health system. As with UHC, the relationship between PHC and HSS is not consistent in the literature. There are a number of areas that can be described as both PHC and HSS, such as investments in the District Health Information Software 2 (DHIS2) system or the development of the community health workforce. PHC goes well beyond this, though, to include the delivery of a range of primary care interventions, such as malaria treatment, childhood vaccinations, and antenatal care.

PHC has the potential to become a focus of advocacy efforts by civil society and an important complement to existing donor efforts on specific diseases and on health systems strengthening. For this to happen, the world needs a clear, compelling case for how investing PHC will help achieve the SDG targets.

This concept note is the first step in a process of tackling the challenge of defining the concrete, measurable donor investments in PHC that can catalyze significant progress in low- and middle-



income countries by complementing domestic financing. It presents an initial framework for how a modest additional investment of external financing can play a critical role in helping countries achieve the SDG targets while building resilience to respond to future crises.

The approach builds on the lessons learned from recent successful global health efforts by employing an evidence-based, results-focused strategy that identifies a limited number of investment areas that are catalytic and well-suited to donor financing. Some of the approaches are well-known and have been deployed at scale in pioneering countries but have never received sufficient levels of funding to be transformative in a broad range of countries. Others, largely opportunities made possible by advances in digital technology and artificial intelligence, are newer but hold enormous potential for enabling countries to overcome longstanding barriers.

This concept note does not propose creating a new structure to manage the increased financing. Instead, it proposes leveraging the investments that have been made in multilateral global health initiatives, particularly Gavi, the Global Financing Facility, the Global Fund, and the World Bank. These organizations have been very successful in addressing their mandates but the current multilateral system is not optimally designed to support the rapid expansion of funding for PHC. To address this, the concept note also outlines an approach to tackling the underlying causes of these problems.

## 2 A set of interlocking investments to transform PHC

We know how to prevent people from dying of preventable causes. Thanks to the Disease Control Priorities Project, the normative leadership of WHO, and various Lancet Commissions, among others, we know what to do to address the major causes of premature mortality, from diarrhea, pneumonia, and post-partum hemorrhage to HIV, tuberculosis, and malaria to many non-communicable diseases (NCDs). A range of interventions—such as vaccines, treatments, preventive technologies such as bed nets, and clinical packages such as antenatal care—has been proven to work in rigorous trials.

This knowledge has been important in driving progress on health outcomes, but too many countries are still far from the SDG 3 targets because the service delivery systems that provide these interventions do not work well enough. Addressing this slow pace will require a comprehensive approach that brings together the three elements of the Astana Declaration on PHC: empowered communities, multisectoral policies and actions, and primary care and essential public health functions delivered in an integrated manner. This broad-based effort will take a number of years and hundreds of billions of dollars, which will largely have to come from domestic resources.

International donors are already making valuable contributions to this that should be continued. To complement this existing support, this concept note proposes a set of investments through which donors can play a catalytic role and thereby deliver an outsized impact in two ways. First, these investments would accelerate progress toward the SDG 3 targets, including under-five and maternal mortality, the incidence of HIV, TB, and malaria, and universal health coverage. Second, they would strengthen pandemic preparedness and build the resilience of health systems so that they are better able to cope with future shocks—such as from climate change—and with disease burdens that are increasingly shifting from infectious causes to NCDs. The package of investments set out below would also benefit existing donor investments: plateaus have been hit in areas such as expanding access to vaccinations and immunizations, TB treatment, or family planning, and the approaches discussed below are critical for overcoming the persistent challenges that are holding back progress in these areas.

This package is backed by a strong evidence base, with the proposed approaches having generally been proven effective in rigorous studies. Moreover, countries are already employing them, as highlighted by initiatives such as the *Lancet* Commission on Investing in Health, WHO's PRIMASYS series, PHCPT's Promising Practices, the World Bank's Business Unusual, and Exemplars in Global Health, all of which have identified countries that are deploying some of these approaches and seeing rapid progress as a result. External support has played an important role in scaling some of these efforts up but despite this too many of these approaches are not yet operating at scale—and that is likely to remain the case without a concerted push to accelerate progress.

The proposed investments were identified from the much larger set of approaches that constitutes PHC through a methodology described in detail in Annex A. The starting point was a review of the literature to identify approaches that have clear evidence of effectiveness. These were further prioritized by an Expert Working Group composed of academics and practitioners from eight countries, who looked at factors such as which approaches were likely to be transformational, promote equity, and contribute to building resilience, and the extent to which they were well-suited to donor financing. The costs of scaling up these approaches were then modeled using the approach outlined in Annex A, with the results used to refine the package. These steps were undertaken as an initial effort to determine whether it was possible to identify a set of investments that would be catalytic rather than as a definitive exercise to develop a final set of investments; the investment case process described in Section 4 would fine-tune the list of investments, refine the cost estimates, and quantify the health impacts of scaling these up.

The analysis suggests that with an additional investment of between US\$1.9 and US\$3.8 billion annually over the next three years, donors could finance this evidence-based package of investments in the 59 low- and middle-income countries that are eligible for financing from the World Bank Group's International Development Association (IDA). As shown in Table 1, with larger investments, the additional 15 countries in the next category—so-called “blend” countries—could be covered.<sup>14</sup>

Table 1: Annual costs of alternative financing scenarios

	IDA countries	IDA + Blend countries
<b>Low-investment scenario</b>	US\$1.87 billion	US\$2.79 billion
<b>High-investment scenario</b>	US\$3.85 billion	US\$5.75 billion

In the low-investment scenario, donor support is concentrated on getting these approaches on the path to scale, focusing on areas such as covering the costs of designing and launching new systems, training, and initial investments in equipment. The projected level of financing is aimed at pushing past the trap of donor-financed pilots: it would support 30% of the costs of reaching full population coverage of these approaches, as well as 100% of the costs of some key one-off expenditures (e.g., designing new software applications). The high-investment scenario would cover all of this plus a wider set of implementation costs, including some human resources costs and a more expansive set of capital costs; the financing would again enable these approaches to reach an additional 30% of the population in these countries. It is important to reiterate that donors are already making valuable contributions to many of these areas but that despite this the approaches described in this concept note are generally not being deployed at scale. Therefore, these financing needs supplement rather than replace existing efforts.

This set of countries is quite diverse and the principles of national ownership and local decision-making are critical, so it is important to highlight that this note is not proposing that the approaches described below be implemented in a one-size-fits-all manner or that all of them are appropriate in every context. Instead, implementation of them must be driven by national stakeholders basing their decisions on local data and understandings of the health systems in each country. This set of investments is intended as a starting point for discussions rather than a rigid set of instructions for each country.

At the heart of this package are three interconnected elements that together represent a powerful means by which donors could contribute to systemic change:

**A. A new model of people-centered primary care**

- **From:** Uncoordinated, siloed care skewed by incentives to focus on particular diseases, based on a model of providing care to those patients who are able to show up at facilities
- **To:** Multidisciplinary teams composed of general practitioners, nurses, and CHWs (and, where possible others such as pharmacists and counselors) that ensure care continuity to a defined population, facilitated by digital tools that offer decision-support (including by connecting them with specialists at higher-level facilities)

**B. Next generation community health**

- **From:** Sub-scale community health worker programs that are overly reliant on unpaid volunteers with limited training, inadequately tied to health facilities, not connected to digital resources, and focused on vertical disease control efforts
- **To:** Large-scale CHW programs with a paid, trained workforce that is integrated into care teams based at health facilities and responsible for a defined population, enabled by digital tools, and offering a wide range of services (including case management for both communicable and non-communicable diseases, active case-finding, and public health services, including surveillance)

**C. Individuals and communities empowered to engage in health decision-making**

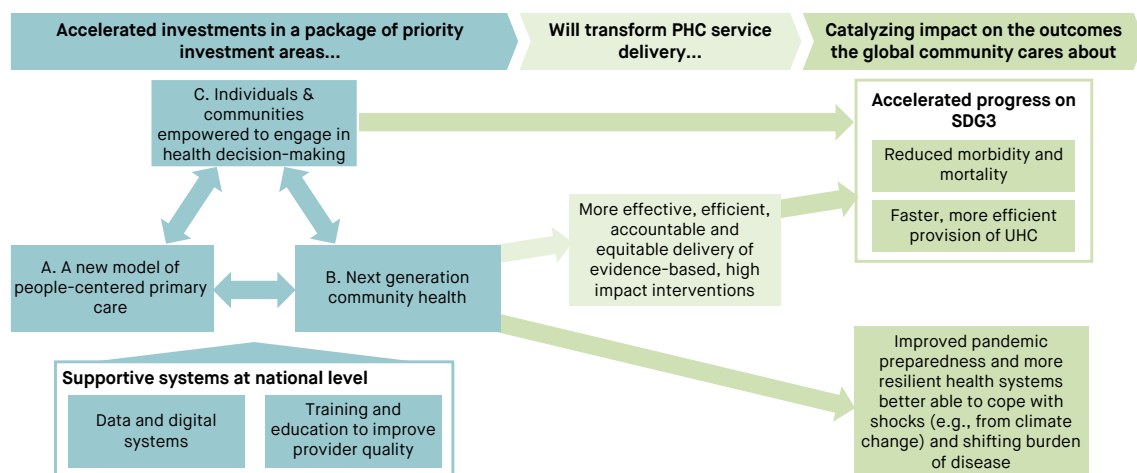
- **From:** Limited, fragmented investment in ensuring that communities are actively involved in decision-making within the health system, with accountability typically flowing up (to national governments and donors) rather than to the people most impacted
- **To:** Interlinked investments that support community empowerment, including through direct financing of capacity building, supportive digital tools, publication of data, and demand-side financing

These three elements are supported by investments in two key supportive elements of national health systems (D. below): the electronic data systems required to track patients, human resources, and supplies in real time and the educational, training, and supervisory systems needed to improve the quality of care.

