



# The Role of Research and Innovation in the Post-2015 Development Agenda

Bridging the Divide Between the Richest and  
the Poorest Within a Generation

# Contents

<b>Executive summary</b>	3
<b>Introduction</b>	4
<b>Research and innovation for health: then and now</b>	5
Research and innovation for health in the MDGs	5
Achieving grand convergence	8
Research and innovation for health in the post-2015 agenda	10
<b>Measuring progress in the post-2015 agenda</b>	11
<b>Conclusion</b>	13
<b>References</b>	14
<b>Appendix A</b>	15
<b>Appendix B</b>	15

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## Executive summary

The post-2015 development agenda will provide a framework for identifying global and national priorities and galvanizing action toward poverty reduction and sustainable development for all. Because poor health and disability contribute substantially to poverty, research, and innovation for health is critical to eradicating poverty and should figure prominently in the post-2015 development agenda.

Progress on developing new interventions targeting poverty-related and neglected diseases has faltered because these diseases occur almost exclusively among the world's poorest and most marginalized populations in low- and middle-income countries (LMICs). Although a clear public health need or gap may exist, this need does not necessarily translate into demand for new and improved health tools. Research and development (R&D) and innovation for health—particularly for the world's poorest—can help to increase demand by creating new health technologies, expanding coverage of existing tools, and contributing to economic growth.

Gains made toward achieving the Millennium Development Goals (MDGs) related to health (MDGs 4, 5, and 6) have been based largely on R&D investments made years earlier. However, the health technologies that have contributed to this progress are insufficient to overcome existing and emerging health challenges and ultimately to achieve the goals of the post-2015 agenda. Current R&D investments in health are inadequate to meet tomorrow's challenges. Although there are promising tools in the pipeline—including effective vaccines and preventive technologies against HIV/AIDS, tuberculosis, malaria, and neglected tropical diseases; new and improved drugs to treat resistant strains of these diseases; rapid diagnostics that enable early identification and treatment; and female-controlled family planning technologies that enable women to protect themselves and their partners from unintended pregnancies and sexually transmitted infections—to meet global health challenges, investments in the development and deployment of these tools need to be continued and increased to achieve the expected impact.

This paper is intended to build support for research and innovation in the final post-2015 agenda, as well as to stimulate and inform discussion about how to measure the impact of R&D of new and improved health tools targeting the needs of LMICs. The authors build on the work of the Lancet Commission on Investing in Health, which called for doubling current R&D investments in health from all countries to bridge the divide between the richest and poorest within a generation. To achieve this bold vision, the authors contend that research and innovation for health must be a central component of the post-2015 development agenda.

# Introduction

Life expectancy in most countries has increased by approximately ten years over the past four decades, but the health gap between the richest and the poorest and most marginalized populations remains wide.<sup>1</sup> Although progress has been made to address this disparity, millions of people in low- and middle-income countries (LMICs) continue to die each year from preventable and treatable diseases and conditions.

A key factor inhibiting further progress is a scarcity of adequate health technologies and interventions targeting many poverty-related diseases. This lack of appropriate health tools is due in large part to the fact that many global health technologies are developed as “global public health goods”—that is, goods that are available, accessible, and affordable to those most in need. The existence of a clear public health need or gap, however, does not necessarily translate into demand for products. Where there is little or no perceived commercial market for health technologies, commercial entities are unlikely to assume the full risks and costs of product development targeting LMICs.



PATH/Aaron Joel Santos

The health burden imposed by poverty and social vulnerability remains far too high; therefore, achieving health for all is one—major—goal of the post-2015 development agenda. Because research and innovation for health is linked to economic prosperity in LMICs, is key to poverty eradication, and is necessary for sustainable development, work to develop and introduce new, more effective health products should be a central component of the health goal for the post-2015 agenda.

Gains made since the launch of the Millennium Development Goals (MDGs) demonstrate the influence that global agendas can have on the priorities and investments of national governments and bilateral and multilateral donors. Goals outlined in the post-2015 agenda should build on previous successes to ensure that health can be achieved in an equitable,

sustainable way for all. Although the new era of work will include scaling up access to proven health interventions, it will also require developing and delivering new, improved technologies that can sustainably reduce morbidity and mortality among the poorest and most marginalized populations over the long term.

