EDITORIAL

Advancing implementation in maternal and newborn health: Two decades of experience

In the past 15 years, Jhpiego has had the privilege of working with governments and other partners to implement interventions for maternal and newborn health (MNH) in nearly 40 countries. This Supplement to the International Journal of Gynecology and Obstetrics (IJGO) is our attempt to share our analysis and learning from those experiences as the global health community looks toward 2030 and beyond, and to ensure that implementation challenges, as well as the resources required to address them, are an important part of the post-Millennium Development Goals conversation.

The new global paradigm for MNH envisioned by the UN Secretary General’s Sustainable Development Goals and the Global Strategy for Women’s, Children’s, and Adolescents’ Health aims to bring evidence-based MNH interventions to national scale, setting ambitious targets to reach the unreached in every country and end all preventable deaths among women and children. Scale is not only about what works; it is about how to make that which has been proven to work in small, controlled areas apply equally well across all contexts. So we must ask ourselves: What does it take for health systems to reach every woman, every child, everywhere, every time?

The answer to this classic implementation science question is difficult to quantify, but we do have some evidence, and as with any scientific inquiry, we should start with the evidence that we have. The papers in the Supplement have been written by and for implementers, describing in detail what has been accomplished and highlighting lessons about what did and did not work. The lessons themselves will not be new to anyone who has worked in MNH as long as we have, but we believe that their thoughtful analysis and collective and inductive presentation is a unique illustration of the complexity of achieving—and then reinforcing—implementation results. Implementation science for MNH has a long road ahead.

The papers in the first section directly confront the “how” of implementation. Even if we have all the right interventions, we need political commitment and partnerships to bring those interventions to populations in need. Sometimes these elements are beyond the control of implementers owing to contextual factors and prioritizations inherent in real-world public health environments, but there are common principles that can help navigate politics and partnerships more strategically and systematically to reach goals more rapidly and with longer-lasting efforts. We should not, however, sacrifice quality for speed; quality improvement, particularly the linkages between quality and health outcomes, remains a critical but under-funded area of our work.

The second section examines the “who” of implementation, documenting ways to empower all cadres of frontline health workers with appropriate competencies to deliver evidence-based interventions, wherever women and children need them. It is our belief that those who work in MNH must truly embrace task-shifting and community interventions, especially those delivered by community health workers, to reach the unreached and end preventable deaths in the last mile. MNH champions, including the readers of IJGO, play an essential role not only in modeling and echoing technical excellence but also in promoting the responsible task-shifting and community-based delivery that is required to facilitate sustainable impact at scale.

The third and final section explores specific interventions that have or should be considered for scale: core examples of the “what” of MNH implementation. Jhpiego’s experiences in setting up programs for emergency obstetric and newborn care, postpartum family planning, malaria in pregnancy, and prevention of maternal-to-child transmission of HIV show the wide range of implementation factors and the reality that there is no single successful implementation strategy for all interventions. MNH interventions will go farther with a focus on pre-service education, engaging learners as early as possible.

Going forward, we need to harness the power of unlike minds and those of our beneficiaries to approach implementation with the kind of design thinking and crowd-sourced inputs that has benefitted the fields of business and engineering. MNH is at a critical crossroads as the era of the Millennium Development Goals ends and new goals are set. It is time to set goals that are more precise than “skilled care at birth” so we can hold ourselves accountable to coverage at scale, such as use of uterotonics and immediate postpartum contraception. If we are committed to eliminating preventable deaths among women and children, we must convince nations to invest in strengthening systems and in improving quality of care for mothers and newborns, and achieve quality at scale. Just as we found the resources to reach high immunization rates, we must find the resources and political will to implement other MNH interventions and measure that implementation to achieve impact at scale. In doing so, we will not only achieve greater maternal and newborn survival but start to reduce the morbidities that will remain an obstacle far beyond 2030. If we learn to implement better, women and children will receive more effective care and be more likely to return to their families safe and healthy.

Harshad Sanghvi, Jeffrey Michael Smith, Koki Agarwal, Blami Dao, Ronald Magarick Jhpiego

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Conflict of interest

The authors have no conflicts of interest.

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As Editor of the *International Journal of Gynecology and Obstetrics* (IJGO) it was my pleasure to shepherd this Supplement and, as Editor Emeritus, it is my pleasure to thank the authors and guest editors for their contributions. Jhpiego, an affiliate of Johns Hopkins University, was founded in 1974 by Doctor Theodore M. King, Director of the Department of Gynecology and Obstetrics at Hopkins, realizing the need to introduce reproductive health breakthroughs to low-income countries to save the lives of women and improve the health of families worldwide. Since its inception, Jhpiego has been providing education and capacity building for physicians, nurses, administrators, and other pre-service providers, and supporting programs to make these lifesaving skills and services available and accessible. In this Supplement, the experience of Jhpiego in implementing maternal and newborn health is described in order to provide a way forward to address the Sustainable Development Goals (SDGs) and achieve and attain the maternal and newborn development goals of the post-Millennium Development Goals (MDGs) era.

Implementation science promotes the uptake of research findings into routine health care in both clinical and policy contexts [1,2]. It is a new concept and discipline that is the natural extension of translational research, clinical research, outcomes research, and health services research, and melds translational research and health technologies development with health services science, public health, and policy. It is an interdisciplinary science that is of the times and whose time has come. This is complex interdisciplinary work and Jhpiego has consistently evidenced, through its educational programs and demonstration projects, an understanding of the clinical, public health, and policy actions required for the transformation of health care in low-income areas around the world through scientific innovation.

Jhpiego has partnered with FIGO, the International Confederation of Midwives, and national professional societies in projects on emergency obstetrics and newborn care, postpartum hemorrhage, sexually transmitted infections and HIV, family planning (especially endoscopic and postpartum family planning), malaria, and preventing mother-to-child transmission of HIV, to implement science for the public good and show that policy and national and local factors must be considered in the transfer of scientific information to practice.

Jhpiego has long focused on “training the trainers” and, as an early adopter of pre-service education at the medical and nursing school levels, is developing lifelong learners engaged in important work that remains in maternal and neonatal health. The readers of IJGO will find much to learn from the examples and lessons in this Supplement: the “how,” the “who,” and the “what.” I thank Jhpiego not only for its many contributions to our shared vision and goals, but for the partnership that it, as a nongovernmental organization, has shown to FIGO and other professional organizations in achieving our mutual goals of a better world through improved women’s health worldwide.

I also thank the guest editors, Harshad Sanghvi, Jeffrey M. Smith, Koki Agarwal, and Blami Dao, and especially the managing editors of the Supplement, Rehana Gubin and Judith Fullerton, for their efforts and contributions in making it possible.

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**References**


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SUPPLEMENT ARTICLE

Scaling up high-impact interventions: How is it done?

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A R T I C L E   I N F O

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Scale-up

A B S T R A C T

Building upon the World Health Organization’s ExpandNet framework, 12 key principles of scale-up have emerged from the implementation of maternal and newborn health interventions. These principles are illustrated by three case studies of scale up of high-impact interventions: the Helping Babies Breathe initiative; pre-service midwifery education in Afghanistan; and advanced distribution of misoprostol for self-administration at home births to prevent postpartum hemorrhage. Program planners who seek to scale a maternal and/or newborn health intervention must ensure that: the necessary evidence and mechanisms for local ownership for the intervention are well-established; the intervention is as simple and cost-effective as possible; and the implementers and beneficiaries of the intervention are working in tandem to build institutional capacity at all levels and in consideration of all perspectives.

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1. Introduction

As countries push to achieve Millennium Development Goals (MDGs) 4 and 5, increasing attention is being paid to the equitable scale-up of proven high-impact interventions for reproductive, maternal, newborn, and child health [1]. Experience has demonstrated that technical interventions that are known to be effective at a small scale under tightly controlled conditions cannot naturally be assumed to be widely adopted and scaled up to cover large segments of the population, despite scale being essential for population-level impact. Scale-up is challenging, and it is not always successful.

Over the past 40 years, Jhpiego and its partners have assisted various countries, through local efforts and global alliances, to achieve some level of scale-up of maternal and newborn health (MNH) interventions across the global development spectrum. Substantial scale-up activity has occurred over the last decade, particularly with support from USAID via its flagship Maternal Child Health Integrated Program (MCHIP), which supported programmatic efforts in MNH in more than 40 countries from 2008 to 2014 [2] and which was led by Jhpiego in partnership with Save the Children, John Snow, Inc., Program for Appropriate Technology in Health, ICF International, Population Services International, Broad Branch Associates, and the Johns Hopkins University’s Institute for International Programs. While the specifics of Jhpiego’s scale-up approach have differed depending on the local context, experience has allowed it to distill common, practice-based principles. As a result, Jhpiego now has a more refined and articulable approach to scale-up that we, as authors representing Jhpiego and partners who have worked closely with Jhpiego, aim to share for the benefit of other public health practitioners.

For the purposes of the present article, we derive our definition of scale-up from ExpandNet, a community of practice for global public health practitioners that is focused on developing and promoting best practices at scale [3]. ExpandNet’s definition encompasses both the process and the objective of increasing coverage of an intervention: “deliberate efforts to increase the impact of health service innovations successfully tested in pilot or experimental projects so as to benefit more people and to foster policy and programme development on a lasting basis” [3]. Progress toward expanding levels of coverage for an intervention is sometimes termed “horizontal scale-up.” The process of institutionalizing an intervention at all levels of a local implementing organization (usually the ministry of health), so that it can manage and sustain an intervention at a high level of horizontal scale-up, is sometimes termed “vertical scale-up.” After stating the principles of scale-up that have emerged from our work, we will describe three illustrative cases in which Jhpiego’s and its partners’ deliberate efforts to assist vertical scale-up using these principles have led to successful horizontal scale-up.

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1.1. The principles of scale-up

There is a large body of literature discussing the variety of frameworks that have been developed to guide the effort to scale-up health interventions [4–6]. The scale-up principles that Jhpiego and partners have crystallized for the purposes of their collective implementation efforts in global MNH are presented in Box 1. These principles are based on the logic of the ExpandNet framework shown in Fig. 1 [7] but contain modifications that have been adapted from insights in other frameworks [8–10].

The ExpandNet framework links five interacting pieces: the “resource team” (in this case, a group of technical assistance organizations led by Jhpiego or a partner), works in concert with the “user organization(s)” (i.e. the ultimate implementer, usually a ministry of health) to help scale-up an “innovation,” or intervention, through a “scaling-up strategy” within the relevant “environment,” or context.

Scale-up tends to happen in phases similar to that of product introduction [11], as shown in Fig. 2, beginning with the introduction of an intervention, during which the intervention is piloted by the resource and health system managers learn the factors necessary for its successful local application and contextualization. As ministries of health increase geographic coverage of the intervention, scale-up moves to an early expansion phase. In this phase, the resource team works with the ministry of health to identify needs for capacity-building, and to continue to refine the intervention based on evidence from pilot experiences. As the ministry of health attains coverage of national scope, or enters the mature expansion phase, issues of institutionalizing the intervention and maintaining quality and fidelity become the most crucial considerations.

A common understanding in the process of scale-up, which is implied in the 12 scale-up principles, is that no organization or agency works independently or in isolation. In fact, Jhpiego has always worked in an environment characterized by the leadership of relevant ministries, alliances with partners, and multilateral networks that address the specific actions required for expansion of coverage within complex health systems.

The three recent illustrative case examples of the scale-up principles are outlined in Table 1 and described in further detail below. Each case involves a key MNH problem, and each is in a different phase of scale-up.

2. Managing newborn asphyxia: Ensuring newborn resuscitation through the Helping Babies Breathe approach

Almost three million newborns die each year, and the majority of these deaths occur within 24 hours of birth. Globally, 23% of newborn deaths, or 700,000 annually, are due to birth asphyxia [12]. Thus, birth asphyxia has been targeted by the global public health community as a priority issue. As described in Box 2, Helping Babies Breathe (HBB), a methodology developed by the American Academy of Pediatrics (AAP) in 2009 to address birth asphyxia [13], expands upon time-tested clinical guidelines using simple, focused learning tools and approaches for newborn resuscitation. This new methodology and training package has proven instrumental in moving toward effective implementation because of its emphasis on mastery and consistent application of the initial steps of resuscitation, which are respiratory support through stimulation and use of a self-inflating bag and mask when necessary. HBB focuses on prompt resuscitation during the Golden Minute (APP, Elk Grove Village, IL, USA) after childbirth as an integral component of essential newborn care (ENC). The HBB approach adheres to a simple assessment and intervention pathway, and development and maintenance of skills through simulation, using a low-cost, life-like anatomic model, both in the learning venue and at the workplace. The HBB training package can be used alone or integrated into existing national training materials for ENC, emergency obstetric and newborn care, or integrated management of newborn and childhood illness. The desired output is to have at least one person who is skilled in newborn resuscitation at every birth [14].

MCHIP embraced the HBB approach for the management of asphyxiated newborns and included it in all of its neonatal programs. Both directly and as a member of the HBB Global Development Alliance (GDA), which was established in June 2010, MCHIP worked with USAID missions, other technical agencies (most significantly AAP and Laerdal Global Health), host country governments, professional associations, and nongovernmental organizations to facilitate the scale-up of HBB in 54 countries as of April 2013 [15].

The MCHIP strategy for scaling up proven interventions was to galvanize action at both the global and the country level. MCHIP’s direct support for implementation included: regional training of trainers in Asia and Africa; partnership with AAP for development of an HBB training video and implementation guide; in-country mentorship through a variety of GDA members; and HBB website maintenance. MCHIP’s breadth allowed cost efficiencies, such as the waiver of copyright fees and access to training models at cost.

Facilitating collaboration among partners, the GDA achieved progress to scale more rapidly than any partner alone because each partner could take on specific roles. For example, AAP developed the technical evidence base, Laerdal provided initial training materials for national
and regional training events, and MCHIP supported implementation in some countries, and policy changes in others. A large trial in Tanzania, led by AAP, demonstrated the mortality impact of HBB [16]. In parallel, MCHIP used implementation science approaches in Malawi and Bangladesh to document processes for scale-up at the country level, evidence that was used to support training, mentorship, and quality assurance in other countries, including Kenya, Mozambique, and Zambia.

At the country level, a key scale-up principle for MCHIP was to support governments and their in-country partners to build on existing platforms to introduce or expand HBB. In line with this principle, consultative advocacy and planning meetings were held with relevant divisional heads within ministries of health regarding the potential role that HBB could play in reducing newborn deaths due to birth asphyxia, focusing on the ministries’ decisions to endorse the introduction/expansion of HBB. This initial planning served to ensure country ownership, coordinate approaches, and mobilize multiple resource channels. During the planning process, decisions were made about: (1) the level of the healthcare system at which the intervention would be delivered; (2) the cadre of healthcare worker to train, especially midwives, and the selection of master trainers, particularly those working in the maternity or neonatal unit; (3) service delivery strategies to meet each country’s needs, be it vertical (as in Bangladesh and Malawi) or integrated (as in Ethiopia); (4) a resource mobilization strategy for training, supervision, and service delivery of supplies; (5) a strategy for wide geographic coverage, phased in based on resource availability; and (6) an ongoing monitoring and evaluation component, using selected indicators. Most countries mobilized adequate resources to initiate HBB-related activities in selected regions, provinces, or districts while advocating for additional resources to scale nationwide. A few countries—for example, Bangladesh—were able to mobilize the needed resources for a nationwide scale-up at the start.

Bangladesh is an example of a country in which the decision to pursue national scale-up was reached because of use of local evidence generated through HBB implementation. Annually, approximately 30,000 newborn deaths in Bangladesh are due to birth asphyxia. To reduce this burden, MCHIP, in partnership with AAP, committed modest funding to study the feasibility and impact of introducing HBB in Bangladesh. In collaboration with the Ministry of Health and Family Welfare (MoHFW), Bangabandhu Sheikh Mujib Medical University (BSMMU), the International Centre for Diarrheal Disease Research, Bangladesh, and Save the Children’s Saving Newborn Lives project, MCHIP supported the introduction of HBB in selected public sector hospitals and clinics. An HBB champion emerged at BSMMU to lead the study, which showed that HBB, within the context of ENC, was feasible for all skilled birth attendants (SBAs) at both the facility and community levels. The study data and demonstration of learning materials allowed the HBB champion to foster local ownership of the intervention by engaging other stakeholders to discuss national scale-up. At a national conference in September 2010, the Minister for Health instructed his directorate heads to scale-up HBB across the country. This leadership and commitment, in the presence of stakeholders and donors, became a pivotal point for mobilization of resources for a nationwide HBB scale-up. The scale-up process is ongoing, led by the MOHFW, with BSMMU as the technical implementation leader. Through this coordinated and locally championed effort, HBB services have been rolled out to 55 districts in Bangladesh, involving over 21,000 health workers, since 2013 [17].

3. Addressing maternal mortality in Afghanistan: Rapidly expanding midwifery education to overcome human resource shortages

The expansion of midwifery education in Afghanistan exemplifies application of the principles of scale-up to a larger health system component—human resource development—at a national level. Among the biggest challenges facing the Ministry of Public Health (MoPH) in Afghanistan in 2002, after 23 years of conflict and isolation, was the alarmingly high maternal mortality ratio, estimated at

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**Table 1**

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Health problem</th>
<th>Location</th>
<th>Phase of scale-up</th>
<th>Lead technical organization</th>
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<tbody>
<tr>
<td>Helping Babies Breathe (targeted newborn resuscitation package)</td>
<td>Birth asphyxia</td>
<td>Multiple countries</td>
<td>Early to mature expansion, in various countries</td>
<td>Save the Children</td>
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<td>Training and deployment of midwives</td>
<td>Low rates of skilled attendance at birth and limited human resources</td>
<td>Afghanistan</td>
<td>Mature expansion</td>
<td>Jhpiego</td>
</tr>
<tr>
<td>Advanced distribution of misoprostol for self-administration at home births</td>
<td>Postpartum hemorrhage</td>
<td>Multiple countries</td>
<td>Introduction to early expansion</td>
<td>Multiple, sometimes Jhpiego</td>
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1600–2200 per 100 000 live births [18]. At that time, national prenatal care and SBA rates were 16% and 14%, respectively, and in rural areas the rates were even lower, at 8% and 7% [19]. The Afghan MoPH recognized the urgent need to comprehensively revitalize the health system for the provision of maternal health services but also recognized the limitations inherent in a postconflict environment; therefore, it focused early and intensively on building human resource capacity.

According to the MoPH, in 2002 only 467 midwives were available in the country to serve an estimated population of 24.5 million people [20]. Midwifery education in the country’s five schools had been suspended by the Taliban, and no new graduates had emerged in more than seven years. Nevertheless, midwives were acknowledged as the preferred providers of maternity services, given cultural preferences for traditional providers. Formation of the AMA, with branches in almost every province of the country, promoted respect for the profession and an understanding of the responsibilities that come from being a member of a profession. New graduates were asked to recite the midwifery oath upon graduation, which formally conferred on them a mantle of responsibility. For many young women in Afghanistan, membership in the AMA was the first time that they had been members of any group outside their own family networks. All of these components created numerous champions not only at a national level, but also at the community level, which promoted respect for the educational programs and the graduates, fostered demand for admission, and, theoretically, promoted sustainability.

The results of adherence to these scale-up principles were remarkable. Between 2002 and 2004, the five government midwifery schools reopened, and 17 new community midwifery schools were established at the provincial level. By 2012 the country’s accredited midwifery education programs had graduated 3827 new midwives. More recently, in response to the results of targeted evaluation studies and government strategic planning for the midwifery profession, the nationally approved curriculum has been revised and program length expanded [30–33]. Some schools have also ceased operation in response to changing community characteristics and needs. In 2013, there were 970 students enrolled in midwifery education in the remaining 24 schools in the country [33]. A number of private midwifery schools have also opened, although their adherence to the guiding principles is less clear. Graduates have entered both the public and private sectors, and while there are several constraining factors [34], retention of graduates in the workforce remains high [35]. Recent data indicate that 96% of women educated through the community midwifery program remained in their home communities, and 74% of women educated through the government midwifery programs in the larger cities continued in their urban workplace [36].
4. Preventing postpartum hemorrhage with misoprostol: Three pills that can save a life

Postpartum hemorrhage (PPH) remains the leading cause of maternal mortality globally [37]. It is a major public health problem, and prevention has emerged as a priority under MDG 5 [38]. Misoprostol was first studied by El-Refaey in 1997 for its clinical ability to prevent PPH [39]; its clinical efficacy has been further refined in subsequent trials [40–45].

Advance distribution of misoprostol for self-administration (ADMSA) has the appeal of a classic public health intervention: it can be implemented at the moment of need, regardless of whether the practitioner is present; and it has the potential to reach a large segment of the vulnerable population. Misoprostol for PPH prevention is empowering, effective, and pro-poor, preferentially impacting those with limited resources [45]. The attractiveness of a simple message that a pill could prevent a woman from dying in childbirth at home helped to attract the attention and interest of the global community as a potentially scalable intervention. In addition, the intervention addresses a classic public health reality: the clinical practitioner cares for the patient who reaches the facility, while the public health practitioner must care for the client who does not.

The first programmatic effort to use misoprostol for the prevention of PPH at homebirth was made by Jhpiego in 1999 in Indonesia [46]. This experience was notable because it focused on a comprehensive approach to PPH reduction by addressing births in a facility as well as births at home. Only a single program, in the Gambia, had adopted this approach [47] until a randomized controlled trial in India demonstrated that the administration of misoprostol reduced the rate of acute PPH at home birth from 12.0% to 6.4% compared with the placebo [48]. This additional evidence fostered greater global enthusiasm and accelerated programmatic activity.

Even more evidence was needed; however, to generate additional resources and willingness by countries to explore whether prevention of PPH at home birth using misoprostol was applicable to their context. Jhpiego and partners therefore adapted the program from Indonesia for two operations research studies—one in Afghanistan [49] and the other in Nepal [45]—to refine the model and focus on ADMSA immediately after birth. With the support of multiple funders, numerous research and programmatic organizations took up the issue of implementation to expand the use of misoprostol for PPH prevention. Between 2006 and 2012, an additional 15 programs were started in 11 countries [50]. The sheer level of activity in the area may have influenced other countries to consider registering misoprostol for the PPH indication in order to establish similar programs for their own populations (Fig. 3) [51].

Despite enthusiasm within the global health community, WHO felt that the evidence for ADMSA remained incomplete [52]. The PPH prevention guidelines issued in 2007 and 2009 specifically restricted use of misoprostol to facility settings [52,53], which tempered progress at the country level. National ministries of health and other donors were reserved in their adoption of the approach, awaiting WHO’s firm endorsement. In a 2012 survey, although 16 countries had piloted the ADMSA approach, only five were scaling it up [54].

In light of this, or perhaps because of this, champions and a global community of practice have emerged to advocate for the ADMSA approach and bring supporting evidence within the reach of key stakeholders. Since 2005, when the Nepal and Afghanistan programs were initiated, Jhpiego has assisted in the initiation or expansion of PPH prevention programs using misoprostol in an additional 12 countries (Bangladesh, Ethiopia, Guinea, Liberia, Madagascar, Malawi, etc.)

**Fig. 3.** Global regulatory approvals for misoprostol as of May 2013. Reprinted with permission from Venture Strategies Innovations [51].
Mozambique, Nigeria, Pakistan, Philippines, Rwanda, South Sudan) [55,56], and other partners have done the same in another eight countries (Burma, Ghana, Kenya, Senegal, Somaliland, Tanzania, Uganda, Zambia) [50,57]. Jhpiego has supported widespread dissemination of its findings from these programs to ensure that discussion of ADMSA has remained prominent at numerous regional and global meetings, including the International Federation of Gynecology and Obstetrics’ (FIGO) conferences in Cape Town and Rome in 2009 and 2012, the Postpartum Hemorrhage Prevention meeting in Bangkok in 2005, and MCHIP regional conferences in Addis Ababa and Dhaka in 2011 and 2012. These strategic engagement opportunities have contributed to calls for providers from Asia and Sub-Saharan Africa to scale up the intervention [58]. Misoprostol is now recognized by the global health community as an essential commodity, and its availability is being enhanced through the UN Commission on Life-Saving Commodities for Women’s and Children’s Health [59].

5. Discussion

Although the ultimate goal of scale-up (i.e. high, effective coverage) is similar across all programs, there is no single route to scale-up. Basic research and practical experimentation with several pathways to scale-up have, nevertheless, generated a number of lessons learned, particularly in low- and middle-income countries [2,60]. Country ownership, including the engagement of both program-level champions and the community, is key [10,61].

The rapid expansion of a technical intervention—be it a clinical or educational one—is facilitated by simplicity and standardization, clear evidence of effectiveness, dedicated champions, local capacity, adequate resources, and national or global ownership. Compelling messages, whether about simplified techniques for the resuscitation of newborns or medications to prevent PPH in home births, make the intervention understandable. Better comprehension likely encourages partners to accept and promote the intervention and push it beyond the trial or pilot stage.

As seen with the use of misoprostol for PPH prevention, clinical and programmatic evidence is necessary to build technical consensus for an intervention. Clinicians, professional associations, governments, and global advocates need data on feasibility and effectiveness to justify the promotion of one intervention over another or the use of a selected intervention where previously none was available. There will be countries who are early adopters, willing to initiate programs based on clinical evidence alone, while other countries need programmatic evidence, cost-effectiveness data, or population impact data to adopt new and innovative approaches. For this reason, new programs must publish their findings, and ongoing programs must continue to monitor and evaluate and share their lessons learned. Furthermore, new research and modeling approaches, such as that used to quantify the impact of scaling up midwifery, can help to develop new interest or to sustain commitment to scale up strategies [62].

Yet even with data, programs sometimes cannot gain the necessary foothold without dedicated champions who present the case time and again to the cautious and the skeptical. The success of the Afghanistan midwifery experience required champions at all levels: in the MoPH and its multiple departments; among the development partners, both as leaders and implementers; within professional associations, such as the AMA; and among the population of young women being educated and mothers being served. The same can be said for the HBB resuscitation approach and the use of misoprostol for prevention of PPH. The role of a champion must not be undervalued, for champions are the ones who repeat the message, craft the approach, navigate the barriers, and motivate the masses.

Finally, adequate resources, combined with national ownership and global technical consensus, have enabled the interventions profiled to be taken further and deeper into health systems, achieving institutionalization and sustainability. The HBB GDA is a collection of dedicated and experienced professionals, organizations, donors, and implementers who mobilize and direct resources toward global impact for newborn resuscitation. It has helped increase and direct donor funds, ensured resources for evaluation, and untangled the logistics of commodity security. Donors in Afghanistan generously supported the midwifery education environment, in part due to the MoPH’s demonstrated commitment to its vision and the structured pathway pursued by Jhpiego and its partners.

Constraints abound, however [63–65]. Continued expansion requires that all the principles of scale-up are adhered to for a substantial period of time. Moving from pilots to expansion to scale requires the development of systems and the collection of data. Institutionalization of the intervention requires drafting and adhering to new policies and human resource procedures, modifying pre-service education curricula, and updating faculty. Data on the extent of coverage and achievement of scale can come only after the development of appropriate indicators and the modification of health information systems. Achievement of scale requires the development of systems, often in places where the systems themselves are barriers to scale. Sustaining scale-up and maximizing equity at scale are critical challenges going forward.

6. Conclusion

Achievement of coverage at scale of certain fundamental interventions is both necessary and achievable. By identifying and adhering to principles and processes, Jhpiego, over its 40-year history and with its numerous partners, has laid a path for moving from innovation to scale. As demonstrated by the three case examples, programs are advised to focus on the essence of the intervention to be scaled; to plot a willful strategy built on evidence and informed through local ownership; and to engage and mobilize both implementers and beneficiaries in the capacity-building and institutionalization processes necessary to achieve national coverage.

Conflict of interest

The authors have no conflicts of interest.

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COMMENTARY

Best practices for a successful MNCH partnership that an external evaluation could never find: Experiences from the Maternal and Child Health Integrated Program

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ABSTRACT

Partnerships for maternal, newborn, and child health (MNCH) are increasingly prevalent, yet little has been published about the possible reasons for their success or failure. In this commentary, we assess the presence of four principles for a successful collaborative partnership—clear goals, clear roles, trust, and commitment—within the Maternal and Child Health Integrated Program (MCHIP), an MNCH partnership among eight implementing organizations that was funded by USAID from 2008 to 2014. MCHIP made substantial strides in developing clear goals and partner roles, and despite external constraints, to develop the trust and commitment needed to work in an interdependent manner. Future collaborative MNCH partnerships should pursue a shared understanding of these four principles as early and often as possible to ensure success.

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1. Background

Partnerships have been described as “the development approach of our time”[1]. Indeed, the sheer number of partnerships undertaken in the development field in recent decades signifies overwhelming confidence in the comparative advantage of these joint ventures. In global health, the Global Alliance for Vaccines and Immunization, the U.S. President’s Emergency Plan for AIDS Relief, and the Global Fund to Fight AIDS, Tuberculosis and Malaria are just a few of the most well-known examples of development-focused partnerships[2–6].

These “purposive strategic relationships” among governments, institutions, private entities, and individuals have understandable appeal in the pursuit of global health goals; many of these goals, such as the reduction of maternal and newborn mortality, cannot be achieved without comprehensive technical, contextual, and administrative expertise[7]. Partnerships are known by a range of labels—alliances, networks, coalitions, and associations—but in almost all cases involve multiple independent organizations seeking to accomplish complex initiatives that would otherwise be unattainable by a single entity[7].

While there is ample literature, especially from the business community, on partnerships, we found no clear attempt to distinguish among their different structures, even though some distinctions readily emerge. Some development partnerships remain, intentionally or not, at a low level of coordination, ensuring that constituents’ activities are synchronized but not necessarily linked. Others proceed to a higher level of cooperation, or integrated planning to achieve mutually beneficial objectives. Still others strive for full collaboration, pooling resources to undertake common activities, with joint problem-solving and decision-making at every turn.

In the global maternal, newborn, and child health (MNCH) field, the Partnership for Maternal, Newborn and Child Health (PMNCH) most closely resembles a coordinated partnership, harmonizing a research and advocacy platform to guide independent endeavors by its constituents in these interlocking technical areas[8–10]. The Health 4+ partnership, by contrast, appears to function as a cooperative partnership, aligning into one work plan the country-specific efforts of all relevant United Nations agencies in pursuit of Millennium Development Goals (MDGs) 4 and 5[11]. This partnership stops short of actually executing activities under a single umbrella agency.

In this commentary, we assess the third type of partnership identified from the literature, a collaborative partnership funded by USAID that we have managed: the Maternal and Child Health Integrated Program (MCHIP). There are many published external evaluations of partnerships that determine whether such entities were able to meet their objectives, but these evaluations are often not intended—or able—to offer insight into how or why objectives were or were not met[12,13]. Given the scarce resources and ambitious agenda in MNCH in particular, we aim to contribute our own assessment of our partnership’s internal dynamics and provide guidance to future
partnerships on ways to build better collaborative partnerships for MNCH. While this paper may be focused on how a USAID-funded project brought together so many partners who worked well together, the issues and recommendations should be valid for most collaborative partnerships.

2. A conceptual framework for evaluating MNCH partnerships

The large body of social science literature about partnerships reveals certain fundamental characteristics of a solid partnership: strong management; well-defined goals; carefully-considered membership and representation; open lines of communication; core processes for monitoring and evaluation; and strategies to overcome obstacles and adjust policies and tactics when necessitated by the external environment [3,7,16,17]. Conversely, there are some commonly cited reasons for partnership failure: among others, poor planning, inadequate organization, lack of mutual dependence, competing interests, battles over authority, and micromanagement or lack of management, especially of resources [2,7].