Annex B contains details about the costs for each investment area.

Figure 1 below summarizes how these elements come together to form an investment strategy that would transform additional financing for PHC into concrete health outcomes as well as building health systems that are better prepared for pandemics and more resilient.

Figure 1: Theory of change for how package of donor investments will drive impact



Each of these areas is described below. For each, a brief case study shows how countries are already demonstrating the promise of these approaches. These successes highlight the opportunities that exist to scale up exciting approaches and thereby accelerate progress on SDG 3 targets.

#### A. A new model of people-centered primary care

The fastest route to improving health outcomes is by increasing the availability and quality of evidence-based, high-impact interventions. Despite this, many countries have hit plateaus in the coverage of these interventions as a result of ineffective and inefficient service delivery systems.

Too often, care is siloed and inefficiently delivered, with external resources used to hire healthcare workers to focus on specific diseases rather than to treat the full set of conditions a patient presents with, and lab facilities only equipped to diagnose the conditions that receive dedicated support. The basic model of facilities relying on sick patients presenting at them is inefficient and inequitable, and it ignores both technological advances that open up new ways of reaching patients and the successful experiences of a number of countries in moving to models that engage entire communities.

New models of care are needed to overcome these challenges, and donors can play a key role in developing and scaling up these new models by investing in three areas:

- **Digital diagnostic and clinical decision-support tools:** Many conditions can be handled by a competent multidisciplinary team at a primary care facility, but inevitably the skills of these teams will reach their limits. That means many patients need to visit secondary or tertiary facilities, something that is often more challenging for people with lower incomes or in more rural settings. Rapid technological advances and new approaches—recently driven by restrictions related to COVID-19—have created a huge opportunity to rethink this model. Machine learning algorithms are already as good at reading a variety of diagnostic imaging as specialists in high-income countries and could be revolutionary in settings with limited access to specialists, but this technology has barely been deployed in low- and middle-income countries. Primary care centers can establish IT kiosks that connect patients with specialists located in distant cities who can offer telemedicine consultations or that enable the care teams themselves to get second opinions. Simple decision-support tools can help optimize treatment regimens for chronic conditions and provide alerts on side effects.

Widespread use of these tools in primary care facilities would be transformational. The largest benefits would be on quality of care, which is now so poor that it is responsible for more deaths in low- and middle-income countries than lack of access to services.<sup>15</sup> Equity would also benefit significantly, as these digital tools can address the barriers that prevent more disadvantaged populations from attaining quality care. Finally, surveillance for emerging pathogens would benefit enormously if frontline service providers could

immediately engage with specialist expertise to help diagnose new or unusual symptoms and send data to regional and national monitoring systems.

**Digital diagnostics in action: Niramai's Thermalytix technology for breast cancer screening in India**

Niramai's Thermalytix technology combines thermal imaging with a cloud-hosted analytics solution that analyzes thermal images to produce a breast health score. Using big data analytics and machine learning, the technology offers reliable and accurate detection of breast cancer through a low-cost, portable, and easy-to-use approach. In addition, Thermalytix is noninvasive and effective in younger women, addressing key problems with older technologies. Niramai is exploring applying its AI-enabled solutions to other diagnostic challenges including river blindness and COVID-19.

- More than 90% sensitivity in all trials;
- Comparable or higher accuracy than traditional mammography;
- 70% higher positive predictive value than visual interpretation of thermography results.<sup>16</sup>

- **Multidisciplinary care teams:** Siloed service delivery has been important in addressing emergency situations, particularly in the context of the rapid spread of HIV. In general, though, integrated approaches are both more effective and more efficient in handling the rising complexity of care created by the shifting burden of disease (such as multimorbidity tied to the double burden of communicable and non-communicable diseases) and in building systems that are able to withstand shocks from pandemics and other looming threats, such as climate change. The center of this is a team-based approach to service delivery that brings together general practitioners/family doctors, nurses, and community health workers, supported where feasible by lab technicians, pharmacists, midwives, and various other specialists (e.g., dentists, mental health professionals). This team serves as the first point of contact with the health system.

This model has three main benefits. First, it enables holistic care, treating patients as individuals who inevitably face multiple health challenges over the course of their life, often at the same moments. Starting with an integrated perspective on a person's health allows for this complexity to be addressed effectively, rather than requiring an individual to navigate through multiple parts of a health system. Second, it improves efficiency by facilitating the division of labor, enabling services to be provided at the appropriate level through a team with complementary skills. Finally, it strengthens accountability for an individual's overall health outcomes rather than incentivizing the delivery of separate, uncoordinated interventions.<sup>17</sup>

**Multi-disciplinary care teams in action: Brazil's Family Health Teams**

Brazil's Family Health Teams (FHTs) have proven to be a cost-effective way to improve PHC service coverage and health outcomes, particularly in poorer regions. These teams provide comprehensive and continuous community-based PHC to a defined group of patients. Through active health promotion, education, surveillance, and control of neglected tropical diseases, they focus on prevention rather than treatment of disease. Each team consists of a physician, nurse, nurse technician, and four to six full-time community health agents, as well as other health workers including oral health workers, physiotherapists, and managers. FHTs are supported by PHC support teams who provide additional care to empaneled populations, including through input from psychologists, obstetricians, and public health workers. FHTs were set up in 1994 as part of Brazil's Family Health Program and by 2014 covered 64% of the population.<sup>18</sup> They are associated with a range of improved outcomes including:

- Reductions in cardiovascular disease morbidity and mortality;<sup>19</sup>
- Reductions in infant mortality;<sup>20</sup>
- Reductions in pediatric and adult hospital admissions as a result of improved primary care;<sup>21</sup>
- Increases in vaccine coverage rates.<sup>22</sup>

- **New approaches to reaching people:** Far too many health systems are still organized around a fundamentally inefficient, ineffective, and inequitable model of relying on individuals to show up at a health facility when they become sick enough to seek care. This means that some



people—particularly poorer people—wait too long to access services, which often increases the costs of that care because simpler solutions are no longer feasible and outcomes are worse. Others show up more frequently than necessary, increasing the burden on the system.

There are a number of promising alternatives. COVID-19 has driven rapid progress in telehealth, with a range of ways to connect patients to providers remotely. These services cannot replace all in-person care but experiences both during and before the pandemic have shown that a wide variety of conditions can be addressed via phone calls, text messaging, and video consultations.

A lower-tech approach that has also demonstrated results is shifting services from static facilities to outposts in communities. Kiosks staffed by community health workers and/or nurses can be an effective way to bring care to where people are rather than waiting for them to travel to larger facilities.

Finally, a number of countries have improved health outcomes by proactively identifying all people in a given area and assigning them to a care team that is responsible for looking after their health, an approach known as empanelment.<sup>23</sup> Empanelment enables a shift toward preventive care that is delivered in the community and also strengthens the ties between individuals and the care teams that are responsible for them. Care teams can be held accountable for the delivery of services that maximize the health of the full population of an area, rather than just the subset that shows up to access care. This promotes equity because it means that those who cannot afford to access care are not forgotten by the health system, but rather are targeted for proactive follow-up if they are not accessing services. It also strengthens key public health functions, including both surveillance and the provision of information and behavior change messaging.<sup>24</sup>

#### **New approaches in action: Rwanda's Babyl system**

Babyl provides digital health to the people of Rwanda. The service offers rapid, easily accessible, and cost-effective health care over the phone, with nurses handling triage and involving doctors to provide consultations for conditions that can be addressed over the phone, as well as referrals for diagnostic services (with lab results also accessible via phone). Launched in 2016, by 2020 it covered 30% of the population and had performed over 1,300,000 consultations.<sup>25</sup>

Each of these approaches has benefits on their own but when combined they would be truly revolutionary. However, it is hard to bring about these kinds of large-scale shifts without a combination of political leadership and the sizeable commitment of resources to design, test, and ultimately scale-up a new model. A number of low- and middle-income countries have shown leadership in championing some of these approaches, but even visionary leaders in low- and middle-income countries often lack the flexible financing required to drive this kind of change.

The provision of that kind of financing is a perfect role for DAH. In a low-investment scenario, donors can catalyze progress by financing the development of decision support tools, the tablets that frontline workers in primary care facilities need to benefit from these tools, the provision of the technical assistance that is needed to redesign models of care and introduce the accompanying policy shifts, and the research to identify what works and the barriers to scaling up. The commitments in a high-investment scenario would cover the implementation costs associated with scaling up telehealth services to reach 30% of the population and the costs of data collection to facilitate empanelment.

#### ***B. Next generation community health***

A number of countries have expanded community health worker (CHW) programs in recent years, which has been instrumental in improving health outcomes. Despite these models of success, in too many countries CHW programs are small-scale and reliant on volunteers who receive no or minimal pay and little training. Additionally, too often CHWs are insufficiently tied with primary care facilities and so lack supportive supervision. Siloes are another challenge, with some countries having different CHW programs addressing different diseases, which leads to fragmented, inefficient care and insufficient provision of public health services. Finally, the digital revolution has bypassed far too many CHW programs, with the result that they do not benefit from access to decision-support tools and do not feed data into national monitoring systems.