Investment in science, technology, and innovation for health is essential for building on progress made toward the MDGs. During the first decade of the century, health research investments in LMICs increased at 5 percent each year.<sup>2</sup> As a result, most LMICs have a growing health research infrastructure that provides a foundation to build upon. Nevertheless, investments in health research and development (R&D) relevant to LMIC health priorities remain woefully inadequate, at approximately 1 to 2 percent of the total global medical R&D investment.<sup>3</sup>

Creating enabling environments for health R&D focused on LMIC health priorities will require increased resource allocations, though this will not be enough to ensure success. It will also require policy change within endemic countries (such as regulatory reform and the establishment of new financial and incentive mechanisms); capacity strengthening and knowledge transfer among high-, middle-, and low-income countries; and multisectoral partnerships as a means to improve health research systems, optimize needs-driven health R&D, and ensure universal access to new, improved health tools to tackle the diseases and conditions that remain prevalent in LMICs.

The Lancet Commission on Investing in Health—a group of renowned economists and global health experts—has outlined an investment framework for achieving the dramatic health gains envisioned for the post-2015 agenda. In its Global Health 2035 report, the Commission specifically calls for greater investment in global health R&D by all countries

to close the health gap between high-, middle- and low-income countries within a generation.<sup>3</sup> In this context, it is essential that any health goal within the post-2015 development agenda includes R&D and innovation targets and indicators to measure progress toward eradicating poverty. The health goal as currently envisaged by the Open Working Group on the Sustainable Development Goals is to ensure healthy lives and promote well-being for people of all ages.

Building on the findings of the Lancet Commission and drawing from the literature, this paper will:

- Highlight how research for health has contributed to progress toward achieving the MDGs.
- Discuss the rationale for continuous prioritization of R&D and innovation for health within the post-2015 development agenda.
- Make the case for supporting R&D of new and improved high-priority health tools for diseases and conditions disproportionately affecting LMICs as a critical component of any future sustainable health and development agenda.
- Provide preliminary suggestions for areas to consider as potential indicators of progress in global health R&D and innovation.

This paper also draws on findings and perspectives shared during an official nongovernmental organization side session at the 67th annual World Health Assembly (WHA) hosted by the Council on Health Research for Development (COHRED), Drugs for Neglected Diseases initiative (DNDi), the Global Health Council (GHC), the Global Health Technologies Coalition (GHTC), and the International AIDS Vaccine Initiative (IAVI) exploring the role of R&D in the post-2015 development agenda (see Appendix A for list of UN member state sponsors and speakers). Although other components of research for health—such as health systems research and implementation research—are also of great relevance and should be addressed appropriately within the post-2015 agenda, this paper focuses on R&D of health technologies.

## Research and innovation for health: then and now

### Research and innovation for health in the MDGs

In the decade after the MDGs were launched, there was a steady increase in funding research for health. This funding led to significant growth in product technology portfolios addressing poverty-related and neglected diseases, a surge in the



PATH/Lesley Reed

number of stakeholders (from the public, nonprofit, private, academic, and philanthropic sectors) filling these pipelines, and enhancement of innovation systems in LMICs through improved research and manufacturing capacity and increased public-sector investments by endemic countries.<sup>4</sup>

These changes enabled the development and deployment of many health products that have contributed substantially to progress toward meeting MDGs 4 (reduce child mortality), 5 (improve maternal health), and 6 (combat HIV/AIDS, malaria, and other diseases). Key technological innovations have included:

- New and improved vaccines for some of the leading killers of children (including meningitis A, Japanese encephalitis, diarrheal disease, pneumonia, and cholera).
- Novel drugs and drug combinations for malaria, HIV/AIDS, tuberculosis (TB), and neglected diseases, such as human African trypanosomiasis (commonly known as sleeping sickness).

## The impact of health research and innovation on Millennium Development Goal 6

Millennium Development Goal (MDG) 6 aims to reduce the burden of HIV/AIDS, malaria, and other diseases (including tuberculosis [TB] and other poverty-related diseases). The increased effort in research and development (R&D) for these diseases has led to the development and introduction of important new interventions over the past two decades, which have had a significant impact on halting and even beginning to reverse the spread of these epidemics in low- and middle-income countries (LMICs).