Drawing from this literature but seeking to distill a few easily-discriminable measures of collaborative partnership success, we isolated the following four principles: clear goals; clear roles; trust; and commitment (Fig. 1). The four identified principles loosely correspond to USAID’s own definition of “partnership” as “an association between USAID, its partners and customers based on mutual respect, complementary strengths, and shared commitment to achieve mutually agreed upon objectives” [8].

“Clear goals” refers to partners’ collective and explicit agreement on shared objectives, often through the creation of formal partnership agreements, or unified strategic and operating plans [1,17,18]. Maintaining clear goals for the duration of the partnership requires procedures to monitor progress and a mechanism for renegotiation and mid-course adjustment [17].

“Clear roles” emphasizes the place of each individual partner in relation to the whole and creates a shared vision of success. The most successful partnerships articulate the strategic intent behind each partner’s participation in the alliance and consider the unique competencies that each partner brings [2,3,17]. While multiple partners can assume leadership positions for different, selective aspects of work, it is difficult to entirely avoid some overlap and duplication of scope. There must be a clear center of oversight and decision-making authority, the “convener,” to allocate roles and diffuse—or ideally prevent—tensions [18].

“Trust” and mutual interdependence rarely exist at the outset of a partnership; instead, they must be built over time through high-quality communication among partners [1,3,17]. At a minimum, a partnership should develop a set of communication norms that encourages widespread sharing and dissemination of accomplishments, obstacles, next steps, and special acknowledgement of individual partner contributions [16,18]. Trust often arises when the convener is “capable of stepping back to allow others to come forward to fill needed roles” [17]. Trust can also be built through transparency in decision-making, with the convener communicating clearly across the partnership.

“Commitment” is generally presumed when a partner elects to join a partnership, but partners inevitably differ in their allocations of time, resources, influence, and priorities [19]. Recognizing these differences and continually reaffirming partner interest and investment allows other partners to adjust their expectations of the partnership over time [2]. Every partnership also needs a well-coordinated exit strategy, a plan for its dissolution and eventual transfer of responsibilities to other stakeholders [17].

3. Application of successful collaborative partnership principles to MCHIP

MCHIP began in 2008 as USAID’s flagship program for MNCH, a US $600 million Leader with Associates Cooperative Agreement “designed to support the introduction, scale-up and further development of high-impact MNCH interventions” within interested countries in which USAID works [20]. MCHIP also subsumed the functions of five pre-existing USAID projects relating to maternal and neonatal health: ACCESS, BASICS III, Immunization BASICS, POPPHI, and CSTS+ [20]. In doing so, it joined teams from the following implementing organizations, each of which had its own extensive international reach: Jhpiego Corporation (Jhpiego), as the prime partner; John Snow, Inc.; Johns Hopkins University/Institute for International Programs; ICF Macro, Inc.; Program for Appropriate Technology in Health (PATH); Save the Children; Broad Branch Associates; and Population Services International (PSI) [20]. As far as we know, MCHIP was the largest single financial commitment ever made by USAID for maternal and newborn health and child survival and a key investment in USAID’s expanding portfolio in those areas, which had increased in size from US $361 million in 2001.

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Fig. 1. Principles of successful collaborative partnerships.
to US $522 million in 2008 [21]. Because USAID provided the impetus and funding for MCHIP, we do not consider USAID itself to be a partner and instead analyze the dynamics among the eight constituent organizations. To analyze the role of USAID—or any donor—in the effectiveness of a partnership that it funds would need a separate commentary.

3.1. Clear goals

MCHIP used “integration” in its name, but the meaning of that term—and, by extension, MCHIP’s overarching goals—was not clear at the partnership’s outset. Some thought that MCHIP merely integrated the five pre-existing projects to provide a “one-stop” source for USAID-funded technical assistance across MNCH technical areas, while others expected MCHIP to introduce integrated programming approaches that would bridge the typical technical area silos within MNCH [22]. The partnership therefore employed a management consultant who was not affiliated with any partner to facilitate extensive discussions among the partners and with the donor about expectations and translate those discussions into a strategic plan and an initial set of “partnership principles.” While conflicting opinions about the partnership’s goals persisted throughout its duration, these partnership principles provided a strong foundation for future discussions. The requirements of the program as outlined by the donor reflected the need for one organization to serve as the “prime” partner, or contractual counterparty. Jhpiego, as the prime partner, therefore established “teaming agreements” with each of the other partners that provided platforms for negotiation and commitment. In addition, during the start-up phase, the partners debated the pros and cons of various partnership models and absorbed as many best practices as possible from these models into the teaming agreements. Based on these teaming agreements and discussions about the partnership principles, a number of more pragmatic “operating principles” emerged, the most fundamental of which are listed in Box 1. While these operating principles were supposed to be adopted and implemented both at the central level and by each of the partnership’s country offices, some offices were more conformant than others based on their history and leadership as well as their USAID country mission’s understanding of MCHIP’s goals.

MCHIP’s management structure developed slowly over the first year, as partners merged their unique technical work streams, office cultures, and administrative systems into one unified program. Jhpiego, as the prime partner, assumed responsibility for strategic leadership but delegated most other authority to an Executive Management Team (EMT) composed of staff with demonstrated experience managing complex programs from several “core” partners. For example, decisions about which partners would be involved in a given country program were made by the EMT based on the operating principles and the technical focus for each country. Strategic considerations such as cost efficiency and the strength of each partner’s in-country presence and mission preference were considered as well. The project director decided the partner lead when the EMT could not reach a consensus. Box 2 summarizes the routine practices for MCHIP’s EMT meetings and demonstrates the way in which the joint management undertaken by the EMT proved particularly useful in identifying issues that needed to be addressed among the partnership as a whole and reviewing whether the partnership’s collective efforts were meeting its goals. Initially, the partnership had also planned a “Partnership Management Team” that would help execute administrative and financial decisions made by the EMT, but this team did not meet consistently to support implementation of these decisions.

As a check on the EMT’s internal assessments, MCHIP continued to employ the same management consultant to track the partnership’s progress toward its strategic objectives and advise all partners during external evaluations. MCHIP also commissioned an internal mid-term review by the management consultant to focus on areas of implementation that could be strengthened and solicit opinions widely from all partners as well as from the donor, USAID [22]. The early introduction and continuity of this trusted independent consultant might have contributed to the productive relationship between the partners and its evaluator. As a result of the mid-term review, MCHIP modified its operating principles to align with the review’s findings that MCHIP needed better internal communication and knowledge sharing. For example, the review highlighted the low reliance by partners on MCHIP’s external website or on the internal, web-based “Sharepoint” site that was established to serve as a central repository for documents and as a space for collaborative discussion. Improvements were made to respond to this shortcoming as this represents an important platform to communicate and reinforce clear goals; however, access remains problematic for country offices. Still, the review provided the opportunity to isolate common problems and devise solutions.

Box 1
Operating principles of the Maternal and Child Health Integrated Program (MCHIP).

1. Decentralize management of country activities to the greatest extent possible to build in-country capacity and champions, maximize efficiency, ensure rapid start-up, and contain costs.
2. Maintain maximum responsiveness to the donor while being sensitive to the planning needs of each partner.
3. Assign lead responsibility to one partner per country, based primarily on the scope of work and the technical areas identified, but with consideration of in-country capacity and cost efficiency.
4. To the extent practicable, establish an MCHIP country office where all MCHIP staff, regardless of partner affiliation, will be co-located. The lead partner in each country will be responsible for overall management of the office.
5. Create and follow branding guidelines.
6. Allow each partner to manage and budget its own in-country activities if it has sufficient staff and capability, except when there are administrative requirements for or substantial efficiencies achieved by centralization.
7. Encourage partners to hire their own technical staff to support their area of expertise, but recruit cross-cutting technical staff, such as monitoring and evaluation officers, through the lead partner in each country, balancing the hires equitably among the partners.

Box 2
Routine practices for Maternal and Child Health Integrated Program (MCHIP) Executive Management Team meetings.

• Occur weekly with few exceptions.
• Chair ed by the Deputy Director, who is not affiliated with prime partner.
• Review and respond to questions elevated for management decision.
• Focus on project-wide issues, including managing the relationship with the donor.
• Invite presentations by partnership staff of major successes and challenges.
• Notes prepared with follow-up actions that are revisited at future meetings.
3.2. Clear roles

MCHIP united eight implementing organizations that are all leaders in the field of MNCH and possess a number of similar competencies. Fig. 2 represents the working relationship among these partner organizations that resulted from internal deliberation about organizational strengths and technical leadership capabilities. Recognizing that issues of “role creep” and role confusion would be a recurring problem, MCHIP established a Corporate Representative Team (CRT) at its inception that was comprised of one senior corporate representative for each partner. The CRT met quarterly for the first year and then, as roles became better defined, twice a year thereafter. Jhpiego’s senior leadership also met separately with each other partner once a year to ensure that all were satisfied with their scope of work. In these meetings, and in other informal opportunities to comment, partners gave generally positive reactions, even those whose roles became narrower than originally conceived and were expected to have concerns. A more routine partner assessment, through the CRT or otherwise, would have been useful.

The EMT served as the partnership’s center of oversight and “convenor,” and although it did not include all partners, representation reflected those with cross-cutting functions across the program. While members were employed by different organizations, they could only perform their functions successfully if partners came together in a coherent, meaningful way. Accordingly, it was felt that this group was representative enough to make decisions fairly and inclusively. In fact, the donor sometimes engaged in direct communications with the EMT, instead of with the partner leading the relevant scope of work, because it was a more efficient way to reach all partners about management issues. There was one role, financial control, that Jhpiego was not able to share or delegate, largely because the partnership was not an independent legal entity. Some partners expressed frustration with this outcome because it reduced budgetary transparency and created significant administrative hurdles caused by inserting one partner’s financial procedures into another partner’s operational decisions. Jhpiego addressed these challenges by developing templates to share budget inputs between partners, leaving budgetary decisions to individual project teams, and making funds available to partners before final approval for projects has been obtained. Although the perceived lack of transparency was a consistent challenge for the partnership, the roles themselves were shared to the extent possible under the terms of the program’s agreement.

Fig. 2. Partner roles within the Maternal and Child Health Integrated Program (MCHIP).

3.3. Trust

Most of the MCHIP partners had never formally collaborated before, and some had directly competed against each other for prior USAID awards, creating understandable apprehension about working together and with the common donor. The EMT—and the diplomatic personalities appointed to it—was instrumental in providing a forum to build trust among partners, sharing best practices and expressing concerns about competing organizational priorities and management strategies. One comment made during MCHIP’s internal mid-term review captured this surprising openness:

“I think that the culture of communication that we’ve established between partners on this project, while it still has some occasionally rocky places, is actually pretty amazing in that none of the main core partners seem to be shy about voicing any concerns that they have, and the group commits to resolving the issues” [22].

The culture of open communication within the EMT and at the partner leadership level proved much easier to foster among partnership staff who were co-located in the same office as the EMT than among other staff who were located remotely or in country offices. Face-to-face meetings, including weekly EMT meetings and monthly staff meetings in which the EMT reported major decisions and lead partners presented their successes, were extremely conducive to generating this solidarity, but it was also important, and often difficult, to have face-to-face interactions outside of formal meeting structures. High-quality communication requires an understanding of each other’s motivations and typical reactions that cannot easily be attained without reading body language and gaining familiarity with personalities in informal settings. Even in countries where there was an MCHIP office and co-location was encouraged, understanding how to reconcile new ways of doing business under MCHIP within a broader competitive bilateral funding environment posed a challenge to building trust.

To anticipate its communications challenges, MCHIP made the creation of a shared identity, or MCHIP “brand,” a top priority for the partnership. MCHIP hired a dedicated communications team leader who was selected by a recruitment team comprised of multiple partners, who was experienced in US government relations, and who could provide support to each of MCHIP’s technical areas and country
programs. The communications leader reported directly to the EMT and drew support from the communication teams within each of the partner organizations and respective country offices. Through the creation of branded communications tools such as web pages, document templates, and publication services, MCHIP enabled staff to present themselves as affiliated with MCHIP. The communications leader also worked with USAID to appropriately emphasize the donor's role and its connection with the partnership, as well as with each partner organization. Coordinating the partnership's branding among all partners and with USAID, and having the EMT reinforce use of the brand through active outreach to technical and field teams, helped ensure the quality of MCHIP's work and recognition of each partner's contribution, as though MCHIP were its own organization. It was also important to hire new staff full-time for the project itself, instead of sharing time with the home organization, to build acceptance of the MCHIP brand.

3.4. Commitment

Because MCHIP was an unprecedented global program in scope and size, partners with broader competencies and depth of experience in a particular country ultimately received a greater proportion of award funding as there were existing technical and administrative platforms on which to build. Partners with more defined, narrower scopes were always less involved in day-to-day operations. In some cases, roles narrowed over time, leading to gradual changes in levels of commitment and resources. However, all partners continued to participate in the CRT, and technical staff and program staff across the program remained fully committed to the success of MCHIP, as demonstrated by their continued and active engagement in program design and reviews, internal and external meetings, and responses to USAID requests. Partners also showed a shared sense of credit and responsibility by copying each other on correspondence and involving them in discussions when information that was important to the partnership had been directed to only one organization.

The significant amount of funding received by the project in part reflected the donor's confidence in and tremendous support of the partnership to take on an ambitious scope of work. The breadth and reach of the program also meant there were a large number of USAID managers involved in different aspects of project activities. Inevitably, this sometimes led to lack of clarity about expectations and overburdened staff with competing demands. These situations ultimately reinforced the need for staff to come together as a partnership to seek clarity when these situations arose. A clear and shared commitment was particularly critical among the country-level staff who were executing project activities. The most successful country programs co-located staff in the same office and hired new staff specifically for MCHIP, and they were managed by strong leadership that could operate with autonomy as well as accountability within the wider project.

Like MCHIP's starting goals, MCHIP's exit strategy was hardwired into the program's original design. In its final year, MCHIP wound down its operations with a common "close-out" reporting mechanism that documented accomplishments as overall project accomplishments, not as those of any individual partner. Because technical teams led by one partner often reached into the partnership to engage staff from multiple organizations to achieve project goals, the close-out reports reflect the commitment of multiple organizations working together to achieve those goals. MCHIP's partner organizations have affirmed their continued commitment to working with one another by seeking to implement together—and with several new partners—the next global USAID program for MNCH: the Maternal and Child Survival Program. As a result of the partnership's history, this new program should be in a better position to clarify commitments and expectations at the beginning.

4. Challenges and best practices for consideration by future MNCH partnerships

This commentary offers an insider's perspective by three senior leaders of a collaborative MNCH partnership on four key dimensions (clear goals, clear roles, trust, and commitment), by examining the authors' own experience as managers of MCHIP. This perspective is necessarily subjective and relative to the management positions held, and is not intended to be representative of all those involved in the partnership, especially country office colleagues who, as described above, were inevitably distanced from many decisions. At the same time, we expect that this internal assessment of our partnership has revealed more, and different, reasons for the partnership's strengths and weaknesses than any external evaluation might find.

By its design, and through early and intentional discussion about operating principles and technical capabilities, MCHIP was well-equipped to set clear goals and roles; it took much more time and effort to develop trust and ensure commitment among all partners. Inherently, a global program has a time-bound dimension, clearly different from the organizations that come together to implement such programs. Given the intrinsically transitional nature of MCHIP, the program enjoyed a great reputation and recognition for the technical excellence it provided to over 50 countries. Even then, the partnership sometimes struggled in ensuring that its operating principles were implemented similarly in each country office, and in managing the "role creep" that prevented some staff from having clear and reasonable expectations for their work. While the EMT tried to maintain transparency in its decision-making and institute a common identity throughout the program, it was challenging to disseminate information to country offices and gain widespread understanding within a short time frame of a global program. Because of the size of the partnership, its administrative aspects were immense, and in retrospect, stronger investment in a Partnership Management Team to carry out such functions and improve collaboration might have been worthwhile.

On the other hand, in its relatively short, six-year duration, MCHIP was able to combine and administer an unprecedented set of technical resources for integrated MNCH programming that had previously been dispersed among multiple implementing organizations. In the spirit of our discipline's commitment to evidence-based learning, we have summarized from this experience a set of best practices (Box 3) and a checklist of questions that we recommend all MNCH partnerships consider at their inception (Box 4).

We believe that one of the best things that can come out of our MCHIP partnership is for each partner to be viewed as a good partner and as a good leader of future partnerships. Partnerships in

Box 3

Best practices for maternal, newborn, and child health (MNCH) partnerships.

- Engage an independent management consultant to establish goals at start-up, and consider keeping the same consultant for ongoing goal recalibration.
- Establish written operating principles, if not a full partnering agreement, that each lead individual continually reaffirms and acts upon.
- Distribute ownership of partnership components among core partners and encourage intrapartnership evaluations.
- Create a multipartner management team that meets regularly and makes decisions that are accessible to all partnership staff.
- Conduct periodic check-in evaluations through surveys to identify major bottlenecks preventing effective functioning.
- To the extent possible, encourage co-location and common communication norms that engender a shared partnership identity.
Box 4
Checklist for a successful maternal, newborn, and child health (MNCH) partnership.

1. Are clear goals and objectives for the partnership established?
2. Is it clear how the work of the partnership will be evaluated?
3. Is there a clear role for each partner?
4. Does each partner understand the role of the other partners?
5. Are there written principles that guide relationships within the partnership?
6. Are there written operating guidelines that outline how the work of the partnership will be implemented?
7. Is there a clear process for referring problems that cannot swiftly be resolved by the central members of the partnership?
8. Has the partnership considered hiring an external management consultant to advise on different aspects of partnership work?
9. Is it clear where the “buck stops” within the partnership?
10. Is there a forum where partners can be heard on a regular basis?
11. Is there an information sharing system that enables all partners to have equitable access to information?
12. Does the partnership have its own identity or brand that is distinguishable from the identity or brand of each individual partner?
13. How does the partnership ensure that partners universally feel a part of this identity?
14. Is there a communication function within the partnership that is viewed as truly representing the partnership and not favoring any one member?
15. Is there a way for individual partners to represent the partnership while at the same time maintaining their organizational identity?
16. Does the convener of the partnership demonstrate trust in other partners, as shown by:
   a. a transparent problem-solving mechanism?
   b. a transparent decision-making process?
   c. sharing management and implementation responsibility?
   d. allowing partners to speak freely about shortcomings of other partners, including the convener?
17. Does each partner feel that being a member of the partnership will enhance its own organizational goals as well as the goals of the partnership?
18. Are the strengths of each partner fully utilized?

MNCH appear to be here to stay, so we should seek to improve their chances of success.

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Conflict of interest

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References

SUPPLEMENT ARTICLE

Implementation of the Standards-Based Management and Recognition approach to quality improvement in maternal, newborn, and child health programs in low-resource countries

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ABSTRACT

The Standards-Based Management and Recognition (SBM-R) approach to quality improvement was developed by Jhpiego to respond to common challenges faced by health systems in low-resource settings, including poor pre-service education, lack of resources for conventional supervisory models, and weak health information systems. Since its introduction in Brazil in 1997, SBM-R has been implemented in approximately 30 countries and continues expanding to new places and service delivery areas. The present article: (1) describes key steps in the SBM-R methodology focusing on provider performance assessment using evidence-based standards; and (2) presents examples of improvements in provider performance in maternal, newborn, and child health care following SBM-R implementation derived from routine program data, quasi-experimental evaluations, and in-depth case studies. SBM-R incorporates evidence-based methods that are known to have positive effects on healthcare quality, including audit and feedback, educational outreach visits, and checklist usage; however, further rigorous research is needed to document the population-level impacts of the SBM-R approach.

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1. Background

Since its establishment 40 years ago, Jhpiego has worked to strengthen educational approaches and systems in reproductive, maternal, and primary care in low-resource countries. In the last 15 years, Jhpiego’s scope has expanded beyond the preparation of competent health providers to improving the performance of these workers to produce effective, quality services for clients. To contribute to this quality improvement aim, Jhpiego developed an intuitive but innovative approach called Standards-Based Management and Recognition (SBM-R) that was first implemented in Brazil in 1997. Here, we describe key steps in the SBM-R methodology and provide illustrative examples of improvements in provider performance in maternal, newborn, and child health (MNCH) care that have been documented to help demonstrate the impact of the SBM-R approach on service delivery. SBM-R has been adopted by facilities and facility networks with large catchment populations, creating the potential to affect quality of care on a relatively large scale.

2. The SBM-R methodology

SBM-R pertains to the group of quality approaches that pursues basic standardization of services as an initial step in quality. It starts with the provision of recommended standards of care (including inputs and processes) as a point of reference for facility staff and managers to identify gaps in performance. Although most quality improvement approaches share common elements (e.g., the Deming improvement cycle: plan-do-check-act), they also have differences. Some approaches focus on problem-solving and continuous improvement, whereas others promote the standardization of processes to achieve regularity in service provision [1]. SBM-R, as well as other commonly used approaches such as accreditation, pertains to the latter group of quality approaches. SBM-R consists of systematic utilization of detailed performance standards for rapid and repeated assessments of health facilities, including...
both clinical and support systems; identification of gaps in compliance with these standards; implementation of corrective interventions; and rewarding of achievements through recognition mechanisms. The SBM-R model was designed to confront key realities in the health systems of many resource-constrained settings. In these settings, pre-service education curricula may not cover the full range of MNCH services, so quality assurance and supervision approaches must simultaneously function as in-service training, not only telling health workers what to do, but how to do it [2–5]. Conventional supervisory models using external supervisors also operate intermittently at best, owing to challenges such as understaffing in management cadres and lack of transportation resources [3,6]. Likewise, a “push” approach to the allocation and distribution of the critical resources needed for the efficient and effective provision of services is often inadequate, so a “pull” effect is also needed from health workers who are already knowledgeable about their particular needs [7,8]. Health management information systems (HMIS) in these settings are frequently too weak or disjointed to collect meaningful indicators with the periodicity or specificity needed for targeted quality improvement activities [9,10]. Finally, as in all settings, health workers are more likely to accomplish their tasks satisfactorily if they are engaged and motivated; however, many conventional supervisory approaches are focused on the attainment of service targets without addressing or supporting the morale of health providers themselves [11,12].

Box 1 and Fig. 1 describe the key steps of the SBM-R methodology, which begins with the development of evidence-based and informative performance standards. Unlike many other quality improvement approaches, a cornerstone of SBM-R is not only providing a methodology but also generating the context that guides the improvement process, embodied in the performance standards. These standards incorporate evidence-based practices from a technical perspective as well as an emphasis on care that respects clients’ rights, dignity, and cultural preferences. SBM-R standards address “pathways of care,” or the key steps for the provision of distinct types of health services, in a holistic manner instead of focusing on interventions in isolation. As a result, the standards encourage support systems that aim to create an organizational culture of quality and ultimately make improvements more sustainable. Typically, programs implementing SBM-R identify between 5–25 performance standards per health service area, each with specific tasks that translate into verification criteria. The number of verification criteria per standard has ranged from as few as two to more than 35. Box 2 provides a sample SBM-R performance standard and its verification criteria.

SBM-R employs a systematic change management process to achieve desired improvements in quality of care. Once performance standards are identified, they are then used in performance assessment tools that can be scored to express performance in quantitative terms. These tools can be used for self, peer, internal, and external assessments at the facility level (sometimes including representative users of health services) to enable the identification of performance gaps, i.e. lack of compliance with standards. Because SBM-R assessment tools distill and summarize standards for health services, they can also serve as job aids and support for on-the-job learning. Following an assessment, local health teams and managers can analyze the causes of gaps and develop action plans to implement appropriate interventions to correct them, considering potential contributing factors such as: lack of knowledge and skills; inadequate existence of equipment, supplies, and other resources or policies; and lack of motivation. While each local initiative will have different improvement targets, the SBM-R methodology generally encourages facilities to achieve 80% or better compliance with the locality’s established performance standards.

The motivational element of SBM-R, or recognition of achievements, is the final but defining attribute of SBM-R, adapted from business management theory [13]. Local health teams are encouraged to begin with simple interventions in order to achieve early results that improve morale and create momentum for change, gradually acquiring or strengthening change management skills to address more complex gaps. These

Box 1

Key steps in the Standards-Based Management and Recognition (SBM-R) methodology.

- Set standards of performance.
- Organize these standards into a checklist tool that can be used for performance assessment.
- Implement the standards through an initial assessment, measuring performance and pinpointing gaps in compliance with standards.
- Develop action plans to correct these gaps by addressing all performance factors in a comprehensive way.
- Measure progress through repeated periodic assessments, mainly internal, at each participating facility using the same checklist tool.
- Recognize achievements, both fulfilling the action plans and improving compliance with performance standards.

Box 2

Sample Standards-Based Management and Recognition (SBM-R) standard and its verification criteria.

<table>
<thead>
<tr>
<th>Area: Pregnancy care</th>
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<tbody>
<tr>
<td><strong>Performance standard:</strong></td>
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<tr>
<td><strong>Verification criteria:</strong></td>
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</table>

Source: Necochea and Bossemeyer [14].
teams are also oriented to work in networks and share experiences with other participating facilities. The sense of personal achievement, growth, and responsibility in a job as well as gaining recognition from stakeholders (e.g. clients, communities, institutional authorities) for perceptible improvements are characteristic of the SBM-R process and help make the process more acceptable to providers. SBM-R empowerment is achieved by the perception of improvements and also by having standards that reassure providers/managers on evidence-based operating procedures. Knowing and having more control and responsibility for changes enhances empowerment and thus motivation. Partial improvements are rewarded during the process through positive feedback and social recognition (e.g. ceremonies or symbolic rewards). The achievement of compliance with standards by a facility is acknowledged through broader recognition mechanisms that involve institutional authorities and the community and can lead to certification as a high performing unit or center of excellence in health care. Even financial rewards have been included in some SBM-R initiatives. Each facility keeps graphs and other documentation about its performance at each point of assessment, enabling the rapid identification of additional areas that need attention to be addressed in the next action plan. A SBM-R “field guide” provides further details about the many tools that have been developed to implement this methodology [14].

2.1. SBM-R focal area: Performance data collection

While the SBM-R process involves service data collection as well as performance assessments, the present article focuses on results and published findings related to SBM-R performance assessments. Service data can be analyzed to determine the impact of SBM-R and to identify causes of performance gaps, as described in more detail in another publication [14]. As a part of the SBM-R process, all participating facilities conduct periodic rapid assessments (usually every three to six months) using tools based on the SBM-R standards. These are rapid assessments that present only an approximate image of true facility performance on any given occasion. But, because they can be conducted several times a year at a relatively low cost, over time they provide a comprehensive picture of provider performance and are useful to guide ongoing decision-making by facility and service managers. These assessments can be performed internally by facility staff, external supervisors, or peers from other facilities, including national and subnational authorities and the community and can lead to certification as a high performing unit or center of excellence in health care.

2.2. Performance improvement results

Improvements in patient coverage of high-impact MNCH interventions can begin to be associated with achievement of performance standards measured through periodic assessments when coverage is measured through facility routine service data collection. Fig. 3 compares achievement of defined child health performance standards with major child health indicators at two time points, February and November 2010, in 11 facilities participating in an SBM-R improvement initiative in Yanacocha, Peru (personal correspondence, Eva Miranda, Technical Advisor, Quality of Healthcare Project, 2013). A 33% overall improvement in adherence to defined SBM-R standards was concurrent with an increase in the percentage of children at these facilities documented as receiving growth monitoring (33% to 83%) and vaccination (41% to 85%), as well as with a modest increase in proportion of children assessed as well-nourished (58% to 66%). Because of these improvements and those obtained in other areas of the country using the SBM-R approach, Peru’s Ministry of Health, in an official resolution, formally adopted SBM-R as a national approach to improving performance in health care [15].

Similarly, in Honduras, the SBM-R process provided the opportunity to introduce and track implementation of high-impact interventions such as active management of the third stage of labor (AMTSL) and a shift away from routine episiotomy at six hospitals in two regions (personal correspondence, Gloria Fajardo, Technical Advisor, Maternal and Neonatal Health Project Director, 2003). Baselines were conducted between August 2001 and January 2003 because the SBM-R process was phased in at different times in different hospitals. Fig. 4 provides data for the last four months of 2003, illustrating the rapid adoption of appropriate practices following SBM-R assessments and action plan development. Before the SBM-R process was implemented, no deliveries were covered with AMTSL, and episiotomies were performed in all cases. By the end of 2003, AMTSL was nearly universal (89.7% of deliveries), and episiotomies were being performed in less than half of deliveries (41.4%).

3. Results

3.1. Implementation of SBM-R

SBM-R interventions have been implemented in approximately 30 countries. Table 1 presents a summary of completed or ongoing SBM-R interventions, showing the number and type of facilities involved, services targeted, and progress in the achievement of specified standards. This table shows that SBM-R has been used in facilities at different health system levels across a wide range of technical areas, including MNCH, HIV/AIDS, and primary care. The remainder of this section illustrates specific MNCH performance assessment results produced in a sample of countries and technical areas and evaluates the evidence that SBM-R contributes to improving quality of care at scale. SBM-R assessments and routine program data (e.g. health service statistics) consistently show marked improvements over relatively short time periods of six months to one year.

3.2. Improving adherence to performance standards

In Guatemala, a quality improvement initiative applied the SBM-R approach to improve maternal and newborn health services in 20 district hospitals, 42 health centers, and 52 health posts (personal correspondence, Oscar Cordon, Maternal and Neonatal Health Project Director, 2003). Fig. 2 shows substantial improvements in average facility performance relative to baseline across a range of SBM-R standards at 11 health centers that participated in an SBM-R evaluation. While no standard reached the 80% target, performance increased from 2.5-fold to five-fold within a year in basic maternal care; infection prevention; information, education, and communication; material resources; and management capacity. In these facilities, the SBM-R performance assessment results were used to identify the technical areas needing more intensive support. For instance, despite a five-fold increase from baseline, the provision of basic maternal care remained further from performance targets, leading to greater investment of resources in provider training and other knowledge and skills interventions. While Jhpiego no longer has a presence in Guatemala, the SBM-R approach has continued to be implemented through the support of cooperating agencies.

3.3. Improving coverage with high-impact interventions and patient outcomes

Improvements in patient coverage of high-impact MNCH interventions can begin to be associated with achievement of performance standards measured through periodic assessments when coverage is measured through facility routine service data collection. Fig. 3 compares achievement of defined child health performance standards with major child health indicators at two time points, February and November 2010, in 11 facilities participating in an SBM-R improvement initiative in Yanacocha, Peru (personal correspondence, Eva Miranda, Technical Advisor, Quality of Healthcare Project, 2013). A 33% overall improvement in adherence to defined SBM-R standards was concurrent with an increase in the percentage of children at these facilities documented as receiving growth monitoring (33% to 83%) and vaccination (41% to 85%), as well as with a modest increase in proportion of children assessed as well-nourished (58% to 66%). Because of these improvements and those obtained in other areas of the country using the SBM-R approach, Peru’s Ministry of Health, in an official resolution, formally adopted SBM-R as a national approach to improving performance in health care [15].