It is time to make investments in CHW programs that are commensurate with the value that they offer and thereby deliver next generation community health services. This requires both additional financing from donors and reworking existing financing to make it more integrated. Three investment areas are especially important:

- **Large-scale programs that employ paid, trained CHWs:** WHO has recognized for a number of years that CHWs should be remunerated for their work and has established benchmarks for the appropriate density of CHWs. Reaching these standards will require large-scale investments to cover the recruitment, payment, and training of these new CHWs.

This approach would enable CHWs to play a central role in a new team-based model of care that makes a multidisciplinary team responsible for the health of a defined population. These CHWs would provide community case management services and links to facilities when individuals require more sophisticated care than can be delivered in homes. They could also work with other medical personnel to deliver care in innovative settings such as community-based kiosks. Finally, adequately staffing CHW programs would enable them to serve as the first line of alert in detecting emerging pathogens and unusual disease patterns.

#### **Large-scale CHW programs in action: Ethiopia's health extension workers**

Ethiopia's health extension workers (HEWs) have played a critical role in improving health outcomes and overcoming shortages of health workers since the program was launched in 2003. HEWs are women selected from the local population by representatives of the community and district. Following a 12-month training program, they become salaried government officials and are assigned in pairs to "kebeles" (neighborhoods). HEWs work closely with communities, educating and providing care to support sanitation, antenatal care, postnatal care, immunizations, family planning and malaria diagnosis and treatment. Their introduction, in combination with the wider health extension program and other comprehensive strategies to support the health system, was instrumental in supporting Ethiopia to achieve the health-related Millennium Development Goals. HEWs played a role in achieving:

- A 67% reduction in the under-five mortality rate;
- A 71% decline in the maternal mortality ratio;
- A 90% decline in new HIV infections;
- A 73% decrease in malaria-related deaths;
- More than 50% decrease in TB mortality.<sup>26</sup>

- **Making sure every CHW program is technology-enabled:** CHWs are often treated as second-class members of the health profession and not provided with the same equipment and supplies that others benefit from, as has been seen with tragic consequences in the context of COVID-19 when many CHWs have not been provided with personal protective equipment. This mindset has been limiting the effectiveness of CHW programs well before the pandemic because it has meant that too many of these programs are not taking advantage of the possibilities opened up by digital technologies.

Technological advances and drops in price mean that there is now no reason that every CHW cannot be provided with a smartphone (and airtime to use it). This would have three benefits. First, the quality of care delivered by CHWs would improve as a result of them being able to draw on digital decision-support tools that can help them make the correct diagnosis and identify when a patient needs to be referred to a health facility. Second, this would enable the kind of rapid feedback and supportive supervision that is now not possible in most CHW programs. Finally, it would enable data generated by CHWs to flow into national databases in real time, improving the ability of decision-makers at all levels to base their plans on the most recent data, including spotting anomalies in the data that could help identify emerging pathogens.<sup>27</sup>

#### **Digitally-enabled CHWs in action: CHWs delivering antenatal care in Nepal**

Medic Mobile, a mobile phone-based health monitoring solution, was introduced in Nepal in 2013 to support CHWs to deliver the full cycle of antenatal care (ANC) to expectant mothers. CHWs were given mobile phones and trained to use standardized SMS texts to register maternal health information and flag potentially dangerous signs during pregnancy. This information is used to automatically generate SMS alerts to CHWs to remind them to follow up with mothers for ANC consultations and enables CHW supervisors to monitor CHW activity. Medic Mobile was designed for use by CHWs with low literacy, showing that even simple digital tools can improve service delivery. By 2017, the program had been scaled in Nepal and launched in 22 other countries, supporting almost 14,000 CHWs. Pilot evaluation suggested that the tool:

- Made it easier for CHWs to keep track of the expectant mothers who were under their care;
- Increased the frequency of CHW contact with expectant mothers and newborns, and the timely management of complicated cases.<sup>28</sup>

- **Offering a comprehensive and integrated package:** The expansion of CHW programs enables an important conceptual evolution: a switch from models in which CHWs focus solely on people who are living with HIV, in need of TB treatment, or pregnant women, to one in which they instead engage with everyone in their communities to provide services that are tailored to their individual situations.

The benefits of this comprehensive approach would be significant. It would enable active case-finding, which is important for connecting people with health services early in the course of a disease, when treatment is often more effective, as well as delivering benefits for existing programs. People living with HIV, for example, not only cope with their HIV infection but also need mental health services and support with other chronic conditions, which often impact their ability to adhere to antiretroviral therapy regimens but which are less likely to be addressed if that requires interacting with another part of the health system. The reach of CHW programs also means that they are ideally suited to playing a central role in shifting the focus of health services from dealing with people who are already sick to promoting health and preventing illness. COVID-19 has highlighted the importance of public health messaging in addressing pandemics, but it is also critical for encouraging the adoption of healthy behaviors related to nutrition, hygiene, and smoking, among others.

#### **Integrated CHW services in action: mobilizing CHWs for the Ebola response in the DRC**

When Ebola broke out in the eastern part of the DRC in August 2018, a region already suffering from humanitarian crises, CHWs trained by International Medical Corps helped to engage communities to control the spread of the virus. Based on their training in infection prevention and control and their established trusted relationships within their communities, CHWs were able to educate people on basic hygiene and helped to dispel misinformation about the outbreak. CHWs also played an important surveillance role by identifying people in the community with Ebola-like symptoms and alerting the health authorities.<sup>29</sup>

The idea of expanding CHW programs—particularly with paid staff rather than volunteers—may be challenging at a time when the fiscal space in many countries is under pressure as a result of the economic fallout of COVID-19. However, the long-run benefits of expansion—including the eventual economic returns from better health—are very clear,<sup>30</sup> which suggests an important role for targeting development assistance to it (as many donors have already recognized and contributed to).

In a low-investment scenario, external resources would provide the support required to expand CHW programs to cover 30% of the population with an enhanced package of services by financing five key areas: technical assistance to support the planning needed to expand CHW programs, including the long-run fiscal implications; training to ensure that existing CHWs are equipped to deliver quality care in a comprehensive manner and that new CHWs are well-prepared for their roles; supplies so that all CHWs have a basic package of materials (e.g., basic medicines, rapid diagnostic kits); digital devices (i.e., smartphones or tablets, depending on national protocols) and the means to make optimal use of the devices (e.g., airtime, subscriptions to apps); and the development and/or customization of digital decision-support tools for use by CHWs. In a high-investment scenario, more significant financing

would support the wage costs associated with expanding CHW programs to provide comprehensive coverage for 30% of the population.

*C. Individuals and communities empowered to engage in health decision-making*

There is growing evidence that the empowerment of communities and individuals to become more active participants in the PHC system can have very large impacts on health outcomes. To give one example, implementation of women's participatory learning and action groups during pregnancy could save an estimated 283,000 newborns and over 36,600 mothers every year if implemented in rural areas of 74 low- and middle-income countries.<sup>31</sup> When communities and individuals have access to learning, knowledge, and information, when PHC systems place the patient at the center, and when patients are empowered with digital tools to support self-testing and self-management, they shift from being passive consumers to co-creators of health prevention and care.

However, to date there has been very little dedicated investment in supporting communities and individuals in this way to become actively involved in decision-making within the health system. The small amount of investment has been piecemeal and accountability for such investments has typically been upwards—to central governments and donors—rather than downwards to people and communities.

PHC in low- and middle-income countries could be radically transformed by strategic, interlinked investments to engage communities and individuals across two areas:

- **A dedicated “joined up” approach to empowering communities:** While donors have funded some community engagement efforts (e.g., the Global Fund's Community, Rights and Gender Strategic Initiative), the full power of community coalition building, participatory learning and action groups and forums, and patient education and outreach activities has not yet been unleashed.

Coalitions that link health workers with communities, particularly when vulnerable populations are involved, can improve not just individual health outcomes and behavior, but also PHC delivery systems. Such coalition-driven community engagement strategies have been shown to have positive effects across a wide range of health issues, including HIV risk behavior, immunization uptake, and breastfeeding behavior.

Participatory groups that mobilize and engage communities in policy, organizational change, public health campaigns, and shaping and preparing information for patients can all have positive impacts. When communities are invited to prepare health information for patients, this improves the quality of the information, which in turn improves patient knowledge. Communities can also play valuable roles in strengthening monitoring systems, as experiences with digitally-enabled community monitoring for HIV have shown.

Shared decision-making by patients and providers—achieved through patient education and outreach—has been shown to have several valuable outcomes, such as reducing the over-prescribing of antibiotics and thus helping to prevent antibiotic resistance.

**Community empowerment in action: women's participatory learning and action groups**

Participatory learning and action groups for women can increase care-seeking for antenatal care and institutional delivery, as well as improving care practices for mothers and newborns.