The breakthrough discovery of antiretroviral (ARV) drugs in the 1980s and ARV combination therapy in the 1990s, and the subsequent rollout of these medications, led to one of the greatest accomplishments in the global fight against HIV/AIDS: the unprecedented, successful push to increase access to lifesaving ARV drugs in LMICs and the global partnerships, policies, and commitments necessary to achieve this. In 2000, only about 1 in 1,000 people living with HIV in Africa got access to these lifesaving drugs. At the time, these medications cost US\$10,000 to \$15,000 per person, per year.<sup>5</sup> Agreements and new initiatives—including the establishment of WHO's Prequalification of Medicines Program to help United Nations agencies and countries procure high-quality medicines—were critical to strengthen the capacity of generic-drug manufacturing countries (notably India in the case of ARVs) and to improve access to consistent supplies of high-quality, low-cost generic medications for global procurement. Today, ARVs have been rolled out to millions in LMICs, helping to avert 5.4 million deaths due to HIV/AIDS between 1995 and 2012.<sup>2</sup> India remains the major global supplier of generic ARVs, and Indian-produced generic ARVs have accounted for more than 80 percent of the donor-funded anti-HIV treatments since 2006.<sup>6</sup>

Malaria is one of the leading causes of death around the world, and approximately half of the world's population is at risk. Significant improvements in prevention and treatment interventions in recent years—including insecticide-treated bednets and new fixed-dose combinations and formulations of antimalarial drugs—have helped to curb infection and improve access to treatment. For example, Coartem® *Dispersible*—a pediatric formulation of an existing antimalarial—was developed to address poor compliance and imprecise dosing for treatment of childhood malaria. Since 2009, 200 million treatments of Coartem® *Dispersible* have been delivered to 50 malaria-endemic countries.

Because TB is the leading killer of people with HIV, accurate and timely diagnosis is crucial to achieving MDG 6. New TB diagnostic technologies have contributed to the gains made in detecting and treating TB. Since the early 2000s, a number of new TB diagnostics tools such as liquid culture and molecular tests have reduced the time to detection, improved accuracy, and increased identification of drug resistance. As a result, the number of people on TB treatment has increased and led to a 45 percent drop in the TB death rate between 1990 and 2012.<sup>7</sup>

The 17 diseases included in WHO's list of neglected tropical diseases (NTDs) affect more than a billion people in the poorest and most marginalized communities around the globe. These diseases thrive in places with unsafe water, poor sanitation, and limited access to basic health care. Because of the severe pain and life-long disabilities these diseases cause among the poorest populations, combating NTDs is crucial to eradicating poverty and increasing economic prosperity. Recent advances in NTD research and innovation have enabled progress in combating these diseases of poverty, but NTDs continue to impede progress toward achieving the MDGs.

The launch of Nifurtimox-Eflornithine Combination Therapy (NECT)—which became the first new, improved treatment option in 25 years for advanced-stage human African trypanosomiasis (sleeping sickness)—demonstrates how increased investment in NTD R&D can improve access to critical health interventions. NECT is much safer than the previous treatment most common used for sleeping sickness, which is a highly toxic, arsenic-based drug that kills 5 percent of treated patients. NECT is now available in the 13 African countries that account for 100 percent of the reported cases of sleeping sickness.<sup>8</sup>

These scientific and technological innovations, coupled with innovative partnerships and enabling policies, have helped to foster a robust environment for innovation and ensure progress toward achieving MDG 6. Much more needs to be done, however, to deliver the tools needed to eradicate these diseases.

- Improved diagnostics and testing platforms for neglected diseases, including visceral leishmaniasis.
- Anti-malaria insecticides.
- Devices to improve maternal health outcomes, including contraceptives and treatments for postpartum hemorrhage.