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<table>
<thead>
<tr>
<th>Country</th>
<th>Years</th>
<th>Technical areas</th>
<th>Number and type of facilities</th>
<th>Progress on Standardsb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angola</td>
<td>2008–2011</td>
<td>ANC/MiP</td>
<td>2 MH, 40 HC, 14 HP</td>
<td>Baseline: 6–47% Final: 82–100%</td>
</tr>
<tr>
<td>Côte d’Ivoire</td>
<td>2008–2013</td>
<td>PMTCT, ARV</td>
<td>35 DH &amp; HC (urban and rural)</td>
<td>Baseline: Not available Final: 83–89%</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>2011–2014</td>
<td>MNH</td>
<td>12 Hospitals, 104 HC</td>
<td>Baseline: 28% First: 52% Second: 71%</td>
</tr>
<tr>
<td>Ghana</td>
<td>2011–2014</td>
<td>Community-based health services</td>
<td>61 CHPS</td>
<td>30% improvement over baseline in 1 year for 18 CHPS assessed (2013 data)</td>
</tr>
<tr>
<td>India</td>
<td>2011–2013</td>
<td>PSE</td>
<td>60 NS</td>
<td>Baseline: 17–45% Final: 47–89%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PPP/ PPRUCD</td>
<td>38 DH&amp;HC</td>
<td>Baseline average: 42% Final assessment average: 79%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>2012–2013</td>
<td>MNH, IP, clinical governance, referral systems</td>
<td>23 DH, 94 HC, 10 district referral systems</td>
<td>Baseline (DH): 24–36% Final (DH): 51–84%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Baseline (HC): 23–39% Final (HC): 72–76%</td>
</tr>
<tr>
<td>Kenya</td>
<td>2008–2012</td>
<td>PMTCT</td>
<td>8 PH, 23 DH, 4 MiH, 7 HC</td>
<td>Baseline: Not available Final: 54–80%</td>
</tr>
<tr>
<td></td>
<td>2012</td>
<td>FP</td>
<td>11 DH, 2 MiH, 3HC</td>
<td>Baseline: Not available Final: 40–80%</td>
</tr>
<tr>
<td>Malawi</td>
<td>2006–2014</td>
<td>IPC, M&amp;RH (ANC, L&amp;D, PNC, FP, STI, PAC, CECAP, PMTCT)</td>
<td>28 DH, 32 HC</td>
<td>Baseline: Data to come Latest (2013): 18 DH achieved &gt;80% in IPC; 4 DH achieved &gt;80% in M&amp;R</td>
</tr>
<tr>
<td></td>
<td>2009–2014</td>
<td>MNH</td>
<td>3 CH, 7 PH, 5 GH, 33 DH, 47 HC</td>
<td>Baseline: 34% Latest (2013) assessments: 60%</td>
</tr>
<tr>
<td>Nigeria</td>
<td>2007–2009</td>
<td>MNH</td>
<td>6 GH</td>
<td>Baseline: 0–25% Final: 77–100%</td>
</tr>
<tr>
<td></td>
<td>2010–2012</td>
<td>Sokoto State: MNH, FP, CH</td>
<td>17 GH</td>
<td>Baseline: 4–33% Final: 22–56%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bauchi State: MNH, FP, CH</td>
<td>23 GH</td>
<td>Baseline: 6–23% Final: 45–98%</td>
</tr>
<tr>
<td>Pakistan</td>
<td>2004–2006</td>
<td>FP</td>
<td>48 Private sector providers</td>
<td>Baseline: 15% Final: 64%</td>
</tr>
<tr>
<td></td>
<td>2006–2010</td>
<td>PHC</td>
<td>122 PHCF</td>
<td>Baseline: Not available Final: Average of 30 PHCFs improved from 14% to 56% in 20 months; average of 59 PHCF improved from 7% to 30% in 8 months</td>
</tr>
<tr>
<td>Peru</td>
<td>2009–2012</td>
<td>BEmONC, CH</td>
<td>117 BEmONC, 239 CH</td>
<td>Baseline (BEmONC): 36–92% Final (BEmONC): 49–98% Baseline (CH): 38–72% Final (CH): 59–87%</td>
</tr>
</tbody>
</table>
Because the results presented above do not include a comparison group and thus could be related to factors external to the SBM-R intervention, Jhpiego has implemented more rigorous evaluations in Zambia, Malawi, and Afghanistan using quasi-experimental designs with intervention and comparison groups of facilities. The selection of countries for these studies was based on feasibility, including the availability of suitable comparison facilities and funding sources. One systematic evaluation focused on the use of SBM-R for the prevention of mother-to-child transmission of HIV (PMTCT) and prenatal care in Zambian defense force facilities between August 2010 and December 2011. The evaluation matched four intervention and four comparison groups of facilities. The selection of facili- 

ties than comparison facilities for postnatal care and family planning perfor-

mance standards was signifi-

cantly higher in the intervention fa-

cilities than comparison facilities for postnatal care and family planning ser-

vices [17]. Of the 120 family planning verification criteria developed specifically for this comprehensive study, the mean number achieved by intervention facilities was 89.0 (74%), compared with 70.5 (58%) for comparison facilities (P < 0.01). Of 200 postnatal care verification criteria, the mean number achieved by intervention facilities was 144.2 (72%), compared with 135.2 (68%) for comparison facilities (P < 0.01). There were no significant differences between intervention and comparison facilities achievement of standards for prenatal care or labor and delivery care.

Finally, a systematic evaluation of an SBM-R intervention to improve maternal health services in 31 facilities in Afghanistan showed that, in the areas of prenatal care and family planning, provider performance in intervention facilities improved with longer exposure to the intervention as well as in relation to the comparison group [18]. Mean scores for prena-

tal care performance, measured by the percentage of tasks achieved during clinical observations, were 47% for the comparison group, 56% for the beginning SBM-R group, and 71% for the advanced SBM-R group (P < 0.05). Mean scores for family planning performance were 57%, 68%, and 77%, respectively, for these same groups (P < 0.05). There was no

Finally, Fig. 5 shows that improvements in adherence to a basic package of SBM-R maternal health standards that were related to prenatal care, deliveries, and complications were concurrent with reductions in the number of maternal complications and maternal deaths at a regional hospital in Tanzania (personal correspondence, Dustin Bishanga, October, 2013). As performance on maternal health standards increased from 43% at baseline in 2009 to 83% to an interim assessment in 2011, the number of maternal complications (postpartum hemorrhage, pre-eclampsia/eclampsia, and ruptured uterus) declined from 14 in 2010 to 10 in 2011, and the number of maternal deaths declined from 14 in 2009 to 4 in 2010. Although these numbers are too small to make statistical infer- 

cences, they circumstantially suggest a reduction in adverse health outcomes.

3.4. Systematic evaluations and implementation case studies—facility capacity and health worker performance

Finally, Fig. 5 shows that improvements in adherence to a basic package of SBM-R maternal health standards that were related to prenatal care, deliveries, and complications were concurrent with reductions in the number of maternal complications and maternal deaths at a regional hospital in Tanzania (personal correspondence, Dustin Bishanga, October, 2013). As performance on maternal health standards increased from 43% at baseline in 2009 to 83% to an interim assessment in 2011, the number of maternal complications (postpartum hemorrhage, pre-eclampsia/eclampsia, and ruptured uterus) declined from 14 in 2010 to 10 in 2011, and the number of maternal deaths declined from 14 in 2009 to 4 in 2010. Although these numbers are too small to make statistical infer- 

cences, they circumstantially suggest a reduction in adverse health outcomes.
significant improvement in performance scores for labor and delivery care. The evaluation showed that client-provider communication and client satisfaction significantly improved with increased duration of the SBM-R intervention and relative to comparison groups.

Jhpiego has also conducted implementation case studies in a few countries to further explore the qualitative effects of SBM-R. One of these examined the PROQUALI reproductive health project in Brazil in 1999, which was the first introduction of SBM-R in that country in five pilot clinics [19]. The case study observed that although SBM-R was labor-intensive, it improved compliance with standards of care through its self-assessments. In particular, the SBM-R tools identified performance gaps and contributing factors not previously perceived in the clinics and overcame them through teamwork and improved allocation of resources such as staff, commodities, and educational materials.

A second case study assessed the use of SBM-R for accreditation of community midwifery schools in Afghanistan and showed that SBM-R assessments were systematically applied to improve adoption of recommended processes and practices at participating schools [20]. Three schools received essentially no external technical assistance owing to insecurity or funding limitations but, “because of the detailed nature of the assessment tools and the interaction with other schools and colleagues,” [20] they were able to improve educational performance and achieve accreditation status.

4. Discussion

SBM-R provides a rapid and feasible methodology to enable facilities to understand their service quality and implement solutions to address problems. Through this aggregate collection of program data, quasi-experimental evaluations, and implementation case studies from a number of countries, it is evident that SBM-R leads to improvements in provider compliance with performance standards and might be associated with improved coverage of high-impact MNCH interventions for clients of facility services. Routine SBM-R assessments, though partially self-reported, generally document improvements in provider adherence to best practices and improvements in facility infrastructure and operations. The results of the quasi-experimental studies that compare changes between intervention and control groups or between baseline and post-intervention data provide even stronger evidence of the positive effects of SBM-R. Finally, in-depth case studies reveal how these improvements are achieved, through repeated assessments, better communication among providers, and development and application of action plans. By triangulating the patterns that emerge from these multiple methodologies, it is possible to assert a causal relationship that holds for real-world settings [21].

While the full details of the quasi-experimental studies are reported elsewhere, it is important to note that these studies used representative random sampling and well-trained, unbiased assessors. The results of such studies generally showed less dramatic changes in overall skills improvement than the assessment-based data; however, improvements were statistically significant for many skills. The difference in magnitude between routine SBM-R assessments and quasi-experimental studies of SBM-R effects could be due to differences in measurement methods, quality of assessors, and sampling methods, or they could be due to the different contexts in which each were performed.

Program data from Peru, Honduras, and Tanzania further suggest that, in addition to improving provider practices and quality of care, SBM-R could be associated with improvements in intermediate and long-term health outcomes, such as lower episiotomy rates, improved child nutrition, and fewer maternal complications and deaths. The Afghanistan quasi-experimental study builds upon these findings by identifying a linkage between implementation of SBM-R and improvements in client

![Fig. 3. Achievement of Standards-Based Management and Recognition (SBM-R) child health standards and coverage of interventions at 11 facilities: Peru, 2010.](image)

![Fig. 4. Changes in episiotomies and coverage of active management of the third stage of labor (AMTSL) at six hospitals: Honduras, 2003.](image)
satisfaction, an important outcome of care and a meaningful indicator of care quality [22]. The fact that SBM-R was adopted by external stakeholders in Afghanistan, and also in Peru and Guatemala, appears to indicate sustainability, yet sustainability remains an ongoing challenge in other countries.

This collective presentation of the results of SBM-R interventions, using a wide variety of analytical approaches, is particularly meaningful because of the inherent difficulties in demonstrating the direct impact of quality improvement initiatives on health outcomes. Raven et al. [23] analyzed the methodologies and tools used in 34 articles and reports on quality improvement in maternal and newborn care in low-income countries and concluded that, while there is emerging evidence to suggest that quality improvement interventions lead to demonstrable changes in care practices, most included reports did not offer detailed information on how to implement quality improvement methods and did not articulate how documented improvements occurred. Other recent studies on the effectiveness of several quality-related approaches such as accreditation [24], supervision [25], and quality improvement collaboratives [26,27] have also shown limited or disappointing results. The lack of positive attribution does not, however, mean that such attribution cannot be made, just that common experimental methods might not suffice. Quality improvement programs are evolving in a changing economic, social, and political climate and use interventions that focus on complex adaptive social systems, so their activities might have a synergistic effect rather than an effect on individual clients, and their outcomes might therefore need to be studied from the perspectives of different parties [28].

Although the experimental evidence regarding the impact of quality improvement interventions on practice improvement is limited, other systematically-collected evidence regarding the effects of SBM-R can be found in research on component approaches that are embedded within the SBM-R methodology. The audit and feedback process, for example, which is routinely practiced in SBM-R after assessments are implemented, has shown small improvements in practice [29]. Similarly, educational outreach visits, which are part of the SBM-R external assessments, have resulted in small but consistent improvements in service delivery [30]. Checklists, an essential feature for tracking SBM-R standards and verification criteria, have been associated with improved practices in maternal and newborn health [31]. The one approach that has not yet yielded evidence on improved outcomes is self-certification of the use of process standards [32]. Every effort should be made to track patient outcomes as part of quality improvement program evaluations, including evaluations of SBM-R, recognizing that accurate measurement of such outcomes is challenging in low-resource settings.

4.1. Strengths and limitations

The results in the present article have some important limitations. Most of the sources from which these data were drawn were able to document changes in adherence to SBM-R standards, but few were able to track changes in patient outcomes. The suggested associations between improved SBM-R assessment results and improved health outcome results based on health service statistics may not be completely reliable because of the shortcomings of routine information systems; however, those programs made special data quality assurance efforts to overcome these issues. In some countries, the national government, Jhpiego, and donor partners have worked to revise data registries. In others, program staff have performed data quality checks or supported sentinel sites for in-depth data collection. While the quasi-experimental studies are designed with careful data collection practices from the start, their small sample sizes might limit the generalizability of reported results.

The many strengths of the SBM-R approach mitigate these limitations and support further evidence generation. SBM-R does not focus on a single intervention, but instead on a set of services and systems approach to facility readiness. While complex improvements across an array of topics are more difficult to implement than single-intervention programs, such coordinated efforts can help reduce artificial, unsustainable improvements in performance; it is easier to temporarily comply with a single practice than with a complex set of interventions. The improvements reported in SBM-R assessments are affirmed by systematic studies that used quasi-experimental designs and external data collection. Even though most of the results presented relate to provider adherence to best practices, and not directly to patient outcomes, they begin to show that performance of those best practices result in specific health outcomes when reliably implemented.

5. Conclusions

This broad survey of SBM-R initiatives and results demonstrates that the SBM-R approach has consistently contributed to improvements in provider performance of MNCH service delivery. The SBM-R methodology facilitates rapid action to correct service gaps and has shown to be helpful in promoting a culture of standardization, continuous measurement, and recognition of achievements. The spread of SBM-R to and within many countries suggests that it has a high level of system-wide acceptability, though this reach has been influenced by donor investment. The large number of facilities that are now successfully applying
SBM-R shows its potential as a method that can be used to improve quality at scale. As a result, SBM-R should be part of the array of quality improvement options considered in low-resource settings, particularly where the adoption of evidence-based practices is inconsistent and health systems are weak. Further effort is needed to strengthen documentation of the results of SBM-R implementation, including the effect of SBM-R on key indicators of patient outcomes and population-level changes. As with other quality improvement approaches, SBM-R will benefit from the growing trend toward more robust implementation research and evaluation methods.

Conflict of interest

The authors have no conflicts of interest.

References

SUPPLEMENT ARTICLE

Task shifting in maternal and newborn health care: Key components from policy to implementation

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c Jhpiego, Pretoria, South Africa  
d Jhpiego, Abuja, Nigeria

1. Background

The WHO has estimated that 57 countries have a critical shortage of healthcare workers, and that 2.4 million doctors, nurses, and midwives are needed to achieve the Millennium Development Goals (MDGs) [1]. The most acute shortfalls occur in Southeast Asia and Sub-Saharan Africa. Thirty-six of the 57 countries are in Sub-Saharan Africa, which contains 24% of the global burden of disease but only 3% of the global health workforce [2]. Inequalities in health workforce distribution within countries are also common; it is estimated that only 24% of physicians and 38% of nurses work in rural areas, although half of the world’s population is rural [1].

Difficult working conditions, high rates of attrition, maldistribution and out-migration of staff, and the HIV/AIDS epidemic have all contributed to the inadequate supply of skilled health workers [3]. The dramatic shortage of skilled providers creates challenges to the provision of both facility- and community-based healthcare services, including services for maternal and newborn health (MNH). Task shifting has been promoted as one response to this global health worker crisis, shifting tasks to one provider cadre and from another. Various other terms are found in the literature to communicate the task shifting concept, including “task sharing,” “substitute health worker,” “skills substitution,” “task delegation,” and “optimizing health worker roles” [4,5]. For the purposes of this paper, the authors define “task shifting” as either: (1) developing a new provider cadre, such as lay health workers (LHWs) with competencies to perform tasks normally performed by health professionals with more education and higher qualifications; or (2) expanding the scope of practice of an existing health professional cadre to accept additional tasks and functions. The intent of both types of task shifting is to bring services closer to the population and increase health system efficiencies. LHWs, also known as community health workers (CHWs), might take the form of lady health visitors, traditional birth attendants, health educators, or other paid or volunteer community members who have some health-related training but lack the broader educational preparation typical of a healthcare professional.

Task shifting builds on the assumption that less specialized health workers can take on some of the responsibilities of more specialized workers in a cost-effective manner without sacrificing quality of care [6,7]. Multiple efficiencies may arise from task shifting, given that the cadre to which tasks are shifted often require shorter training periods and lower educational qualifications, might have skills specific to their local setting (e.g. language), and are not as likely to emigrate to other countries [8]. Task shifting is not, however, an intervention that occurs...
in a vacuum; instead, it must be aligned with broader health systems strengthening activities [9].

The present paper reviews Jhpiego’s experiences in the use of task shifting as a strategy for increasing the scope and breadth of its MNH programming in over a dozen countries around the world (Table 1). These experiences were chosen to illustrate both types of task shifting and to closely examine the processes and key components underlying the task-shifting approach that maximize the potential of available human resources.

2. Key components of task shifting in maternal and newborn care

There is a growing body of research and grey literature evaluating task shifting in low-resource country settings, much of which has come from the HIV/AIDS field [10,11]. The WHO has also issued recommendations for MNH task shifting based on clinical and research evidence [12,13]. Box 1 provides some illustrations of MNH tasks that might be appropriate for various cadres of healthcare providers. Many of these recommendations are in line with five key components that Jhpiego has identified and prioritized as the basis for its task-shifting work: (1) policy and regulatory support; (2) determination of roles, functions, and limitations; (3) determination of requisite skills and qualifications; (4) education and training; and (5) service delivery support.

2.1. Policy and regulatory support

In most contexts, there are clear delineations of the roles that different health cadres can perform; these may be established by ministries of health and/or professional and licensing councils and enacted through pre-service curricula, job descriptions of and procedure manuals for health personnel, or legislative authorization. Changes in practice

### Table 1

Selected examples of task shifting in Jhpiego’s maternal and newborn health programs.

<table>
<thead>
<tr>
<th>Country/location</th>
<th>Years</th>
<th>Cadre(s) “shifted to”</th>
<th>New/shifted skills</th>
<th>Cadre(s) “shifted from”</th>
<th>Shared with</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afghanistan/20 districts in Badakshan, Bamiyan, Faryab, Jawzjan, and Kabul Provinces</td>
<td>2005–2007</td>
<td>CHWs</td>
<td>Community-based distribution of misoprostol for PPH prevention</td>
<td>Oxygenin and ergometrine by skilled birth attendants, primarily midwives, in facilities</td>
<td></td>
</tr>
<tr>
<td>Pakistan/national</td>
<td>2007–2010</td>
<td>Expansion: 2011–2012</td>
<td>CHWs</td>
<td>Community-based postpartum FP, including injectables</td>
<td>Facility-based providers, particularly midwives</td>
</tr>
<tr>
<td>Bangladesh/Sylhet District</td>
<td>2007–present</td>
<td>CHWs</td>
<td>Postpartum FP counseling and contraceptive distribution</td>
<td>Facility-based health providers</td>
<td></td>
</tr>
<tr>
<td>Ghana/Accra metro area, Amasaman, and Kumasi</td>
<td>2000–2003</td>
<td>Nurses</td>
<td>Cervical cancer screening including: VIA, clinical decision-making, and cryotherapy</td>
<td>Physicians, including specialists (with partial role for nurses)</td>
<td></td>
</tr>
<tr>
<td>Guinea/national</td>
<td>1998–present</td>
<td>Nurses, midwives, and auxiliary nurses</td>
<td>PAC</td>
<td>Physicians (emergency PAC only)</td>
<td></td>
</tr>
<tr>
<td>India/22 states</td>
<td>Pilot: 2005–2006</td>
<td>Present CHWs Postpartum FP counseling and contraceptive services</td>
<td>MBBS doctors (general medical doctors)</td>
<td>Physicians/gynecologists</td>
<td></td>
</tr>
<tr>
<td>Kenya/Embu District</td>
<td>2007–present</td>
<td>Midwives</td>
<td>Postpartum FP, including provision of postpartum intratuterine contraceptive devices, and PNC</td>
<td>Physicians/gynecologists</td>
<td></td>
</tr>
<tr>
<td>Malawi/National</td>
<td>2005–2009</td>
<td>Health surveillance assistants</td>
<td>Community-based MNH services, including: prenatal care (e.g. education on danger signs, promotion of facility delivery), PNC, and neonatal assessment</td>
<td>Community health nurses</td>
<td></td>
</tr>
<tr>
<td>Malawi/national</td>
<td>2005–2009</td>
<td>Nurse midwifery technicians</td>
<td>BEmONC</td>
<td>Registered nurse midwives</td>
<td></td>
</tr>
<tr>
<td>Mozambique/national</td>
<td>2008–present</td>
<td>CHWs</td>
<td>Maternal health nurses</td>
<td>Physicians</td>
<td></td>
</tr>
<tr>
<td>Mozambique/national</td>
<td>2011–present</td>
<td>Female community health volunteers</td>
<td>Community-based distribution of misoprostol for PPH prevention</td>
<td>Skilled birth attendants (oxytocin only)</td>
<td></td>
</tr>
<tr>
<td>Nigeria/Kano, Katsina, Zamfara states</td>
<td>2006–2012</td>
<td>CHEWs</td>
<td>Clean and safe delivery, BEmONC, and FP counseling and services</td>
<td>Physicians and nurse-midwives</td>
<td></td>
</tr>
<tr>
<td>Nigeria/Akwa Ibom state</td>
<td>2007–2012</td>
<td>Volunteer community-directed distributors</td>
<td>Community-based PPH prevention and FP BEmONC, including management of breech births</td>
<td>Physicians and nurses in facilities</td>
<td></td>
</tr>
<tr>
<td>Rwanda/13 districts</td>
<td>2010–2012</td>
<td>CHWs</td>
<td>Community-based PPH prevention and FP BEmONC, including management of breech births</td>
<td>Physicians and nurses in facilities</td>
<td></td>
</tr>
<tr>
<td>Rwanda/9 districts</td>
<td>2010–2012</td>
<td>Nurses and midwives</td>
<td>Initiation and management of clients on antiretroviral therapy</td>
<td>Specialist physicians</td>
<td></td>
</tr>
<tr>
<td>South Africa/national</td>
<td>2007–2010</td>
<td>Professional nurses and midwives</td>
<td>Cervical cancer screening including: VIA, clinical decision-making, and cryotherapy</td>
<td>Physicians, including specialists (with partial role for nurses)</td>
<td></td>
</tr>
<tr>
<td>Thailand/national</td>
<td>2000–2003</td>
<td>Nurses</td>
<td>Initiation and management of clients on antiretroviral therapy</td>
<td>Nurses, midwives, laboratory personnel</td>
<td></td>
</tr>
<tr>
<td>Zambia/Southern, Eastern, and Western Provinces</td>
<td>2010–2011</td>
<td>CHWs</td>
<td>HIV counseling and rapid diagnostic testing</td>
<td>Physicians</td>
<td></td>
</tr>
</tbody>
</table>

Abbreviations: BEmONC, basic emergency obstetric and newborn care; CEmONC, comprehensive emergency obstetric and newborn care; CHEWs, community health extension workers; CHWs, community health workers; FP, family planning; MBBS, Bachelor of Medicine, Bachelor of Surgery; MNH, maternal and newborn health; PAC, postabortion care; PNC, postnatal care; PPH, postpartum hemorrhage; VIA, visual inspection with acetate acid.

* The term “physician” includes both specialists (such as obstetricians and pediatricians) and nonspecialists (primary care, generalists or family doctors). The term “midwife” includes both direct-entry midwives and nurse-midwives, unless otherwise specified.
must be affirmed in national regulatory mechanisms such as cadre scopes of practice, licensing examinations, re-licensing requirements, and professional association or council responsibilities. Shifting tasks within or between professional cadres, or from a professional cadre to LHWs, therefore requires engagement with policymakers and regulatory bodies [13,14]. Formal revision of policy and regulatory frameworks often requires evidence regarding the effectiveness of shifting a particular task; pilot projects can provide this evidence but might involve securing informal permission or a conditional waiver. Obtaining appropriate policy and regulatory support may necessitate advocacy with national stakeholders; without such support, task shifting programs face numerous barriers (e.g. health cadres may be reluctant to take part owing to liability concerns) [5,15]. Absence of explicit policy leadership or regulatory support can severely limit the degree to which task shifting is scaled-up or sustained [11,16].

2.2. Determination of roles, functions, and limitations

A task-shifting program should be preceded by task analysis to understand the specific services contributing to healthcare delivery bottlenecks that undermine productive efficiency [17,18]. Task analysis provides information about the care actually provided by a specific cadre and often uncovers that the actual tasks performed by a cadre do not match the official job description, regulatory statutes, or pre-service education curriculum. Task analysis can guide evaluation and revision of the cadre’s scope of practice, the content of its pre-service and in-service curricula, and regulatory and deployment decisions. Task analysis must also consider the responsibilities that a cadre already carries out and whether additional services will overburden that cadre. Sometimes a second cadre might be engaged to make task shifting feasible. For example, when busy nurses take on the task of prescribing antiretrovirals (ARVs) for HIV, another group, such as LHWs, might take on the counseling and testing previously done by nurses. The results of task analysis should guide decisions regarding both the cadres “shifted to” and “shifted from.” It is particularly important to ensure that the cadre taking on new services has a clear understanding of the limitations of its expanded role. Responsible task shifting requires clear boundaries and processes for referral to higher-level cadres, as needed [19], to maintain positive and productive working relationships among all cadres affected by the shift. While research suggests that “shifted from” providers generally have positive attitudes toward task shifting [20,21], task shifting without clearly defined roles and processes can undermine teamwork and result in lasting tension between health worker cadres, in part due to “professional protectionism” [17,19,20]. Clear roles and responsibilities serve not only to distinguish cadres but also to harmonize them within the broader health system. Such harmonization prevents health services from becoming too fragmented and difficult for users to negotiate [20].

2.3. Determination of requisite skills and qualifications

Even if cadres to whom tasks are being shifted are already extant and widely deployed, their position requirements and, in turn, recruitment strategies, must be adapted to their new skills and qualifications [9,10,19,20]. For example, literacy might not have been an important requirement for CHWs when their role was limited to the promotion of healthy behaviors and health service utilization, given that numerous pictorial tools and job aids exist for such work. However, if task shifting programs intend to involve CHWs in service provision and recordkeeping, then literacy and numeracy might become important requirements [9]. Clarifying such skill requirements is crucial to avoid a mismatch between expected roles and available human resource capacity [19].

2.4. Education and training

Appropriate learning resources and skills building are required for cadres to whom tasks are being shifted. Successful task-shifting efforts have involved competency-based education and training for “shifted to” health workers and include certification processes and clear performance standards when possible [10,14,22,23]. The involvement of professional associations and educational and training institutions in the development and use of teaching materials might also be important [24]. Many task-shifting programs begin with in-service education if they are changing the roles of existing cadres [7]; however, sustained and scaled-up task shifting requires the revision of pre-service education to reach new providers [15,25]. Education can ensure the crucial harmonization of task shifting with the broader health system by providing a recognized platform for coordination among the “shifted to” cadres and their supervisors and clinical counterparts, ensuring mutual understanding of roles and responsibilities and consistent guidelines for practice. This coordination is particularly important if services are being shifted to non-clinical cadres and if clinicians are involved in supervisory and quality assurance roles.

2.5. Service delivery support

While the preceding four components address key actions that are necessary for successful task shifting, an enabling environment comprised of the following service delivery support elements encourages “shifted to” cadres and their supervisors to provide services most effectively.

2.5.1. Management and supervision

Maintaining the quality of services provided by lesser-educated cadres is a primary challenge in task shifting. Virtually all task-shifting reviews and evaluations single out the importance of supportive...
supervision—a concept that includes performance assessment, remedial education, mentoring, and motivation [7,10,18,20,26]. Such supervision must be resourced with financial, logistical, and educational support for supervisors. Additionally, task shifting should be embedded in a comprehensive quality assurance framework including regular, standardized assessment [20]. Supportive supervision can help prevent the sense of isolation and frustration that has been implicated in high attrition rates, particularly among CHWs [27].

2.5.2. Incentives and/or remuneration

Task shifting frequently requires existing health workers to take on more work, which can add burdens particularly to volunteer cadres. Thus, it is essential to devise appropriate incentive packages and recognition systems to reward cadres taking on new tasks to reduce their attrition [7]. While some reviews have recommended financial incentives [27], other research on CHWs has suggested that effective incentives include social prestige, support for income-generating activities, and recognition from the community and health system, and that in-kind incentives can contribute to motivation and retention [28–30].

2.5.3. Material support such as commodities, supplies, and job aids

Cadres implementing newly shifted tasks require the same material support as the original cadre. However, because task shifting might require workers to practice new competencies or take services outside the health facility context, it is important to ensure that “shifted” cadres have the material tools to maintain their skills and fulfill their new roles. Logistics systems are especially important to maintain a consistent and quality assured supply of drugs, equipment, supplies, and commodities, as are up-to-date and simple job aids and service protocols, ideally tested for comprehensibility and ease of use [9,31,32].

2.5.4. Referral systems

Task shifting often results in service provision outside the facilities where the services have been customarily performed, e.g. into peripheral health facilities and the community. This dislocation increases the importance of functioning referral systems to ensure that women and newborns can be referred for further care, whether for needs that already exist upon presentation but are not performed by the shifted cadre, or for complications or adverse effects that might arise during service provision [10,19]. For example, cadres newly capacitated as skilled birth attendants (SBAs) need to be able to refer women for comprehensive emergency obstetric care and newborn care (CEmONC), which includes cesarean delivery. The absence of such referral mechanisms can heighten the risks of a fragmented health service delivery system.

3. Case studies: Applications of key components to Jhpiego’s field programs

Global experience in task shifting is extensive. Jhpiego’s task-shifting experience began with the transition of intrauterine device services from physicians to nurses and midwives in Morocco and Egypt in 1983. In the last fifteen years, Jhpiego has continued to implement task-shifting efforts in its programs to increase access to and improve the coverage of services to women and newborns. Table 1 summarizes Jhpiego’s more recent programmatic experiences with task shifting, most of which were implemented in partnership with governments and other agencies. The following case studies provide more detail about four of these experiences that best highlight the role of the key components described above.

3.1. Nigeria: Increasing access to basic emergency obstetric and newborn care

As in many countries in Africa, Nigeria faces high maternal and newborn mortality rates, in large part due to the lack of access to SBAs who can provide basic emergency obstetric and newborn care BEmONC (Box 2) [33]. The 2003 Demographic and Health Survey showed that in the North-West Zone of Nigeria, where Jhpiego was working at the time, there was only a 12.3% rate of SBA-attended births [34]. Most primary healthcare centers did not have a doctor or midwife and were staffed with Community Health Extension Workers (CHEWs). As a result, although Jhpiego was working to increase CEmONC capacity among midwives and physicians, rural primary healthcare centers still lacked even BEmONC. In 2006, in collaboration with the Federal Ministry of Health (FMoH) and Save the Children, Jhpiego began to equip CHEWs with the competencies and support needed to provide quality BEmONC—previously provided by physicians, nurses, and midwives based in hospitals.

First, the FMoH agreed to modify the training package for CHEWs to prepare them as SBAs, including the skills needed to provide BEmONC. Next, the partners sought subnational government support to prepare the health system to accept these new services. Magnesium sulfate, delivery kits, and other supplies and equipment had to be procured, and some maternity units required renovation. For the CHEWs who were already in practice, in-service training courses were established with pre-service preceptors and nursing faculty. Post-training supervision and a performance improvement system were also initiated to support CHEWs in their new tasks.

