The Power of Straight Talk

The Independent Monitoring Board of the Global Polio Eradication Initiative

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The Independent Monitoring Board of the Global Polio Eradication Initiative

Nellie Bristol and Chris Millard

By 2009, the two-decades-long bid to eradicate polio globally had stalled. After remarkable early successes that resulted in a steady reduction in disease from 1988 to 2001, the number of wild poliovirus cases fluctuated between 800 and 2,000 a year for the next nine years. The techniques that had reduced polio incidence by more than 99 percent were not working in the last, most difficult places and the program struggled to adapt to its new circumstances. Program donors and the core international partners leading the Global Polio Eradication Initiative (GPEI)—the World Health Organization (WHO), UNICEF, the U.S. Centers for Disease Control and Prevention (CDC), Rotary International, and the Bill & Melinda Gates Foundation—were frustrated. The GPEI was the largest global health initiative ever, involving governments at every level, academics, civil society, millions of vaccinators, and billions of dollars. Failure would result in a resurgence of polio cases and dampen enthusiasm for future large-scale global health endeavors.

The time was ripe for new approaches. A critical new force came in 2010 in the form of the Independent Monitoring Board (IMB) of the GPEI. Over its five-year tenure, the eight-member panel of experts in the fields of epidemiology, global health governance, program management, communications, and health systems has become a transformative voice in the eradication effort. With refreshing candor, clarity, and readability, IMB reports have taken to task management at every level of the GPEI from donors, to international partners, to country operations. With an eye focused firmly on the goal of polio eradication, the IMB has identified program shortcomings, held to account those responsible, and demanded solutions. While there have been complaints of political tone deafness and excessively harsh commentary that in some cases may have damaged country program morale, the board has been able to jolt the struggling initiative out of business-as-usual mode, rendering it closer to the organizational integrity needed to successfully eradicate polio globally.

1 Nellie Bristol is a senior fellow with the CSIS Global Health Policy Center. Chris Millard is program manager and research associate with the CSIS Global Health Policy Center.
2 Wild poliovirus occurs naturally in the environment. The disease also can be caused in very rare instances by the oral polio vaccine, a weakened live virus vaccine.
The CSIS Global Health Policy Center (GHPC) examined the IMB’s history, processes, and future to explore both its impact on the GPEI and the monitoring model’s potential applicability to other global development initiatives. As part of the project, in summer 2015 GHPC interviewed 23 individuals, including: IMB members and staff; officials from GPEI donor organizations; GPEI core partner officials; current and former country officials; academics; and global health experts. Overall respondents praised the IMB’s directness and the quality of its reports saying they helped improve GPEI effectiveness. Many of those interviewed said the IMB model would be a useful monitoring mechanism for other global initiatives, particularly those with the types of complex governance arrangements found in the GPEI.

While the road to polio eradication remains a bumpy ride, the last several years have shown solid successes and the number of polio cases globally in 2015 is significantly reduced from the same time last year.4 By increasing global and national attention to polio eradication and helping improve program management, the IMB has been a strong contributor to the current positive trajectory. This report concludes that an IMB-style monitoring mechanism would be beneficial to other global development endeavors if the board had (1) strong leadership, (2) defined milestones against which to judge progress, (3) the willingness to speak boldly about program shortcomings, and (4) was charged with monitoring a program that was open to constructive criticism.

Global Polio Eradication at Risk

The World Health Assembly (WHA) agreed in 19885 to rid the world of polio, with an original eradication goal of 2000.6 With the concerted effort of national governments and international partners, the number of wild poliovirus cases fell dramatically through the 1990s. Starting from an estimated 350,000 cases when the program began, the number plummeted to 483 by 2001. But then progress stalled. Polio transmission had been halted in countries with relatively stable political situations, generally well-functioning health systems, and/or less dense populations that allowed easier access to adequate numbers of susceptible children. Efforts also succeeded under more difficult circumstances, including in areas of armed conflict. But then the virus settled into the most challenging locales in four countries—India, Pakistan, Nigeria, and Afghanistan. Vaccinators were completely shut out in some areas. Migrant populations defied easy access. Awareness around vaccination was lacking or failing in areas where vaccine refusal rates were high. The program also got caught up in geopolitical struggles resulting in vaccination bans in some areas. In 2003, the program suffered a major setback as public figures in northern Nigeria suggested the polio vaccine was unsafe, scaring parents away from the

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4 For a graph showing the annual number of cases of wild poliovirus globally since 2000, see Appendix 1; for the same information for Pakistan, Afghanistan, and Nigeria, see Appendix 2.
5 For a complete timeline of major events in global polio eradication, see Appendix 3.
program. New outbreaks occurred in Nigeria and the virus spread to 20 other countries.\(^7\) The number of polio cases globally fluctuated for the remainder of the decade but did not fall below 1,000.