Additionally, significant progress has been made in the development of much-needed technologies that are still in the pipeline. These products include preventive vaccines for HIV, TB, malaria, and poverty-related diseases such as hookworm; improved child-friendly formulations of existing drugs to treat HIV and malaria; new drugs to treat TB and other neglected diseases such as Chagas; microbicides to protect women and their partners against HIV and unintended pregnancies; point-of-care diagnostics for neglected diseases, including onchocerciasis (commonly known as river blindness); devices aimed at improving maternal and child health outcomes and family planning options; and vector-control technologies against diseases such as dengue.



PATH/Gabe Bienczycki

These tools in development are still urgently needed, especially because progress toward achieving the MDG health targets has been uneven across goals and geographies. For example, although the number of new HIV infections has declined in most regions, 2.1 million people still became newly infected with HIV last year, with young people (especially women and girls), men who have sex with men, female sex workers, injecting-drug users, and other marginalized populations being disproportionately affected. New HIV prevention tools that effectively address these groups' needs are desperately needed.

African women ages 15 to 24 years are twice as likely as their male counterparts to be infected with HIV.<sup>9</sup> Further investment to increase access to effective microbicides could help women in LMICs protect themselves and

their partners from HIV and unplanned pregnancies.<sup>10,11</sup> In addition, a safe, effective, accessible HIV vaccine holds huge promise for women and other populations vulnerable to HIV/AIDS,<sup>12</sup> though long-term investment in science and technology, as well as an enabling environment for R&D and innovation, will be required to advance the most promising vaccine candidates into large-scale testing.<sup>13</sup>

On the whole, child mortality rates have been almost halved since 1990; 6 million fewer children died in 2012 than in 1990.<sup>14</sup> During that time the introduction of new and improved vaccines, oral rehydration therapy, and insecticide-treated bednets have halved the number of children who die before age 5 from pneumonia, diarrheal disease, and malaria—the leading killers of children worldwide. However, these achievements will not reach the MDG 4 goal of a two-thirds reduction in child mortality by 2015.

MDG 5 calls for universal access to reproductive health care to improve maternal health outcomes. Although the number of births among young women ages 15 to 19 years decreased worldwide between 1990 and 2011, the adolescent birthrate was relatively constant in sub Saharan Africa—remaining at 117 births per 1,000 girls.<sup>14</sup> An estimated 222 million women in LMICs want to delay the birth of their next child or limit the size of their family but are not using contraception.<sup>15</sup> Without further support to increase access to appropriate family planning products that meet their needs, women and their partners face unwanted pregnancies and the risk of sexually transmitted infections. The development and introduction of new technological innovations are critical not only to improving health outcomes but also to ultimately lifting women and their children out of poverty.

To prevent TB, the Bacille Calmette-Guérin (BCG) vaccine is the only option for use in infants. Although this is the most widely used vaccine in the world, BCG is only partially effective for a small window of time, losing its efficacy by late adolescence, making it necessary to develop a new vaccine against TB.

Investments totaling US\$600 million over the past decade have resulted in a robust TB vaccine portfolio with potential to avert millions of new cases of TB by 2050.<sup>16</sup> Experts have estimated, however, that an additional \$800 million is needed over the next 10 to 15 years to complete necessary research and prepare for the introduction of a new TB vaccine (that likely already exists in the current pipeline).<sup>17</sup> Compared to the \$8 billion spent per year on TB treatment and care programs, this is a sound investment. Because research timelines often do not align with political timelines, countries must include investment in global health R&D as a critical component of their domestic and international development agendas. With that in mind, it is important to note that much of the progress in global health over the past two decades was based on R&D investments made years earlier.

## Achieving grand convergence

When the first World Development Report, *Investing in Health*, was launched in 1993, it provided a global health investment agenda targeting the world's poorest populations.<sup>17</sup> This report—which first articulated the need for investing



PATH/Gabe Bienyzycki

in health as smart and necessary as opposed to a burden to finance ministers—called for improved educational opportunities, economic policies, and promotion of rights as a means to foster an enabling environment for health. It also requested increased spending on health targeting diseases of greatest burden in the poorest populations. The report helped to catalyze much of the progress made toward prioritizing health as a critical element of any economic development agenda, and the shift in the global health R&D landscape.