The training of CHEWs deployed to primary healthcare centers led to increased utilization of prenatal and delivery services. For example, in
Kano, Katsina, and Zamfara States, the Jhpiego-led program trained CHEWs working in 23 primary healthcare centers. The total number of women receiving SBA services from these CHEWs increased several-fold between 2007–2008 and 2009–2010 (Fig. 1).

The main challenges were the systemic problems often found in rural healthcare settings. There was an irregular supply of medications and consumable supplies, infrastructural deficiencies (power outages, lack of potable water, poor communication), and frequent transfers of trained staff out of their service stations to other departments or facilities where they could not practice their newly acquired skills. Policy and regulatory support continued long after the tasks had been shifted to better formalize the BEmONC function of CHEWs and ensure sustainability into the future.

3.2. India: Reaching rural areas with CEmONC services

In India, 69% of the population lives in rural areas with limited availability of providers who can deliver BEmONC and CEmONC [35]. In 2006, the Government of India identified this shortfall as an important factor in the urban/rural disparity in maternal mortality (267 versus 619 maternal deaths per 100 000 births, respectively) [36]. Until 2004, only obstetric and gynecologic (ob/gyn) specialist physicians were trained and widely authorized to perform cesarean deliveries and several other emergency obstetric skills. In addition, half of ob/gyn specialists in India work in the private sector, leaving a wide gap in public sector human resources, especially at the primary healthcare level. Although more than 25 000 Bachelor of Medicine, Bachelor of Surgery (MBBS) physicians, who function as general medical doctors, are employed in rural areas, India continues to face a severe shortage of ob/gyn physicians who can provide BEmONC or CEmONC in those areas.

In 2006, the Government of India and the Federation of Obstetric and Gynaecological Societies of India (FOGSI), with technical assistance from Jhpiego, implemented a pilot program to capacitate MBBS physicians to provide CEmONC. This pilot was implemented in three medical schools and their corresponding 12 district hospital practice sites in Gujarat and Rajasthan States. The pilot included the development and establishment of competency-based educational courses for CEmONC in three medical schools, with a minimum of 16 graduates per year per site. Graduates from these courses were deployed to 21 first referral units to provide CEmONC services. High-level and sustained advocacy throughout the pilot resulted in widespread acceptance of the competency-based approach by the Government of India, professional associations, and medical school stakeholders.

An independent evaluation in Gujarat State revealed a substantial increase in access to CEmONC in four first referral units (from 0%–57% to 94%–100%) after a period of only five months [37]. Another independent study of 10 referral units to which graduates were posted found that CEmONC provision increased from two facilities to all 10 [36]. Following the pilot’s success, the Government of India funded the scale-up of this approach to additional states through program management partners. Among the results of this scale-up were the development of 34 sites for MBBS training and 235 district practicum sites; the capacitation of 333 district hospital teachers/tutors; and the capacitation of 1221 MBBS physicians across a total of 22 states for round-the-clock CEmONC services (Personal communication, Bhardwaj A, AVNI Foundation, Delhi, India, April 28, 2013).

Task shifting of complex CEmONC skills from specialists who have traditionally provided these services to general practitioners raised understandable questions and concerns about safety and quality. FOGSI, in particular, was concerned that it might be held accountable if a graduate of the CEmONC program was found incompetent or caused harm during service provision. In response, Jhpiego assisted FOGSI in implementing the Standards-Based Management and Recognition (SBM-R; Jhpiego, Baltimore, MD, USA) methodology as the basis for quality assurance and improvement, as well as for rewarding compliance with standards through recognition mechanisms [38]. Certification of teaching sites by FOGSI became mandatory to ensure sustained educational quality. An expansive discussion of SBM-R is offered in another paper in this supplement [38].

3.3. Nepal: Expanding uterotonic coverage to prevent postpartum hemorrhage in the community

Uterotonics (e.g. oxytocin and misoprostol) can prevent postpartum hemorrhage (PPH) and are customarily administered after delivery by a skilled birth attendant [39]. In 2006 in Nepal, less than 20% of births were attended by an SBA, and hemorrhage remained the leading cause of maternal mortality [40]. From 2005 to 2009, under the leadership of its Family Health Division, the Nepal Family Health Program, and the Banke District Public Health Office, the Government of Nepal piloted community-based distribution of misoprostol for PPH prevention in Banke District, targeting home deliveries without SBAs. This intervention shifted uterotonic provision from facility-based providers to female community health volunteers (FCHVs)—an existing cadre that is deployed across Nepal’s 75 districts. Jhpiego provided technical assistance to design, monitor, and evaluate the intervention, including the adaptation of educational materials and methods.

National and district level support and ownership of this project helped ensure necessary authorization and funding for the project. Intervention components included: building support among stakeholders; obtaining necessary government approvals; conducting baseline assessments; establishing monitoring systems; orienting district/health facility staff; and training and supervision of FCHVs. FCHVs identified pregnant women, provided prenatal health education, dispensed misoprostol tablets late in pregnancy, and made early postnatal home visits [41]. FCHVs reached nearly 19 000 women in the pilot area. An endline survey found that 73% of women received misoprostol from an FCHV during their pregnancy and that overall uterotonic coverage increased from 10.7% at baseline to 74.2% at endline (OR 25.0; 95% CI, 15.6–40.1) [42]. The largest gains were among the poor, illiterate, and those living in remote areas. The survey also indicated that FCHVs were positive about their expanded roles and that FCHV distribution of misoprostol was not associated with significant adverse events or incorrect use [42]. The maternal mortality ratio among misoprostol users in the pilot area was 72/100 000, significantly lower than among non-users (304/100 000) and across the nation (281/100 000) [42].

A program review indicated that the pilot’s success was due to several interacting factors: high level of commitment and ownership by the Banke District Public Health Office; community-level advocacy and education; good teamwork and coordination between governmental and nongovernmental partners; well-trained, carefully supervised and supported FCHVs; and establishment of effective supply chains for commodities [41]. In 2010, the Nepal Family Health Program II replicated this model in four mountainous districts with the most limited access to SBAs. By 2011, the program was expanded to 21 districts through government funding and partnership with international organizations. By 2013, the program had been expanded to 31 districts.

3.4. Southern Africa: Task shifting for HIV care

Three quarters of mortality in Sub-Saharan Africa is attributed to communicable, maternal, neonatal, and nutritional causes [43]. HIV is the leading cause of life years lost, and HIV prevalence among adults 15 — 49 years of age is 5% [43,44]. The United Nations Declaration of Commitment on HIV/AIDS [45], coupled with the ongoing crisis in human resources for health, necessitated a new approach to service delivery when widespread scale-up of ARVs and prevention of mother-to-child transmission (PMTCT). Since 2005, Jhpiego has contributed to expanding access to essential HIV services across Sub-Saharan Africa, including PMTCT. Two distinct examples of HIV task shifting include provision of ARVs by nurses and midwives and HIV
testing and counseling by LHWs. In Zambia and Mozambique, LHWs were capacitated to competently test and counsel pregnant women and their families for HIV using rapid diagnostic testing, i.e. performing a finger prick and interpreting results. In Mozambique, Jhpiego first led a demonstration project with the government and other partners in one site in 2006 to convince policymakers of the soundness of the approach; Jhpiego was then asked to assist the government to formalize the approach and roll it out nationally. As of 2013, more than one million Mozambicans have been tested and counseled in their communities through these programs.

For ARVs, task shifting progressed with less intentionality as the dominant, physician-driven approach to HIV treatment in district and tertiary hospitals and became untenable owing to the large numbers in need of services driven in part by changing international guidelines that expanded ARV eligibility criteria. Across Southern Africa, nurses and midwives were already managing common opportunistic infections and following up women receiving ARVs; widespread adoption of ARVs during pregnancy for all HIV-positive pregnant women in 2012–2013 only increased this demand for services. As a result, several countries in the region had little choice than to accept and formalize the role of nurses and midwives in initiating and managing clients on ARVs, whether for PMTCT or as treatment for the health of the mother. Jhpiego supported this expanded scope for nurses and midwives in ARV provi

sion by contributing to the development and implementation of competency-based pre- and in-service education in Mozambique and South Africa that enhanced competencies for clinical assessment and management of common and serious opportunistic infections and introduced competencies for initiation and management of clients on ARVs, including the management of adverse effects, as a comprehensive package to ensure high-quality HIV care and treatment service delivery.

Challenges to expanding HIV testing and counseling services through the engagement of LHWs have included retention of volunteers in ser

vice, inadequate remuneration, and government hesitation to include the cadre of LHWs as an official position in the public health system. HIV treatment with ARVs by nurses and midwives has been hindered by legislation that has been unsupportive of the cadres’ prescribing ability and that has failed to address overall inadequate levels of human resources. Additionally, some providers have resisted, such as pharmacists not wanting to fill nurse prescriptions or nurses themselves not wanting to take on extra responsibilities.

4. Discussion
The four case studies detailed above illustrate the importance of each of the five key components of task shifting. Sometimes these components occur in a sequential manner; other times, they occur simultaneously and continuously. Careful identification of the missing task or service—and often the geographic area most affected by its absence—provided a rationale for the shift, while a thorough understanding of the essential skills needed to perform the task or service justified the cadre(s) to which the task was “shifted to.” Effective, competency-based in-service or pre-service education was foundational to build the requisite capacity. Health system inputs, such as strengthening logistic systems to ensure sufficient supplies and the implementation of supportive supervision systems promoted the ability of the “shifted to” cadres as they assumed responsibility for performance of their newly acquired skills.

The critical role of policy and regulatory support cannot be overstated. In each case, the formulation of new policies with sub

stantial government involvement led to formal authorization for the shifted cadres and created the mechanisms for ensuring the quality of education and training for the tasks shifted. With these policies in place, quality assurance mechanisms and monitoring and evaluation have been able to assess the strategic value of the task-shifting intervention over time.

5. Conclusion
Expanding access to lifesaving MNH services requires innovative methods to ensure that sufficient human resources are in place to meet the needs of women and newborns. Task shifting is one way to address the human resource crisis, but its sustainable implementation requires a complex interplay of different components: a sound policy and regulatory foundation, attention to qualifications and responsibilities, education and training, and service delivery support. Moreover, task shifting is only one element of larger health system forces that need to be structured equitably to meet the needs of all mothers, newborns, children, and families.

Conflict of interest
The authors have no conflicts of interest.

References


Experiences engaging community health workers to provide maternal and newborn health services: Implementation of four programs

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ABSTRACT

A paucity of skilled health providers is a considerable impediment to reducing maternal, infant, and under-five mortality for many low-resource countries. Although evidence supports the effectiveness of community health workers (CHWs) in delivering primary healthcare services, shifting tasks to this cadre from providers with advanced training has been pursued with overall caution—both because of difficulties determining an appropriate package of CHW services and to avoid overburdening the cadre. We reviewed programs in Rwanda, Afghanistan, Nigeria, and Nepal where tasks in delivery of health promotion information and distribution of commodities were transitioned to CHWs to reach underserved populations. The community-based interventions were complementary to facility-based interventions as part of a comprehensive approach to increase access to basic health services. Drawing on these experiences, we illuminate commonalities, lessons learned, and factors contributing to the programs’ implementation strategies to help inform practical application in other settings.

1. Introduction

The Alma Alta Declaration of 1978 incorporated volunteer community health workers (CHWs) into the delivery of basic health services at the village level [1] and paved the way for the proliferation of CHW programs [2]. More than 30 years later, many low-income countries are striving to increase the numbers of skilled providers as a way to improve coverage of and access to basic health services, including maternal and newborn health (MNH), family planning, and nutrition [3]. Nevertheless, efforts to strengthen facility services have often not kept pace with the health system requirements needed to provide all citizens access to care [4]. The ongoing crisis in human resources for health remains one of the most critical system challenges, resulting from a severe paucity in the number of providers, inappropriate distribution of existing providers, and insufficient capacity of providers due to lack of training and education [5]. In this context, discussion around the appropriate role of CHWs in reducing maternal, infant, and under-five mortality has been revitalized [6,7].

The term “community health worker” encompasses the roles and responsibilities of various health cadres [6]. Lewin et al. [7] defines a lay health worker—a term often used interchangeably with CHW—as any health worker who: (1) performs functions related to healthcare delivery; (2) has received some form of training relevant to the given intervention; and (3) does not hold a formal professional or paraprofessional certificate or tertiary education degree. Although the profile of CHWs varies across countries, common attributes such as being recruited and supported by the community served [8] may uniquely position the cadre to help address some of the health system challenges that affect access to health facility services.

1.1. Current community health worker situation

Globally, many women, particularly in rural areas, continue to give birth at home without the presence of a skilled provider [9], and families in such settings often seek treatment for child illnesses from informal providers such as medicine vendors [10]. These challenges underscore critical gaps in healthcare access. National MNH survival strategies must employ complementary facility- and community-based strategies, which in some cases might be accomplished by CHWs delivering health promotion information and distributing commodities to communities to achieve greater coverage of priority interventions. Barros et al. [11] reviewed inequalities in maternal, newborn, and child health interventions and concluded that community-based interventions are more equitable than static facility-based services. Thus, task shifting to CHWs to

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provide outreach services in rural communities can help increase over-
all access to basic interventions [12,13].

The role and need for CHWs has been examined in relation to
programmatic opportunities for task shifting, and recommendations
for program integration have been issued by both WHO [14] and
USAID on this topic [15]. Community-level interventions in MNH
have focused on health promotion and distribution of commodities
such as iron, folic acid, and vitamin A supplementation [16]. CHWs
have also been shown successful in strengthening management of
uncomplicated child fever cases in community case management
(CCM) of malaria [17], distributing and promoting contraceptives
[18], and promoting exclusive breastfeeding [7], although not always
sustainably at scale.

While there is evidence, at least in pilot settings, that CHWs can ef-
effectively deliver interventions when adequately trained and supervised,
debate has persisted on how to best utilize the cadre. The global com-
nunity has shifted responsibilities to CHWs with overall caution, focus-
ing largely on the intervention itself, rather than on populations in need
who are not reached by the current health system [2]. Exploiting oppor-
tunities to devolve select interventions to CHWs might help address the
human resources for health crisis by enabling skilled providers to focus
on those services (e.g. diagnostic, therapeutic) that require a higher
level of education or training.

1.2. Jhpiego’s experience with community health workers

As part of a comprehensive approach to care, Jhpiego has worked
with CHWs in numerous countries as a complement to facility-based
care and a key strategy for reaching underserved women and their fam-
ilies with lifesaving services with a focus on MNH. The objective of the
present article is to illuminate commonalities and lessons learned
from four country programs in which tasks in health promotion and dis-
tribution of commodities were intentionally shifted from skilled pro-
viders to CHWs to advance MNH strategies. These illustrative experiences, presented as case studies, are assessed—with a focus on
CHW scopes of work and factors contributing to the effective imple-
mentation of the programs—to help inform practical application in
other settings.

2. Methods

Keeping in mind Lewin et al.’s definition of a lay health worker [7],
which aligns with Jhpiego’s definition of a CHW, we reviewed program
reports and other documents collected from Jhpiego’s internal reser-
voir and program staff’s inventories to identify those programs that met
the following criteria: (1) CHWs delivered health promotion informa-
tion and distributed commodities to the community for curative and
preventive interventions in support of MNH; (2) CHWs performed a
task that had been shifted from a skilled provider; and (3) data on
MNH services were available.

We specifically looked for clear examples of “task shifting” because
of the potential for this practice to provide relief to overburdened
health systems and to reach women and children who are often
overlooked. Programs that included components known to support
CHW efforts (e.g. community involvement) were also given special
consideration, in line with our focus on factors for effective
implementation.

After the program documents were reviewed and discussed among
staff who were knowledgeable about the CHW programs that fit our in-
sclusion criteria, we selected four that best met our criteria and were
“representative,” collectively, on a current and global level, in terms of
setting/culture and range of challenges. Drawing from these programs,
we developed the following case studies to highlight information most
pertinent to our objective.
linked to a national health performance-based system to incentivize CHWs on an ongoing basis, based upon achievement and completeness of 26 indicators (e.g. number of women accompanied to the facility for delivery). Each cooperative could receive money on a quarterly basis; on average, a cooperative received between US $1500 and $6000. Based upon the quarterly performance-based financing invoice, 70% of the payment was directed to the cooperative, and 30% was directed to CHWs as an individual incentive. To preclude adverse incentives, the system concentrated on preventive activities rather than curative care.

The cooperatives paradigm has been regarded as a solution for motivating and sustaining CHWs and supporting their integration into the health system. Between July 2010 and June 2011, a total of 2433 ASMs in six of the 30 districts received training in community-based MNH. In the same time period, in those six districts, 19 248 pregnant women were accompanied to the health center for pregnancy-related danger signs identified by the ASMs, and 52.7% of women who delivered in a facility were accompanied by ASMs [20].

3.2. Case study 2: Integration of postpartum family planning with existing MNH services in Afghanistan

Following the exit of the Taliban in 2001, health indicators in Afghanistan were highly unfavorable. The Ministry of Public Health (MOPH) placed emphasis on community-based health care as part of its strategy to expand access to and availability of basic health services, including family planning, as a pillar of maternal health for preventing

### Table 1

<table>
<thead>
<tr>
<th>Countries</th>
<th>Rwanda</th>
<th>Afghanistan</th>
<th>Nigeria</th>
<th>Nepal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus of program intervention</td>
<td>MNH and iCCM</td>
<td>PPFP</td>
<td>Malaria in pregnancy</td>
<td>PPH</td>
</tr>
<tr>
<td>Tasks shifted to CHWs from formally trained provider</td>
<td>1. CHW: Treatment of diarrhea, malaria and pneumonia; RDT test; direct observation of tuberculosis treatment; provision of family planning; IEC</td>
<td>Contraceptives to postpartum women, including injections</td>
<td>IPTp provision, insecticide-treated net distribution</td>
<td>Advance distribution of misoprostol for self-administration at home births</td>
</tr>
<tr>
<td>Total number of CHWs in program</td>
<td>16 447 out of the total 45 000 in the country</td>
<td>14 389 out of the total 19 000 in the country</td>
<td>735</td>
<td>At scale: 16 920</td>
</tr>
<tr>
<td>Geographic scale National: all 30 districts, among them 11 supported by MCHIP in 2010–2011</td>
<td>National: all 34 provinces of the country</td>
<td>7 local government areas (districts)</td>
<td>Pilot: 1 district (Banke)</td>
<td></td>
</tr>
<tr>
<td>Government selection criteria</td>
<td>Female; 25–50 years old; primary school education; literate; resident in village where working; available for home visits; respected by community; volunteer; perceived as honest</td>
<td>Female; willing to work as a volunteer; resident in village where working; respected by community; motivated to serve as a CHW</td>
<td>Willing to work as volunteer; resident in village where working; perceived as honest and acceptable by community</td>
<td>Self-motivated; willing to work as volunteer; willing to act as a focal person to bridge health programs with community</td>
</tr>
<tr>
<td>Government Initial Training and program intervention training</td>
<td>2 weeks initial; 6 days on the intervention; refresher after 6 months</td>
<td>9 weeks initial; 5 days on the intervention; refresher after 6 months</td>
<td>9 weeks initial; 5 days on the intervention; refresher after 6 months</td>
<td>18 days initial in two phases; 7 days on the intervention; periodic refresher training</td>
</tr>
<tr>
<td>Linkages to health facility</td>
<td>Community focal point at health center level and district hospital level; CHWs call ambulances; access to prenatal care facility data for follow up; reference and counter-reference system clear and operational</td>
<td>Monthly meetings with supervisor and health facility provider; referrals on LAPM to health facilities</td>
<td>Clinic provided trainers and supervisors and managed commodities for collection</td>
<td>Trainers of FCHVs were government staff in health facilities or district health offices; FCHVs reported to facilities; FCHVs shared progress in district semiannual review meeting</td>
</tr>
<tr>
<td>Reward/motivation/support</td>
<td>Funds from income generation activities, materials such as registers and counseling and screening cards, and supplies including celebration cloths for dry wrap and kangaroo mother care</td>
<td>Community recognition, traditional and creative non-monetary means (e.g. home repair, free transportation)</td>
<td>Community recognition and sense of obligation to his/her clan; materials such as counseling flip chart</td>
<td>Government organized FCHV day celebration and endowment fund; information, education and communication materials</td>
</tr>
<tr>
<td>Impact on MNH</td>
<td>150 207 women in labor were accompanied by ASMs to deliver in health facilities; 19 248 pregnant women were accompanied to the health center for pregnancy-related danger signs identified by the ASMs</td>
<td>Injectable contraceptives provided at health posts increased from 49 922 (April 2006–March 2007) to 103 898 (April 2009–March 2010); estimated contraceptive prevalence rate had reached 20%, compared with 10% (2010)</td>
<td>Proportion of pregnant women taking at least two sulfadoxine-pyrimethamine doses during pregnancy was 5 times in the CDI communities compared with 3 times in the control group, for whom IPTp was available only at prenatal care (P &lt; 0.001)</td>
<td>840 postintervention survey respondents, 73.2% received misoprostol, and uterine coverage increased from 11.6% before the intervention to 74.2% post intervention</td>
</tr>
</tbody>
</table>

Abbreviations: ASM, animatrice de santé maternelles; CHW, community health worker; FCHV, female community health volunteer; iCCM, integrated community case management; IEC, information, education, communication; IPTp, intermittent preventive treatment in pregnancy; LAPM, long-acting and permanent methods; MNH, maternal and newborn health; MCHIP, Maternal and Child Health Integrated Program; PPFP, postpartum family planning; PPH, postpartum hemorrhage; RDT, rapid diagnostic test.
unintended pregnancies [21]. Postpartum family planning (PPFP) had also been brought to the fore as a lifesaving intervention, having been repositioned within the last decade—in part by the ACCESS-FP Program (an associate award of the ACCESS Program) and proponents of the lactational amenorrhea method (a short-term contraceptive method based upon patterns of breastfeeding).

In 2007, ACCESS-FP, in collaboration with the Health Services Support Project (HSSP), partnered with the MOPH and the organization Management Sciences for Health to introduce PPFP services to increase contraceptive utilization, address unmet need for contraception, and promote healthy birth-to-pregnancy intervals of at least 24 months. The existing national community-based healthcare system positioned these volunteers as frontline health workers within a basic package of health services (BPHS) [22] at the health post level, their primary functions being health promotion and limited curative care.

CHWs were selected by community health shura (councils) after meeting basic selection criteria and were given an eight-week pre-service training [23]. With the strong sociocultural preference for female workers, 50% of CHWs were women. Often the female CHW at the health post was a relative of the male CHW, which helped increase cultural acceptability of female CHW roles.

Before commencement of the PPFP program under HSSP, the roles of a female CHW included conducting household visits to deliver counseling in prenatal and postpartum care, as well as providing counseling on family planning and distributing oral contraceptives, condoms, and follow-up doses of injectable contraceptives. Additionally, the Accelerating Contraceptive Use project, led by Management Sciences for Health, supported CHWs in initiating use of injectable contraceptives and administering the first injection on a pilot basis [24]. The PPFP program used the existing cadre, roles, and lessons learned from this pilot as a platform to build CHW capacity to provide counseling on PPFP, including providing the first dose of injectable contraceptives to postpartum women.

After identifying pregnant and postpartum women in their catchment areas through community mapping, CHWs were expected to conduct five household visits at specified times: the first during the eighth month of pregnancy and the other four during the postpartum period. The CHW: (1) provided counseling—assisted by pictorial flip charts—on healthy timing and spacing of pregnancies, exclusive breastfeeding, the lactational amenorrhea method, the return to fertility after pregnancy, transition from the lactational amenorrhea method to other modern methods of contraception, and adverse effects of various methods; (2) distributed condoms and oral contraceptives; (3) administered injectable contraceptives; and (4) made referrals to facilities for long-acting methods.

The strategy for initiating and expanding PPFP services by CHWs was four-pronged: (1) mobilizing the community through the health shura and leaders; (2) building capacity of the CHWs through in-service training on PPFP; (3) supporting the CHWs with supervision; and (4) collecting information on contraception distributed by CHWs for monitoring. The expansion strategy was aided by a number of activities and implementing partners. For instance, HSSP supported the MOPH in training CHW trainers in PPFP; in turn, these trainers replicated the CHW trainings at the provincial level with the assistance of non-governmental organizations contracted by the MOPH to deliver the BPHS. The establishment of a pool of provincial trainers helped to both expand the package of services and promote sustainability. Because CHWs were accountable to health shura for performance and community satisfaction, community sensitization meetings were conducted with the shura and with community and religious leaders to provide messages on PPFP and galvanize support for the program. In these meetings, the community health supervisors provided information on and addressed myths and misconceptions about the purpose and benefits of PPFP, means of service delivery, and the role of the CHW.

Operations research in Afghanistan on the national CHW program indicate that some, but not all, NGOs implementing the BPHS provided CHWs monetary and non-monetary incentives such as bicycles, literacy training, or furniture for health posts [25]; however, the recent national Community-Based Health Care Strategy acknowledges that support from communities or shura to CHWs is variable [26]. The MOPH’s expansion of access to quality health care through the BPHS, which includes community-based services, has led to increased services for women, newborns, and children, as well as improved health indicators. While the overall expansion of health services has undoubtedly played a role in this increase, select indicators highlight the possible contribution of PPFP services delivered by CHWs. From 2007 to 2009, 13 provinces in the country piloted community-based PPFP services. Following the pilot period, by the end of 2011, the program had rolled out to all 34 provinces. In total, 14,389 CHWs out of the 19,000 CHWs in the country received in-service training in PPFP [27]. In addition, National Health Management Information System data indicates that the number of injectable contraceptives provided at health posts by CHWs increased from 49,922 (April 2006–March 2007) to 103,898 (April 2009–March 2010). By 2010, the Afghanistan Mortality Survey estimated that the contraceptive prevalence rate had reached 20%, compared with 10% estimated by the Multiple Indicator Cluster Survey in 2003 (Fig. 1) [28–32]. The 2010 Afghanistan Mortality Survey also estimated the country’s median birth interval at 27 months in the preceding 5 years. Although data on birth intervals before the survey were not available, the estimate is promising, given that global evidence indicates that birth-to-pregnancy intervals of less than 24 months are associated with adverse maternal and neonatal outcomes.

As a result of the progress observed from the PPFP services provided by CHWs, the MOPH integrated these services into policy documents, including the national Reproductive Health Policy and Strategy, and into the BPHS. With the help of donors and the nongovernmental organizations delivering the BPHS, CHW-delivered PPFP services continue in Afghanistan to date. Efforts are underway to integrate the intervention within the national curriculum for CHWs, as well as to incorporate indicators into the National Health Management Information System.

3.3. Case study 3: Employing a community-directed intervention for malaria control in Nigeria

In 1995, the African Program on Onchocerciasis Control (APOC) managed treatment of onchocerciasis—a parasitic disease that can cause blindness—at the community level through a strategy entitled “community-directed treatment with ivermectin” (CDTI) [33]. CDTI harnesses community engagement through a community-clinic partnership and empowers members to actively participate in delivery of the drug. Under APOC, the “clinic” side of the partnership involved health facility staff: (1) reaching out to communities in their catchment area and encouraging them to take responsibility for the handling and distribution of ivermectin; and (2) training community volunteers to distribute the drug, maintaining stocks of ivermectin at the facility, and collecting completed distribution records. The “community” side
further engaged the community in planning ivermectin distribution, choosing volunteer community-directed distributors (CDDs) (CHWs in this context), and undertaking village censuses. Communities chose CDDs from among male and female neighbors who were reliable, respectable, and accountable [34]. Literacy was not a requirement, but usually at least one CDD in a village was literate in order to maintain records.

Given the success that APOC experienced in reaching 100 000 villages with CDTI, Jhpiego and other health programs realized the strategy's potential as a model for other health and social interventions [35]. CDDs became involved in immunization outreach, control of other diseases, agricultural extension, and general health promotion, which led the United Nations Development Programme (UNDP)/World Bank/WHO/UNICEF Special Program on Research and Training in Tropical Diseases to design intervention research to test CDTI with other health services. In addition to enhanced ivermectin coverage, this multicountry project found that the approach, now termed “community-directed intervention” (CDI), increased coverage of malaria treatment, bed net use and prevention services, and vitamin A supplementation compared with traditional facility-based services, as well as assisted in directly observed treatment for tuberculosis [36] and intestinal helmint control [37].

Jhpiego, recognizing the community involvement principles behind the successful implementation of CDI, adapted the approach to address malaria in pregnancy in Akwa Ibom State, a highly endemic area of Nigeria where uptake of intermittent preventive treatment in pregnancy (IPTp) and insecticide-treated net distribution had been very low [38]. In the context of Jhpiego's work, a pilot project was conceived on community-directed delivery of malaria in pregnancy control interventions. The clan (large group of families) served as the platform for community engagement. Each clan included about 100 residents and was encouraged to select at least two CDDs to help manage interventions such as health promotion, IPTp provision, recordkeeping, and insecticide-treated net distribution. Primary healthcare facility staff received in-service training in malaria in pregnancy and malaria; they then reached out to the leadership and social structures at the village and clan levels. Every catchment area consisted of four to six villages, and each village contained approximately a dozen clans. Primary healthcare facility staff trained the chosen volunteers, but the clan as a whole kept the volunteers accountable and helped with tasks like census-taking and recordkeeping. Importantly, the involvement of CDDs in delivering IPTp was endorsed through a meeting of stakeholders in the state to overcome skepticism about community capabilities and gain government commitment.

Although CDDs frequently asked about monetary motivation and incentives, the idea of having the smallest community unit, the clan, choose at least two CDDs helped ensure that the workload did not overwhelm volunteers; the arrangement also capitalized on the likelihood that the volunteer would have a sense of obligation to his/her own clan. This intrinsic motivation enabled volunteers to see CDI as a way to help relatives and neighbors, while also gaining recognition for providing a valuable service to their communities. CDI attrition was not an issue because maintaining these human resources was regarded as the responsibility of the whole community (with the support of the primary healthcare facility), which was always ready to identify new CDDs.

The pilot that used the CDI process for malaria in pregnancy achieved significantly higher coverage of IPTp and insecticide-treated nets and prenatal care attendance in intervention communities than control communities without CDI. The effects of the CDI program were largest for IPTp adherence, increasing the proportion of pregnant women taking at least two sulfadoxine-pyrimethamine doses during pregnancy by five times in the CDI communities compared with three times in the control group, for whom IPTp was available only at prenatal care (P < 0.001) [39]. Based on this pilot CDI program, the communities were willing to expand their efforts into iCCM, on a trial basis in two communities [40].

3.4. Case study 4: Preventing postpartum hemorrhage at home birth in Nepal

The Nepalese Government created the female community health volunteer program (FCHV) in 1988/89—a group of CHWs that has grown to 48 000 volunteers across the country. Selected by the communities, the FCHVs receive 18 days of initial training in addition to a five-year cycle of five-day refresher training in maternal and child health based on the government’s FCHV policy (2003) [41] and periodic refresher training. Their responsibilities have included health promotion and distribution of commodities such as vitamin A, deworming tablets, and iron folate.

In 2006, the maternal mortality ratio in Nepal was 281 per 100 000 live births [42], and nearly half of these deaths were attributable to PPH [43]. The Nepal Family Health Program (NFHP), which aimed to improve MNH outcomes, explored the feasibility, acceptability, and safety of a program for advanced distribution of misoprostol to pregnant women for self-administration after home births for prevention of PPH. This intervention, which was implemented by John Snow, Inc., Jhpiego, Save the Children and partners, was piloted in Banke district, where there were 665 existing FCHVs in the government health system.