Dissatisfied at the lack of progress and seeking greater transparency in GPEI operations, polio program supporters agitated for change. Led by the Bill & Melinda Gates Foundation, which was becoming an increasingly large financial backer of the program, the U.S. Agency for International Development, the U.K.’s Department for International Development, and other supporters pushed for ongoing external assessment that would identify programmatic shortcomings and recommend solutions. While the GPEI had a variety of monitoring mechanisms throughout its history, most of them focused on technical issues rather than management and were too often populated by representatives of the international partners tasked with program implementation, limiting external critiques.

Responding to supporter concerns, the GPEI’s 2010–2012 strategic plan called for an independent monitoring panel: “A new global advisory body will evaluate the milestones, and major process indicators, monitor corrective action plans and provide overall guidance on policy, strategy and priorities.”\(^8\) The GPEI international partners generated names for potential panel members. WHO Director-General Margaret Chan asked Sir Liam Donaldson, the UK government’s former chief medical adviser and chief medical officer for England, to chair the panel. Other members selected represent a cross section of global health expertise from a wide geographic area—including Australia, Kenya, South Africa, the United States, and Norway—with competencies ranging from epidemiology to communications to health systems.\(^9\)

The IMB Sets up Shop

The IMB’s first meeting was held in December 2010 at the WHO building in Geneva. The board soon decided that meeting at WHO compromised its independence and began meeting most regularly in London. Attendance is by invitation only or by request to the secretariat. Attendees include global and country program managers along with donor organizations, civil society, academics, and other interested parties.

Meetings are a combination of open and private sessions. Presentations cover GPEI core partners’ responses to IMB recommendations from previous meetings, provide an overview of global eradication developments, and discuss current risks and mitigation strategies. Countries with ongoing polio outbreaks give presentations on their situations.


\(^{9}\) For a full listing of IMB members and their biographies, see Appendix 4.
The IMB also meets in closed sessions with country representatives and core partners, and has private discussions to determine the content of its next report. In addition to official information gathering, each IMB member and the group’s staff regularly and privately poll their own networks of program implementers and observers. Others involved in and around the program also reach out to the IMB to discuss concerns. None of these individuals is named publicly and came to be referred to collectively in panel reports as “IMB sources.”

A key element in the panel’s deliberations has been the work of the IMB’s chief officer, Paul Rutter, a public health physician who served as clinical adviser to England’s chief medical officer. Rutter reviewed polio eradication program activities in countries, including through country visits, and synthesized streams of epidemiological data produced by the GPEI. He presented members with an overview of the global program and highlights of countries where the program was struggling. His work provided the basis for panel deliberations for each report. Following panel discussions, Rutter and Donaldson largely co-wrote the reports (with regular board member feedback), a job they were tasked with completing within three weeks after each meeting. Reports are then sent to the heads of the core partner agencies and then made public, without alteration.

Early on, IMB members kept a strict distance between themselves and program officials in order to ensure their independence. However, the board came under criticism for not engaging with program officials to better understand the pressures faced by implementers and for weighing too heavily the voices of those dissatisfied with the program and looking for an opportunity to vent. The board responded to those complaints by meeting more regularly with eradication leaders.

In other adjustments, the IMB originally said it intended to proactively engage with the media and become public advocates for polio eradication. It decided, though, that because the reports focus on where the program is weakest, that the media would get a skewed view of eradication progress and opted instead to issue reports publicly, but limit oral presentations to GPEI partners. Media inquiries are handled through Donaldson’s office.

While some observers were concerned about the lack of specific polio eradication expertise on the board, the panel’s broad range of global health knowledge came to be appreciated since it allowed the IMB to address issues outside the GPEI’s largely epidemiological approach. Nonetheless, board members and other stakeholders regret

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10 Rutter has since moved to WHO where he now serves as chief operations officer for polio eradication.
the loss of Ciro de Quadros, the former executive vice president of the Sabin Vaccine Institute, who died in 2014. De Quadros was among those who advocated for an independent review panel for the GPEI and was an original member of the IMB. He was credited with managing the elimination of polio from the Americas while serving at the Pan American Health Organization and considered one of the world’s foremost experts on disease eradication.

Calling It as They See It—IMB Reports

The IMB’s reports are lauded for being well informed, well written, and relevant to the program’s challenges. In contrast to many monitoring documents in public health, the IMB uses strong, direct, jargon-free language that clearly assigns responsibility for program deficiencies and their resolution. Reports include cleverly designed graphics that simply and succinctly convey the major elements of each issue.

Because polio eradication is a high-profile public health program involving a large budget and workforce, and because the reports are hard-hitting and accessible, IMB documents are widely read by eradication stakeholders. Reports are cited by the media both within countries and at the global level. They command the attention of GPEI management and country officials and have increased the urgency with which program managers approach their work.

The board’s independence particularly comes into play in its assessment of country polio programs. Since it is governed by member states and works closely with ministers of health, WHO curbs most direct criticism of national governments. Other GPEI partners, including the CDC and the Gates Foundation, also need to cultivate positive relationships with government officials in order to pursue their work in-country. The IMB, on the other hand, uses its autonomous position to directly challenge national polio programs.