In 2013, The Lancet Commission on Investing in Health assessed progress since 1993 and updated the recommendations from the earlier report. The new recommendations followed four major themes:

- Health investment will have big returns in increasing valuable life-years (VLYs).
- “Grand convergence”—reducing infectious, child, and maternal mortality rates among the world’s poor to comparable rates in the best-performing middle-income countries\*—is achievable by 2035.
- Fiscal policies are needed to scale-up low-cost interventions for noncommunicable diseases and injuries.
- Universal health coverage is critical to achieving health and financial protection for all.

The Lancet Commission noted that a key driver for achieving grand convergence is increased investment in health R&D by all countries. Commissioners noted that many of the new health tools launched over the past decade have been based on research that occurred several decades ago. Although these interventions are contributing to improved health outcomes in endemic countries, they will not be sufficient to overcome existing and emerging health challenges (i.e., antimicrobial resistance) or to achieve the goals of the post-2015 agenda. To that end, it is essential to invest in the “discovery, development, delivery and widespread adoption of new technologies.” In fact, the Commission noted that “the most effective form of international collective action to help achieving convergence would be to “direct a substantial portion of DAH [Development Assistance for Health] towards this R&D enterprise.”<sup>3</sup>

\* Defined as the “4Cs”: Chile, China, Costa Rica, and Cuba



The 2013 Commission report argued that returns of investing in health are enormous—even greater than those stressed in the 1993 World Development report—when taking into account the “full picture” of the value of health as shown by a country’s “full income” measure, (i.e., income growth) plus the VLYs. The report noted that about 24 percent of growth in income in LMICs between 2000 and 2011 resulted from the VLYs gained through improved health systems and investments in innovation.<sup>3</sup> Measuring the number and value of additional life years allows for a more comprehensive understanding of the economic value of health improvements and provides the rationale for improved resource allocation to research and innovation for health.

Such an approach to assessing income provides a compelling economic rationale for investing in R&D of high-priority health tools already in the pipeline and keeping the pipeline filled.<sup>3</sup> This is in addition to the direct health benefits of health research (through new technologies such as drugs, diagnostics, vaccines, and devices, and better ways to improve coverage, care and delivery with existing technologies) and the indirect benefits through the impact of better health on economic growth and activity. Based on this analysis, the Commission concluded that convergence and sustainable development can only be reached if current health spending for research and innovation of \$3 billion per year is doubled to \$6 billion per year by 2020.<sup>3</sup>

## **The shifting landscape of research and innovation for health**

Historically, research and innovation targeting the health needs of low- and middle-income countries (LMICs) has taken a “top-down” approach in which health research is conducted and funded predominately by stakeholders in high-income countries (HICs) with minimal engagement of LMICs. However, there is growing acknowledgment of the need for locally driven solutions to health threats in LMICs.

With increasing investment from endemic countries, the global health landscape is shifting from HICs identifying research priorities and developing new interventions for use in low-income countries to a more collaborative approach in which high-, middle-, and low-income countries work laterally. This approach relies on the rapidly increasing capabilities of LMICs to set the research agenda and to offer innovative solutions. It also ensures that the economic and social benefits of a growing innovation ecosystem accrue not only to high-income countries but also to LMICs.

Innovative mechanisms such as product development partnerships (PDPs) were created to advance R&D for new and improved tools addressing poverty-related and neglected diseases and conditions, and to strengthen local capacity to conduct high-priority research in endemic countries. Whereas PDPs support and engage in product development, another organizational model, the European and Development Country Clinical Trial Partnership (EDCTP), was created as a financial mechanism to support clinical research partnerships between European and African research groups with a focus on clinical research and related capacity strengthening in sub-Saharan Africa. Over the past 10 to 15 years, these organizations have been driving much of the R&D addressing the health needs of the poorest and most marginalized populations in LMICs. In various forms and degrees, these organizations use public and philanthropic investments to share risk, leverage expertise from both the private and public sectors, and strengthen the R&D capacities and systems in LMICs. PDPs and initiatives such as the EDCTP have helped to stimulate investment in research for health across sectors and geographies.