A systematic review and meta-analysis of 7 randomized control trials of the role of such groups in maternal and newborn health in four countries (Bangladesh, India, Malawi, and Nepal) found evidence of impressive results for a relatively low-cost investment. Based on four studies where more than 30% of pregnant woman participated, exposure to women's groups is associated with:

- A 49% reduction in maternal mortality;
- A 33% reduction in neonatal mortality;
- Research has also shown that the intervention is cost-effective.<sup>32</sup>

- **Self-testing and self-management:** New technologies are creating exciting possibilities for empowering individuals to play active roles in managing their own health. For example, self-testing for HPV—women collecting their own specimen at a time and place of their choosing—could be transformative by overcoming barriers to cervical cancer screening. Such testing has been shown to be acceptable to both women and health workers and effective at



getting to hard-to-reach communities who live far from health facilities.<sup>33</sup> HIV self-tests allow people to obtain their own HIV status from an oral swab or blood sample; some of these people would not have sought testing at a health facility due to stigma linked with HIV.

A digital revolution is underway that puts power in the hands of individuals to take more control over their own health but the fruits of this revolution have not yet reached low- and middle-income countries at scale. The rapid rise in the number of people who own mobile phones creates a huge opportunity to use mobile phone apps to facilitate self-management of long-term illnesses, to curb NCD risk factors, and to provide information on demand for a range of conditions. Such apps are cost-effective and convenient, and can provide prompts such as medication reminders. Studies have shown improved health outcomes and improved self-management from the use of such apps in people with diabetes or high blood pressure.<sup>34</sup>

The spread of digital technologies also means that the health data that patients themselves collect could be rapidly incorporated into their electronic medical records to improve care outcomes.

#### **Self-testing in action: the Self-Testing Africa (STAR) Initiative**

In sub-Saharan Africa, it is estimated that around 60% of people with HIV do not know their status. Both HIV-related stigma and long distances to clinics are barriers to getting tested. The STAR Initiative, funded by UNITAID, initially rolled out HIV self-tests in Malawi, Zambia, and Zimbabwe, before expanding to Lesotho, South Africa, and Swaziland. Tests are made available through a wide variety of channels, including pharmacies, door to door distribution, workplaces, and peer educators. Evaluations have shown that the initiative has been able to rapidly scale up HIV testing across multiple settings.<sup>35</sup>

This suite of approaches to empowering communities and individuals could have large impacts for a relatively modest cost. A low-investment scenario would cover in each country the costs of setting up a large-scale community empowerment program (e.g., participatory learning and action groups) to reach 30% of the target population (e.g., women of childbearing age), including training of community leaders on how to promote and facilitate community engagement, and facilitation, convening, and supplies costs; the costs of setting up a national self-testing program to reach 30% coverage, including training and demand generation costs; and the costs of developing a digital self-care tool (i.e., mobile apps). A high-investment scenario would also cover the costs of procuring and distributing self-test kits for 30% of the population in each country.

#### **Delivering an integrated vision: MomConnect South Africa: A mobile health tool enabling health promotion, healthcare data collection and user feedback on healthcare facilities**

There are important synergies across the three investment areas described above, with the different elements designed to reinforce each other. A good example of how a technology platform can contribute to delivering comprehensive primary health care is the MomConnect program run by the National Department of Health in South Africa.

MomConnect is a mobile health program designed to improve antenatal and maternal health in South Africa that has rapidly scaled into one of the world's largest mhealth tools. Pregnant women register themselves or are registered through an initial antenatal appointment at a healthcare facility into a national universal pregnancy registry. During their pregnancy and until the child is born, they receive weekly SMS messages providing timely information on safe and healthy pregnancies and childrearing, including information on nutrition, warning signs of fetal development and sensitive topics such as domestic abuse awareness. Through an interactive helpdesk, woman can ask questions on antenatal, maternal and child health, as well as provide feedback on the healthcare facilities that they are using.

A companion service, NurseConnect, provides nurses in more than 3,000 facilities across the country with a one-stop-shop to access information on common conditions, interact with the National Department of Health, and receive emotional support and encouragement.<sup>36</sup>

- Voluntarily used by 60% of pregnant women receiving formal antenatal care in South Africa;<sup>37</sup>
- Users felt empowered by the messages and reported having increased understanding of how to promote maternal and child health;<sup>38</sup>
- User data on the quality of care at health facilities helps to identify quality issues in healthcare facilities;<sup>39</sup>
- Health data collection is facilitated through the creation of a master patient index that can be integrated into an electronic medical system.<sup>40</sup>



*D. Supportive systems at national level*

Efforts to improve health outcomes should be centered on improving the service delivery platforms described above. But these investments will be more effective if they are complemented by strengthening the national-level systems that provide support for the frontline delivery. Two elements of this are particularly important: the data systems that monitor patients, staffing, and supplies and the systems that are aimed at improving quality of care through education, training, and supervision.

The importance of systems that can produce accurate data in real-time has been highlighted by COVID-19. Concerns about the quality of these systems—including such basic elements as tracking the numbers of people being born and dying—have fed uncertainty about the extent and severity of the pandemic in many low- and middle-income countries, and even many high-income countries have struggled to bring together fragmented sources of data. As the vaccine roll out gets underway around the world, another challenge has been under the spotlight: countries are struggling to target healthcare workers for vaccination because they do not have accurate data about their health workforce. The need to keep careful track of scarce vaccine supplies has also called attention to the value of robust logistics management information systems.

Historically, donor support for these areas has been hampered by fragmentation and questions around sustainability. Recent efforts have started addressing this, including through the Health Data Collaborative and investments from multiple donors in joint systems, particularly DHIS2 and civil registration and vital statistics systems. Less attention has been paid to other systems that are important for service delivery, particularly electronic medical records systems, human resources information systems, and logistics management information systems. Across all of these, too little progress has been made in taking advantage of the enormous possibilities opened up by the rapid spread of digital technologies. Investing in these areas is critical for improving quality of care, ensuring that human resources are appropriately deployed (and that funding is not being wasted on ghost workers), and strengthening the availability of medicines and other supplies.

The need for investments in these areas varies considerably by country, so the role of international support will vary accordingly, but the overriding imperative is clear: significant investments are needed to bring data systems into the digital age and so ensure that healthcare workers and planners have access to real-time, accurate information about both individuals and key inputs so they can make decisions based on these data. In some cases, this will take the form of resources to support technical assistance to design the introduction or scale-up of a data system, while in other countries the priority is to invest in the training needed to make a new system operate effectively. More significant investment areas include the set-up costs associated with expanding a system (particularly the capital costs of technology) and the recurrent costs of running a system.

Efforts to address the quality of care have not been as central a preoccupation of the international community as the drive to increase access to services. The success in expanding coverage has been instrumental in improving health outcomes, but it is increasingly clear that more attention needs to be paid to the quality of these services; one influential panel has estimated that more lives are now lost to poor quality of care than lack of access.<sup>41</sup>

A number of the investment areas described above—particularly around new models of care—can be important drivers of improving the quality of care. In addition, modest-sized, targeted donor investments at the national level can complement this by addressing key constraints.

COVID-19 has highlighted the need to have continuing education systems that can rapidly reach large numbers of healthcare workers to provide timely updates on evolving issues. The innovations that have been deployed around COVID-19, such as the rapid expansion of e-learning platforms, are not only relevant for a pandemic, but often are better ways of delivering continuing medical education, which is weak in many low- and middle-income countries.

Development assistance can play a key role in increasing adoption of these innovative platforms, including by financing some key elements that may be more difficult to cover with domestic resources: the technical assistance to set up and pilot new systems, the development of e-learning content, and the capital costs associated with making devices available at every facility.

**Strengthening data systems to improve PHC performance: District Health Information Software 2 (DHIS2) in Afghanistan**

Afghanistan's health data were stored in a siloed way as a result of fragmented donor programs and disconnected surveys and systems. This meant it was difficult to analyze and therefore was not being adequately used. Through technical, financial, and capacity support from USAID, the Ministry of Public Health brought together different types of data stored in different systems to create a robust DHIS2 data warehouse system that enables triangulation and analysis of collected data. This has enabled analysis to inform the efficient running of the service, including analysis of human resources and immunization data to uncover patterns on why some health facilities perform better than others, as well as to support the development of performance-based payment for healthcare providers.<sup>42</sup>

*E. Investing in a better future*

Although the investment areas in this section are presented sequentially, they are designed to be mutually reinforcing, as depicted in Figure 1. Together, they would drive progress on the SDG 3 targets and build pandemic preparedness and resilience to future shocks for a price tag that represents a modest increase in DAH.

Countries across the world have demonstrated their ability to rapidly mobilize trillions of dollars for the response to COVID-19, making massive investments across the health value chain, from research and development to equipment and infrastructure to personnel, treatments, and diagnostics. This same urgency is needed at a smaller scale to transform PHC.

Understanding what to finance is the necessary starting point for increasing DAH, but the question of how the resources will flow to countries is also critical to delivering on the transformational potential of this approach, so is addressed in the next section.

### 3 Improving the ability of the multilateral system to finance PHC

The ability of the international community to provide large-scale support in a broad range of low- and middle-income countries in a results-oriented manner has been dramatically expanded in the past two decades by virtue of the establishment of Gavi, the GFF, and the Global Fund. These global health initiatives (GHIs) are already major channels of financing for PHC, through two routes:

- They provide considerable resources for the high-impact interventions that are at the heart of PHC, such as malaria treatment, childhood vaccinations, and antenatal care;
- They support a range of efforts to strengthen health systems, including in a number of the areas discussed above, such as health management information systems and human resources for health.