In its October 2011 report, for example, the IMB starkly criticized the Nigerian program, which has struggled in some areas with insecurity, management issues, and other obstacles to successfully immunizing children. “Quite simply, immunization day coverage remains too low across whole swathes of the north,” the report said. “Almost 30% of the highest risk wards have been missing more than 10% of children. This is embarrassing and unacceptable performance.”

Last year, when Pakistan’s program flagged, the IMB again expressed its opinion with characteristic frankness: “Pakistan’s polio programme is a disaster. It continues to flounder hopelessly, as its virus flourishes. Home to 80% of the world’s polio cases in 2014, Pakistan is now the major stumbling block to global polio eradication. The

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principal victims are the children of Pakistan, who are left vulnerable and unprotected by their government.”  

While pushing countries to improve their programs, IMB assessments also provide objective evidence to the global community that certain country polio programs need more focus, resources, and managerial improvements. With all countries aware that their hard-fought efforts against the disease are threatened by virus reintroductions as long as poliovirus is circulating anywhere in the world, IMB assessments help fuel international political pressure on countries that are lagging.

While country polio programs are a frequent IMB target, other partners are not spared. The international partnership attracted the board’s critical eye for a lack of cohesive management and tired leadership. The IMB regularly assesses the global program but GPEI core partners cite the board’s October 2011 report in particular as a watershed moment. “We are convinced that polio can—and must—be eradicated,” the report said. “We are equally convinced that it will not be eradicated on the current trajectory. Important changes in style, commitment and accountability are essential.”  

Problems cited by the board included a lack of innovation and resistance to new ideas, along with a potentially dangerous “spirit of optimism” that while essential to motivating the program to success “risks it ducking the really difficult problems essential to eradication.”

Beyond management structures, the IMB also comments pointedly on the quality of program leadership. “How can it be that individuals known to be tired and ineffective are allowed to remain in key leadership positions?” it asked. The reports generate introspection at the global level that has resulted in management restructuring and increased intensity of effort. IMB critiques led to the establishment of new governance structures, including the Polio Oversight Board, made up of the leaders of the five core partner organizations.

Over the years, it has noted the GPEI’s willingness to listen and change, but in 2014 the IMB still called for an outside management review. “If a billion dollar global business missed its clear major goal several times, it would be inconceivable that it would not revisit and revise its organizational and decision making structure,” it said, adding “The IMB firmly reiterates its view that the global program remains seriously flawed whilst

15 Ibid., 26.
16 Ibid., 21.
17 Ibid., 18.
18 Ibid., 18.
the organisational status quo prevails.” Commissioned by the Polio Oversight Board, PricewaterhouseCoopers conducted an analysis that resulted in further management reconfigurations.

IMB reports generally strike a constructive balance between stern and supportive. If they had been too soft they would not have had sufficient impact, too hard and they would have been dismissed. Those interviewed said GPEI leadership initially was taken aback by the tone of reports and said they did cause anger and defensiveness at times, but said they also motivate program managers to improve. The IMB fostered a more cohesive, open management structure among the core partners and encouraged continuous self-evaluation as GPEI leaders were called upon each meeting to respond to the board’s previous recommendations and either show progress or explain if there was none. While program leaders said each report contains one or two recommendations they consider to be infeasible or irrelevant, most find the bulk of them to be useful and actionable.

Raising Critical Questions—the IMB’s Impact

With its independent stature and willingness to comment boldly and publicly on GPEI shortcomings, the IMB is able to raise the visibility of important program dysfunctions and foster improvements in program management. The IMB shined a light on several issues in particular:

*Emergency declaration for polio*—Starting with its first report in April 2011, the IMB pushed for the WHA to declare polio eradication a public health emergency. The goal was to raise awareness of the effort and to encourage countries to take eradication more seriously. Citing recommendations from the IMB and the Strategic Advisory Group of Experts on Immunization, the WHA passed a resolution in May 2012 declaring the completion of polio eradication a programmatic emergency for global public health. The resolution fostered development of emergency action plans both at the global and country levels, increasing focus and urgency toward polio eradication. The move to emergency status is credited with leading to “substantial progress toward global polio eradication.” As part of the effort, several core partners also activated emergency mechanisms toward polio eradication, including CDC. In December 2011, CDC Director Thomas Frieden moved the Centers’ polio activities into its Emergency Operations Center, signaling an intensification of efforts by the United States.

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24 Bristol, *The U.S. Role in Global Polio Eradication*. 
Pakistan now have established polio national and regional Emergency Operations Centers that provide a focal point for polio activities, improving coordination and information dissemination.