These efforts have been welcomed by LMICs, which are keen to take on the challenge of research and innovation for health in a much stronger way than ever before.<sup>18</sup> The post-2015 agenda offers an opportunity to stakeholders from across different sectors in LMICs to take more control and responsibility for driving the health research and innovation agenda.

## Research and innovation for health in the post-2015 agenda

The post-2015 agenda is an opportunity for LMICs to define the health research agenda and assert their leadership in the innovation landscape.<sup>19</sup> LMICs need to set their own health and health research priorities and follow through on this by allocating resources and engaging in international research and innovation collaborations as equal partners—in line with these priorities—to achieve sustainable development for all.



Miguel Alvarez

The most recent Ebola virus outbreak illustrates why research and innovation need to be included in the post-2015 agenda and why LMICs need to step up to the challenge and increase their investments in health science, technology, and innovation. The current global attention to Ebola is perhaps due more to the perceived threat to high- and middle-income countries and less to the size of the outbreak. In reality, Ebola epidemics have occurred periodically since the mid-1970s, with heavy mortality over the years. The relative containment of these epidemics to West Africa and the fact that even the current numbers of deaths disappear in global health statistics means that Ebola—like many other poverty-related conditions—has not elicited significant local or global investment in health research. For countries in the region, the Ebola virus not only causes many deaths but also cripples already struggling economies and social development.<sup>20</sup>

The development of national research capacity in LMICs is therefore an urgent matter of life and death. Developing this capacity requires setting up needed infrastructure, strengthening surveillance systems, and strengthening capacity for research, development, and innovation that—in the medium- to long-term—will ensure that LMICs can act on their own health priorities. This local development can also stimulate the kind of regional and global research and innovation partnerships needed to prevent, detect, and treat diseases that are priorities for many LMICs.

The inclusion of research and innovation in the post-2015 agenda should build upon initiatives and activities that are already under way to accelerate R&D for poverty-related and neglected diseases—as well as learn from successes and failures in implementing them—at the global and national levels. Over the past decade, the call to improve financing and coordination of research and innovation targeting the health needs of LMICs has been gaining traction. These discussions came to a head in 2012 when the World Health Organization's Consultative Expert Working Group (CEWG) released recommendations aimed at improving the research and innovation ecosystem addressing health challenges in LMICs.<sup>21</sup> Given the efforts already expended on these issues, targets for and indicators of progress in supporting research and innovation for health in the post-2015 agenda should align with ongoing efforts to strengthen the innovation ecosystem in LMICs.

In 2013 and 2014, the World Health Assembly passed a series of resolutions based on the CEWG recommendations to help strengthen the global health enterprise. These resolutions called for a variety of activities:

- Establishing a global health R&D observatory that would act as a central coordinating mechanism to monitor and analyze relevant information on health research and innovation.
- Implementing health research demonstration projects that would use innovative funding and partnership models to address identified gaps that disproportionately affect LMICs.
- Establishing long-term, sustainable financing mechanisms, including pooling resources.
- Improving regulatory systems in endemic countries.

The resolutions also build upon previous policy commitments and initiatives established to accelerate R&D targeting LMICs' health needs. In 2008, for example, governments signing onto the Bamako Communique and Algiers Declaration on Health committed to invest at least 2 percent of their national health budgets in research for health.<sup>22,23</sup> In addition, there have been several international calls, most recently from an Institute of Medicine Global Health Interest Group,<sup>24</sup> and from the Lancet Commission, for all countries to commit resources to global health R&D. Unfortunately, endorsing political commitments does not guarantee implementation, and many of these political pledges remain unfulfilled, with a few exceptions. Therefore, the post-2015 agenda must have accountability structures in place to ensure that countries acknowledge the value of investing in research and innovation as a critical component of achieving the goals outlined in the final document.