Given these investments and the proven track records of the GHIs, setting up a new financing mechanism would not be the most efficient or effective way to increase financing for PHC. Instead, the GHIs should be at the center of the effort to increase external support for PHC, alongside increased bilateral financing (which has a particular role to play in supporting certain areas, such as technical assistance and civil society engagement). This approach would also be beneficial to the core mandates of the GHIs, as strengthening PHC would address some of the key challenges that each of the GHIs is confronting in their efforts to improve health outcomes for the specific areas for which they were established.

However, the current architecture was not set up specifically to deliver financing for PHC and so there are some challenges associated with channeling increased financing through the GHIs. This section examines these challenges, the underlying causes, and potential solutions, before turning to some ways that these could be addressed in the course of developing an investment case for PHC.

Some of the issues discussed below are specific to PHC, but many of the factors that hamper the ability to address PHC are not exclusive to it but rather relate to the global health architecture writ large. Thus the analysis below draws on a broader diagnosis of the challenges and responses, much of which has been identified by the GHIs themselves (including in their evaluations, assessments, and materials produced to inform their strategies or technical approaches on areas such as health systems strengthening, all of which informed this section).

As discussed in the final part of this section, the broader nature of the problems also raises a question about the best way to address them in the context of PHC. The analysis below presents a quick review of the challenges and their causes, but it is important to recognize that the fact that the GHIs have identified many of these challenges themselves also means that the situation is not static and progress is being made in addressing some of these areas.

#### *A. The problems delivering PHC through GHIs*

The GHIs are very effective at delivering some aspects of PHC, particularly those elements that are closest to their original mandates: interventions for conditions such as malaria and childhood illnesses that can be delivered through primary care facilities or via CHWs. Providing financing for the service delivery platforms themselves—whether the human resources, the infrastructure and equipment, supply chain management, or program management—has proven more uneven, with a considerable volume of financing being directed at investments that are effective in responding to a particular disease but that do not strengthen systems overall (or even weaken them): medical personnel or CHWs who are supposed to focus solely on TB treatment or vaccinations, supply chains that are restricted to HIV medicines or immunizations, or information systems that focus solely on one or a handful of areas.

This is not surprising: financing delivered in this way may be the most efficient way of improving the health outcomes for which the GHIs were established. But from the perspective of the health system as a whole, these investments are both allocatively and technically inefficient. This is important for increasing financing for PHC because these inefficiencies mean that each incremental dollar of support delivers smaller health gains than would be expected if the financing was optimized for PHC.

The allocative inefficiency primarily takes the form of insufficient allocation to areas of common good that may provide diffuse benefits to many actors but less direct benefit to any one disease area. PHC itself is a prime example of this: the GHIs have not systematically focused on strengthening PHC service delivery platforms despite the abundance of evidence on their importance. The GHIs have made scattered investments in many of the approaches described in Section 2, but—in contrast to the financing provided for key interventions for disease treatment and prevention—the financing from

the GHIs for these approaches has generally been subscale, albeit with some notable exceptions (e.g., support for the scale-up of DHIS2).

Technical inefficiencies are apparent in areas such as the suboptimal utilization of infrastructure because of donor restrictions and the high levels of transaction costs created by having multiple coordination bodies and, at times, multiple implementation units at country level. Examples of the former include when microscopes procured with financing related to malaria sit idle in a facility that lacks adequate microscopy for other diseases because of concerns that using them for cholera diagnosis would run afoul of donor restrictions, or when half-full trucks race around a country distributing antiretrovirals but not taking antibiotics from the same warehouses to the same primary care facilities. An example of the high transaction costs occurs whenever a ministry of health wants to use resources from multiple GHIs to address a cross-cutting challenge (e.g., the financing of the national CHW program), which requires navigating multiple coordination structures at national level.

The ultimate aim of an investment case on PHC is to increase donor financing for PHC. An impediment to that is the perception on the part of some donors that the multilateral system is not well-equipped to handle financing for PHC. Unless this perception is addressed, it will limit the volume of additional financing that can be raised for PHC.

#### *B. The underlying causes of these problems*

The problems outlined above are caused by three types of issues:

- Policy and governance issues;
- Operational issues;
- Capacity issues.

A major policy and governance issue is the fact that there is not a single GHI that has the lead responsibility for PHC, nor is there agreement about a division of labor around different elements of PHC across the GHIs (e.g., one lead organization for human resources for health, another for information systems, etc.). Another significant impediment to improving the effectiveness of multilateral financing for PHC is that each GHI has its own governance structure at national level (except in the few countries that have managed to bring together these governance bodies). That means that any PHC reform that is to be financed by multiple GHIs has to go through multiple governance reviews. Additionally, although these bodies are generally headed by senior officials in ministries of health who have broad responsibilities, their day-to-day operations are often run by disease-oriented parts of ministries, which tend not to have the requisite expertise to look holistically at health systems and so are not well-suited to addressing PHC. A final challenge stems from the fact that each GHI has its own processes and grant cycles, which often do not align with each other, making it considerably more difficult to finance a cross-cutting initiative with resources from multiple GHIs.

Operationally, the GHIs have been able to deliver impressive results in their disease areas because they have developed systems that contain robust sets of incentives to deliver and operational models that are largely structured around standardized ways of working. These are well-suited for their core mandates but can work against collaboration and more integrated ways of operating such as PHC. Similarly, organizational cultures and dynamics with the governance bodies of the GHIs tend to push toward disease-oriented approaches.

Finally, both GHIs and national-level stakeholders have capacity constraints that impede their ability to deliver PHC effectively. GHI staff are generally not hired because of their expertise in integrated approaches, while at national level stakeholders often lack information about the flexibilities that exist within GHI policies that could be exploited to deliver more integrated approaches.

#### *C. Types of solutions*

These challenges are not insurmountable. This section describes the types of solutions that could be pursued and provides a few examples of possible responses, but the development of workable solutions requires the involvement of all of the GHIs.

The problems identified above are generally not new, so there have been a number of efforts—both through global initiatives and in individual countries—to address them, which have informed the discussion below. The solutions can be grouped into three categories:

- Solutions that require inter-organizational collaboration;
- Solutions that can be tackled by individual organizations;
- Country-level solutions.

A range of inter-organizational solutions are possible. At the more ambitious end of the spectrum would be agreeing to a clear division of labor with regard to PHC financing. There are successful examples of multilateral organizations delineating responsibilities over a complex area, such as happens regularly through the UNAIDS-led process on HIV/AIDS,<sup>43</sup> but this would require engagement with the governance bodies of each of the GHIs. In a few countries, some efforts have already been made to establish joint coordination and/or management structures to oversee GHI funding, and the GFF in particular has taken steps to create a joint investment framework that includes resources from other GHIs (although it is not clear the extent to which this has resulted in more harmonized financing for common areas such as PHC). The simplest step would be to improve information-sharing (on a country-by-country basis) between the GHIs about their PHC investments.

There are a number of steps that each GHI could take on their own to improve the effectiveness of their financing for PHC. Some of these would require more significant shifts in business practices, such as around grant cycles and processes. Others would strengthen the internal incentives to focus on PHC or create more support within internal organizational cultures for working on PHC.

Finally, there are solutions that focus more on putting countries in the lead. Some countries have successfully established joint governance mechanisms or implementation units, but these successes and the concrete steps to implement them are not widely known; a south-south information exchange platform could facilitate the spread of such good practices. This could be supported by a joint note from the GHIs that articulates the steps that a country could use to take advantage of existing flexibilities to bring together the governance mechanisms at national level or establish a joint coordination unit

#### *D. How a PHC investment case can drive improvements in the delivery of financing for PHC*

The challenges associated with PHC financing are unlikely to resolve themselves on their own. The process of developing an investment case for PHC, which is described in more detail in Section 4, can be used to drive progress in improving the effectiveness of financing for PHC.

The simplest way to do this is in the design of how new financing for PHC would flow from donors to the GHIs. These resources could be included as part of regular donor contributions to the GHIs, but this approach is unlikely to incentivize efforts to improve how PHC financing is delivered. Instead, donors could take steps such as creating new windows for PHC within each of the GHIs, which could be structured in ways that incentivize or require collaboration at country level. An even bolder approach would be to create a joint pool of financing for PHC (held by a treasury institution, such as the World Bank) that each GHI could tap into to provide PHC financing that could only be used for activities that strengthen joint delivery platforms or other common goods.

These options could create a powerful pull mechanism to encourage the GHIs to increase cooperation around PHC and would be light-touch and easy to establish. However, they would not be based on a thorough analysis of the challenges that the GHIs face in financing PHC and so are unlikely to result in improvements in some of the root causes. These approaches also do not engage countries as joint problem-solvers in improving the effectiveness of external support for PHC.

An alternative would be to embark on a more extensive process as part of developing the investment case for PHC that fully engages the GHIs and key stakeholders (particularly the countries that receive GHI financing) in diagnosing the problems and their root causes and identifying solutions. This would build on the work already done by the GHIs but would look more systemically at the challenges and possible responses across the different levels described earlier.

The advantage of this approach is that it would get at the underlying causes of problems in PHC financing, which could lead to more impactful and durable solutions. If driven by the leadership of the GHIs, this process could also build ownership within each of them for reforms that would ultimately make their PHC financing more effective. It would also engage countries as problem-solvers, and could serve as a pilot for broader efforts to encourage the GHIs to operate more effectively together. The downsides to this approach are that it would take time and it might not be successful without strong external incentives for change (although the design of the flow of funds could help address this).