**Missed Children**—Over the last decade, the GPEI has had a keen focus on ensuring vaccines are reaching all children, embracing the motto “Every Last Child.” Toward that end, it has developed innovations including micro plans to confirm vaccinators were visiting all households and GPS tracking devices that ensured vaccines were reaching every village. Despite these efforts, the IMB reported in its June 2012 report entitled “Every Missed Child” that more than 2.7 million “never children” in persistently infected regions had not received even a single dose of oral poliovirus vaccine (OPV), a development it termed “a towering and malevolent statistic” that “looms over the Polio Eradication Programme.” The IMB’s focus on this issue helps keep it in the forefront of eradication efforts.

**Engaging International Health Regulations to aid polio eradication**—In November 2012, the IMB pushed WHO’s International Health Regulations Expert Review Committee to issue a standing recommendation calling for polio vaccination checks in Afghanistan, Nigeria, and Pakistan until national transmission is halted. As broader outbreaks occurred in 2013 and 2014, WHO Director-General Chan issued recommendations in May 2014 requesting countries that could export poliovirus to require proof of vaccination for exiting international travelers.

**Honoring front-line staff**—The IMB emphasized the importance of field staff and urged the GPEI to better support them. “The front-line is where the programme will succeed or fail,” the IMB said. “The programme’s sense of hierarchy must invert to reflect this.” It added, “too many of these workers are underrated, rarely thanked, frequently criticized, often under-paid, poorly motivated, and weakly skilled.” The IMB recommended that vaccinators become the focus of an internal effort to “engage, train and motivate them to success.”

**Communications**—The GPEI had been criticized as being too data driven and for employing a largely biomedical approach to eradication without giving sufficient

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29 Ibid., 7.

30 Ibid., 50.
attention to the social factors affecting vaccination dissemination and acceptance. The IMB put a hard focus on the lack of GPEI efforts to engage parents and create demand for polio immunization. “We recommend that the Programme urgently construct and implement a plan to correct its crippling under-emphasis on social mobilization and communications. This should address the need to rehabilitate the reputation of the vaccine in places where it has fallen into disrepute; to elevate the social mobilization networks to excellent performance; and to bring substantially more communications expertise to the table. . . .”31

Endgame strategic plan—The IMB encouraged the GPEI starting in June 2012 to develop a multiyear polio “endgame and legacy strategy” that would provide donors a sense of next steps and also lay out plans for transitioning polio assets and networks to other development projects post eradication. The GPEI developed the Polio Eradication & Endgame Strategic Plan 2013–2018, which outlines activities to end polio transmission in remaining endemic countries; tackle vaccine-related poliovirus by phasing out the oral poliovirus vaccine while improving weak immunization systems; ensuring virus containment in facilities; and plan for a polio legacy.32 The GPEI continues to pursue all four objectives.

Increased financial transparency coupled with better donor engagement—The IMB urges the GPEI to increase financial transparency and accountability, including in its May 2014 report: “We recommend that current concerns and unease about the transparency and communication of the polio eradication budget are properly and openly addressed.”33 The board also cites a near-constant program funding gap and urges donors to increase contributions to address it.34

Weakness in anticipating and responding to outbreaks—As countries rid themselves of polio, the GPEI has tended to shift international resources to countries that still have the disease. The IMB encourages the GPEI to pay more attention to countries that are considered polio free, but have weak immunization systems either as a result of health system failures or ongoing civil unrest or insecurity. The IMB urges greater attention to a “Red List” of countries vulnerable to polio outbreaks, such as Syria,

34 Independent Monitoring Board of the Global Polio Eradication Initiative, Every Missed Child, 43.
Ukraine, Yemen, and South Sudan. “More needs to be done to identify the tinder boxes and take action before they ignite,” the board said.35

Expanded use of inactivated poliovirus vaccine—A long-standing debate within the GPEI centered around how and when to introduce the inactivated poliovirus vaccine (IPV), a vaccine that, unlike the live-virus OPV, carries no risk of vaccine-related paralysis. The IMB said the debate had been too lengthy and circular and urged a definitive approach.36 While the board did not take a stand on how IPV should be used, it successfully requested that GPEI leaders resolve the debate.

Assessing the Assessors: IMB Strengths

The IMB’s success hinges on several key factors:

Leadership—The IMB has exceptional leadership with Sir Liam Donaldson. He is credited with organizing effective meetings that allow program implementers to present their materials, while simultaneously encouraging pointed questioning from board members so they can gain a clearer picture of program realities. He is described as a good listener who ensures that all board members’ viewpoints are considered. He has the stature in the global health community to command the respect and credibility necessary for the IMB to have maximum impact.

Effective reports—IMB reports are clear, punchy, and accessible to a wide audience. While often stern in tone, they also praise program implementers when appropriate and note progress. The tone of the reports generally strikes an effective balance between criticism and motivation and helped move program leadership toward improved operations.

Membership independence and credibility—IMB members are all well-respected senior public health experts who are not involved in GPEI implementation. As a result they can provide an objective assessment of program progress and can say things others cannot.

Longevity—The majority of IMB members have been on the panel since its inception, providing important continuity and institutional memory.