## Measuring progress in the post-2015 agenda

The Open Working Group on Sustainable Development Goals (OWG)—the committee of United Nations member states tasked with developing a proposal on the post-2015 agenda for consideration by the General Assembly—recently submitted its final proposal to the UN Secretary General. Research and innovation for health is included in the proposal under goals 3 (ensure healthy lives and promote well-being for all at all ages), 9 (build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation) and 17 (strengthen the means of implementation and revitalize the global partnership for sustainable development).<sup>25</sup>

The proposal acknowledges the importance of health R&D in relation to implementation of the health goal in calling for nations to:

support research and development of vaccines and medicines for the communicable and non-communicable diseases that primarily affect developing countries, provide access to affordable essential medicines and vaccines, in accordance with the Doha Declaration which affirms the right of developing countries to use to the full the provisions in the TRIPS agreement regarding flexibilities to protect public health and, in particular, provide access to medicines for all.<sup>25</sup>



PATH/Evelyn Hockstein

Given the wide spectrum of health needs that remain to be fulfilled in LMICs, the health goal should include R&D for a similarly broad spectrum of health technologies, including medicines and vaccines as well as diagnostic technologies and medical devices that are critically needed to achieve the targets outlined in the health goal.

Goal 9 highlights the need for investment from the public and private sectors to strengthen research and manufacturing capacity in LMICs. In defining approaches to and investment in capacity strengthening, it will be important to ensure baseline ethical, safety, and quality standards that ensure that products are suitable, acceptable, affordable, and accessible to the populations that need them most. The proposed targets in goal 17 acknowledge the critical role that knowledge and technology transfer among high-, middle-, and low-income countries plays in creating an enabling environment for innovation and ultimately as a means of sustainable development.

Ultimately, the success or failure of the post-2015 agenda relies just as much on how the goals and targets are implemented as it does on

how progress will be measured. Defining research and innovation indicators is difficult to quantify because timelines are long, and success in R&D is defined by a complex set of milestones that must be met in advance of the ultimate health impact. Therefore, it can be difficult to attribute impact to specific investments and innovations.

Adequate levels of investment, as suggested by the Lancet Commission, are critical for spurring the development of new health tools, providing they align with financing needs in R&D, notably predictability and flexibility. But even that sort of investment alone does not guarantee more products, and it does not drive innovation toward the right type of products—suitable, acceptable, affordable, and accessible to populations most in need. It is essential, therefore, that indicators for R&D for health tools that primarily affect LMICs address a comprehensive set of outcomes including financing needs, infrastructure and human resources needs, enabling policies, necessary partnerships, capacity strengthening, and access requirements.

Sources for such a comprehensive set of indicators are limited (see Appendix B for list of documents outlining potential R&D indicators). One example is the Innovation Union Scoreboard used by the European Union (EU) to assess innovation performance of member states.<sup>26</sup> Performance is measured by the “Summary Innovation Index” — a composite indicator that takes into account 25 indicators that fall into three categories: enablers or drivers of innovation (e.g., human resources), innovation at the organizational level (e.g., investments, intellectual assets), and outputs or effects of innovation (e.g., economic effects).

*The Global Strategy and Plan of Action on Public Health, Innovation and Intellectual Property* provides an agenda that encourages needs-driven research rather than purely market-driven research to target diseases that disproportionately affect LMICs. The global strategy proposes several indicators to promote innovation, strengthen capacity, improve access, and mobilize resources for research targeting the health needs of LMICs.<sup>27</sup>

Ultimately, indicators should not only help to measure progress against the goals and targets described in the post-2015 agenda but also increase accountability of researchers, governments, and funders and inform research processes. Monies spent by governments are an indicator of political commitment to research and innovation, but funding alone does not provide information on how the monies are creating an enabling environment for research and innovation for health. Likewise, the number of new innovations cannot account for impact as it does not indicate suitability or accessibility and whether the new innovations have reached the populations most in need.

Any indicators developed must be relevant and measure R&D outputs as well as the enabling environment (e.g., infrastructure, capacity) for research and innovation. For instance, some areas for consideration could include:

- Financing of innovation.
- Capacity to innovate.
- Enabling policies for innovation.
- Partnering for innovation.
- Impact on sustainable development and poverty eradication.

The goals and targets included in the post-2015 agenda are not mutually exclusive and measure a country’s commitment to investing in its entire population. Each benchmark provides a snapshot of the research and innovation landscape and cannot be achieved independently. Therefore, progress needs to be tracked as a cohesive set of indicators. Inclusion of research and innovation for health in the post-2015 agenda must facilitate an enabling environment for research and innovation in LMICs and encourage endemic countries to set and pursue a domestically driven health research agenda.