The FCHVs had received previous training on other aspects of their assigned tasks, worked 3–8 hours per week, and served for an average of five years. Most of the FCHVs were illiterate [44]. For the purpose of this pilot on PPH prevention, the FCHVs received an additional seven days of training focused on the intervention, which involved identifying pregnant women in their catchment area, providing prenatal counseling, and distributing misoprostol to women who were eight months pregnant for self-administration at home births.

Results showed that of the 840 post-intervention survey respondents, 73.2% received misoprostol, and uterine coverage increased from 11.6% before the intervention to 74.2% after the intervention [44]. The most extensive improvements in uterine coverage were observed in the two lowest wealth strata. This successful pilot program added to the increasing body of evidence demonstrating that trained CHWs could effectively deliver misoprostol for self-administration by women at home deliveries [45], although scale-up has been challenged in areas such as consistent supply of misoprostol [46]. However, it is a compelling example of the contribution that CHWs can make to improving equity of health interventions.

4. Discussion

The Alma Alta Declaration of 1978 trumpeted the provision of primary health care for all by 2000. Although universal coverage of MNH services has not yet been achieved, the CHW programs reviewed in this article have shown that CHWs can contribute to increased coverage of interventions in pilot and early scale-up efforts in different settings. Scale-up presents many challenges, as reported by Smith et al. [47] in this supplement. Successful national MNH survival strategies will require not only facility-based strategies to provide care during pregnancy, childbirth, and the postpartum period, but also community-based strategies that bring services directly to the household level.

In each of the case studies presented, the CHWs undertook a variety of MNH tasks that had been shifted to them from providers with more advanced training. This shift was made possible through mutual consensus between the health system, which approved the tasks, and the community, which had clear needs for the services. The health promotion and distribution of commodities afforded by these community-based strategies yielded greater uptake of interventions than would have been achieved through facility-based services alone.

4.1. Supportive program components

Drawing on these experiences, we identified cross-cutting health system and community components that facilitated the programs’ achievements through the use of CHWs, illustrated in Fig. 2.
Fig. 2. Key components of successful community health worker (CHW) programs.

All programs built upon an existing platform for CHW delivery of information and services, such as family planning in Afghanistan and prenatal care in Rwanda. Programs facilitated better linkages with health facility services so that a complementary facility-community approach could be employed, often at the local level. In Afghanistan, however, the intervention was introduced as a vertical intervention; later, once the program had demonstrated feasibility, the intervention was integrated horizontally at the national level within the larger purview of CHW responsibilities.

Capacity building of CHWs was achieved initially through refresher training, followed by supportive supervision. Refresher training reinforced the initial training received by CHWs as implementation progressed. As the intervention became more ingrained within the roles of CHWs, the knowledge and skills needed to perform it could be integrated into their initial education.

Community engagement was integral throughout implementation, from community members selecting the CHWs to community members acting as equal and active partners in providing primary healthcare services. This engagement, in turn, helped to influence intervention uptake, as well as CHW accountability and dedication. Whether taking the form of clan members in Nigeria or religious leaders in Afghanistan, the community proved to be a potent force in programmatic success.

A motivational element for CHWs was also shown to be important. Globally, discussion about how to reward CHW performance and whether CHWs should be paid is ongoing. Although we do not answer that question, we have observed that all of these programs used approaches that targeted benefits to the CHW. These include both extrinsic benefits, such as contributions to a CHW savings fund in Rwanda, and intrinsic benefits, such as community accountability to a clan as the primary impetus that fueled CHW motivation in Nigeria.

Sufficient political commitment, including a steady supply of commodities, was integral for the approval of the tasks performed by CHWs. Moreover, government support of CHWs as a permanent component of a comprehensive health system also played a role in success.

4.2. Addressing challenges

In these four country experiences, Jhpiego worked to address context-specific challenges to facilitate CHW program success. When the community-based PPFP initiative commenced in Afghanistan, for example, efforts were initially challenged by misconceptions and restrictive sociocultural beliefs about contraception. One approach to address this issue was to develop PPFP messages consistent with the teachings of Islam. For example, the lactational amenorrhea method—in which fully or nearly fully breastfeeding is one of three criteria for successful use of the method—was linked with Islam’s promotion of breastfeeding. These messages resonated with target groups and created common ground where CHWs were able to connect with religious leaders on the subject. Consequently, some mullahs integrated lactational amenorrhea method messages within their Friday prayers, helping to achieve broader promotion of PPFP within communities.

While community-based interventions have been found to be more equitable than facility-based services, programs must still ensure that underserved or disadvantaged areas receive access. In Rwanda, for example, despite a larger, more developed CHW presence than in many comparable settings, many women and children are still not being reached. To address this gap, the government is initiating a mapping exercise by CHWs to create a visual representation of catchment areas, including the location of all households. The “map” will be used by CHWs as an aid in monitoring delivery of interventions.

Absence of political commitment is another category of challenge that, alone, might circumvent CHWs from reaching their full potential, arising from a persisting notion that CHWs are only a temporary solution within the health system [48]. Although the 2012 WHO guidelines for the prevention and management of PPH recommend the administration of misoprostol by CHWs [49], polarized discussion continues about whether members of this cadre can provide misoprostol to women in advance of childbirth for self-administration after a home birth, to prevent PPH. Despite mounting implementation evidence in favor of this practice to prevent PPH [45], many countries arguably lack the political will to put this lifesaving measure into the hands of CHWs—their most prevalent, far-reaching providers. In contrast, community-based distribution of misoprostol in Nepal was done through the government health system, illustrating ample political support. In fact, all four of the programs described in the present article operated within the government health system, illustrating ample political support. In fact, all four of the programs described in the present article operated within the government health system, illustrating ample political support. In fact, all four of the programs described in the present article operated within the government health system, illustrating ample political support. In fact, all four of the programs described in the present article operated within the government health system, illustrating ample political support.

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5. Conclusion

CHWs can take an active role in the delivery of community-based primary healthcare interventions linked to the health facility, as posited by Alma Alta. As illustrated by four Jhpiego-led programs, CHWs have demonstrated that they can effectively deliver MNH and family planning information and distribute commodities that were once regarded as functions of formally-trained health workers. Other studies should be conducted to explore the potential for other services to be transitioned to CHWs, such as screening for pre-eclampsia/eclampsia and providing a loading dose of the anticonvulsant magnesium sulfate to women with eclampsia.

Many factors must be weighed when considering the devolution of tasks to CHWs and effective implementation of related programs. However, these case studies demonstrate that there are MNH/family planning interventions that can be facilitated by CHWs to complement facility services. Through improved access to MNH/family planning...
interventions, the scale-up of community-based interventions has the potential to reduce maternal, infant, and under-five mortality. Other countries and CHW programs can apply these lessons learned to increase uptake of MNH/family planning interventions in similar settings.

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Conflict of interest

The authors have no conflicts of interest.

References

[17] Matalanis NH, Harper DH. scaling community-based health interventions: the scale-up of community-based interventions has the potential to reduce maternal, infant, and under-five mortality. Other countries and CHW programs can apply these lessons learned to increase uptake of MNH/family planning interventions in similar settings.

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References


1. Background

Recent reports from UN agencies regarding Millennium Development Goals (MDGs) 4 and 5, which set targets for reductions in maternal and child mortality, have shown that progress has been made in both areas. At the global level, according to WHO data, maternal mortality ratios have declined from 380 to 210 maternal deaths per 100,000 live births between 1990 and 2013 [1]. Similarly, UNICEF reported a reduction in under-5 child mortality rates from 88 to 57 per 1,000 live births for approximately the same period [2]. These global trends hide regional disparities, however, with most of the progress being made in Asian and Latin American countries. In Sub-Saharan Africa, for example, maternal mortality ratios remain as high as 510 per 100,000 live births for approximately the same period [3]. These global trends hide regional disparities, however, with most of the progress being made in Asian and Latin American countries. In Sub-Saharan Africa, for example, maternal mortality ratios remain as high as 510 per 100,000 live births [1], and Sub-Saharan Africa is the only region in which under-5 child mortality has not been cut by half since 1990 [3].

Several challenges have impeded significant progress in the reduction of maternal and newborn mortality in Sub-Saharan Africa [4], including shortages of human resources, poor infrastructure, scarcity of equipment and commodities, and insufficient implementation of evidence-based interventions [5]. Although the number of health workers plays a critical role, the quality of services delivered (resulting from those workers’ knowledge, skills, and attitudes) is of equal importance. For example, in a multicountry survey conducted by the Maternal and Child Health Integrated Program (MCHIP)—USAID’s flagship maternal, neonatal, and child health (MNCH) program from 2008 to 2014—the mean knowledge score among frontline healthcare workers for the management of pre-eclampsia/eclampsia was just 25% in Kenya [6]. In Tanzania, 95% of partographs, which are intended to be used during labor to monitor and anticipate complications, were completed after delivery [7]. Furthermore, the mean knowledge score for actions to be taken for a retained placenta was 33% in Ethiopia [6], and the mean performance score for woman-friendly care was 58% in Rwanda [9]. These findings suggest that significant knowledge and practice gaps need to be addressed to promote high-quality care and the use of essential interventions that have proven valuable in the reduction of maternal and newborn mortality [10,11].

There are also examples from some low-resource countries showing that besides competent health workers, strong political will along with good leadership in reproductive health are essential elements for the reduction of maternal mortality [6]. As a result, there is an apparent need for providers who possess not only up-to-date clinical skills but also strong leadership skills, and who are well-established and respected within their field of practice. Such healthcare workers should be able to advocate for the use and scale-up of evidence-based interventions [9], engage with decision makers to commit them to update national and subnational policies where necessary, and advocate for increased funding for MNCH. In addition, they should be able to act as role models, demonstrating quality care that is evidence-based and woman-friendly while guiding and inspiring others to do the
same [12]. Health workers possessing such leadership and clinical skills could be called “champions.”

1.1. Champions in health care

The concept of champions originated in the management field with the notion of product champions. Champions and the promotion of innovation are intimately linked. Champions can be defined as individuals who contribute decisively to the innovation process by overcoming resistance to innovations, building support for them, and making sure that they are implemented [13].

There is a distinct role for champions in bringing changes and improvement in health care [14,15]. Various types of healthcare champions have emerged, including executive champions who hold leadership positions within organizations; managerial champions who are responsible for managing clinical departments, wards or units; and clinical champions who are frontline clinicians. All of these champions, however, perform at least the following five functions: they advocate, disseminate knowledge, navigate boundaries between professional groups, build relationships, and achieve consensus.

Based on descriptions from the literature [16–18], a clinical champion can be further defined as a physician, nurse, midwife, physician assistant, or other healthcare professional who has the requisite knowledge and skills in a given discipline, who is respected by his or her peers and is supported by the system hierarchy, and who takes the lead in introducing a new practice or innovation to improve the quality of care. We define a maternal and newborn health (MNH) champion as a specific kind of clinical champion: a health professional (doctor, midwife, nurse) with up-to-date knowledge, practices, and attitudes in MNH (i.e. an expert in his or her respective field of practice), who, through advocacy and action, promotes policies, practices, and programs that will help achieve MDGs 4 and 5 in his or her country and region.

The present article describes two Jhpiego-led initiatives to develop MNH champions in countries with some of the most challenging MNH indicators in the world. We describe the MNH champion development process, identify ways in which the process evolved over time (including differences between the two initiatives), highlight MNH champion contributions through a series of case studies, and discuss lessons learned and challenges encountered.

2. Context and evolution for the champions initiatives

One of the objectives of USAID’s flagship Maternal and Neonatal Health Program, which was implemented from 1998–2004 by Jhpiego and partners, was to increase MNH providers’ use of evidence-based standards of care, tools, and approaches. To achieve this goal as rapidly as possible, the Maternal and Neonatal Health Program developed a network of experts from Africa, Asia, and Latin America and the Caribbean who could “champion” the inclusion of essential interventions in national policies and in pre-service and in-service education curricula for doctors, midwives, and nurses at all levels of service delivery. This effort, Jhpiego’s first MNH champions initiative, was called the “Regional Expert Development Initiative.” Forty-three midwives and obstetricians from 18 countries participated over a period of 12 months, receiving continuing professional development activities to ensure that they were proficient in life-saving best practices and advanced clinical training techniques, and that they understood the principles of advocacy for MNH [19]. As their expertise and experience was recognized, many of these champions subsequently fulfilled the Maternal and Neonatal Health Program’s expectations for improving MNH in their regions, and they were later called upon to collaborate with the ACCESS Program, the follow-on USAID project that was also awarded to a Jhpiego-led consortium and implemented in 2004–2009. In addition, the champions were involved in MNH projects implemented by other organizations in their respective countries.

Based on the successes and accomplishments of the MNH champions who participated in the Regional Expert Development Initiative, and faced with the need for strong local leadership for MNCH in programs across more than 40 countries, particularly in Africa, the next Jhpiego-led and USAID-sponsored MNCH program, MCHIP, aimed to replicate and improve upon the first initiative and focus on the African region. This new leadership initiative, entitled the “Africa MNH Champions Program,” was designed in collaboration with the WHO’s Regional Office for Africa, the UNFPA, the West African Health Organization (WAHO), and other regional institutions. As a result of this partnership, WAHO was able to assist with institutional, logistic, and financial support for participants to complement the funding provided by USAID through MCHIP. Funding was provided to the champions for travel expenses to the courses, but they did not receive any other compensation for their participation in the initiative.

The Africa MNH Champions Program was an 18-month initiative that used a modern, evidence-based, “blended learning” (online and face-to-face) approach to build the technical, training, and advocacy capacity of MNH experts from 10 African countries, five Anglophone and five Francophone countries. Champions from each country were grouped into interdisciplinary teams comprised of midwives, obstetricians, and pediatricians, for a total of 30 champions. Due to original selection and attrition, the final composition was 26 and more heavily weighted toward midwives and obstetricians (Table 1). All champions, at the time of selection, were in leadership positions either in their facilities as chief of services and/or as pre-service education faculty. Since commencement of the program, the champions have been putting the knowledge and skills learned into practice at all levels of the healthcare delivery system in their respective countries. All have conducted step-down technical updates for colleagues in their own institutions, and all have been involved in national training workshops and revisions of pre-service and in-service curricula—designed by Jhpiego and partners—either during or following their participation in the program.

3. Development process for both champions initiatives

Some common elements of and key differences between the two MNH champions initiatives are described below.

3.1. Planning and design

Both initiatives were planned during a series of consultation meetings among Jhpiego, its partner organizations, and USAID. Their design was guided by the following principles: (1) involvement of all parties in the selection of countries and candidates; (2) competitive selection of candidates; and (3) ensuring local participation by involving regional organizations and ministries of health as much as possible. To move implementation forward, a “facilitator team” was formed that included senior midwives, obstetricians, and pediatricians, serving as Jhpiego staff or consultants.

3.2. Selection criteria

The facilitator team agreed on selection criteria for the candidates that were based on clinical capacity as well as perceived motivation and leadership skills (Box 1). For the first initiative, an announcement...
for applications was sent through Jhpiego’s networks alone; for the second initiative, an announcement was also sent through MCHIP partner country offices as the “MNH Africa Champions Program Concept Note” to WHO, ministries of health, and USAID’s and UN agencies’ country offices. Once received, candidates’ applications were compared against the selection criteria to determine eligibility, and the final decision on champions from those eligible was made by a multiagency selection committee.

Because both initiatives involved multiple activities taking place over a period of 12–18 months, and also because of the high expectations from the facilitator teams, each selected champion was asked to sign an agreement confirming that they would complete the entire program. Champions’ supervisors or institutional representatives were also asked to sign agreements allowing the champions to commit to full participation.

### 3.3. Representative activities

Table 2 shows the types of activities included in both initiatives to bolster champions’ clinical, training, and leadership skills. The ultimate goal of these activities was to create a group of proficient clinical trainers with standardized clinical skills who could educate others and advocate for improved MNH in their respective countries and regions. Training materials included those developed by Jhpiego and its partners, such as the WHO manual, “Managing complications in pregnancy and childbirth: a guide for midwives and doctors” [20] and the “Emergency Obstetric Care for Doctors and Midwives Learning Resource Package” by the Maternal and Neonatal Health Program and the Averting Maternal Death and Disability (AMDD) Program of Columbia University’s Mailman School of Public Health [21].

#### Table 2

<table>
<thead>
<tr>
<th>Activity</th>
<th>Objective</th>
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<tbody>
<tr>
<td>Knowledge and clinical skills standardization course</td>
<td>Ensure that champions are familiar with the latest evidence in MNH (including malaria in pregnancy, PMTCT, and quality improvement) and have strengthened their clinical practice skills</td>
</tr>
<tr>
<td>Clinical training skills course</td>
<td>Enable champions to serve as master trainers who can effectively train other MNH providers</td>
</tr>
<tr>
<td>Leadership and advocacy course</td>
<td>Empower champions to be change agents and advocates for maternal and newborn health</td>
</tr>
<tr>
<td>Follow-up visits</td>
<td>Mentor the champions as they transfer new knowledge and skills to their workplaces and implement an action plan for training and advocacy</td>
</tr>
</tbody>
</table>

### 3.4. Monitoring and evaluation

Several monitoring and evaluation tools were used to follow up and track the outcomes of the various activities and action plans. These tools included reviews of activity logs, site visits between activities, and—in the second initiative, with its blended learning approach—analysis of the e-learning courses; however, improvement of knowledge and skills of individuals trained by the champions was not measured. Because the majority of champions were already leaders in their respective facilities or institutions when they were selected for the initiatives, they were well-positioned to carry out all activities and use the periods in between activities to implement action plans, organizing training sessions on specific themes and supervising implementation of best MNH practices. In addition, because many of the facilities in which champions practiced were large-volume clinical practice sites for medical and midwifery pre-service education programs, students at these sites were exposed to the champions’ new knowledge and skills, and the sites themselves therefore benefitted early and consistently from the latest evidence-based care.

### 3.5. Key differences between the initiatives

Although both MNH champions initiatives contained the same essential elements, there were some key differences, outlined in Table 3, that were largely due to the regional focus of the Africa MNH Champions Program and the increased use of technology and rapid emergence of online learning platforms by the time that initiative was implemented. Before each of the face-to-face workshops held for the Africa MNH Champions Program, online content was delivered to champions in modules, including one on basic emergency obstetric and newborn care (BEmONC) and one on effective teaching skills, via the Qstream platform, which uses a self-paced, spaced, learning approach [22]. By giving champions online courses to cover this content prior to the workshops, the workshops were able to cover in-depth technical information and clinical skills more rapidly. For the Africa MNH Champions Program, email communication was also possible to conduct follow-up monitoring and evaluation, and a Community of Practice, or online site to share resources and public discussions, was established to facilitate continued exchange of experiences and resources. Some participants even exchanged communications through social media. Neither of the initiatives provided additional funding to increase services or improve upon those services that were currently provided in each of the champions’ facilities.

### 4. Case studies from the first MNH champions initiative

The MNH champions participating in both initiatives have accomplished a great deal in their workplaces, countries, and regions. A survey of the champions from the Regional Expert Development Initiative indicated that many were able to practice the skills learned in the trainings and thus felt more competent and confident in their use. Some went on to become particularly notable and successful leaders. While champions’ facilities did not receive equipment, commodities, or funding, champions became advocates to their ministries of health and facilities to improve MNH services. The case studies below are drawn from the first initiative and highlight the contributions of these champions in their respective countries or regions.

#### 4.1. Case study 1: Implementing best practices locally, educating regionally, advocating globally

One obstetrician/gynecologist from Africa who was the head of an obstetrics and gynecology unit at a large teaching hospital joined the champions initiative with a keen interest in learning and implementing new evidence-based approaches to improve health outcomes at her hospital. She immediately began using the knowledge that she gained...
to make several changes that are still in place in the hospital today. For one, she reorganized the “factory assembly-line approach” in the prenatal clinic to create a more personalized, women-friendly service, allowing each woman to be seen by one nurse in a screened-off area instead of by many providers in a public area. Second, she introduced an emergency triage system that was especially beneficial for her busy service because it acted as a referral site for a large catchment area and treated many women with complications on a daily basis. Finally, she worked with her hospital’s administration to advocate for a more consistent supply of drugs to treat pre eclampsia/eclampsia and postpartum hemorrhage—the greatest causes of maternal mortality in her country. Although the hospital’s maternity unit remains small and crowded, it is still used as a clinical training site because of the evidence-based practices that were supported by the champion and implemented there, in areas such as infection prevention, active management of the third stage of labor, magnesium sulfate for pre eclampsia/eclampsia, and newborn resuscitation. The champion has gone on to facilitate regional trainings in these, and additional, best practices, and she has also worked at the global level as a contributor to a WHO technical working group and a member of the editorial review committee of the African Journal of Reproductive Health.

4.2. Case study 2: Leading the way, bringing hope to underserved areas

Another Africa champion, a nurse-midwife who participated in the initiative as she began leading an organization for private midwives, has influenced the expansion of her organization from approximately 30 members working in private maternity practices in seven of the country’s 30 regions to 75 members across 18 regions. Since the organization’s founding, its members have assisted at nearly 10,000 births, targeting underserved communities where other health professionals often do not want to work. These committed midwives give women the all-important option of a skilled provider for their pregnancy and birth at an affordable cost. As the reach of the organization’s members has grown, the champion continues conducting in-service trainings for members to build skills in infection prevention, use of the partograph, and newborn resuscitation. She also carries out supportive supervision as funds allow.

4.3. Case study 3: Sharing a passion for evidence-based practice, respectful care, and innovation

One active champion from Latin America, an obstetrician/gynecologist who has worked throughout the region with several international nongovernmental organizations to strengthen MNH, is now an assistant professor of obstetrics and gynecology at the national medical school. Since his participation in the champions initiative, he has advocated to the ministry of health in his country to adopt the WHO Integrated Management of Pregnancy and Childbirth (IMPAC) guidelines for use in all health facilities to curb unnecessary “routine” practices such as episiotomy and cesarean delivery. His own facility has been able to drastically decrease the rates of these practices, from 90% to 16% for episiotomy and from 50% to 24% for cesarean delivery—rates that still hold true today. Through the many talks that he has given throughout the region, he has educated other providers about the respectful maternity care principles that were highlighted for him during the champions initiative. Another of his ongoing advocacy efforts is the promotion of a modified insertion technique used to reduce expulsions of the postpartum intrauterine contraceptive device by straightening the uterine-cervical angle postpartum implantation. This idea originated during the time that he was involved in the initiative. He has collaborated with programs in India and the Philippines to develop training materials and train providers using his approach.

4.4. Case study 4: Demonstrating the broad applicability of leadership training

The first champions initiative reached Southeast Asia as well. One obstetrician/gynecologist from Jakarta, Indonesia, was the deputy chief of medical services at a private hospital when he participated in the initiative and has gone on to apply what he learned, particularly the training and leadership skills, in a variety of other regional and global positions in MNH. For example, he has led trainings for several international nongovernmental organizations in Indonesia and Afghanistan; served as a principal researcher for a World Bank Project; and worked with the University of Aberdeen’s project on maternal and newborn near misses in Indonesia. He is now the director of his private hospital, which is a partner on a USAID-supported project for MNH.

5. Lessons learned from the second champions initiative

The second initiative, the Africa MNH Champions Program, had similar accomplishments to the first (Table 4) and improved upon the first by involving multiple partners in soliciting candidate applications, organizing champions as interdisciplinary teams of midwives, obstetricians, and pediatricians, and utilizing technology to increase opportunities to transfer learning. Still, the initiative encountered a number of challenges that might reflect universal issues to be considered when designing any MNH champions program.

5.1. Country selection

The selection of countries from which the initiative could solicit candidates was necessarily driven by stakeholder preferences. The terms for the Africa MNH Champions Program required selection of five Anglophone and five Francophone countries, and all of the partners supporting USAID in designing the program—the WHO’s Regional Office for Africa, UNFPA, WAHO, and other regional institutions—had different and competing suggestions for those 10 countries. Ultimately, USAID made the final selection from a list of its own identified priority countries. Individuals from a number of countries not included in that final selection expressed a strong desire for their country to be part of a future champions initiative, indicating the limited number and geographic diversity of candidates because of country selection as well as the high perceived value of the program.
5.2. Participant selection

Participant selection occurred on a tight timeline, likely affecting the number and quality of candidates from selected countries. The pool of candidates from the Francophone region was larger and more balanced in cadre than that of the Anglophone region because of the stronger existing networks in the Francophone region that facilitated outreach to more contacts. Even though there was a requirement that candidates possess and be able to use a computer, the candidates chosen were not necessarily ideal for the online learning methods that were central to this initiative. For many, internet connectivity was poor and often irregular, and comfort with online learning varied from a beginning level of competence to expert, with similar ranges of competence experienced within each cadre. As a result, those who would have benefitted most from the program might not have been reached.

5.3. Involvement from partners and national ministries of health

Partner involvement was strongest in West Africa, with support from WAHO that even included travel funds. Champions’ activity logs document a high level of participation by UNFPA, UNICEF, WHO, and a number of USAID-funded programs. Early country and regional engagement seemed to facilitate a higher level of partner participation. In some countries, champions teams included those employed by the national ministry of health or other government ministries, or the facilitators team was able to introduce teams to the relevant ministries and discuss champions’ potential as leaders and advocates. Those countries experienced strong early successes during and after the initiative as champions were asked with increasing frequency to participate in national or subnational strategies, trainings, assessments, and programs, as evidenced by the champions’ activity logs. Engagement of partners and national ministries at the start of the initiative, including selection of champions with connections to the ministries, therefore appeared to lead to greater potential for immediate activity and use of the champions’ skills.

5.4. Individual and team participation

Despite agreements signed at the beginning of the initiative committing champions to full participation, participation varied in scope depending on previous experience with similar programs, geographic proximity to other team members and activities, and overall team cohesion. Teams with champions located in the same city generally had an easier time coordinating their work and calling on each other for support. Additional on-site follow-up activities would have been useful to increase participation and improve team integration but was not possible because of budget limitations. In addition, the initiative was not designed to measure improvements in knowledge and skills of those trained by champions—evaluations that would have been useful to determine the impact these initiatives had on MNH services. The four champions who dropped out of the initiative ostensibly did so because of personal circumstances, but it is possible that they did so because of logistic difficulties and challenges working with their team. The most successful teams were able to leverage their identity as a cohort of champions to influence national health policies, initiate regional mentoring programs, and introduce evidence-based care in teaching hospitals. Participation in the initiative garnered respect for and lent credibility to each champion’s opinions, but their collective endorsement appeared to build even greater momentum for broad changes in national health systems.

5.5. Adaptation to online activities

Particularly given the connectivity and other technology challenges experienced by some of the champions, completion of the Qstream modules was high, with completion rates of 80% and 97% on the BeNOc and Effective Teaching modules, respectively. As expected, modules that were translated into French had higher completion rates from the Francophone group. All 26 champions in the initiative successfully enrolled in the Community of Practice, but few made use of it, citing barriers that included lack of time, logistical issues with registering and obtaining new passwords, and ongoing connectivity difficulties. Redundancy with other resource sites and discussion boards may also have contributed to lack of use. For many champions, internet connectivity was irregular even at work sites, and few had internet access at home. Approximately 25% of participants funded their own internet use. For online activities to be successful in a champions initiative, they must be readily available and at least as accessible as in-person activities.

6. Conclusion

These two Jhpiego-led MNH champions initiatives have used similar approaches that can provide a foundation for future efforts in capacity-building and leadership development in MNH. Despite the challenges that come with multicountry initiatives, the investment was worth it in the light of what the experts/champions have accomplished collectively and individually. However, a more rigorous and long-term evaluation of the impact of these initiatives should take place before expanding the approach.

Conflict of interest

The authors have no conflicts of interest.

References


SUPPLEMENT ARTICLE

Essential basic and emergency obstetric and newborn care: From education and training to service delivery and quality of care

Emmanuel Otolorina, Patricia Gomezb, Sheena Curriec, Kusum Thapad, Blami Dao

1. Introduction

Approximately 15% of expected births worldwide will result in life-threatening complications during pregnancy, delivery, or the postpartum period [1]. The concept of emergency obstetric and newborn care (EmONC) was introduced by WHO, UNICEF, and UNFPA in 1997 as an organizing framework for the delivery of evidence-based clinical services, as a critical component of any program to reduce maternal and newborn mortality [2]. Skilled birth attendants (SBAs) [3] provide EmONC services within the context of community-focused and facility-based health systems, enabling timely prevention of and intervention for these complications and saving the lives of mothers and newborns. Universal access to EmONC is considered essential to reduce maternal mortality and requires that all pregnant women and newborns with complications have rapid access to well-functioning facilities that include a broad range of service delivery types and settings [4].

A set of seven key obstetric services, or “signal functions,” has been identified as critical to basic emergency obstetric and newborn care (BEmONC): administration of parenteral antibiotics; administration of parenteral anticonvulsants; removal of retained products (manual vacuum aspiration); assisted vaginal delivery; manual removal of the placenta; and resuscitation of the newborn [5]. Comprehensive emergency obstetric and newborn care (CEmONC) includes all BEmONC services and adds surgical capacity and blood transfusion. This set of life-saving services defines a health facility with regard to its capacity to treat obstetric and newborn emergencies [4]. The decision to include these functions in a package of emergency obstetric and newborn care services was based on evidence from numerous quasi-experimental or experimental studies and is summarized in various systematic reviews [6–9]. Recent global discussions have centered on expansion of the original seven signal functions to encompass activities related to routine care for mothers and newborns because they enable prediction, prevention, and early intervention to mitigate life-threatening complications [10]. These expanded functions include such services as: infection prevention and management for both mothers and infants; monitoring and management of labor using the partograph; active management of the third stage of labor; and infant thermal protection, feeding, and HIV prevention.

Table 1 shows the proposed expanded signal functions for obstetrics and newborn care alongside existing functions.

Over the last 15 years, Jhpiego has led consortia for USAID flagship maternal and newborn health (MNH) programs—Maternal and Neonatal...
Abbreviations: KMC, kangaroo mother care; PMTCT, prevention of mother-to-child transmission; PROM, premature rupture of membranes; 24/7, 24 hours a day 7 days a week.