## 4 Mobilizing new DAH to support PHC

This concept note has shown that PHC can be broken down into concrete, measurable approaches that are amenable to external financing, and that for a realistic price tag donors could play a critical role in accelerating a PHC transformation. Assessing the feasibility of identifying such a package was a necessary step toward making a compelling case for investing in PHC. However, this alone is not sufficient to mobilize new DAH to support PHC.

One particularly influential framework for how issues gain traction within global health identifies four key factors: actor power, ideas, political contexts, and issue characteristics.<sup>44</sup> Mobilizing new DAH that is targeted to PHC will require addressing each of these, but there is reason to believe that the stars are aligning behind an effort on PHC:

- A number of important actors in global health have already indicated their support for increasing investment in PHC, including a wide range of governments, leading UN agencies such as WHO and UNICEF, the GHIs, and key civil society groups at the global and country level. Despite this broad support, these groups have not coalesced around a concerted push to mobilize resources for PHC in part because there has never previously been a concrete target that they can collectively advocate for—exactly what this process is providing.
- One of the challenges in galvanizing support for PHC has been the amorphousness of the very idea of PHC. This concept note demonstrates that it is possible to identify evidence-based investment areas within the broad frame of PHC that could be transformational.
- The political context is inevitably shaped by COVID-19. The pandemic highlights the costs of underinvesting in health and specifically pandemic preparedness, and the focus on addressing this and building back better creates a window of opportunity for mobilizing additional DAH for approaches such as PHC that can demonstrate how they will prevent a recurrence of the tragedy of the past year. COVID-19 has also demonstrated that the global community is capable of mobilizing enormous sums of money when the political will is present: the annual cost of US\$1.9-5.8 billion proposed in this concept note represents a mere 0.01%-0.04% of the more than US\$16 trillion in fiscal stimulus provided over the past year in response to COVID-19.<sup>45</sup>
- The characteristics of PHC also suggest that the moment has arrived to focus on it. In particular, there is a widespread sense that the cross-cutting bottlenecks around service delivery must be addressed in order to continue making the kind of progress that has occurred over the past twenty years.

These propitious conditions will go to waste unless the global community comes together behind a common target. This concept note has demonstrated the proof-of-concept: it is possible to identify a package of evidence-based investments in PHC that would catalyze outsized impact and that can be delivered for a modest price tag. The next phase is to create a process that will bring key stakeholders together to refine this approach and, ultimately, collectively own a shared vision of the level of investment the global community should aspire to.

The process of developing this investment case should involve a wide range of groups. Low- and middle-income countries know best what needs to happen around PHC and so should play a leadership role in the process. Donor countries will eventually have to put their resources behind the vision and so have a key role in co-creating it. WHO plays the leading normative role around PHC and has been an important champion for it for years, while UNICEF is a key implementer of PHC programs in many countries (and these two organizations are co-leading the PHC accelerator of the SDG 3 Global Action Plan, which should be engaged in this process). Groups such as UHC2030 and the UHC Partnership hosted by WHO offer important opportunities for the promotion of PHC by providing technical support, policy dialogue, and coordination at global, regional, and country levels. The GHIs are already key funders of PHC and need to be engaged in thinking through how to improve the effectiveness of financing for it. Many civil society groups have been advocating for PHC and working on the frontlines delivering it for decades and so bring enormous expertise to the process.

There are some important methodological challenges that will need to be addressed as part of this process. Estimating the health impacts is not easy given the lack of robust health impact data for some approaches—particularly newer, innovative ones that have not yet been widely studied at scale. To quantify the benefit:cost ratio, differing opinions around how to calculate the monetary value of the mortality (and potentially morbidity) impacts of these investments will need to be reconciled.

The investment case will also need to address how new resources for PHC can be delivered most effectively from donors to countries. As discussed in Section 3, current approaches to channeling DAH

have some important inefficiencies, so addressing this will be an important part of the development of an investment case.

These challenges are not trivial but they can be overcome. Far more consequential are the costs of not trying to tackle them: unless the world unites behind a concerted push on PHC it is hard to see how we will get on a trajectory to achieve the SDG targets. This concept note makes it clear that there is a path to success—what is needed now is the political will to walk down it.

## Acknowledgements

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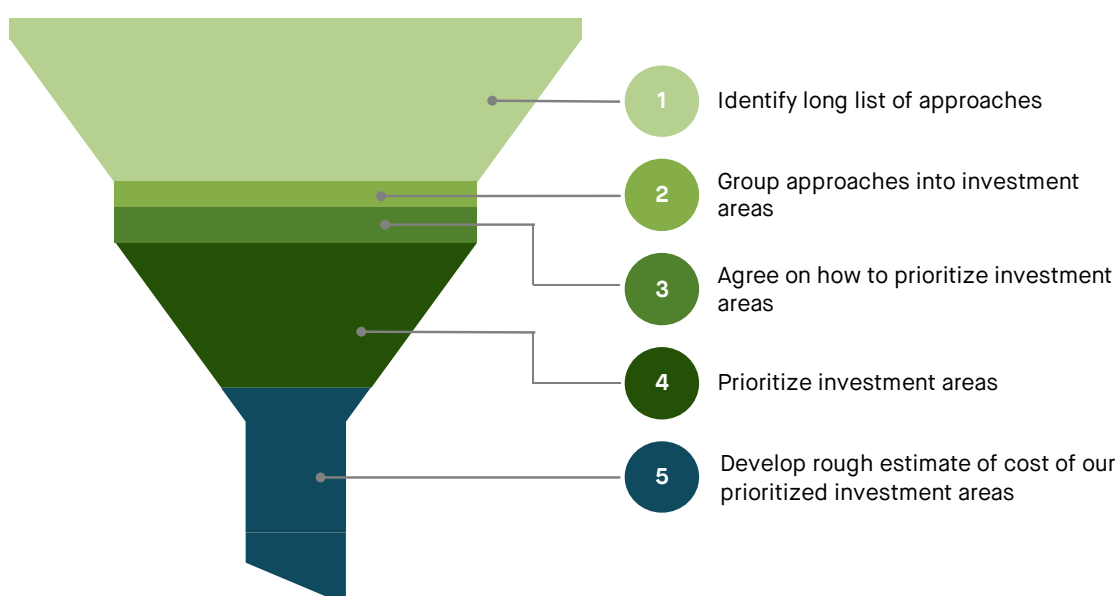
The authors would like to thank the Bill & Melinda Gates Foundation for the financial support for this work. The authors also express their gratitude to the members of the Expert Working Group, which played a key role in the development of the technical package described in Section 2: Yibeltal Assefa Alemu (University of Queensland), Luke Allen (London School of Hygiene and Tropical Medicine), Paulin Basinga (Bill & Melinda Gates Foundation), Anthony Ofosu (Ghana Health Service), Patricia Garcia (Universidad Peruana Cayetano Heredia, University of Washington), Debra Jackson (London School of Hygiene & Tropical Medicine), Henry Mwanyika (PATH), Rachel Nugent (RTI International), Salman Rawaf (Imperial College), Srinath Reddy (Public Health Foundation of India), Dykki Settle (PATH), and Beth Tritter (PHCPI).

## Annex A: Methodology to identify and cost a set of catalytic investments in PHC

This concept note aims to identify a set of investments that if financed by donors would play a catalytic role and thereby deliver an outsized impact, both through accelerating progress towards SDG 3 and strengthening resilience of health systems to enable them to be prepared for future shocks. This exercise did not set out to develop a final set of investments, rather its purpose was to determine whether it was possible to identify a set of investments that would be catalytic for a price tag that could be affordable to donors. The package of investments identified through this exercise, along with estimates of costs and impact, would be refined through a full investment case process described in section 4 of the concept note.

The figure below illustrates the 5-step technical methodology undertaken to define the technical package presented in the concept note.

Figure A1: Technical methodology



### 1 Identify long list of approaches

The WHO primary health care levers identified in the Astana Vision document and Operational Framework from WHO<sup>46</sup> served as the starting framework for the identification of cross-cutting catalytic approaches that could have potential to accelerate interventions. Given the ample resources available on what is most promising for PHC, and the expediency required for the concept note process, the search process centered on four primary sources: Cochrane systematic reviews in EPOC (Effective Practice and Organization of Care); World Bank Frontline First; databases of social innovations in health care, including Innovations in Healthcare and the Center for Health Market Innovations; and work from WHO and others on pandemic preparedness. To ensure that the long list captured new, cutting-edge areas for potential investment that might not yet feature in the academic literature, these sources were supplemented with innovation databases and other non-academic sources. The long list of approaches identified was cleaned by removing and/or grouping duplicate or similar approaches found in multiple sources and renaming of approaches that were unclear. The final long list consisted of 131 approaches.

## 2 Group approaches into investment areas

To enable prioritization to happen at a higher level, approaches were grouped into “investment areas” based on their focus area (e.g., case finding), and the method or means through which they support the focus area or disease (e.g., mhealth or private sector engagement). Through this process 22 investment areas were identified at a level more appropriate to present to donors as a meaningful investment opportunity.

The 22 investment areas are presented in table 1, organized according to the 14 WHO levers for PHC. Investment areas were aligned with the levers based on the primary lever, recognizing that many of the investment areas would impact multiple levers.