## Conclusion

Poverty and social vulnerability put people at greater risk for poor health. Likewise, poor health makes it more difficult for people to lift themselves out of poverty. The post-2015 development agenda must recognize the value of health improvements for ending poverty and the role that research and innovation for health plays in sustainably achieving that goal. Research and innovation of new health technologies not only improves health outcomes but also drives economic growth and activity in LMICs.

As demonstrated in the Lancet Commission report, all countries must increase investment in research and innovation if we are to close the gap between the richest and poorest by 2030.

The post-2015 development agenda is an opportunity for LMICs to set their own health agendas and research priorities and to assert their leadership in strengthening the R&D landscape focused on the needs of the poorest and most marginalized populations. Therefore, it is essential that there is broad agreement among all of the relevant stakeholders that research and innovation for health—which includes the scaling up of proven health interventions as well as the development of new and improved high-priority health technologies—is critical to meeting the ambitious goals of eradicating poverty and ensuring sustainable development for all within a generation.

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# Appendix A

COHRED, DNDi, GHC, GHTC, and IAVI organized a side event, “The Role of Research & Innovation to Achieve Health for All and Sustainable Development,” focused on the critical role of global health research, development, and innovation in accelerating and sustaining progress in global health within the post-2015 development framework at the 67th annual WHA held May of 2014 in Geneva, Switzerland.

The event was sponsored by UN member states: Kenya, the Netherlands, Norway, Senegal, and the United Kingdom.

Speakers included:

- Prof. Fred H.K. Segor, Kenya Principal Secretary of Health
- Dr. Mandiaye Loume, First Technical Counselor to the Senegal Minister of Health & Social Action
- Dr. Seth Berkley, CEO of Gavi, the Vaccine Alliance
- Mr. Jon Pender, Vice President Government Affairs of GSK
- Prof. Osman Sankoh, Executive Director of INDEPTH
- Dr. Robert Terry, Manager Knowledge Management, World Health Organization
- Dr. Christine Sow, Executive Director Global Health Council
- Prof. Carel IJsselmuiden, Executive Director of COHRED

# Appendix B

## Examples of indicators measuring research and innovation for health

**Global strategy and plan of action on public health, innovation and intellectual property** ([http://www.who.int/phi/publications/Global\\_Strategy\\_Plan\\_Action.pdf?ua=1](http://www.who.int/phi/publications/Global_Strategy_Plan_Action.pdf?ua=1))

**Innovation union scoreboard** ([http://ec.europa.eu/enterprise/policies/innovation/files/ius/ius-2014\\_en.pdf](http://ec.europa.eu/enterprise/policies/innovation/files/ius/ius-2014_en.pdf))

**EDCTP2 decision no. 556/2014/EU** ([http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:JOL\\_2014\\_169\\_R\\_0004](http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:JOL_2014_169_R_0004))

**A framework to measure the impact of investments in health research** (<http://www.oecd.org/sti/inno/37450246.pdf>)

**Selection of relevant OECD main science and technology indicators** (<http://www.oecd.org/innovation/publicationsdocuments/datasets/>)

**OECD science, technology and industry working papers 2012/04: modes of public funding of research and development towards internationally comparable indicators** (<http://www.oecd-ilibrary.org/docserver/download/5k98ssns1gzs.pdf?expires=1404852829&id=id&accname=guest&checksum=8F22ECD824AAD005878C164D579D7ACA>)

**Selection of World Bank science & technology indicators** (<http://data.worldbank.org/indicator/GB.XPD.RSDV.GD.ZS>)

**Planning, monitoring and evaluation framework for capacity strengthening in health research** (<http://www.who.int/tdr/publications/seven-principles/en/>)

The Council on Health Research for Development can be found online at [www.cohred.org](http://www.cohred.org).

The Global Health Technologies Coalition can be found online at [www.ghcoalition.org](http://www.ghcoalition.org).

The International AIDS Vaccine Initiative can be found online at [www.iavi.org](http://www.iavi.org).

PATH can be found online at [www.path.org](http://www.path.org).

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