Health (1998–2004), the Access to Clinical and Community Maternal, Neonatal and Women’s Health (ACCESS) Program (2004–2009), and the Maternal and Child Health Integrated Program (MCHIP) (2008–2014). These three programs have focused on maternal and newborn survival through the implementation of evidence-based interventions in low-resource countries designed to accelerate the reduction of maternal, newborn, and child mortality [11]. MCHIP has continued to build upon the successes of the Maternal and Neonatal Health and the Maternal and Child Health Integrated Program (MCHIP) and the Maternal and Child Health Integrated Program (MCHIP)

Table 1

<table>
<thead>
<tr>
<th>Dimensions of facility care</th>
<th>Obstetric</th>
<th>Newborn</th>
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</thead>
<tbody>
<tr>
<td><strong>General requirements for health facility</strong></td>
<td>Service availability 24/7&lt;br&gt;Skilled providers in sufficient numbers&lt;br&gt;Referral service to higher-level care, communications tools&lt;br&gt;Reliable electricity and water supply, heating in cold climates, clean toilets</td>
<td>Thermal protection&lt;br&gt;Immediate and exclusive breastfeeding&lt;br&gt;Infection prevention including hygienic cord care&lt;br&gt;Antibiotics for preterm or prolonged PROM&lt;br&gt;Prompt to prevent infection&lt;br&gt;Corticosteroids in preterm labor&lt;br&gt;Resuscitation with bag and mask of non-breathing baby&lt;br&gt;KMC for premature/very small babies&lt;br&gt;Alternative feeding if baby unable to breastfeed&lt;br&gt;Injectable antibiotics for neonatal sepsis (PMTCT if HIV-positive mother)&lt;br&gt;Intravenous fluids&lt;br&gt;Safe administration of oxygen</td>
</tr>
<tr>
<td><strong>A. Routine care (for all mothers and babies)</strong></td>
<td>Monitoring and management of labor using partograph&lt;br&gt;Infection prevention measures (hand-washing, gloves)&lt;br&gt;Active management of the third stage of labor (AMTSL)&lt;br&gt;Parenteral magnesium sulfate for (pre-) eclampsia&lt;br&gt;Assisted vaginal delivery&lt;br&gt;Parenteral antibiotics for maternal infection&lt;br&gt;Parenteral oxytocic drugs for hemorrhage&lt;br&gt;Manual removal of placenta for retained placenta&lt;br&gt;Removal of retained products of conception</td>
<td></td>
</tr>
<tr>
<td><strong>B. Basic emergency care (for mothers and babies with complications)</strong></td>
<td>Surgery (e.g. cesarean) including anesthesia&lt;br&gt;Blood transfusion&lt;br&gt;Parenteral oxytocic drugs for hemorrhage&lt;br&gt;Manual removal of placenta for retained placenta&lt;br&gt;Removal of retained products of conception&lt;br&gt;Antibiotics for preterm or prolonged PROM&lt;br&gt;Prompt to prevent infection&lt;br&gt;Corticosteroids in preterm labor&lt;br&gt;Resuscitation with bag and mask of non-breathing baby&lt;br&gt;KMC for premature/very small babies&lt;br&gt;Alternative feeding if baby unable to breastfeed&lt;br&gt;Injectable antibiotics for neonatal sepsis (PMTCT if HIV-positive mother)&lt;br&gt;Intravenous fluids&lt;br&gt;Safe administration of oxygen</td>
<td></td>
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<tr>
<td><strong>C. Comprehensive emergency care (functions in addition to Basic)</strong></td>
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Abbreviations: KMC, kangaroo mother care; PMTCT, prevention of mother-to-child transmission; PROM, premature rupture of membranes; 24/7, 24 hours a day 7 days a week.

a Reprinted from Gabrysch et al. [10].
b Thermal protection: drying baby immediately after birth, skin-to-skin with mother, wrapping, no bath in first six hours.
c AMTSL: oxytocin injection in thigh within 1 minute of delivery of baby, controlled cord traction, uterine massage after delivery of the placenta.
d Hygienic cord care: cutting with sterile blade, application of 4% chlorhexidine on tip of cord and stump and no application of harmful substances (or clean and dry care in settings with low neonatal mortality and infection risk).
e Breastmilk expression and cup/spoon feeding.
f PMTCT: in brackets as not strictly a “newborn” function, but included for continuum of care; situational depending on HIV prevalence.
health facility; and (3) delay in the provision of adequate care—as discussed by Thaddeus and Maine [15]. This manner of community engagement is also known to impact maternal and newborn deaths. Improving the capacity of providers and the health system specifically reduces the “third delay”: receiving the appropriate care in a timely fashion. Community involvement is a critical element in helping families understand the benefit of using skilled providers, particularly those who have had prior negative experiences and who are reluctant to engage in care-seeking behaviors for a current pregnancy—a situation often acknowledged as the “Phase Four” delay [16].

3. Implementation experience

The main lesson learned from all of these programs is that a combination of well-coordinated demand creation and service improvement activities is essential to any successful scale-up of evidence-based interventions. Factors that promote such successful scale-up include increased awareness of the availability of global low cost solutions to the major causes of maternal and newborn mortality; strong government ownership of national EmONC efforts that results in the domestication and implementation of global MNH standards; competency-based provider education leading to skilled birth attendance; and respectful maternity care in the context of health systems strengthening. In the sections that follow, information is provided on the settings and process used for dissemination of generic international standards for essential MNH care, provider education, and quality improvement.

3.1. International standards for essential MNH care

Collaborating with WHO, UNFPA, UNICEF, International Federation of Gynecology and Obstetrics (FIGO), International Confederation of Midwives (ICM), and other donors and technical bodies, the Jhpiego-led consortia have helped facilitate the development of a number of guidelines and manuals for provider use. Two manuals were developed in collaboration with WHO as part of The Integrated Management of Pregnancy and Childbirth Series: Managing Complications of Pregnancy and Childbirth (MCPC) [17] and Managing Newborn Problems (MNP) [18]. Both manuals used a symptom-based approach rather than a traditional disease-based approach to clinical decision-making. MCPC was originally published in English and has been translated into several languages including Spanish, French, Dari, Laotian, Bahasa, and Mandarin. MNP is available in English, French, and Arabic. These documents have informed the development and adaptation of maternal and newborn health service delivery guidelines and associated pre- and in-service education and training packages in many low-resource countries including Afghanistan, Bolivia, Burkina Faso, Guatemala, Haiti, Honduras, Indonesia, Nepal, Nigeria, Peru, Tanzania, and Zambia. More recently MCHIP has supported new guidelines from WHO on preventing postpartum hemorrhage (PPH) and pre-eclampsia/eclampsia (PE/E) by making the information more readily available [19].

The key lesson learned is that the provision of global generic guidance on low-cost effective interventions for the prevention and/or treatment of the common causes of maternal and newborn mortality provides a template for countries who wish to set performance standards or protocols for MNH care and a roadmap for the program design.

3.2. Provider education

The education of providers in EmONC always includes a knowledge domain, either in a classroom setting or using online resources, and a competency update enabling providers to practice decision-making and new clinical skills. Jhpiego uses a “humanistic” approach to education and training, in which providers first practice skills on anatomic models, treating them as though they are actual clients. This approach is consonant with Jhpiego’s commitment to the philosophy and practice of respectful maternity care [20]. Once skills are mastered on models, providers then form small groups and move to the clinical setting for supervised practice.

Jhpiego has developed a continuum of activities to ensure that providers: (1) learn the evidence basis for EmONC interventions, including the preventive signal functions presently under consideration; (2) practice critical life-saving skills; and (3) transfer their knowledge and skills to their clinical sites. To prepare for the practical component, at least one clinical site is chosen and prepared as a demonstration site for “best practice.” These clinical sites must have a high volume of clients and the providers often require targeted educational updates to enhance their ability to provide essential standardized interventions. A dedicated manual was developed to ensure rapid site strengthening and optimal clinical experience during education and training [21].

Supplemental materials have also been developed to support standardized competency-based education and include a variety of teacher/tutor and participant teaching and learning resources. For example, the knowledge domain has been addressed using interactive presentations; the decision-making tools use case studies; and psycho-motor skills and promotion of professional attitudes use demonstrations and practice with checklists, first with anatomic models and then with clients. A specific example of this process is Jhpiego’s work with the Averting Maternal Death and Disability (AMDD) program to prepare healthcare workers in obstetric anesthesia for use during EmONC service delivery [22-25].

Because repetitive teaching interventions achieve better learning outcomes than single interventions [26], Jhpiego has structured its educational programming with a “low-dose, high-frequency” educational innovation that iteratively prepares lower-level health providers to improve maternal and newborn outcomes [27]. In order for providers to manage complications, it is essential that they understand and support normal birth and labor management, including use of the partograph and active management of the third stage of labor (AMTSL). A number of resource materials and manuals were developed that address these supportive processes and EmONC skills [27].

Follow-up with providers occurs within three to six months to promote the retention of knowledge and skills. Providers undergo testing for knowledge competencies and are observed performing skills on clients and/or models. Discussions are then held with providers’ supervisors and facility administrators to assess any barriers to use of best practices. A guide for this process has been developed that can be used both for ongoing assessments and for supportive supervision (Box 1) [28].

The lessons learned from provider education for MNH are that competency-based clinical skills standardization with the use of anatomic models help to build confidence of providers to provide quality services while protecting clients from harm (see Table 2 for illustrative notable outcomes). A holistic approach to this transfer of learning that prescribes tasks for the learner, teacher, supervisor, and co-workers before, during, and after the teaching intervention is essential, and program managers must learn to adequately invest resources for this implementation.

3.3. Quality improvement

Paxton et al. [29] reviewed 24 national-level needs assessments conducted in Asia, Africa, and Latin America to determine the availability of BEmONC and CEmONC services. The authors noted that while CEmONC facilities were available in adequate number, BEmONC services were not as well distributed within geographic areas. There were also concerns about the quality of care, equity of service delivery, and financial accessibility of these emergency obstetric care facilities. The authors therefore recommended prioritizing upgrades to infrastructure for BEmONC facilities, in-service education of staff on essential EmONC skills, and providing supportive supervision and improved management systems.

To provide a platform for a root cause analysis of quality issues in BEmONC and CEmONC facilities, Jhpiego introduced its quality improvement (QI) approach, known as Standards Based Management...
International evidence-based standards for MNH were incorporated into national guidelines in more than 15 countries. Through competency-based education and training, the program increased skilled attendance at birth in Burkina Faso, Guatemala, Indonesia, and Nepal.

- **Burkina Faso**: ANC coverage increased from 21% to 58% while births attended by skilled providers increased from 39% in 2001 to 58% in 2004.
- **Nepal**: Skilled attendance at birth increased from 15% at baseline to 33% at endline.
- **Afghanistan**: Over 50 health providers trained in EmOC expanded services to all 32 provincial hospitals. Healthcare workers were also trained in spinal anesthesia for cesarean delivery.

**Increased collaboration among organizations promoting maternal and newborn care**, e.g. with White Ribbon Alliance.

**Establishment and promotion of international evidence-based standards for maternal and newborn health**, e.g. MPC and MNP manuals, and incorporation into national guidelines and protocols.

**Facility assessments and strengthening**.

**Competency-based provider education and training in EmOC/EmONC**, e.g. AMTSL, use of magnesium sulfate for eclampsia treatment, use of the partograph to monitor labor etc.

**Promotion of birth planning and complication readiness**.

**Performance and quality improvement programs in Guatemala, Burkina Faso, Indonesia, and Honduras**.

**Table 2**

Summary of EmONC and maternal/neonatal care services provided by Jhpiego and partners through USAID flagship programs (1998–2014).

<table>
<thead>
<tr>
<th>Program/date/partners</th>
<th>Countries</th>
<th>Goals and strategic objectives</th>
<th>Major EmONC activities and interventions</th>
<th>Notable EmONC outcomes (education and training, service delivery, quality of care)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Program: Maternal and Neonatal Health</strong></td>
<td>Afghanistan, Bangladesh, Bhutan, Bolivia, Burkina Faso, Egypt, Guatemala, Honduras, Indonesia, Nepal, Pakistan, Peru, Tanzania, Yemen, Zambia</td>
<td>To promote maternal and newborn survival in low-resource countries by increasing the use of appropriate MNH and nutrition interventions</td>
<td>• Increased collaboration among organizations promoting maternal and newborn care, e.g. with White Ribbon Alliance.</td>
<td>• International evidence-based standards for MNH were incorporated into national guidelines in more than 15 countries.</td>
</tr>
<tr>
<td><strong>Partners:</strong> Jhpiego, CEDPA, JHU-CCP and PATH</td>
<td></td>
<td></td>
<td>• Establishment and promotion of international evidence-based standards for maternal and newborn health, e.g. MPC and MNP manuals, and incorporation into national guidelines and protocols.</td>
<td>• Through competency-based education and training, the program increased skilled attendance at birth in Burkina Faso, Guatemala, Indonesia, and Nepal.</td>
</tr>
<tr>
<td><strong>Program:</strong> ACCESS</td>
<td>Afghanistan, Cameroon, Ethiopia, Ghana, Guinea, Haiti, India, Malawi, Mauritania, Nepal, Niger, Nigeria, Rwanda, Tanzania, Togo</td>
<td>To improve the health and survival of mothers and their newborns through expansion of coverage, access and use of MNH services and through improving household health behaviors and practices</td>
<td>• Increased international and national attention and commitment to improve MNH through global and local alliances including the WHO, Roll Back Malaria’s Malaria in Pregnancy Working Group, UNICEF, UNFPA, Partnership Maternal, Newborn and Child Health, White Ribbon Alliance, International Confederation of Midwives, International Federation of Gynecology and Obstetrics, Healthy Newborn Partnerships, etc.</td>
<td>• Burkina Faso: ANC coverage increased from 21% to 58% while births attended by skilled providers increased from 39% in 2001 to 58% in 2004.</td>
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<td><strong>Date:</strong> 1998–2004</td>
<td></td>
<td>• Introduced and/or expanded focused antenatal care services in 15 countries.</td>
<td>• Nepal: Skilled attendance at birth increased from 15% at baseline to 33% at endline.</td>
<td>• Afghanistan: Over 50 health providers trained in EmOC expanded services to all 32 provincial hospitals. Healthcare workers were also trained in spinal anesthesia for cesarean delivery.</td>
</tr>
<tr>
<td><strong>Partners:</strong> Jhpiego, Save the Children, Constella-Futures, AED, ACNM, IMA World Health</td>
<td></td>
<td>• Introduced and/or expanded PPH and PE/E prevention programs in 14 countries.</td>
<td>• Afghanistan: Promoted development of Emergency Plans with better emergency funding and planning mechanisms for EmOC.</td>
<td>• Nepal: Expanding EmOC through skilled midwifery education and training activities and established 15-year plan aiming to provide BEmOC and CEmOC.</td>
</tr>
<tr>
<td><strong>Program:</strong> ACCESS</td>
<td>Afghanistan, Cambodia, Ethiopia, Ghana, Guinea, Haiti, India, Malawi, Mauritania, Nepal, Niger, Nigeria, Rwanda, Tanzania, Togo</td>
<td>To improve the health and survival of mothers and their newborns through expansion of coverage, access and use of MNH services and through improving household health behaviors and practices</td>
<td>• Introduced and/or expanded focused antenatal care services in 15 countries.</td>
<td>• Pakistan: Practiced AMTSL for all deliveries and strengthened existing BEmOC sites (e.g. educating and training providers; improving infection prevention practices, donating basic obstetric equipment).</td>
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<tr>
<td><strong>Date:</strong> 2004–2009</td>
<td></td>
<td>• Introduced and/or expanded PPH and PE/E prevention programs in 14 countries.</td>
<td>• Yemen: Improved district hospitals’ capacity to provide EmOC.</td>
<td>• Afghanistan: Practiced AMTSL for all deliveries and strengthened existing BEmOC sites (e.g. educating and training providers; improving infection prevention practices, donating basic obstetric equipment).</td>
</tr>
<tr>
<td><strong>Partners:</strong> Jhpiego, Save the Children, Constella-Futures, AED, ACNM, IMA World Health</td>
<td></td>
<td>• Introduced and/or expanded focused antenatal care services in 15 countries.</td>
<td>• Afghanistan, Ethiopia, Ghana, India, Malawi, Nigeria, Tanzania: Education and training in BEmCO was implemented coupled with work to improve skills of midwifery tutors and preceptors in 126 pre-service education institutions.</td>
<td>• Nepal: Expanding EmOC through skilled midwifery education and training activities and established 15-year plan aiming to provide BEmOC and CEmOC.</td>
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<td>Afghanistan, Cambodia, Ethiopia, Ghana, Guinea, Haiti, India, Malawi, Mauritania, Nepal, Niger, Nigeria, Rwanda, Tanzania, Togo</td>
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<td>• Afghanistan: 96% of women in project intervention areas received uterotonic for AMTSL compared with only 26% in the comparison area. 96% of women reached in the community by CHWs accepted to use misoprostol to prevent PPH.</td>
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<tr>
<td><strong>Date:</strong> 2004–2009</td>
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<td></td>
<td>• Nepal: Misoprostol was dispensed to 18 761 pregnant women by female CHWs, thereby increasing the proportion of deliveries protected by uterotonic to 72.5% from 10.4% at baseline. Skilled attendance at birth increased from 9.9% to 16%.</td>
<td>• Afghanistan, Ethiopia, Ghana, India, Malawi, Nigeri, Nigeria, Tanzania: Education and training in BEmOC was implemented coupled with work to improve skills of midwifery tutors and preceptors in 126 pre-service education institutions.</td>
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<tr>
<td><strong>Partners:</strong> Jhpiego, Save the Children, Constella-Futures, AED, ACNM, IMA World Health</td>
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<tbody>
<tr>
<td>Program: MCHIP</td>
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<td>Rwanda: Over 150 healthcare providers and CHWs were trained in BEmONC, leading to 100% of births in targeted facilities occurring with SBAs using a partograph and AMTSL.</td>
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<td>Bangladesh: Through the Mahoni Program, CHWs were trained to provide counseling on prevention of PPH and distribution of misoprostol.</td>
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<td>Bolivia: Finalized 7 areas of BEmONC performance standards while training 9 local consultants on AMTSL; advanced implementation of BEmONC for QI in maternal health.</td>
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<td>Ethiopia: The project is increasing the capacity of local nongovernmental organizations to provide BEmONC education and training, e.g. Ethiopian Midwifery Association.</td>
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<td>Ethiopia, Kenya, Madagascar, Mozambique, Rwanda, Tanzania: Implemented the maternal and newborn QoC assessments with focus on management of PPH, PE/E, and birth asphyxia.</td>
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<td>Ghana: Supported midwifery pre-service education.</td>
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<td>India: Initiated BEmONC approach; increased capacity to provide anesthesia for EmONC.</td>
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<td>Indonesia: Completed health facility survey; introduced BEmONC process with QI efforts; improved competency of midwives in AMTSL.</td>
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<td>Madagascar: Adoption of national PPH prevention strategy through uterotonic coverage with emphasis on education and training on AMTSL using oxytocin and misoprostol; implemented QoC facility survey; developed capacity in BEmONC.</td>
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<td>Malawi: Trained health providers on BEmONC; introduced PQI.</td>
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<td>Mozambique: Institutionalized standardized QI approach in all 34 Model Maternity facilities (country’s largest EmONC facilities), including use of AMTSL and partograph.</td>
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<td>Nepal: Conducted cross-over trial study about PE/E detection; provided in-service education.</td>
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<td>Nigeria: Scaled up EmONC services to 57 health facilities; supported strengthening of Essential and EmONC with pre-service midwifery education.</td>
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<td>Paraguay: Strengthened capacity for emergency care, especially capacity of SBAs.</td>
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<td>Rwanda: Implemented maternal and newborn care QoC study.</td>
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<td>Sierra Leone: Supported capacity building of SBAs.</td>
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<td></td>
<td>Zimbabwe: Supported oxytocin potency testing.</td>
</tr>
</tbody>
</table>

Abbreviations: AMTSL, active management of the third stage of labor; ANC, antenatal care; BEmOC, basic emergency obstetric care; BEmONC, basic emergency obstetric and newborn care; CEmOC, comprehensive emergency obstetric care; CHW, community health workers; EmOC, emergency obstetric care; EmONC, emergency obstetric and newborn care; MNH, maternal and newborn health; PAC, postabortion care; PE/E, pre-eclampsia/eclampsia; PPH, postpartum hemorrhage; PQI, performance and quality improvement; QoC, quality of care; QI, quality improvement; SBAs, skilled birth attendants; SBM-R, Standards-Based Management and Recognition (Jhpiego, Baltimore, USA).
and Recognition (SBM-R) (Jhpiego, Baltimore, USA) [30], in many of its EmONC projects as a complement to its education and training efforts. Assessment of facilities and providers according to EmONC performance standards helped draw attention to gaps in the quality of care at health facilities and implementation of solutions that could lead to quality improvement. The use of the SBM-R approach has been documented as a strategy that can help to improve the quality of maternal and newborn care in many countries and under a variety of thematic areas, as a key lesson learned. A full discussion of SBM-R is offered in another paper in this supplement [31].

4. Translating research to practice

4.1. Use of the partograph

The partograph, a tool used to provide a continuous pictorial overview of labor on a preprinted single sheet of paper, is an obstetric care practice long advocated across the globe for improving the quality of care for laboring women. Use of the partograph as one of its essential interventions [32] because it helps to prevent obstructed labor [33] and thus helps to prevent uterine rupture, which has been proposed as a factor in five main causes of maternal death, and birth asphyxia, one of the three main causes of newborn mortality. The partograph can prompt a healthcare provider to take action, especially in low-resource settings where prolonged labor and delay in decision-making are significant causes of adverse obstetric outcomes [34]. ICM includes use of the partograph as a basic competency for midwives because of its value as a clinical management tool in low-resource settings [35]. Jhpiego and other global implementing organizations emphasize its use even though adoption is often slow. In Nigeria, for example, despite repeated educational sessions and supportive follow-up visits, use of the partograph at endline was only documented in 44.4% of 81 437 deliveries. Reasons frequently given for the suboptimal use of the partograph include late presentation of the women in labor (often in second stage) and staff shortage in very busy labor wards [36]. Based on lessons learned from program experience, Jhpiego has adapted the text and pictures used in its educational materials to recontextualize the content. Jhpiego has also recently introduced “E-Partograms”—electronic handheld devices—based on WHO’s paper partograph, designed to increase accessibility to patient data between different levels of healthcare providers and facilities [37,38]. However, current opinion is that further trial evidence is required to establish the efficacy of partogram use [34].

4.2. Scaling up use of magnesium sulfate for severe pre-eclampsia/eclampsia

Hypertensive disorders related to pregnancy affect about 10% of all pregnant women around the world [39–41]. WHO has identified magnesium sulfate as the most effective and low-cost anticonvulsant for women with severe pre-eclampsia/eclampsia [42]. In compliance with WHO guidelines, Jhpiego supported the use of magnesium sulfate in each of the countries in which it worked with mixed success. In Nepal, for instance, the ACCESS Program worked in collaboration with the Nepal Society for Obstetricians and Gynaecologists (NESOG) and the Family Health Division of the Department of Health Services to strengthen the use of magnesium sulfate for the treatment of severe pre-eclampsia/eclampsia in 22 health facilities across Nepal, where pre-eclampsia/eclampsia accounts for 21% of all maternal deaths, using the SBM-R approach [43]. The drug was incorporated into pre-and in-service education for Nepali SBAs starting in 2006 and was included in the national medical standards and essential medicines list. Evaluations of Nepali providers, following continuing professional education activities that were focused on appropriate use of the drug, indicated that the average facility score increased from 26% to 60% [43]. Eight out of 22 sites scored 80% or higher and another 12 sites showed substantial improvements [43]. By the end of the ACCESS program in 2009, 11 of the 22 facilities were performing at 80% or higher in achieving evidence-based standards [43]. During site visits, staff identified gaps and created an action plan to address them. NESOG members conducted clinical updates, disseminated job aids, and supported staff with on-site coaching. This (and similar) experience(s) generated the lesson learned that national professional organizations can be engaged in capacity building of healthcare workers to champion the scale-up of critical evidence-based interventions for MNH.

4.3. Essential newborn care

Based on the evidence that outcomes for the mother and the newborn are intimately linked, ACCESS worked in 16 countries to improve outcomes for newborns with a particular focus on promotion of thermal protection, early and exclusive breastfeeding, newborn resuscitation, and infection prevention and treatment. Following the global introduction of the Helping Babies Breathe (HBB) program [44], MCHIP prepared hundreds of healthcare workers in essential newborn care and specifically in HBB. HBB has been integrated into EmONC education and training in many countries such as Tanzania and Zimbabwe and is discussed further in this Supplement [45]. In Nepal, for example, under the ACCESS program, community health volunteers were trained in kangaroo mother care, resulting in a 60% adoption of the practice. The fact that low-cost, evidence-based, essential newborn interventions can be rapidly scaled-up in low-resource settings provided there is strong government ownership and coordination of relevant stakeholders, was the important lesson learned.

5. Opportunities and challenges

While remarkable progress has been made toward the reduction of maternal and child mortality in many low-resource countries, critical challenges remain in provision of high-quality EmONC services, particularly in Sub-Saharan Africa and Southeast Asia. The global community must focus on reaching the poorest and most vulnerable populations to address persistent inequities [46]. These inequities include, among other things, a shortage of SBAs in the most vulnerable communities that is driven by lack of targeted workforce planning strategies, for example matching deployment with the competencies of providers and addressing well-known factors that discourage workforce retention.
management of life-saving commodities and consumable supplies, record-keeping and use of data for decision-making. Countries, in collaboration with their relevant professional organizations, should be supported to initiate and own vital registrations of births and deaths and institutional or community maternal and perinatal death reviews. Such confidential enquiries should embrace a “no name, no blame” policy to encourage honest and productive dialogue that will lead to quality improvement of MNH services.

Conflict of interest

The authors have no conflicts of interest.

References


A facility birth can be the time to start family planning: Postpartum intrauterine device experiences from six countries

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b Jhpiego, Conakry, Guinea
c Jhpiego, New Delhi, India
d Jhpiego, Addis Ababa, Ethiopia
e Jhpiego, Manila, Philippines
f Jhpiego, Kigali, Rwanda
g Ministry of Health, Kigali, Rwanda
h Jhpiego, Islamabad, Pakistan
i Jhpiego, Baltimore, MD, USA

Abstract

Initiation of family planning at the time of birth is opportune, since few women in low-resource settings who give birth in a facility return for further care. Postpartum family planning (PPFP) and postpartum intrauterine device (PPIUD) services were integrated into maternal care in six low- and middle-income countries, applying an insertion technique developed in Paraguay. Facilities with high delivery volume were selected to integrate PPFP/PPIUD services into routine care. Effective PPFP/PPIUD integration requires training and mentoring those providers assisting women at the time of birth. Ongoing monitoring generated data for advocacy. The percentages of PPIUD acceptors ranged from 2.3% of women counseled in Pakistan to 5.8% in the Philippines. Rates of complications among women returning for follow-up were low. Expulsion rates were 3.7% in Pakistan, 3.6% in Ethiopia, and 1.7% in Guinea and the Philippines. Infection rates did not exceed 1.3%, and three countries recorded no cases. Offering PPFP/PPIUD at birth improves access to contraception.

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1. Background

In 2012, an estimated 222 million women in low-resource countries wanted to avoid pregnancy but were not using modern contraception [1]. For many of these women, childbearing begins at an early age, intervals between pregnancies are too short, and lifetime fertility is high [2]. The resulting fertility patterns lead to excess mortality and morbidity for both mothers and offspring [3–5]. Although family planning services are intended to address desires to space and limit births, typically they are offered separately from maternity services. The providers who work in family planning units frequently are not the same individuals who care for women prenatally, at birth, and postnatally, so opportunities for integrating these services are limited. In many countries, institutional births are on the rise, and there is strong policy support for the use of skilled birth attendants. Thus, initiation of family planning during a facility stay at the time of birth is particularly opportune, especially since few women who give birth in a facility return for further postnatal care [6–8].

According to the WHO, “postpartum family planning (PPFP) focuses on the prevention of unintended and closely spaced pregnancies through the first 12 months following childbirth” [9]. Operationalizing PPFP requires integration of family planning with maternal, newborn, and child health services (see Fig. 1). In the present paper, we define “immediate postpartum” as the first 48 hours after birth, “early postpartum” as the six weeks after a birth, and “extended postpartum” as the 12 months after a birth. The provision of a contraceptive method before discharge ensures that women are protected against pregnancy before they resume sexual activity or return to fecundity. Family planning programs with a wide range of contraceptive choices are associated with greater use and lower costs [10]. Yet, according to current WHO

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1 (retired).

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recommendations, contraceptive choices are more limited during the early postpartum period, in particular for hormonal methods, if a woman follows recommendations to exclusively or predominantly breastfeed her baby [11,12]. Some countries allow progestin-only hormonal methods in the immediate postpartum for lactating women, but many follow the WHO’s recommendation to delay initiation of these methods for at least six weeks. Exclusive breastfeeding for the first six months, without resumption of menses—the lactational amenorrhea method (LAM)—is a highly effective method of family planning in the short term [13]. Other immediate contraceptive options include the postpartum intrauterine device (PPIUD), which is an intrauterine device (IUD) inserted soon after delivery, as opposed to the interval IUD inserted later, or postpartum tubal ligation. PPFP includes any contraception used during the extended postpartum, regardless of timing of initiation, of which PPIUD is one option and is limited to the 48 hours after a birth. Quality programs always counsel women on all their PPFP options. Box 1 describes modalities for PPIUD insertion.

As a result of this convenient timing, PPFP/PPIUD services can be organized to take advantage of prenatal care and labor and delivery as prime opportunities to address postpartum contraceptive needs. In many countries, PPFP/PPIUD services also align with national efforts to promote facility-based births. However, early studies of PPIUDs that have examined different types and timings of insertion (up to seven days after birth) have found high expulsion rates, from 3.7% to over 30%, with mixed conclusions concerning post-placental or early postpartum insertion. These studies did not describe the PPIUD insertion technique used other than to indicate hand or instrumental insertion [14–17].

In the present article, we present program experiences from six countries where Jhpiego or the Jhpiego-led and USAID-supported Maternal and Child Health Integrated Program (MCHIP) integrated PPFP into maternal care, with PPIUD services offered. We describe the rollout and implementation of the programs, present service data on uptake and follow-up, and discuss operational challenges and solutions to support the scale-up and replication of PPIUD services in other countries. All six of the country programs used the Copper T 380A IUD. The Copper T is reversible and effective for 12 years, requires very little routine follow-up, and can be inserted within 10 minutes of placental expulsion, during cesarean deliveries, or within 48 hours after childbirth [18].

2. Methods and context

The authors reviewed program documentation, country-level monitoring and evaluation databases, and monthly summary reports from participating health facilities to assess commonalities and differences in program implementation. In Pakistan, Jhpiego staff obtained data compiled by facilities from the district or regional headquarters, while in Ethiopia, India, and the Philippines, data were obtained from monthly facility reports to program staff. In Guinea, monthly reports were sent to program staff at the same time as to the ministry of health (MOH). The
MOH of Rwanda provided the Rwanda data. The timing of interventions varied across countries, as did the availability of program data. Where country programs collected data with a lesser level of detail, we have indicated in our results that data are missing.

Secondary analysis of Demographic and Health Survey (DHS) data for prospective unmet need among women in the first year postpartum in the six countries shows high unmet need for family planning during the first year postpartum (Table 1) [19]. “Prospective unmet need” is based on DHS questions about desires for another child within the next two years (asked of postpartum women as of other nonpregnant women), whereas the standard unmet need definition is based on questions about whether a current or recent pregnancy was intended, for those women who are either pregnant or had a birth within the past two years. Total prospective unmet need for spacing and limiting births during the first 12 months after delivery ranged from 60.5% in the Philippines to 81.2% in Ethiopia. Overall, the use of IUDs ranged from a fraction of a percent of married women in Ethiopia, Guinea, and Rwanda to 3.7% of married Filipino women currently using a contraceptive [19]. Currently-married women in Pakistan and India reported IUD use of 1.7% and 2.3%, respectively.

### 3. PPIUD program elements: Process and variations

Table 2 shows the locations of PPIPF/PPIUD services in the six countries and the numbers and cadres of providers trained by Jhpiego and MCHIP from 2010–2013. India and the Philippines trained more physicians than nurses and midwives, whereas the other country programs did the opposite. From our experiences in these countries, we have synthesized common steps in the introduction of PPIUDs as part of a PFP program.