Areas for Improvement

While the IMB is considered an important addition to the polio eradication effort, there are areas that can be improved:

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Lack of connection to in-country context—Because IMB reports focus where national programs are weak, political opponents in some countries have used them to attack public health officials. While in some cases the attacks might have been justified, some country programs are struggling against enormous obstacles to delivering polio vaccine. Nigeria and Pakistan, for example, both have dealt with deadly attacks on their polio personnel. IMB commentary has at times inadvertently undermined country political support for polio eradication by focusing on program failures without fully balancing them against successes and the difficulty of immunizing children in politically volatile, security-compromised areas. While part of the IMB’s strength is that it is above the day-to-day struggles and can speak only to what needs to be done to eradicate polio, the “ivory tower” approach has at times frustrated and angered health officials. It would be useful to add members to the board who can help the panel better understand the cultural, security, and political environments under which country programs are operating.

Assessments sometimes off the mark—While generally those interviewed said IMB reports and recommendations are valid and often reflect the GPEI’s own view of the program, some recommendations are seen as unrealistic or superfluous. One often-cited example was a recommendation to put a live feed camera into the Nigerian Emergency Operations Center. While the IMB thought the move would make the polio program more accessible and interesting to a broader audience, others viewed it as an attempt to oversee the program in a particularly invasive manner. The IMB also recommended that the GPEI plan its activities based on program needs, financial constraints notwithstanding, a suggestion viewed as not being realistic by those living under strict budgets. In the same report, the board suggested the GPEI convene a global summit on missed children, a recommendation deemed an unnecessary distraction by GPEI leadership since issues facing vaccinators in hard-to-reach areas are context specific and not readily addressed by more global solutions.

Difficulties empirically judging the impact of recommendation responses—IMB reports often remark that the GPEI at various levels has responded to report recommendations, but the assessments lack hard data to back them up. A more definitive response-assessment mechanism would better show whether and how program implementers are reacting to IMB critiques.

More appropriate funding mechanism—IMB is funded through the GPEI core partnership. Funding pays for IMB member travel and meeting expenses and supports 1.5 positions in the secretariat. Additional administrative support and supplies are paid for ad hoc by Sir Liam Donaldson’s office and board members serve pro bono. The panel

37 Independent Monitoring Board of the Global Polio Eradication Initiative Polio’s Last Stand?, 49.
39 Ibid., 24.
would benefit from a more thorough and concrete budgeting process that ensures it has sufficient funds and that it controls its own resources.

The IMB’s Future

The IMB currently is limited to monitoring progress toward the first objective of the Polio Eradication & Endgame Strategic Plan: eradicating polio. Most of those interviewed want to see the board continue until eradication is achieved. Many also want to see its mandate expanded to include other aspects of the endgame plan, particularly polio legacy, although the extension may require board members with a different set of skills and expertise.

Polio legacy activities focus on developing plans to incorporate polio systems, knowledge, and resources into national public health systems and other development initiatives. A primary focus of the effort is expanding polio immunization, surveillance, laboratory expertise, and other assets toward the control of vaccine-preventable diseases beyond polio. Country-level legacy planning is being encouraged by the GPEI and some countries are slowly taking it on. In order to monitor polio legacy planning, the IMB might consider altering its membership to include immunization system experts, donor organizations, and representatives from countries such as India that have led the way in polio-legacy planning. For the IMB to be most effective in monitoring progress toward purposeful polio resource transitions, the GPEI would need to develop clear milestones against which progress could be measured.

The IMB Model—Is It Transferrable?

Nearly all of those interviewed said an IMB-like structure would be useful for other development initiatives, especially those that have the type of complex partnership arrangements found in the GPEI. The model is thought to be particularly well suited to other United Nations initiatives where a large international bureaucracy often stifles honest, critical evaluation. The model could be useful, for example, in international disease outbreak response, such as that conducted for the Ebola epidemic.

There are, however, some caveats. First, the IMB was convened after the GPEI had been in operation for some years and had hit serious roadblocks. This rendered GPEI leaders particularly open to the feedback provided by the IMB. Without program managers’ willingness to listen to IMB critiques, the board would not have the impact it does.

Second, as mentioned earlier, strong leadership and an effective secretariat are also key to the success of the IMB model. The choice of a panel leader is particularly important. It

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must be someone with credibility at the highest levels and who is not in any way beholden to any of the partner organizations involved.

Third, the unique tone and engaging turns of phrase that distinguish IMB reports would be difficult to replicate. Other approaches also could be successful as long as reports were honest and hard-hitting, but also accessible to a non-technical audience.

Last, part of the IMB’s success rests on its ability to focus narrowly on one large but narrow goal: the attainment of global polio eradication. As a result the board has the luxury of ignoring all else and assessing only what countries and the global program need to improve to eliminate polio. Organizing an IMB for other endeavors would entail ensuring that goals and milestones are adequately and narrowly defined so that board members can clearly gauge progress and recommend relevant solutions to impediments.