Table A1: Investment areas identified

WHO lever	Investment area
<b>Governance and policy frameworks</b>	Governance arrangements to improve population health outcomes
	Public health policy to improve overall health
<b>Engagement of communities and other stakeholders</b>	Community or patient engagement in health decision making
	Health promotion to improve basic health care
	Innovative technology and approaches to empower communities to take more control over their health (self-care)
<b>Models of care</b>	New care delivery models to improve patient case finding
	New care delivery models to increase access
	Public health services to improve overall health
	Public health interventions to improve pandemic preparedness/response
<b>Primary health care workforce</b>	Financial and non-financial incentives for healthcare workforce
	Task shifting (particularly to community health workers) to improve health access and outcomes
<b>Medicines and other health products</b>	Strengthening performance of supply chains
<b>Engagement with private providers</b>	Private sector approaches to improve quality and service delivery
<b>Purchasing and payment systems</b>	Supply-side approaches to improve health financing architecture
<b>Digital technologies for health</b>	Digital health to improve patient tracking and referrals
	Digital health to improve patient treatment adherence
	Digital health to support provider decision making and care practices
	Digital health for pandemic preparedness and response
	Data systems and use to improve quality of health system
	Telehealth to improve access to healthcare
<b>Systems to improve quality of care</b>	Financial and non-financial incentives to influence patient behaviors
	Training, education, and other management techniques to improve provider quality

This initial long list of investments was reviewed at the first meeting of an Expert Working Group (EWG) of 12 PHC experts from 9 countries convened to inform the technical approach of the concept note development.



### 3 Agree on how to prioritize investment areas

All of the 22 investment areas are valuable, but this concept note set out to demonstrate that it is possible to identify a prioritized package of investments that can deliver significant health outcomes for a manageable price tag that donors will be willing to fund. To do this, eight criteria of the ideal investment opportunity were identified. These capture four different dimensions considered to be critical in catalyzing impact, promoting equity and being amenable to donor funding. These criteria were reviewed and discussed by the EWG at its first meeting.

**Prioritization criteria:**

Deliver transformational impact on health outcomes

- Generate transformational rather than just incremental impact on health outcomes (typically by affecting a large proportion of the population in a significant way)
- Are innovative, use new technology or new care delivery approaches to transform PHC systems

Promote convergence in health outcomes across and within countries

- Increase access to interventions where coverage is particularly low or has plateaued in recent years
- Contribute to reducing inequities in health outcomes

Future-proof PHC systems

- Support pandemic preparedness and health system resilience
- Support adaptation of health systems to respond to shifting burden of diseases

Comparative advantage of donor investment:

- Catalyze progress by addressing bottlenecks that limit the effectiveness of multiple interventions, especially ones in which donors are already making significant investments (i.e., vaccines, HIV, TB, malaria, RMNCAH-N)
- Donor funding can offer a comparative advantage, for example by covering high startup costs or by funding areas that domestic resources often will not cover (ie, non-government service delivery)

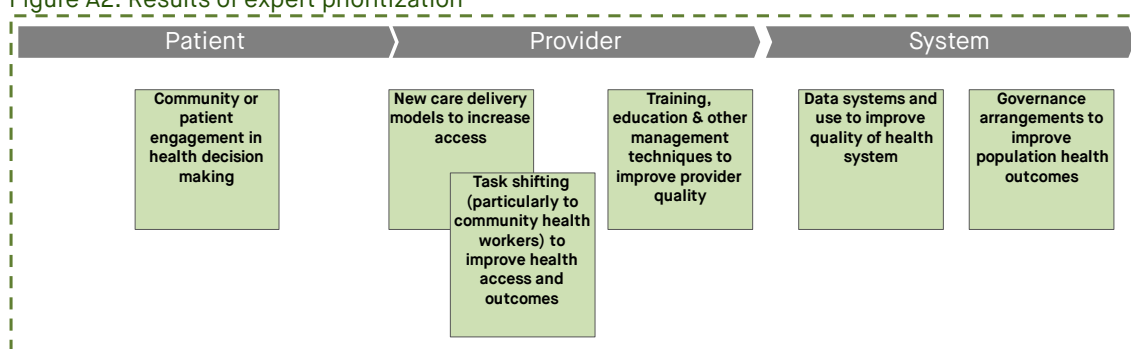
### 4 Prioritize investment areas

Following the first EWG meeting, each member was asked to complete a template, prioritizing the investment areas generated by Step 2, using the criteria defined in Step 3.

Experts were asked to score investment areas against each of the criteria using a quick subjective scale (high/medium/low). Based on this scoring and their own subjective assessment, they were then asked to prioritize no more than 6 investment areas that they felt should be included, alongside brief qualitative justifications of their choices. Within each prioritized investment area, experts were asked to highlight and explain the approaches that they found particularly compelling.

Collating the expert responses revealed some clear patterns in the investment areas prioritized. Clear consensus emerged on the importance of donor investment in new care delivery models to increase access; community or patient engagement in health decision making; and data systems and use to improve quality of health systems. Other investment areas that experts regarded as important included task shifting to improve health outcomes, particularly relating to community health care workers, training education and other management techniques to improve provider quality and governance arrangements to improve population outcomes. The set of investment areas identified touches all parts of PHC, from the patient and community level to the provider, to the system level.

Figure A2: Results of expert prioritization



The EWG tended to prioritize the more tried and true elements of PHC, at the expense of the more innovative approaches included in the long list. However, within each of these investment areas, experts had picked out more innovative approaches, such as mHealth technology for more efficient and cost-effective case finding.

The results of the prioritization exercise were presented back to the group at a second EWG meeting. The discussion focused primarily on the areas that did not rise to the top of the prioritization exercise in the way that may have been anticipated, specifically, more innovative investment areas relating to digital and pandemic preparedness. On both, the groups feedback was that, while important, they form part of the investment areas that were prioritized. On digital, the consensus was that digital should be a critical underpinning of the wider package of investments that set out to strengthen PHC in a digital age. There was also a sense that more work needs to be done on getting the fundamentals of digital right including standards, interoperability, and digital literacy. On pandemic preparedness, the guidance from the group was that that preemptive broad-based investments in strengthening PHC systems, for example, having a strong cadre of CHWs, was a more effective way of improving pandemic preparedness than investments that specifically target pandemic preparedness.

Based on this input and discussion, the investments identified were packaged into the three interlocking areas and two systems investments presented in section 2 of this concept note.

## 5 Develop rough estimate of costs of prioritized investment areas

### A. Introduction

The primary goal of this mini-costing exercise was to develop a price-tag for donor investments in catalytic PHC approaches using publicly available data sources. A secondary goal was to identify gaps in existing data sources that need to be filled if a full investment case is commissioned. Seventy-four IDA-eligible countries were included in the analysis – 59 IDA-only countries, and 15 IDA- and IBRD-eligible (so called “Blend”) countries.<sup>47</sup> Results in the report are presented separately for 59 IDA-only countries and all 74 IDA-only plus Blend countries.

Five categories of catalytic PHC investments were costed: (i) A new model of patient-centered primary care; (ii) next generation community health; (iii) Individuals and communities empowered to engage in health decision-making; (iv) Data and digital systems; and (v) Training, education, and other management techniques to improve provider quality. See Table 1 for descriptions of each PHC category and definition of costing modules. An important assumption made in this study is that all five categories of approaches will be implemented as a package of interlocking approaches and not as separate approaches.

### B. Methods

A hybrid costing approach was adopted for this exercise.<sup>48</sup> This included a combination of top-down and bottom-up costing approaches to arrive at reasonable incremental cost estimates for each catalytic category.

#### Perspectives and investment scenarios

The study adopted a donor’s perspective in line with the assumption that the costs estimated represent costs that donors will be willing to bear to catalyze PHC improvement in focus countries. Therefore, the estimates presented here do not represent the total costs of the catalytic approach, but

a subset of costs components that donors will pay for. Two investment scenarios were modelled: (i) a low-investment scenario that included a minimum set of interventions needed to catalyze PHC improvement, and (ii) a high-investment scenario that include additional interventions over and above those included in the low-investment scenario. Table A2 summarizes the interventions included in each low- and high-investment scenario for each PHC catalytic category.

#### Variables, parameters, and data sources

Table A3 summarizes the variables, parameters and data sources used to estimate costs. An extensive literature review was conducted to find empirical data on previous implementation of interventions in each PHC catalytic category. Both peer-reviewed and grey literature searches were conducted, however, whenever possible, estimates from peer-reviewed sources were given preference over estimates from other sources. Data on total program costs, per-capita costs, and breakdown by costs categories were collected through this review. Point estimates were summarized to obtain mean and median values for inclusion in the cost models. All cost estimates were then adjusted to 2020 USD equivalents using standard methods.<sup>49</sup>

#### Cost estimation

For each PHC catalytic category, total costs were estimated using equation 1 below.

$$TC_i = \sum_{c=1}^N OTC_{i,c} + (pc_i * sf_c * \text{number of years}), \quad (\text{Equation 1})$$

Where,  $TC_i$  represents total costs for intervention  $i$  in each PHC catalytic category,  $OTC_{i,c}$  represents one-time costs for intervention  $i$  in country  $c$ ,  $pc_i$  represents per capita costs for intervention  $i$ ,  $sf_c$  represents a population scaling factor for country  $c$ , and  $N$  represents the total number of countries included in the estimate. Number of years = 3 for this analysis.