#### 3.1. PPIUD service delivery models

Ideally, women would receive PPFP counseling during prenatal care and decide which family planning method to use—a choice that would then be recorded in the prenatal care record and communicated to her provider when she arrives at the facility in early labor. However, if a client has not been counseled before birth, she can still be counseled during latent labor (if she is receptive) or in the immediate postpartum period. Active labor is not considered an appropriate time to provide PPFP counseling. PPIUDs are provided to clients who want them and who do not have exclusion factors, i.e. unresolved postpartum hemorrhage or chorioamnionitis. Every woman’s request for a PPIUD is confirmed immediately prior to insertion.

All six countries have adopted and trained providers on the insertion technique pioneered by Dr Vicente Battaglia Araujo, which focuses on achieving high fundal placement of the IUD. This is accomplished by elongating the cervical-uterine angle, elevating the uterus and the use of a long placental, or “Kelly,” forceps (Fig. 2) [20]. Placement of the IUD high in the fundus minimizes the risk of expulsion [21,22]. Jhpiego has also worked with an anatomic model manufacturer to devise a new uterine model, the “Mama-U,” that simulates the problem of the cervical-uterine angle to practice PPIUD insertion competencies.

#### 3.2. Demand creation

Approaches to creating demand for PPIUDs have evolved over time. Initially, demand creation materials, such as counseling pamphlets and posters, were developed for use in both individual and group counseling settings to recruit patients attending prenatal care at facilities where PPIUD services were available. Women who were missed in prenatal care were counseled in early labor or postpartum. In all programs, this facility-based approach alone was enough to maintain a steady level of PPIUD acceptors. The workload associated with PPFP counseling led the India program to develop and hire a new cadre of dedicated counselors for this purpose: social workers assigned to facilities providing PPFP counseling. PPIUDs are provided to clients who want them and who do not have exclusion factors, i.e. unresolved postpartum hemorrhage or chorioamnionitis. Every woman’s request for a PPIUD is confirmed immediately prior to insertion.

All six countries have adopted and trained providers on the insertion technique pioneered by Dr Vicente Battaglia Araujo, which focuses on achieving high fundal placement of the IUD. This is accomplished by elongating the cervical-uterine angle, elevating the uterus and the use of a long placental, or “Kelly,” forceps (Fig. 2) [20]. Placement of the IUD high in the fundus minimizes the risk of expulsion [21,22]. Jhpiego has also worked with an anatomic model manufacturer to devise a new uterine model, the “Mama-U,” that simulates the problem of the cervical-uterine angle to practice PPIUD insertion competencies.
Over time, strategies to extend demand generation beyond the facility have emerged. Guinea relies on community health workers to spread the word about PPFP services, while Pakistan supplies PPFP leaflets and counseling cards to lady health workers operating at the community level. Indian states now involve community-based, accredited social health activists (ASHAs) in demand generation. Future efforts might involve mass media.

### 3.3. Policy and advocacy

A policy to introduce PPIUDs was common across the six countries, as governments and ministries of health aimed to address unmet need for contraception and reduce the proportion of short birth intervals. In India, the Ministry of Health and Family Welfare launched a national strategy in 2009 to reinvigorate PPIUD use as part of a maternal, newborn, and child health initiative. These revitalization efforts dovetailed with the government-initiated Janani Suraksha Yojna (safe motherhood) scheme, which encouraged childbirth with a skilled birth attendant and has resulted in a more than 15-fold increase in institutional deliveries since 2005 [23]. In Guinea, the Philippines, and Rwanda, national strategies to revitalize family planning emphasized long-acting methods, including PPIUDs. In the Philippines, the Department of Health approved in late 2013 a separate guideline for PPIUD, which includes the PPIUD [24]. Similarly, the Federal Ministry of Health (FMOH) of Ethiopia supported expanding access to services by incorporating Jhpiego’s PPIUD training package into the national training package for family planning. In Pakistan, Jhpiego collaborated with the health and population departments at the subnational level to establish PPFP services at public health facilities.

The decision to initiate a PPFP program that includes PPIUDs involves engagement of international and national experts with relevant ministry officials. The favorable change in WHO medical eligibility criteria for IUDs in the immediate postpartum to category 1 has influenced this decision in many countries [11]. In India, leading voices from reputable universities were instrumental in reviewing the literature on PPIUDs and addressing concerns about expulsion rates. The program strategically introduced PPIUD services in one medical college and expanded them to other states after carefully documenting that the expulsion rate remained low. Experts in Rwanda conducted an operations research study to assess feasibility, and the results were used to inform guidelines for PPIUD insertion. In both Pakistan and Ethiopia, intensive policy engagement focused first on the provincial and regional levels before moving to national scale. In Pakistan, a technical working group with members from the public and private sectors and nongovernmental organizations developed a PPFP strategy and implementation plan. The group held several advocacy meetings and presented the plan at meetings and seminars organized by professional obstetrics and gynecology bodies and a medical university. In Ethiopia, early engagement and advocacy to support initiating PPFP/PPIUD service delivery in select facilities focused on regional health bureaus as gatekeepers for the individual facilities. The FMOH focal person was aware of the proposed PPIUD introduction at the regional level but not the details of the program. At a national family planning symposium in November 2012, an update on the program’s progress attracted national attention and resulted in significant policy support at the federal level. In all countries, the PPFP/PPIUD programs would not have been possible without ministry leadership and ownership.

Engagement with government decision-makers, medical, or academic gatekeepers to advocate regarding the safety and benefits of PPFP/PPIUD services has been a key and ongoing component of the programs. In preparation for initiating PPIUD services, Rwandan stakeholders visited a demonstration program in Kenya [25], while project staff in Pakistan looked for opportunities at professional meetings to marshal interest in and overcome resistance to PPIUDs. All six countries needed continued advocacy after initiation of PPIUD services and have shared their progress along the way, including service data on expulsions and infections, to help address resistance. For example, in the Philippines, the program worked to incorporate PPIUD into new clinical practice guidelines for cesarean delivery and family planning. In India, whenever the program expands to new states, it begins with a state-level workshop for the heads of all district health teams.

---

**Table 2**

<table>
<thead>
<tr>
<th>Country</th>
<th>Dates of reporting</th>
<th>Catchment area population</th>
<th>Number of Jhpiego-assisted facilities</th>
<th>Number of providers trained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethiopia</td>
<td>March 2012–July 2013</td>
<td>33 255 949</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Guinea</td>
<td>April 2011–April 2013</td>
<td>2 550 393</td>
<td>4</td>
<td>14</td>
</tr>
<tr>
<td>India</td>
<td>February 2010–April 2013</td>
<td>1 141 158 597</td>
<td>0</td>
<td>330</td>
</tr>
<tr>
<td>Pakistan</td>
<td>September 2012–June 2013</td>
<td>1 466 465 + (estimated)</td>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td>Philippines</td>
<td>January–June 2013</td>
<td>12 904 871</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>Rwanda</td>
<td>May 2010–February 2013</td>
<td>unknown</td>
<td>8</td>
<td>5</td>
</tr>
</tbody>
</table>

**Fig. 2.** Illustration of uterine extension during placement of postpartum intrauterine device. Adapted with permission from Jhpiego [20].
3.4. Site selection and training

Site selection for PPIUD services has focused on facilities with: (1) a high volume of deliveries; (2) interested providers; and (3) adequate staff to integrate PPIUD service delivery into routine care, along with the ability to conduct supportive supervision. Through needs assessments, programs identified sites with high delivery caseloads and gaps in equipment and training. In the Philippines, the program specifically selected “centers of excellence” in 10 geographical areas to serve as model service delivery sites for training, with the intent of increasing sustainability. In Pakistan, the program conducted qualitative formative research with new mothers, husbands, and grandmothers (mothers-in-law) to help craft better counseling messages and educational materials. In Guinea, the program started in six high-volume facilities in the capital city, Conakry. The facilities served as clinical practice sites for medical and midwifery school students. The program then expanded to sites in the interior of the country. In all six programs, instrument kits—containing, in particular, long placentals forceps such as Kelly forceps—were distributed when training was initiated. In some countries, such as Ethiopia and Pakistan, infection prevention materials were also provided. In both the Philippines and India, the government has taken over the procurement of instruments at the state level. In India, a country-approved manufacturer produces modified long placental forceps.

All six programs also developed a pool of national trainers who could support program expansion and sustainability. In Ethiopia, Guinea, Pakistan, and Rwanda, training of healthcare providers began with a training event on general PFP counseling, which targeted providers from the prenatal care, labor and delivery, and postnatal wards and covers all contraceptive options, including LAM. The PFP counseling event was followed by a course on PPIUD insertion (covering all types of insertion) for labor and delivery staff. During the time between training events (an interval that ranged from two weeks to several months across the programs), clients were counseled on PFP, including PPIUDs, and facilities increased their caseloads of PPIUD acceptors. In Pakistan and the Philippines, general information on PFP was incorporated into a PPIUD course for prenatal care and maternity clinicians.

Where PPIUD services were still a novelty, failure to communicate with facility staff about the introduction of the services sometimes resulted in instances of nontrained staff influencing clients to reverse their decision about PPIUD. As a result, whole-site orientations for all facility staff members, not just those who attended training, have been conducted in all programs. These orientations have even included cleaning and support staff so all staff would be informed about the service integration and respond accurately to client questions about the availability of PPIUD services.

The timing of the orientations varied across programs. In Guinea, for example, the orientation takes place immediately after training and before the start-up of services; in Pakistan and the Philippines it is held after training as part of onsite mentoring or supportive supervision visits by technical staff. In both Guinea and Ethiopia, participants in the training carry out this orientation as part of their post-training action plan, which is subsequently monitored by program staff in follow-up visits.

3.5. Post-training and ongoing monitoring

Ongoing supportive supervision visits and post-training follow-up visits to support the transfer of learning enable programs to reinforce provider performance, promote quality of services, and troubleshoot issues with service delivery or equipment. The visits enable newly trained providers to reorganize processes in a way that optimizes a consistent supply of instruments and contraceptives in the delivery rooms and initiate PFP/PPIUD services with help from trainers. Post-training transfer-of-learning visits are conducted in all but the Philippines program. In the Philippines, structured supportive supervision visits, coordinated with government, begin immediately after training to reinforce provider performance, promote quality services, and troubleshoot. The programs in Ethiopia, Guinea, India, Pakistan, and Rwanda also conduct quarterly supportive supervision visits. In some cases, like Guinea, program staff conduct these visits, while elsewhere, like Pakistan, these are conducted jointly with government supervisors. Structured tools are used to support supervision in India, Pakistan, and the Philippines.

Because routine health management information systems (HMIS) are not yet adapted for tracking PPIUDs, as they are for interval IUD insertions and removals, programs have established a variety of supplementary records and data collection tools and systems, including modified or separate registers in prenatal and labor and delivery wards, client cards, or other similar files kept in facilities. The need to capture country-specific data and evidence of the feasibility and safety of PFP/PPIUD services justified the request for supplemental data reporting. Guinea and the Philippines have included PFP on their national HMIS forms. The National PFP counseling and LAM use, as well as a separate register for recording PPIUD insertions. The Philippines approved a new version of a family planning form that includes PPIUD, but this form has yet to be widely disseminated. In Guinea, India, Pakistan, and the Philippines, facilities prepare monthly summary reports to share with relevant health authorities. Because only a subset of clients typically return for a postnatal visit, during which a PPIUD can be checked, three programs—Guinea, India (selected facilities), and the Philippines—monitor use after discharge by having providers call women to ask about complications or expulsions.

In Guinea, India, Pakistan, and Rwanda, programs use a special stamp to indicate that a woman has received PFP counseling in prenatal care and to specify the method, if any, that she has elected to use postpartum. The stamp is placed on the client’s prenatal care card, which she then brings with her to the facility at the time of birth. In the Philippines, where facilities are developing their own means to track clients from prenatal care to delivery, one center is using the woman’s birth plan to record PFP counseling and her choice of method.

4. Results

Table 3 presents the proportion of eligible women in the six programs who were counseled on PFP and accepted a method. The Pakistan and Philippines programs counseled more women at prenatal care than at the time of birth. Ideally, all women delivering in facilities would have been counseled at prenatal care and made their choice at that time, but tracking counseling offered in facilities other than that of the birth facility poses a challenge. Percentages of PPIUD acceptors ranged from 2.3% of women counseled in Pakistan to 5.8% in the Philippines. When accounting for all facility births, India had the highest percentage of acceptors, with 6.5% of women who delivered in Jhpiego-assisted facilities electing to have a PPIUD. The India program was the most extensive, reaching more than 99 000 women over the course of about three years (February 2010 to April 2013). Timing of PPIUD insertion varied among countries (Fig. 3), with Pakistan achieving the highest proportion of postplacental IUD insertions (68%) and Rwanda the highest proportion of insertions during cesarean deliveries (43%). Ethiopia had the highest proportion of insertions during the immediate postpartum period (53%) and the lowest percentage during cesarean deliveries (3%). Only three countries systematically track alternative methods of immediate postpartum contraception. LAM uptake is higher than PPIUDs in Ethiopia (8% of facility births) and Guinea (29% of births), whereas documented LAM uptake is roughly equivalent to PPIUD acceptance in Pakistan.

Rates of complications noted during six-week postpartum follow-up visits were collected from facility registers in five of the six country programs (Table 4). Although the proportion of women who returned to the hospital or health center for follow-up varied greatly, data on
Abbreviations: LAM, lactational amenorrhea method; PPFP, postpartum family planning; PPIUD, postpartum intrauterine device; PPTL, postpartum tubal ligation.

counseled but did not opt for one of these methods prior to discharge are thus not captured in this total, arti.

specialists

ownership at the district level can be challenging. Providers

ship at multiple levels of the healthcare system and sustaining that

PPFP/PPIUD programs. As the Pakistan program found, building owner-

engaging government leadership and building local ownership for

Fig. 3. Percentage of postpartum intrauterine device insertions by timing and country.

5. Discussion

The overarching lesson from these programs is the importance of

engaging government leadership and building local ownership for

PPFP/PPIUD programs. As the Pakistan program found, building owner-

ship at multiple levels of the healthcare system and sustaining that

ownership at the district level can be challenging. Providers—including

specialists—myths and misconceptions about IUDs, and spefi

ically PPIUDs, must be addressed as part of stakeholder engagement and the

establishment of services at each new facility. In Rwanda and Guinea,

programs have identified champion providers who are instrumental in

ensuring success.

Supplying facilities with sufficient instruments for service delivery

and ensuring that they have a regular source of commodities, positioned

in maternity, is a basic minimum for continued service delivery. Integra-

tion of counseling at every possible contact with a client, whether

prenatal, at birth, or in the immediate postpartum period, means

integration at multiple points and by multiple providers to ensure

consistent access. At the same time, emphasizing universal prenatal

counseling for PPFP that includes PPIUDs is key to increasing the

proportion of postplacental PPIUD insertions, the insertion timing that

minimizes discomfort for the client. All countries could improve the

coverage of prenatal counseling for PPFP, or the proportion of prenatal

care clients counseled, although it is difficult to determine individual

prenatal care coverage given that clients are expected to have repeat

prenatal care visits.

The country programs in India and the Philippines have sought

to saturate facilities with trained PPIUD providers, whereas the other

programs have struggled with staff turnover. In India, this saturation

has enabled widespread institutionalization of the service. In the

Philippines, capacitating providers as trainers has helped to ensure

that more providers, including residents, are involved in service

delivery, and that the program is prepared to expand from the 10

centers of excellence outward, including reaching out to private sector

midwives. Post-training support to facilities, either through transfer-
of-learning follow-up visits, supportive supervision visits, or other

strategies for assistance has been crucial to address quality gaps in the

medium term.

Ensuring that all staff in a given facility are aware of and understand

the messages around the introduction of PPIUDs has been essential, par-

ticularly during expansion to new sites. This review did not detect any

implications of the variation in timing in programs’ whole-site orienta-

tions, but failing to hold such orientations appears to contribute to low

uptake of the service.

Record-keeping systems for monitoring PPIUD services help show

where improvement is needed. Transparent sharing of monitoring

results allows for continued advocacy for expansion to government
Abbreviations: PPIUD, postpartum intrauterine device.

Nevertheless, ongoing monitoring of program data offers managers and policymakers essential information for decision-making.

There is a dearth of detail on PIPP/PPIUD implementation in the published program literature. The findings and results presented here are all from introductory phases of programming, except in India, where the program is in an expansion phase and has now reached 20 states and hundreds of facilities. We strongly believe that the focus on PPIUD insertion technique with IUD placement high in the fundus is what has enabled these programs to demonstrate low expulsion rates that are equivalent to those from interval IUD insertion [26]. Furthermore, attention to quality and counseling, along with carefully planned and coordinated program implementation, has brought promising results in terms of acceptance of PPIUDs. The absence of reports of uterine perforation in these data is consistent with a global review by Kapp et al. [27]. While we did not report on client satisfaction, the India program has published results from a special study of clients [28].

There are limitations to our findings, as is expected with data collected in program settings rather than rigorously controlled research environments. We report only on continuation and complications seen at the six-week postnatal visit, but additional expulsions and removals likely will occur throughout the first year postpartum. We could not analyze client data through multiple contacts, so we do not know how many women who opted for a PPIUD during prenatal care did not actually obtain the method, either because they could not reach the facility for the birth, the service was not available in the immediate postpartum period, or they changed their mind after further discussion with family or peers. These data do not include any observation of the quality of counseling. Nevertheless, with vast numbers of women expressing unmet need for both birth limiting and birth spacing, particularly in the year following childbirth, the robust uptake among women counseled in six diverse low- and middle-income countries shows the viability of making PPIUDs more widely available to prevent unintended pregnancies in low-resource settings.

6. Conclusion and recommendations

Women around the world are at risk of unintended pregnancy in the postpartum period and need improved access to effective contraception methods before they resume sexual activity and their fertility returns. Equipping and motivating maternal health providers to offer PIPP/PPIUD counseling in prenatal care and at the time of birth improves access to contraception. For integration of PIPP/PPIUD services to be effective, the target of training and mentoring must be different than it is for traditional family planning programs: the focus must be on prenatal care and maternity staff, those assisting women at the time of birth. In most low-resource contexts, midwives and obstetric nurses are the cadres with the most contact with women during birth. To succeed, PFP programs require effective counseling in the prenatal period, availability of trained and competent staff at the time of birth, and adequate follow-up of trained providers. IUDs, including PPIUDs, are among the safest and most effective methods of contraception. They offer the additional advantage of being "forgettable" contraception, in the sense that little or no follow-up is required, other than for removal of the device. But ensuring widespread access to this convenient and cost-effective method requires greater acceptance and uptake among maternal healthcare teams in clinical settings and the larger maternal health community. Data and evidence on acceptability, feasibility, and complication rates of PPIUDs can play a part in ongoing advocacy for expanding access to this underutilized PPIUD method.

Acknowledgments

The authors thank Zhuzhi Moore of MEASURE/DHS for her analysis of the DHS data presented in Table 1. We also acknowledge Elizabeth Sasser for her help preparing and compiling the other tables, and Koki Agarwal for her careful review of the manuscript. Lastly, we are grateful to program staff from all six countries who contributed to this article and to the programs described herein.

Conflict of interest

The authors have no conflicts of interest to declare.

References


Table 4

<table>
<thead>
<tr>
<th>Country</th>
<th>PPIUD acceptors who returned for follow-up</th>
<th>PPIUD acceptors who returned for follow-up with a complication</th>
<th>Complications</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Expulsions</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Infections</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Removals</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>329 (53.1)</td>
<td>19 (5.8)</td>
<td>12 (3.6)</td>
</tr>
<tr>
<td>Guinea</td>
<td>2008 (82.4)</td>
<td>74 (3.7)</td>
<td>35 (1.7)</td>
</tr>
<tr>
<td>India</td>
<td>37252 (37.5)</td>
<td>2937 (7.9)</td>
<td>989 (2.7)</td>
</tr>
<tr>
<td>Pakistan</td>
<td>269 (33.8)</td>
<td>41 (15.2)</td>
<td>10 (3.7)</td>
</tr>
<tr>
<td>Philippines</td>
<td>641 (32.8)</td>
<td>15 (2.3)</td>
<td>11 (1.7)</td>
</tr>
<tr>
<td>Total</td>
<td>40499 (38.1)</td>
<td>3086 (7.6)</td>
<td>1057 (2.6)</td>
</tr>
</tbody>
</table>

Abbreviations: PPIUD, postpartum intrauterine device.

* Values are given as number (percentage).
[10] Pariani S, Heer DM, Van Arsdol Jr MD. Does choice make a difference to contracep-
SUPPLEMENT ARTICLE

Evolution of malaria in pregnancy control: Jhpiego's 10-year contribution

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Keywords:
Focused antenatal care
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Malaria in pregnancy
Sub-Saharan Africa

ABSTRACT

Malaria continues to be a life-threatening illness throughout Sub-Saharan Africa, with pregnant women and children being particularly vulnerable and an estimated 10 000 women and 200 000 newborns dying each year as a result of malaria in pregnancy (MIP). Since 2004, WHO has supported a three-pronged MIP approach: (1) intermittent preventive treatment with sulfadoxine-pyrimethamine; (2) use of insecticide-treated bed nets; and (3) effective case management. The present article identifies benchmarks in Jhpiego's 10-plus years of MIP experience at the regional and national levels that have contributed to its global MIP leadership and aligned programs and policies with global approaches toward malaria elimination. As countries continue to develop and expand MIP programming, support will continue to be essential in the following eight MIP program areas: integration, policy, capacity development, community engagement, quality assurance, commodities, monitoring and evaluation, and financing.

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In 2000, in Abuja, Nigeria, the Roll Back Malaria (RBM) Partnership set a target coverage rate for these three interventions of 80% by 2010 [6]. Since then, the RBM partnership has set targets for IPTp uptake and universal coverage for LLINs at 100% [7]. The US President's Malaria Initiative (PMI) targets are 85% for both IPTp and ITN coverage for those countries with PMI support [8]. While 39 countries in Sub-Saharan Africa have MIP policies in place, most countries are far from achieving target coverage goals for these interventions [9].

For more than a decade, Jhpiego has been a committed partner to the RBM partnership, which includes governments of endemic countries, nongovernmental organizations, donor organizations, and corporate members. Jhpiego has been involved in advancing the MIP global dialogue through the RBM MIP Working Group as an active technical participant since the group's inception and has served as co-chair for seven years. In addition, Jhpiego has provided technical assistance to more than 20 countries to help accelerate malaria prevention and control. The present article presents an historical overview of Jhpiego's MIP programs starting around 2002, reviewing the methods by which Jhpiego has achieved leadership in MIP control. It presents as benchmarks the seminal contributions of Jhpiego in three countries (Burkina Faso, Kenya, and Nigeria) as well as regional MIP efforts in Sub-Saharan Africa. We examine gaps in implementation and key actions required to ensure scale-up of MIP interventions across the region to guide other implementing organizations.

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0020-7292/© 2015 Published by Elsevier Ireland Ltd. on behalf of International Federation of Gynecology and Obstetrics. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/3.0/).
2. Methods

Jhpiego’s MIP programming is represented in the present paper using a case study approach documenting Jhpiego’s contribution to major benchmarks in MIP program evolution. Benchmarks were defined as either technical or managerial innovations that moved MIP efforts to the next level of comprehensiveness and expanded coverage of MIP interventions. A start date of around 2002 was chosen because that was when both the MIP working group and the US Agency for International Development’s (USAID) Malaria Action Coalition, comprised of USAID’s ACCESS and RPM Plus programs, the US Centers for Disease Control and Prevention (CDC), and the WHO/AFRO, began in earnest.

Jhpiego reviewed program activity reports and other publications over a 10-year period to identify and subsequently describe major MIP programming benchmarks. These benchmarks included the following: (1) testing the efficacy of IPTp-SP on a platform of antenatal care (Burkina Faso); (2) integration of focused antenatal care services (FANC), in which providers focus on assessment and actions needed to accelerate MIP implementation (regional); (3) support to regional networks to learn best practices and bottlenecks (regional); and (5) adaptation of the community-directed intervention (CDI) approach to increase MIP service coverage and overcome service delivery bottlenecks (Nigeria).

Countries and programs were chosen for further analysis based on their contribution to MIP programming both at the country level and regionally. An in-depth review of publications related to target countries in Sub-Saharan Africa, including MIP country program reports, ministry of health (MOH) reports, strategy documents, and peer reviewed articles, was performed to determine what countries did to implement MIP programs, what the results were, and what implementation challenges were faced.

3. Findings

The five benchmark contributions of Jhpiego are shown in Table 1.

3.1. Benchmark 1 (technical): Testing the efficacy of IPTp-SP (Burkina Faso)

In 2001, the Burkina Faso MOH, in collaboration with Jhpiego and the CDC, designed and implemented one of the first pilot programs in West Africa testing FANC as a platform for malaria in pregnancy interventions [10]. A total of 23 health facilities were included in the pilot study, and eight sites were selected for the baseline and follow-up assessment. A total of 2014 women were enrolled in the assessment.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Benchmark contributions of Jhpiego to malaria in pregnancy control.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
<td>Technical Bottle of IPTp-SP, health workers not following uptake procedures, and health facilities charging for SP treatments.</td>
</tr>
<tr>
<td><strong>Issue(s)</strong></td>
<td>• Between 2002 and 2004, developed a two-phase service package called “Focused Antenatal Care and Malaria in Pregnancy” that was expanded to 19 malaria endemic districts.</td>
</tr>
<tr>
<td><strong>Solution(s)</strong></td>
<td>• Fostered partnership between the MOH’s Division of Reproductive Health and the Division of Malaria Control.</td>
</tr>
<tr>
<td><strong>Results</strong></td>
<td>• Trained frontline healthcare providers on FANC.</td>
</tr>
<tr>
<td><strong>Table 1</strong></td>
<td>Technical Bottle of IPTp-SP, health workers not following uptake procedures, and health facilities charging for SP treatments.</td>
</tr>
<tr>
<td><strong>Benchmark 1</strong></td>
<td>Testing the efficacy of IPTp-SP (Burkina Faso)</td>
</tr>
<tr>
<td><strong>Benchmark 2</strong></td>
<td>Integration of FANC services with MIP nationwide (Kenya)</td>
</tr>
<tr>
<td><strong>Benchmark 3</strong></td>
<td>Accelerate MIP implementation (East, Southern and West Africa)</td>
</tr>
<tr>
<td><strong>Benchmark 4</strong></td>
<td>Documentation of MIP implementation practices (Regional)</td>
</tr>
<tr>
<td><strong>Benchmark 5</strong></td>
<td>Community-directed interventions (Nigeria)</td>
</tr>
</tbody>
</table>

**Results**

- Attendance of four or more ANC visits increased from 21% to 44%.
- Receipt of two doses of IPTp increased from 0% to 75%.
- Peripheral parasitemia decreased from 22% to 15%.
- Increased ownership of ITN from 22% to 46%.
- One intervention and one control district.
- IPTp1 and IPTp2 increased from 20.3% to 61.7% (intervention) and 9.3% to 28.3% (control).
- Attendance at four ANC visits 17.0% (intervention) compared with 6.5% (control).
- Repositioned MIP from innovation to a major ANC program component; demonstrated importance of peer influence.
- Five-times increase in intervention arm and three-times increase in control arm with IPTp uptake.
- ANC attendance increased using community volunteer referrals.
- Elderly community-directed distributors helped mobilize younger women to clinics.

Abbreviations: IPTp-SP, intermittent preventive treatment with sulfadoxine-pyrimethamine; MIP, malaria in pregnancy; ITN, insecticide-treated bed nets; SP, sulfadoxine-pyrimethamine; MOH, ministry of health; FANC, focused antenatal care; ANC, antenatal care; MIPESA, Malaria in Pregnancy East and Southern Africa; RAOPAG, Réseau d’Afrique de l’Ouest contre le Paludisme pendant la Grossesse [Roll Back Malaria’s West African Network for the Prevention and Treatment of Malaria in Pregnancy].
The initial assessment revealed practical bottlenecks in the provision of IPTp-SP that appeared to limit efficacy, namely: health workers were not following directly observed therapy to ensure IPTp uptake and were providing IPTp-SP on an empty stomach; and health facilities were charging women for SP despite an MOH instruction to deliver it free of charge. As a result, the pilot intervention adopted a comprehensive, system-wide approach, including fostering partnerships between reproductive health and malaria control programs; education and supervision of district health staff; quality improvement at facilities; community mobilization; and improved recordkeeping [11].

Between baseline (2001) and follow-up (2004), results of the pilot study revealed statistically significant improvements in health outcomes. Women attending four or more ANC visits increased from 21% to 44% \( (P = 0.01) \); women receiving two doses of IPTp increased from 0% to 75% \( (P = 0.02) \); and peripheral parasitemia decreased significantly from 22% to 15% \( (P < 0.0001) \) (Fig. 1). Other notable outcomes included owning an ITN, which increased from 22% to 46% [12]. ITN ownership might have increased further if ITN stock-outs had not persisted at ANC sites.

Based in part on the results of this pilot, Burkina Faso adopted an updated MIP policy in 2006 that reflected WHO’s three-pronged approach. From this work, the MOH, CDC, and Jhpiego gathered evidence not only about the efficacy of IPTp, but also about the system-wide strategies needed to manage IPTp delivery through ANC.

3.2. Benchmark 2 (technical): Integration of FANC with MIP nationwide (Kenya)

In 1998, Kenya was one of the early adopters of WHO’s three-pronged approach. In 2003, Kenya operationalized its MIP policy and adopted the platform of FANC to deliver IPTp and promote ITNs. The delivery of MIP preventive care through ANC services was pivotal, especially at that time, since Kenya was one of the first countries in Africa to adopt this integrated approach.

With support from the UK Department for International Development (DFID), Jhpiego played a facilitative role of integrating the MOH’s inputs with WHO’s original FANC model, resulting in a service package called “Focused Antenatal Care and Malaria in Pregnancy.” The program was launched in two phases (demonstration and expansion) between 2002 and 2004. The demonstration phase showed what could be done in four pilot districts with simple, practical education and orientation for health workers and communities—the expansion phase reached all 19 malaria-endemic districts nationwide [12].

Key elements of the initiative were: (1) fostering partnerships between the MOH’s Division of Reproductive Health (DRH) and the Division of Malaria Control (DMOC), where the DRH led implementation and the DMOC provided technical oversight; (2) educating frontline healthcare providers on FANC emphasizing comprehensive care, including IPTp uptake and promotion of ITN use; (3) supportive supervision to reinforce knowledge and skills learned in training courses and address gaps in service delivery through coaching and mentoring; and (4) community sensitization to create awareness about the new changes in provision of ANC services (e.g. pregnant women were only expected to visit the clinics for four comprehensive visits).

The CDC evaluated the Jhpiego/MOH FANC activities by conducting pre- and post-intervention evaluations in one of the intervention districts (Asembo) and one of the control districts (Gem), and it included a cross-sectional household survey of women who recently delivered at baseline (2002) and follow-up (2005) [13].

Results in Fig. 2 illustrate that uptake of IPTp1 (phase 1) and IPTp2 (phase 2) in the intervention district increased threefold, from 20.3% to 61.7% and 9.3% to 28.3%, respectively \( (P < 0.05) \), suggesting that education combined with supportive supervision and community sensitization contributed to increased uptake of IPTp among pregnant women. In addition, women from the intervention district were more likely than women from the control district to attend four ANC visits \( (17.0\% \text{ versus } 6.5\%) \) and were significantly more likely to state that SP is helpful and safe during pregnancy [13].

3.3. Benchmark 3 (managerial): Support to regional networks to accelerate MIP implementation (regional)

In an effort to augment country-level implementation of MIP on a platform of FANC, Jhpiego worked closely with countries in East, Southern, and West Africa to support the development of regional bodies that could increase momentum, advocacy, and support for MIP programming.