**Speaking Truth to Power Is a Universal Benefit**

The GPEI is a large, unwieldy global partnership involving national governments, nongovernmental organizations, foundations, civil society, and other stakeholders led by five large organizations headquartered in different cities. Almost by definition, it is bound to have a messy governance structure. While working together toward a common goal, each of the core partners must remain loyal to and embedded in the culture of its own organizations. The IMB was able to take the independent, bird’s-eye view necessary to spot sources of friction and dysfunction hindering the GPEI’s effectiveness. Countries struggling the most with polio eradication are confronted also with myriad other pressing problems including severe economic and social inequality, resource constraints, and violence. The IMB was able to rise above those concerns and help countries focus more clearly on steps they needed to take to increase polio immunization.

While the last several years have been difficult for the GPEI as program managers grappled with new outbreaks and heightened security risks, the initiative also has garnered solid successes. In 2014, India was declared polio free, along with the rest of Southeast Asia. Africa reported its last case of wild poliovirus in August 2014. Program improvements in Nigeria and Pakistan now are bearing fruit and the number of wild poliovirus cases globally as of September 16 stands at 41 compared to 178 at the same time last year.\(^4\) The program also has begun to take on the issue of vaccine-associated polio by introducing IPV into national immunization systems and beginning a worldwide phase-out of OPV. The IMB has been a solid contributor to many of these successes. As global partnerships increasingly become the norm for large-scale health initiatives monitoring mechanisms modeled after the IMB could, under the right circumstances, improve the effectiveness and efficiency of global health management.

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Appendix 1. Annual Number of Cases of Wild Poliovirus Globally since 2000

Wild Poliovirus Case Count: Global

Appendix 2. Annual Number of Cases of Wild Poliovirus in Pakistan, Afghanistan, and Nigeria since 2010

Appendix 3. Timeline of Major Events in Global Polio Eradication

- **1980**: WHA 41.13 is passed, calling for Global eradication of polio by 2000.
- **1980**: WHO Regional Office for the Americas is certified polio-free.
- **1981**: The Global Polio Laboratory Network is founded.
- **1988**: The last recorded case of wild poliovirus in the WHO Western Pacific Region.
- **1990**: WHO European Region is certified polio-free.
- **1993**: WHO Western Pacific Region is certified polio-free.
- **1994**: The last recorded case of wild poliovirus in the WHO European Region.
- **1995**: WPAI sets the goal of eradicating polio by 2000.
- **1999**: The last recorded case of wild poliovirus 2 (WPV2).
- **2000**: The Independent Monitoring Board holds its first meeting.
- **2001**: WHO declares polio eradication a top priority.
- **2010**: India is removed from polio-endemic list.
- **2014**: Intended date for global vaccine switch from trivalent oral polio vaccine (TOPV) to BOPV.
- **2015**: WHO South East Asia Region is certified polio-free.
- **2016**: WHO recommends that polio-endemic countries require vaccinations for entering international travelers.
- **2017**: CDC moves polio operations to its emergency operations center.
- **2018**: One year mark since Nigeria’s last recorded case of WPV.
- **2019**: GPEI releases its Midterm Review (MTR).
Appendix 4. IMB Member Biographies

Sir Liam Donaldson  
*Chair, Independent Monitoring Board for the Global Polio Eradication Initiative*  
*WHO Envoy for Patient Safety*

Professor Sir Liam Donaldson is recognized as an international champion of patient safety and public health. Previously, he was the foundation chair of the World Health Organization World Alliance for Patient Safety, launched in 2004, and is a past vice-chairman of the World Health Organization Executive Board.

Currently, Sir Liam serves as the World Health Organization’s envoy for patient safety and is chairman of the Independent Monitoring Board of the Global Polio Eradication Initiative. In the United Kingdom, he sits as chair of health policy at Imperial College London and chancellor of Newcastle University. Prior to this appointment Sir Liam was the chief medical officer for England from 1998–2010. During this time he held critical responsibilities across the whole field of public health and health care. As the United Kingdom’s chief adviser on health issues, he advised the secretary of state for health, the prime minister, and other government ministers. He has produced landmark reports that have set health policy and legislation in fields such as stem cell research, quality and safety of health care, infectious disease control, patient empowerment, poor clinical performance, smoke-free public places, medical regulation, and organ and tissue retention.

Dr. Nasr Mohamed El-Sayed  
*Assistant Minister of Health, Egypt*

Dr. Nasr Mohamed El-Sayed is assistant minister of health for primary healthcare, preventive medicine and family planning at the Ministry of Health and Population, Egypt. Additionally, Dr. El-Sayed is special adviser to several United Nations agencies.

Dr. El-Sayed has been instrumental in leading the development and implementation of key national communicable disease programs, including polio eradication, the Expanded Program for Immunization (EPI), and strategies for preparedness and combating avian and pandemic influenza. He has extensive experience in AIDS control, both nationally and internationally, and has provided technical advisory support to UNICEF, the Ford Foundation, and various NGOs.