One-time costs include fixed costs such as start-up costs, app development costs, and any other cost that do not scale linearly with population coverage. By contrast, per capita costs include variable costs such as cost per person reached with an intervention, cost for devices provided to each health worker, and any costs that scale linearly with target population coverage. For each per capita cost used, the respective scaling factor was determined based on the target population (e.g., women of reproductive age, total adult population, or total health worker population).

Cost components not intended to be covered by donors were excluded from per capita costs by applying a deduction equal to the proportion of the cost components excluded. For example, if the per capita cost of \$1.00 included 40% of salaries that would not be covered by donors, the per capita cost will be adjusted by deducting 40% from \$1.00 for a new per capita estimate of \$0.60.

Due to data limitations, existing capacity and current coverage for the per capita cost item were not explicitly modeled. Instead, a simplifying assumption was made that existing coverage was low for each of these catalytic approaches and a small increase in coverage was possible for focus countries. An increase in coverage of 30 percentage points was determined to be plausible and represented an appropriate share of costs to be covered by donors. For one-time cost items, it was assumed that donors would pay for 100% of the costs.

The total price-tag for each PHC investment scenario was a sum of the price-tag for each PHC catalytic category included in the analysis, which was then annualized.

#### Double counting

The cost estimates reflect an important assumption that all PHC catalytic categories will be implemented as an “interlocking set” of interventions rather than as separate interventions. Therefore, to avoid double counting, cost components that appear in more than one PHC category were adjusted to be reflected in just one category. Typical costs that fall into this category include, cost for devices (mobile phone, tablets), phone subscription plans, or community health worker salaries.

*C. Adjustments to the technical package*

Once the initial cost estimates were developed, the package of investments was reviewed to ensure that the final package was in line with estimates of what could be affordable to donors.

Table A2. Module descriptions investment scenarios and cost components

Catalytic approach	Module description	Investment scenarios & Cost components
New models of patient-centered primary care	Cost of supporting reforms to introduce new care models	<p>Low-investment scenario:</p> <ul style="list-style-type: none"> <li>Digital diagnostics and decision support: Costs related to the development and running of digital tools (clinical decision-support tool, IT kiosks in primary care facilities), including training.</li> <li>Empanelment: TA to design system (including IT system design).</li> <li>Multidisciplinary teams: TA to design system reforms; training; operational research around piloting it.</li> </ul> <p>High-investment scenario:</p> <ul style="list-style-type: none"> <li>Digital diagnostics and decision support: Low-cost scenario + costs for telehealth program.</li> <li>Empanelment: Low-cost scenario + data collection to compile comprehensive database.</li> <li>Multidisciplinary teams: N/A</li> </ul>
Next generation community health	Annual cost of providing community-based care through ICT-enabled CHWs per 1,000,000 population.	<p>Low-investment scenario:</p> <ul style="list-style-type: none"> <li>CHW trainings, supplies (including backpacks, drugs and RDTs; costs of IT support included under data and digital systems), management and supervision.</li> </ul> <p>High-investment scenario:</p> <ul style="list-style-type: none"> <li>Low-investment program plus the following: CHW salaries, and overhead costs.</li> </ul>
Individuals and communities empowered to engage in health decision-making	Element 1: Strengthening community and patient engagement in health decision making; Annual cost of providing community participatory learning and action cycles per 1,000,000 adult female population aged 15-49 years.	<p>Low-investment scenario:</p> <ul style="list-style-type: none"> <li>System set-up costs (e.g., staff recruitment and training, securing community approval and adapting intervention delivery methods, content and materials to the local context)</li> <li>Capital costs (e.g., vehicles, IT and office equipment).</li> </ul> <p>High-investment scenario:</p> <ul style="list-style-type: none"> <li>Low-cost program plus the following: materials costs, implementation costs, other recurrent costs and staff salaries (program staff, group facilitators, supervisors).</li> </ul>



Catalytic approach	Module description	Investment scenarios & Cost components
	Element 2: Empowering patients to look after their own health: Annual cost of providing disease-specific self-diagnostic services per 1,000,000 population.	<p>Low-investment scenario:</p> <ul style="list-style-type: none"> <li>• System set-up (e.g., training for start-up, demand generation, etc.)</li> <li>• Capital costs (e.g., building and storage, equipment, vehicles, etc.).</li> </ul> <p>High-investment scenario:</p> <ul style="list-style-type: none"> <li>• Low-investment scenario plus the following: costs of self-testing kits, and distribution costs. No personnel salaries.</li> </ul>
Data and digital systems	Cost of implementing a digital health system per 1,000,000 population.	<p>Low-investment scenario:</p> <ul style="list-style-type: none"> <li>• Set-up costs (e.g., standards development, development of platform, training), equipment costs (e.g., costs to digitalize health facilities and provide smartphone and data plans to CHWs).</li> </ul> <p>High-investment scenario:</p> <ul style="list-style-type: none"> <li>• Low-investment scenario plus the following: costs to maintain platform and institutionalize data use, other recurrent costs.</li> </ul>
Training, education, and other management techniques to improve provider quality	Cost of setting up an e-learning platform for health workers	<p>Low-investment scenario:</p> <ul style="list-style-type: none"> <li>• One-time set-up costs for an e-learning platform (includes standards development, platform development) and a MOOC.</li> <li>• Cost categories include: personnel, overhead, equipment and material, indirect costs, stakeholder cost</li> </ul> <p>High-investment scenario:</p> <ul style="list-style-type: none"> <li>• Low-investment scenario plus the following: demand generation, recurrent costs.</li> </ul> <p>(Cost of devices not included in any scenario [covered under data and digital systems])</p>

Table A3. Variables and parameters

Variable/Parameter	Median/mean unit cost estimates	Notes/References
Per country cost of technical assistance (TA) for health system reform. E.g., for activities such as TA for geographic empanelment, and TA for multidisciplinary health teams.	\$300,000.00	Estimate was obtained through personal communications with the World Bank.
Per country cost to conduct an empanelment survey	\$1,300,000.00; \$1,700,000.00	Estimates represent the costs of a Demographic and Health Survey (DHS) and a Multiple Indicator Cluster Survey (MICS). <sup>50</sup>
Cost per person reached with a mobile health promotion program	\$4.39	Estimate is from the MAMA program in South Africa. <sup>51</sup>  Population coverage estimate derived from MAMA/MomConnect program in South Africa.
Per capita cost of providing community-based care through CHWs	\$2.62	Estimate represents the annual per capita cost of financing CHWs to care for the entire sub-Saharan Africa rural population. <sup>52</sup>
One-time cost to develop a mobile health application	\$425,000.00	Represents the mean reported app development cost in a survey of 2,400 decision makers representing 91 countries and 8,000 mHealth applications. <sup>53</sup>
Per consultation cost of a Babyl digital health program (phone and Kiosks)	\$1.30	Estimate is from Rwanda. <sup>54</sup>  Model assumes 0.5 consultations per person per year.
Cost per person reached with community participatory learning action cycles	\$2.60	Estimates are from India Nepal, Bangladesh, and Malawi. <sup>55</sup>  Target population for cost estimation was women of reproductive age (15-49 years). This group is typically involved in the household healthcare decision-making process.
Cost per self-test kit distributed	\$12.80	Estimates are from Malawi, Zimbabwe, and Zambia and include both cost of test kits and distribution. <sup>56</sup>

Variable/Parameter	Median/mean unit cost estimates	Notes/References
		Model assumes 100% of population will need one test per year at the mean cost.
Per capita cost of implementing a digital health system	\$1.89	Estimate reflect results from the Tanzania digital health scale-up plan and obtained through personal communications with PATH in Tanzania.
Per capita cost of IT support to CHWs	\$0.345	Estimate reflect results from the Tanzania digital health scale-up plan for smartphones and data packages and obtained through personal communications with PATH in Tanzania.
Per country cost of setting up an e-learning platform for health workers (personnel, overhead, equipment and material, indirect costs, and stakeholder costs)	\$272,968.78	Estimates are based on costs for the development of three different massive online open courses. <sup>57</sup>
Per country cost of setting up an e-learning platform for health workers (standards development and governance)	\$4,959,154.00	Estimate is based on personal communications with PATH in Tanzania.

## Annex B: Estimates of the costs of PHC investment areas

The costing methodology described in Annex A was used to develop costs for each of the priority investment areas. As noted in Annex A, these investments are intended to form a synergistic package, with key elements showing up in multiple areas (e.g., community health workers are at the center of next generation community health but they are also integral parts of multidisciplinary care teams and frequently play a role supporting community empowerment efforts). This interconnection makes it more difficult to present costs for each element of the package separately, since, for example, the costs of CHWs are only included once to avoid double-counting (in this case, in the next generation community health investment area) but the other areas that rely on CHWs could not be delivered without those investments. That means that Table B1 must be interpreted cautiously as each line is not independent from the other investment areas.

Table B1: Annual cost by investment area, for each scenario and for IDA and IDA + Blend countries (US\$m)

Investment area	Scenario	IDA countries	IDA + Blend countries
New models of patient-centered primary care	Low	20	25
	High	271	395
Next generation community health	Low	495	743
	High	901	1,354
Individuals and communities empowered to engage in health decision-making	Low	733	1,104
	High	1,882	2,834
Data and digital systems	Low	522	787
	High	690	1,039
Training, education, and other management techniques to improve provider quality	Low	103	129
	High	103	130

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