Dr. El-Sayed has published over a dozen papers in peer-reviewed journals, and has vast experience in practical medicine—first as general practitioner in the Rural Health Unit, then as an internist at the General Army Hospital Cairo—and as quarantine physician at Cairo Airport.
Professor Susan Goldstein  
*Community Medicine Specialist*

Dr. Susan Goldstein is program director at Soul City: Institute for Health and Development Communication. She is medically qualified and specialized in community medicine at the University of the Witwatersrand and has 18 years of experience in public health, particularly in health communication and health promotion.

After working for 10 years in clinics in Soweto and Alexandra, South Africa, she specialized and worked at the Johannesburg local government in health promotion. Thereafter, she joined Soul City: Institute for Health and Development Communication where she managed an adult TV series about tobacco, developed and preformed research for four other TV series, and developed a children’s series for 8- to 12-year-olds. She has led a campaign in South Africa (OneLove) against multiple and concurrent sexual partners, overseen a campaign against alcohol abuse (Phuza Wize), and has served on the Afro Region Task Force for Immunization. Dr. Goldstein is an honorary lecturer at the University of the Witwatersrand School of Public Health and teaches at the University of Kwa Zulu Natal. Dr. Goldstein was a member of a polio communication evaluation team in Pakistan in 2012.

Dr. Jeffrey Koplan  
*Vice President for Global Health, Emory University*

In March 2008, Dr. Jeffrey Koplan was appointed vice president for global health at Emory University. He also serves as director of the Emory Global Health Institute, a position he has held since the institute was established in 2006. Dr. Koplan previously was vice president for academic health affairs in Emory’s Woodruff Health Sciences Center, a position he held since joining Emory University in 2002. From 1998 to 2002, Dr. Koplan served as the director of the U.S. Centers for Disease Control and Prevention (CDC).

Dr. Koplan began his public health career in the early 1970s as one of the CDC’s celebrated “disease detectives,” more formally known as epidemic intelligence service (EIS) officers. Since then, he has worked on virtually every major public health issue, including infectious diseases such as smallpox and HIV/AIDS, environmental issues such as the Bhopal chemical disaster, and the health toll of tobacco and chronic diseases, both in the United States and around the globe.

From 1994 to 1998, he pursued his interest in enhancing the interactions between clinical medicine and public health by leading the Prudential Center for Health Care Research, a nationally recognized health services research organization.
He is a master of the American college of physicians and a member of the Institute of Medicine. He has served on many advisory groups and consultancies in the United States and overseas, and has written more than 200 scientific papers.

**Dr. Sigrun Møgedal**  
*Special Adviser, Norwegian Centre for the Health Services*

Dr. Møgedal is a former Norwegian ambassador for HIV/AIDS and global health initiatives of the Norwegian Ministry for Foreign Affairs, with professional and diplomatic engagement in HIV/AIDS, the interface between foreign policy and health, global health governance, architecture, and reform. She is currently special adviser at the Norwegian Knowledge Centre for the Health Services/Ministry of Foreign Affairs, board chair for the Global Health Workforce Alliance, and special adviser to the executive director of UNAIDS.

Previously, she served as state secretary for international development for the government of Norway, chief technical adviser for social sector development at the North American Aerospace Defense Command (NORAD), DIIS director at the Centre for Partnership in Development in Oslo, Norway, and director of health services and community health and development programs for the United Mission to Nepal.

Other assignments have included two terms as a board member of Gavi, the Vaccine Alliance, being a founding board member of UNITAID, and serving as a board member and committee chair of Global Fund for AIDS, TB and Malaria (GFATM). She is founding member of Global Forum for Health Research, has undertaken various assignments in the committee structure of the Norwegian Research Council and the Christian Medical Commission of the World Council of Churches, and has acted as moderator of the Church of Norway Council on International Relations.

**Dr. Ruth Nduati**  
*Associate Professor of Pediatrics, University of Nairobi, Kenya*

Professor Ruth Nduati is an associate professor of pediatrics at the School of Medicine, College of Health Sciences, University of Nairobi, Kenya. She is a pediatrician and epidemiologist who has taught at the University of Nairobi for many years. Her major achievement is her contributions to the understanding of breast milk transmission of HIV and to the integration of prevention of mother-to-child transmission (PMTCT) of HIV in resource-constrained settings.

Currently, Professor Nduati is the principal investigator for a multi-country study coordinated by the World Health Organization (WHO) evaluating the use of antiretroviral therapy during breastfeeding to prevent MTCT of HIV and for a PEPFAR grant implementing PMTCT in Kenyan government health facilities. Professor Nduati is
also engaged in operational research to support the translation of scientific advances in PMTCT into standards of care in Kenya.

Professor Nduati has written extensively on the subject of MTCT of HIV. She also serves as a member of the Treatment Action Campaign (TAC)/HIV, an advisory panel to the WHO HIV unit in Geneva, and is a longstanding member of the Ghent International Working Group on Mother-to-Child Transmission of HIV, the Kenya Pediatric Association, and the Kenya Medical Association.

**Dr. Arvind Singhal**  
*Endowed Professor of Communication, University of Texas at El Paso*

Dr. Arvind Singhal is the Samuel Shirley and Edna Holt Marston Endowed Professor of Communication and director of the social justice initiative in the University of Texas at El Paso (UTEP) Department of Communication. He has also been appointed the William J. Clinton Distinguished Fellow at the Clinton School of Public Service, Little Rock, Arkansas. Dr. Singhal teaches and conducts research in the diffusion of innovations, organizing for social change, and entertainment-education strategy. His research and outreach spans sectors such as health, education, peace, human rights, poverty alleviation, sustainable development, civic participation, democracy and governance, and corporate citizenship.

Dr. Singhal is coauthor or editor of 11 books, three of which have won awards for distinguished applied scholarship; 150 peer-reviewed essays; and over 30 technical and scholarly reports. He has numerous awards for his work in communications, research, education, and commitment to social justice.

He has also served as an adviser to the World Bank, the United Nation’s Food and Agricultural Organization (FAO), UNICEF, UNDP, UNAIDS, UNFPA, U.S. Department of State; United States Agency for International Development (USAID), Family Health International, PATH (Program for Appropriate Technology in Health), Save the Children, the BBC World Service Trust, International Rice Research Institute, Voice for Humanity, and private corporations such as Procter & Gamble (United States and Thailand), Telenor AS (Norway), SpareBank (Norway), and others.

**Professor Michael J. Toole**  
*Deputy Director, Burnet Institute*

Professor Toole has been the head of the Centre for International Health at the Burnet Institute in Melbourne, Australia, since 1995 and is also a professor in the Department of Epidemiology and Preventive Medicine at Melbourne's Monash University. He has a medical degree from Monash University, a DTM&H from the London School of Hygiene & Tropical Medicine, and a diploma in advanced epidemiology and biostatistics from the New England Epidemiology Institute. He is a medical epidemiologist and public health
physician with special interest in communicable disease control, including HIV prevention and care, nutrition, refugee populations, and humanitarian emergencies.

Between 1973 and 1982, Professor Toole worked in rural and refugee public health programs in Thailand and Somalia and was the health coordinator of Oxfam Australia between 1983 and 1986. From 1986 until 1994, he worked at the U.S. Centers for Disease Control and Prevention (CDC), where he coordinated the agency's technical assistance to refugees and displaced populations in Armenia, Bosnia and Herzegovina, the Democratic Republic of the Congo, Ethiopia, Iraq, Malawi, Pakistan, the Russian Federation, Somalia, the Sudan, and Zimbabwe. His recent field work has focused on HIV prevention and primary health care in the Lao People's Democratic Republic, Papua New Guinea, China, and Myanmar. He is a board member of the Three Diseases Fund for Burma/Myanmar and a member of the Technical Review Panel of the Global Fund to fight AIDS, Tuberculosis and Malaria. He was a founding board member of Médecins sans Frontières in Australia.

**Dr. Ciro de Quadros**

*A founding member of the IMB, de Quadros passed away in May 2014*

Ciro de Quadros was the executive vice-president of the Albert B. Sabin Vaccine Institute. A Brazilian national, he dedicated his career to freeing the world of infectious diseases, especially those that disproportionately affect the health and social development of the world’s poorer countries. A pioneer in developing effective strategies for smallpox surveillance and containment, de Quadros served as the World Health Organization’s chief epidemiologist for smallpox eradication on Ethiopia in the 1970s. Following the global eradication of smallpox, he was the regional immunization adviser and then the director of the Division of Vaccines and Immunization for the Pan American Health Organization, for which he successfully directed efforts to eradicate poliomyelitis and measles from the Western Hemisphere, and established innovative planning and managerial processes that helped countries improve their immunization programs. These processes became the model for Gavi, the Vaccine Alliance.

From 2003, de Quadros led Albert B. Sabin Vaccine Institute’s international immunization advocacy programs, with a special emphasis on the introduction of newly available vaccines as well as the sustainability of immunization programs in developing countries. Dr. de Quadros was also the technical adviser on vaccines and immunization for the International Pediatric Association and served as the chairperson of the Pan American Health Organization’s (PAHO) Technical Advisory Group on Vaccines and Immunization.

He was on faculty at Johns Hopkins School of Hygiene and Public Health and the school of medicine at George Washington University. He had over 120 papers and chapters published in peer-review journals and books and presented at conferences throughout the world. He received several international awards, including the 1993 Prince Mahidol
Award of Thailand, the 2000 Albert B. Sabin Gold Medal, the Order of Rio Branco from his native Brazil, the Bernardo O’Higgins Order of Chile, the Order of Sanidad of Spain, and in 2006 was elected into the U.S. Institute of Medicine of the National Academies.