In East and Southern Africa, five countries (Kenya, Malawi, Tanzania, Uganda, and Zambia) were early adopters of WHO’s three-pronged MIP approach. In 2002, representatives from these countries came together

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**Fig. 1.** Antenatal care and malaria in pregnancy-related outcomes in Burkina Faso: baseline (2001) and follow-up (2004). Abbreviations: ANC, antenatal care; IPTp2, intermittent preventive treatment phase 2; ITN, insecticide-treated bed net; LBW, low birth weight. Reprinted with permission from Jhpiego [12].
with international partners to form the Malaria in Pregnancy East and Southern Africa (MIPESA) coalition. Jhpiego played a key role as a MIPESA partner [14]. Between 2002 and 2005, MIPESA transferred best practices and lessons learned across countries, fostered partnerships between national reproductive health and malaria control programs, and increased regional capacity to support MIP programming at the country level [15]. In particular, MIPESA contributed to: (1) harmonized and appropriately integrated national policies, strategies, and education materials from Kenya to other countries (i.e. adapting training for FANC as a platform to deliver MIP services in Tanzania, Uganda, and Malawi); and (3) increased commitments from national reproductive health and malaria control programs across all countries to work together to address MIP programming.

Similarly, in March 2002, directors of reproductive health and malaria control programs in West African countries came together to consider the way forward for addressing MIP in their region. Among their recommendations was the creation of the Roll Back Malaria’s West African Network for the Prevention and Treatment of Malaria in Pregnancy (Réseau d’Afrique de l’Ouest contre le Paludisme pendant la Grossesse, or RAOPAG), which expanded to 10 countries between 2003 and 2005 (Benin, Burkina Faso, Côte d’Ivoire, Guinea, Mali, Mauritania, Niger, Nigeria, Senegal, and Togo) and multiple international partners [16].

RAOPAG’s mission was to facilitate information exchange between member countries with respect to advocacy, research, and implementation of MIP prevention and treatment interventions, and to support regional expertise through planning and documentation. RAOPAG was the first and only network in West Africa to bring together reproductive health and malaria control experts regionally to share knowledge and lessons learned in MIP prevention and control [15, 16].

Other RAOPAG contributions included: (1) fostering the creation of country-specific action plans for policy change and acting as a catalyst for IPTp-SP adoption in member countries; (2) creating a database of online MIP resources, including country-specific policies, guidelines, and action plans by country focal persons; (3) facilitating the adaptation of FANC/MIP clinical education materials at the regional level and organizing education of trainers at the country level; and (4) assisting member countries in developing advocacy plans to solicit support for their MIP action plans and marketing MIP strategies to potential donors.

These two regional networks helped reposition MIP programming from a mere innovation to a major program component of ANC. They also demonstrated the importance of peer influence inherent in South-to-South dialogue and planning.

3.4. Benchmark 4 (technical): Documentation of MIP program implementation practices (regional)

While MIP program experiences from Burkina Faso and Kenya as well as regional efforts through MIPESA and RAOPAG contributed to acceleration of MIP programming across Sub-Saharan Africa, national coverage of IPTp uptake and ITNs remains low. Based on the most recent Demographic and Health Surveys, Malaria Indicator Surveys, and Malaria Indicator Cluster Surveys, IPTp uptake (two doses) across PMI countries averaged 33%, ranging from 1% (Benin) to 70% (Zambia), and LLIN use among pregnant women averaged 43%, ranging from 10% (Zimbabwe) to 72% (Rwanda) [17]. To better understand the features of MIP programs that work well and those that need improvement, Jhpiego, with support from PMI, documented best practices and remaining challenges in MIP programming in three relatively successful countries: Zambia, Malawi, and Senegal. The results of this program assessment have been published elsewhere and are summarized in Box 1 [18].

3.5. Benchmark 5 (technical): Community-directed interventions

Starting in 2006, Jhpiego received funding from Exxon Mobil to address one of the more visible and challenging MIP program areas in Nigeria: community involvement. Of primary concern was low ANC utilization, poor community attitudes toward ANC because of low perceived service quality, and very low coverage of IPTp and ITNs among pregnant women.

From 2007 to 2011, Jhpiego organized a community-clinic partnership, illustrated in Fig. 3, which used a two-pronged approach to increase coverage of MIP services: (1) improving the quality of FANC services; and (2) increasing access to MIP services through CDIs [19]. CDIs enable communities to lead health interventions in collaboration with health facilities [20]. Health facility staff train, supervise, and provide communities with needed commodities. Communities direct their own health promotion activities, maintain registers, decide when...
Box 1
Malaria in pregnancy program areas.

**Integration:** Integrated MIP services include collaboration between national reproductive health and malaria control programs and other comprehensive maternal and child health services programs to ensure harmonized policies, guidelines, and education materials, and a coordinated effective program implementation.

**Policy:** MIP policies are based on the latest scientific evidence, defined country goals, and national guidelines that are harmonized and effectively integrated across different health sectors.

**Commodities:** Commodities include correct medicines and medical products, systems that ensure commodity availability that include SP, LLINs, diagnostic tools, rapid diagnostic tests and/or microscopy, medicines to provide effective MIP case management.

**Quality assurance:** Quality assurance is a concept that covers individually or collectively efficacy, safety, appropriateness, and acceptability of MIP services measuring quality of care, supervision support, and self-assessment by healthcare providers to monitor delivery of services.

**Capacity Building:** MIP capacity building is strengthening human resources by improving knowledge and skills that includes competency-based pre- and in-service education based on WHO guidelines and national policies.

**Community Awareness and Involvement:** MIP community engagement involves the promotion and/or delivery of health services including raising awareness of MIP prevention and control; promotion of IPTp and ITNs; and effective case management.

**Monitoring and Evaluation:** Monitoring and evaluation captures MIP service delivery indicators and provide data to the national health management information system to be used for decision making at all points of care and national policy formulation.

**Financing:** MIP financing is a combination of national government and donor funding that guarantee that programs receive the necessary support and resources to reach all pregnant women.

Abbreviations: MIP, malaria in pregnancy; SP, sulfadoxine-pyrimethamine; LLIN, long-lasting insecticide-treated nets.

and where to distribute commodities (ITNs and IPTp), and promote service utilization (referral to comprehensive ANC services).

The two-pronged intervention was tested in three Local Government Areas (LGAs) of Akwa Ibom State, Nigeria, using another three LGAs as control areas. Overall, 25 health facilities and catchment communities containing more than 820,000 people were involved. In the three intervention LGAs, frontline health facilities (FLHFs) were trained to mobilize their communities to select their own community-directed distributors (CDDs). After a five-day education session, the 800 selected CDDs were supervised by the FLHFs and monitored using Jhpiego’s quality improvement approach, Standards-Based Management and Recognition (SBM-R), to detect performance gaps that deterred ANC attendance and develop action plans to solve them. More than 300 FLHFs in both arms of the study were provided with basic education on FANC including MIP, record-keeping, and use of data for decision-making purposes. Basic supplies that included SP were also provided to all clinics since nothing was available at baseline. ANC registers were updated to reflect MIP indicators.

FLHFs in the intervention arm mobilized their catchment communities for CDI and encouraged the communities to select the volunteer CDDs, conduct a community census, and collect MIP supplies on a regular basis. CDDs provided a first contact with MIP services, including distributing SP and ITNs, maintaining records and submitting monthly tally sheets, giving health education, and referring pregnant women to ANC, thereby strengthening community–clinic links. By using CDDs, the FLHFs were able to extend the reach of their ANC services.

In addition to technical supervision by the FLHFs, CDDs were held accountable by their communities. Communities had selected CDDs whom they trusted, who were able to read and write, who were resident in the community, and (perhaps most importantly) who were willing to volunteer their services. Two CDDs were even fined and replaced by their communities for diverting MIP commodities, demonstrating their local accountability.

Comparing baseline and endline surveys showed a statistically significant (P < 0.001) five-times increase in coverage of IPTp in the CDI communities as compared with a three-times increase in the control arm where IPTp was available only at ANC. ANC attendance was also enhanced with community volunteers making referrals, showing that the community–clinic partnership was working; elderly CDDs were particularly helpful in mobilizing younger women to attend clinics and utilize available services [21].

4. The way forward

This analysis of Jhpiego’s role in global MIP control highlights key steps and important achievements in MIP programming that helped accelerate program implementation throughout Sub-Saharan Africa. From piloting MIP on a platform of FANC to expansion nationally and adapting a scientifically proven intervention strategy of CDI, as well as supporting the role of regional networks to further accelerate implementation, Jhpiego’s commitment and technical expertise has contributed essential program learning about MIP interventions, both in terms of successful practices and remaining challenges. This learning has subsequently been shared with and scaled up by RBM partner organizations to improve outcomes for women and their newborns.

Despite these programmatic advances, much work remains to adhere to WHO guidelines and reduce MIP prevalence. Very few countries have reached either the targets set at the Abuja meeting in 2000 or their own policy ambition, and countries are even further away from the more recent RBM targets set for 2010 [47]. The new WHO IPTp recommendation, disseminated in October 2012, which promotes IPTp at every scheduled ANC visit beginning in the second trimester of pregnancy [22], presents an opportunity for countries to review and update their national policies and guidelines as well as explore new MIP program possibilities—making strategic decisions to accelerate scale-up and further improve coverage for pregnant women.

As countries continue to expand MIP programming, comprehensive support for the eight MIP program areas will be essential. These program areas are the core components of any health system; if one is weak, it impacts the others. This underscores the importance of addressing MIP care comprehensively with attention to health system strengthening to achieve long-lasting results. Jhpiego’s approach has been to address malaria prevention and control comprehensively across the health “continuum of care,” from the community to the health facility to the national level on a platform of maternal, child, and newborn care, addressing each of the MIP program areas.

Underpinning the acceleration of MIP programming in each of the country and regional case studies was the strong partnership between

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**Fig. 3.** Nigeria malaria in pregnancy (MIP) community–clinic partnership intervention. Reprinted with permission from Brieger et al. [19].
the national reproductive health program and the national malaria control program, as well as the national HIV program. Both Burkina Faso and Kenya faced multiple bottlenecks as MIP programs were introduced and scaled up respectively. For example, addressing issues of commodities and supplies in collaboration with all stakeholders was key to success of the program. In both countries, the dynamic partnership between and leadership from the national reproductive health program and the national malaria control program meant that gaps in provider performance (i.e. understanding of guidelines, education, supervision) could be addressed efficiently. These successful program initiatives in Burkina Faso and Kenya catalyzed the introduction and expansion of FANC services with MIP in other East, Southern, and West African countries using the same elements of partnerships, education, supportive supervision, and community sensitization. The pace of expansion to other countries was hastened through Jhpiego’s participation in regional MIP networks.

Recognizing that MIP is both a maternal and newborn health issue, reproductive health programs should lead efforts to manage program implementation on a platform of FANC, and national malaria control programs should provide technical leadership including procurement and distribution of needed MIP supplies to ANC clinics (i.e. SP, LLINs, and treatment drugs). This critical partnership starts at the national level, where both programs can harmonize national level MIP materials, including policies, guidelines, and education materials, and coordinate effective implementation.

To date, IPTp uptake has been the main focus of country programs; however, ITN use and correct case management are also recognized as essential components of a comprehensive MIP program. Engagement with ITN partners can help to increase awareness among pregnant women about the importance of ITN use, and the role of ANC in routine distribution of ITNs among the partners. The eight program areas of MIP are essential health systems components to address when countries are focusing on improving MIP morbidity and mortality rates [18]. As countries consider application of community-based distribution and/or social mobilization models to augment their existing strategies, it will be essential to document outcomes related to MIP prevention and case management to better understand the feasibility and acceptability of these approaches and guide application.

In the future, countries will need to develop or review their national malaria control policy, strategies, and guidelines for MIP to ensure alignment with global approaches toward malaria elimination. The WHO’s three-pronged approach should be an integral part of national malaria prevention and control programs and should also be reflected in national reproductive health policies. In particular, the third prong—malaria case management—with improved diagnostics and treatment is needed as part of case detection and surveillance among pregnant women to better serve both women and their children.

Jhpiego continues to test new approaches that will support MIP scale-up and help countries achieve their target goals. Ongoing collaboration and support are needed to achieve Millennium Development Goals 4 and 5 and move beyond these goals to eliminate malaria.

Conflict of interest

The authors have no conflicts of interest.

References


SUPPLEMENT ARTICLE

RED for PMTCT: An adaptation of immunization’s Reaching Every District approach increases coverage, access, and utilization of PMTCT care in Bondo District, Kenya☆

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ABSTRACT

Gaps exist in coverage, early access, and utilization of prevention of mother-to-child transmission of HIV (PMTCT) services in Kenya. The Maternal and Child Health Integrated Program, led by Jhpiego, piloted an adaptation of immunization’s Reaching Every District (RED) approach in Bondo District as a way of improving PMTCT care. Routine district-level monthly summary service delivery pre- and post-implementation data were analyzed. Marked improvements resulted in the proportion of HIV-infected and non-infected pregnant women completing four focused prenatal care visits, from 25% to 41%, and the proportion of HIV-exposed infants (HEIs) tested at six weeks, from 27% to 78% (P < 0.001). The proportion of HEIs tested for HIV infection at 12 months was 52%, while 77% of HEIs were issued antiretroviral prophylaxis by the end of the pilot. Implementation of RED for PMTCT demonstrated that PMTCT services can be delivered effectively in the context of the existing community strategy and resulted in increased coverage, access, and utilization of care for HIV-positive pregnant women and their children.

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1. Background

An estimated 35.3 million people are living with HIV globally, around 70% of whom are in Sub-Saharan Africa [1]. Although new HIV infections among children have dropped by 52% since 2001, and access to services for the prevention of mother-to-child transmission (PMTCT) of HIV has increased over the years, children are still disproportionately affected, with an estimated 260 000 (230 000–320 000) of new HIV infections in 2012 occurring among children [1]. In Kenya, HIV transmission from mother to child is considered one of the biggest health and development challenges. Out of Kenya’s estimated population of 38.6 million in 2009 with 1.55 million births [2], the national HIV prevalence among pregnant women in 2013 was 6.0% [3], with an estimated 81 000 children exposed to the virus through maternal-to-child transmission [4]. The number of HIV-positive infants from those HIV-positive pregnancies is estimated at 22 000 [3,4].

The Government of Kenya’s Ministry of Health (MOH) PMTCT program was launched in 2000 and has achieved nearly universal facility-based coverage, with 4,000 of the 4,400 (90%) health facilities offering maternal, newborn, and child health (MNCH) services including PMTCT services [5]. However, there have been challenges to the full scale-up of PMTCT in Kenya that included: late prenatal care attendance; low utilization of prenatal care services and facility-based births; lack of integration of PMTCT services with reproductive health and family planning services; and lack of integration of early infant diagnosis in the MNCH continuum, resulting in missed opportunities for pediatric diagnosis, care, and treatment [6,7].

At the time of the present study, the relevant WHO PMTCT recommendations (2010) called for initiating antiretroviral (ARV) prophylaxis as early as 14 weeks of gestation and continuing through to delivery (also known as “Option A”) [8]. To study the programmatic possibilities for and challenges of implementing this recommendation in Kenya’s national PMTCT strategy, the USAID-funded Maternal and Child Health Integrated Program (MCHIP), led by Jhpiego, adapted the WHO’s successful Reaching Every District (RED) approach for scaling up
immunization services in several African countries [9] to PMTCT service delivery and piloted this RED for PMTCT model in Bondo District, Kenya. The RED approach emphasizes five operational components that are specifically aimed at improving programmatic coverage: (1) better planning and management of resources; (2) reaching all target populations through outreach services; (3) supportive supervision for service providers; (4) linking communities with service delivery; and (5) monitoring for action [9].

RED for PMTCT, also known as the Reaching Every Pregnant Woman approach, was piloted in Bondo District with the aim of demonstrating increased uptake and utilization of PMTCT services. Bondo District is located in Nyanza Province (administrative structures changed from provinces to counties in 2011), in the western part of Kenya. At the time the RED for PMTCT pilot started in 2010, the district had some of the worst health indicators in Kenya, including high maternal mortality (640 deaths per 100,000 live births), infant mortality (110 infant deaths per 1000 live births), and child mortality (208 deaths of children under five years per 1000 live births) rates due to HIV/AIDS, tuberculosis (TB), and malaria (Bondo District Management Team, unpublished data, 2010). Nyanza Province also had some of the highest health disparities in the country, with an estimated population HIV prevalence of 20.2% (17.1% in men and 22.8% in women) and under-five mortality rates of 101 per 1000 live births, as compared with 60 per 1000 live births in Nairobi [10]. This burden of disease, coupled with rampant poverty and underdevelopment, contributed greatly to the poor health status of its populace [10]. Furthermore, widow inheritance, a common cultural practice where a designated male assumes social and/or economic responsibilities for the widow upon the death of her husband, has also been associated with an increased risk of acquisition of HIV infection in this region [11].

The present article reports the results and program experience of RED for PMTCT and evaluates its attempts to increase coverage, access, and utilization (proxies from the immunization field for uptake, access, and retention) relating to PMTCT services through focused prenatal care in one pilot district. We also report challenges and lessons learned to help foster replication of this approach in other resource-limited settings.

2. Program experience

The RED for PMTCT pilot intervention was conducted between July 2010 and June 2012 in Bondo District, Nyanza Province, Kenya. Before the intervention began, advocacy, consultative, and planning meetings were held at the national and regional levels to promote the active engagement of health authorities. Catchment areas were mapped, with average distances to health facilities determined. With the help of community representatives and service providers, villages with high numbers of unreached pregnant women were identified. A situational analysis done to identify barriers to access and/or utilization of health services revealed that of the 329 villages mapped, only seven (2%) were more than five kilometers from the nearest health facility. Although most communities lived within walking distance to a health facility, consistent access to health facilities remained difficult. Some of the challenges identified included: cost; lack of knowledge (majority didn’t know whether it was necessary to go to attend prenatal care early or complete at least four visits); proximity of the nearest clinic; husbands (or religions) prohibiting wives (or pregnant followers) from attending prenatal care; and that they were too busy with economic activities (usually fishing). Reaching communities living on the islands of Lake Victoria presented unique challenges for monitoring treatment utilization owing to transportation issues and the fact that these communities frequently migrated to different fishing locations, some of which were in neighboring districts and countries. Service delivery strategies therefore included those for fixed centers (established health facilities) and those for outreach to hard-to-reach areas, as defined by distance from a health facility and terrain. A mobile service was not adopted because most villages were within five kilometers’ walking distance to a health facility.

Resources from other programs were leveraged to maximize the services provided to the end users. The MCHIP activities in the district were harmonized with other programs conducted by Jhpiego and other partners in the district that focused on the development of facility infrastructure, strengthening HIV commodities and supplies management, and increasing the number of health workers knowledgeable about HIV through in-service education. To prevent unintended pregnancies among women living with HIV, for example, Jhpiego’s ACCESS Uzima program (preceded MCHIP) trained service providers on long-term family planning methods, ensuring availability of family planning commodities and supplies, and disseminating health messages through radio announcements and community health workers (CHWs) to educate the community on family planning with the aim of increasing family planning uptake in the district.

Other activities capitalized on the community-based approach that was set out in the MOH’s community strategy [12], which empowered households and communities to strengthen their role in health and health-related development by increasing their knowledge, skills, and participation. Under this strategy, communities are organized into community units each comprising approximately 1000 households or 5000 people living in the same geographical area and sharing resources and challenges. The community units are organized around villages and other interest groups that are responsible for identifying and supporting volunteer CHWs. The CHWs report to a community health committee (CHC) through a community health extension worker (CHEW), who is an employee of the MOH and a secretary for the CHC. The health governance structure closest to the community is the CHC, whose members are elected in such a way that all the villages in the community unit are represented [12].

Because CHWs were key personnel in this RED for PMTCT pilot, facility-based healthcare workers were encouraged to partner with communities through the CHWs to ensure utilization of their health services. CHWs were recruited from all villages; one CHEW served approximately 500 persons (about 100 households). The CHWs were trained on the community strategy, community-based health information systems, and the RED for PMTCT, or Reaching Every Pregnant Woman, approach. Two educational models were used: (1) training of CHEWs as master trainers who subsequently trained CHWs in their respective community units; and (2) training of some CHWs who then cascaded the training to fellow CHWs.

CHW exit desks were established at all health facilities to schedule appointments for prenatal care, postnatal care, and HIV-exposed infant (HEI) visits. The CHWs thus served as links with the community. Women who missed a scheduled appointment were contacted by phone to schedule new appointments. If necessary, women were physically traced by their respective CHEW. Regardless of HIV status, all MNCH clients were also connected with the CHEW from their respective village to be followed up in the community. In addition, the CHWs actively engaged the male partners of the pregnant women to educate them on MNCH issues and encourage their participation in prenatal care. Pelzer et al. [13] reported that the involvement of the male partner is likely to increase the chance of successful PMTCT interventions.

Integrated community outreaches in hard-to-reach areas were conducted monthly. Prioritization was done based on distance to the nearest facility and the number of unreached pregnant women. Communities participated in service delivery by providing the venue and community resources for the outreach. Services offered at these outreaches included: prenatal care; postnatal care; early infant diagnosis (EID); HIV testing and counseling; family planning counseling; distribution of basic family planning commodities and referrals to health facilities; immunization; defaulter tracing; growth monitoring of children, deworming, treatment and referral for the sick; and health education.

Quarterly supportive supervision visits to health facilities were undertaken by the District Health Management Team (DHMT). Skills gaps among health service providers were identified and addressed through on-site mentorship, and in-service courses were conducted
for service providers when necessary. These courses covered new PMTCT [14] and Infant and Young Child Feeding (IYCF) guidelines [15], data collection tools and registers, the Reaching Every Pregnant Woman approach, and Standards-Based Management and Recognition (SBM-R, Jhpiego, Baltimore, USA) for PMTCT. SBM-R for PMTCT was the quality improvement strategy used to ensure that high-quality PMTCT services were provided as demand for services increased. This quality improvement approach involves facility self-assessments on established performance standards for given health areas and is described in Necochea et al. [16] in the present supplement. In this project, health facilities were supported to assess their performance against Kenya’s national PMTCT performance standards [17], a set of 110 standards across the following intervention areas: (1) information education and counselling (IEC); (2) focused prenatal care; (3) labor and delivery; (4) postnatal care; (5) infection prevention and control (IPC); (6) human and physical resources; and (7) management systems. The IEC standards mainly assessed whether clients received all relevant information related to PMTCT. The focused prenatal care, labor and delivery, and postnatal care standards assessed whether clients received all services as per the national guidelines in a respectful manner. The IPC standards assessed whether all protocols of infection prevention were adhered to. Human and physical resources standards assessed whether there was adequate infrastructure, commodities, and supplies for provision of PMTCT services. In addition, the standards also assessed whether the service providers were adequately trained in the provision of these services. Whether facilities were ready to provide the services was assessed under the management systems’ standards. Client flow, availability and display of appropriate signage, and the use of data for decision making were also assessed. The PMTCT—MNCH integrated services package was defined and disseminated to health workers as a job aid (http://reprolineplus.org/resources/pmtctmnch-integrated-service-job-aid/)

Monitoring and evaluation was done jointly by MCHIP, national and regional MOH staff. MCHIP facilitated the availability of MOH tools and registers for use at the community level. Health facility administrators, MOH partners, and the DHMT held monthly meetings to review health facility performance, and the community units held monthly data review meetings. Strategies were re-prioritized based on the outcomes of those meetings. Technical assistance was provided to the health records team to ensure timely, complete, and accurate reporting of selected prenatal care indicators that were introduced as proxy measurements for access to prenatal care, early prenatal care attendance, and service utilization both before and after the RED for PMTCT intervention (Table 1).

3. Program assessment

To document the utility of the RED for PMTCT intervention, we collected and analyzed cross-sectional data at two similar time points two years apart: January to June 2010 (pre-intervention) and January to June 2012 (the last six months of the intervention). We analyzed data collected using MOH tools that were available at the community level, namely the household register, the CHW logbook, and the monthly CHEW summary. Two additional summary monthly forms (711A and 731) were used by the MOH to capture PMTCT data. Data from 33 health facilities and all the 26 community units in Bondo District were summarized and routinely entered in the national District Health Information System (DHIS2) [18] by the district health records officer. The findings for the indicators of interest from the two time periods were compared through a two-sample test of proportions, and MOH summary data and program reports were also reviewed to triangulate the information obtained from the DHIS2. P < 0.05 was considered statistically significant. No institutional review board determination was sought for the study because the Kenya DHIS2 data are publically available [18], and the use of program reports in aggregate form was not human subjects research.

4. Findings

4.1. Access to and utilization of PMTCT-related services though prenatal care and labor and delivery

The findings of the situational analysis showed that there was high coverage of one prenatal care visit services (>95% of pregnant women attended at least one prenatal care visit); however, utilization of prenatal care services overall was low, more than 65% of the pregnant women dropping out of care between their first and fourth visits. Although most pregnant women attended at least one prenatal care visit, more than 75% attended in the third trimester only, with just 3% attending in the first trimester. Furthermore, the majority of women did not know about the importance of attending prenatal care early and attending at least four visits. Other identified barriers included: husbands prohibiting their wives attending prenatal care; religious leaders prohibiting their followers to seek medical services; the perception that services were too costly (although in many areas traditional birth attendants charged significantly more); and conflicts with the timing of economic activities such as fishing.

Between 2010 and 2012, the proportion of pregnant women who completed four focused prenatal care visits increased significantly from 25% to 41% (P < 0.001), and delivery with skilled birth attendants increased from 23% to 47% (P ≤ 0.001). Uptake of prenatal care partner testing (a proxy for male involvement) increased from 1.8% in 2010 to 19.3% in 2012 (P < 0.001) as more men sought testing. At the same time, the proportion of partners (men) who tested positive for HIV decreased (22.6% in 2010 vs 7.3% in 2012; P < 0.001). All clients were offered HIV testing and were given the option of opting out. Table 2 summarizes the findings of these comparisons between the pre-intervention and end-of-pilot periods.

4.2. Diagnostics for HIV-positive pregnant women and HIV-exposed infants

Over the course of the intervention, the proportion of pregnant women attending prenatal care who tested positive for HIV decreased only slightly from 21% to 18% (P = 0.002). The proportion of women at maternity who tested positive for HIV did not change significantly (25.8% in 2010 vs 27.3% in 2012) but the proportion of HEIs tested for HIV infection at six weeks increased dramatically from 27% to 78% (P < 0.001) (Fig. 1). By the end of the pilot, the proportion of HEIs tested at 12 months remained high, at 52%, while 77% of HEIs at 12 months were issued ARV prophylaxis. In addition, 77% of HEIs aged six months were exclusively breastfed, as shown in Table 3. Only 35 of the 765 HEIs younger than 12 months, or 4.6%, were identified as testing positive for HIV. Overall, 62% of the HIV-positive pregnant women were assessed for antiretroviral therapy (WHO staging and CD4 counts) at prenatal care clinics. For these endline results, baseline data were not available for comparison.
4.3. Performance and quality improvement through SBM-R

An overall upward trend was observed in SBM-R performance scores on PMTCT standards between baseline and two assessment points. Overall, performance scores for all intervention areas (IEC, labor and delivery, infection prevention, and management systems) improved from a mean of 28% at baseline to a mean of 52% by the second assessment (Fig. 2). The largest change in performance occurred at labor and delivery, from 17% to 56%, although that baseline score was the lowest. The highest second (and final) assessment score was in focused prenatal care, at 70%, although it had the highest baseline value of 49%.

4.4. Other findings

CHW coverage of the catchment area of Bondo District increased from 38% in June 2010 to 100% in June 2012—a total of 26 community units. The average number of women eligible for prenatal care attendance was approximately 6000 annually between 2010 and 2012, with virtually all pregnant women during the implementation period reached. The establishment of a CHW desk in health facilities, use of CHWs to actively identify those lost from care in their communities and link them back to services, and an improved community-to-health-facility referral system contributed in reducing the dropout rate between one prenatal care visit and four prenatal care visits from 71% in 2010 to 57% in 2012 (P < 0.001).

5. Discussion and lessons learned

The RED for PMTCT pilot intervention was evaluated using routine program monitoring data collected electronically through a government-sponsored health information system where data are constantly updated, publically available, and can be used in real-time for decision making. Implementation of the RED for PMTCT approach included general adherence to RED’s operational components and a particular emphasis on the lowest level of service delivery, the community. Overall, the findings are suggestive that RED for PMTCT was successful at increasing access to and utilization of PMTCT services among those who attended prenatal care in Bondo District, as demonstrated by the increase in early attendance, delivery under skilled care, and HEI testing at six months by the end of the pilot. The quality of PMTCT service delivery also improved, particularly in labor and delivery, where other services might otherwise have been prioritized.

Table 2

<table>
<thead>
<tr>
<th>Prenatal care attendance and HIV testing</th>
<th>Jan – Jun 2010 (n = 3600)</th>
<th>Jan – Jun 2012 (n = 3633)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of prenatal care users returning for the fourth visit</td>
<td>25.0</td>
<td>41.0</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Proportion of women delivering with assistance of skilled attendants</td>
<td>23.0</td>
<td>47.0</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Proportion of prenatal care users tested for HIV (testing uptake)</td>
<td>79.2</td>
<td>75.7</td>
<td>NS</td>
</tr>
<tr>
<td>Proportion of prenatal care users who tested positive for HIV</td>
<td>21.4</td>
<td>18.3</td>
<td>0.004</td>
</tr>
<tr>
<td>Estimated LLITN coverage among prenatal care users</td>
<td>80.9</td>
<td>81.8</td>
<td>NS</td>
</tr>
<tr>
<td>Proportion of HIV-positive mothers referred for follow-up</td>
<td>78.5</td>
<td>81.5</td>
<td>NS</td>
</tr>
<tr>
<td>Proportion of prenatal care partners tested (couple testing)</td>
<td>1.5</td>
<td>14.6</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Sub-group analyses

| Proportion of women testing positive given preventive ARVs a & b | 93.1 | 108.0 | Not done |
| Proportion of HIV-positive mothers given infant prophylaxis a & b | 97.3 | 124.7 | Not done |
| Proportion of new prenatal care partners who tested positive for HIV a | 22.6 | 7.3 | <0.001 |
| Proportion of HEIs tested for HIV at 6 weeks a | 27.5 | 77.5 | <0.001 |
| Maternity, labor and delivery HIV testing | | | |
| Proportion of women in maternity tested for HIV (testing uptake) a | 88.8 | 87.8 | NS |
| Proportion of women in maternity who tested positive for HIV a | 25.8 | 27.3 | NS |

Abbreviations: ARV, antiretroviral; HEIs, HIV-exposed infants; LLITN, long-lasting insecticide-treated net; PMTCT, prevention of mother-to-child transmission of HIV; NS, not significant.

4 Values are given as percentage unless otherwise indicated.

5 The denominators for these analyses are 770 for 2010 and 665 for 2012. Some HIV-positive pregnant women were counted more than once after testing and receiving ARV prophylaxis multiple times, so the results are greater than 100% in 2012.

6 The denominators for this analysis are 53 for 2010 and 532 for 2012. There was a 10-fold increase in partner/couple testing.

7 The denominators for this analysis are 622 for 2010 and 503 for 2012.

8 The denominators for this analysis are 632 for 2010 and 800 for 2012.

Fig. 1. Trends in proportion of HIV-positive women at prenatal care and HIV-exposed infants at six weeks. Abbreviation: HEI, HIV-exposed infants.

Table 3

<p>| HIV-exposed infants and early infant diagnosis services indicators at end-of pilot (January – June 2012). |
|--------------------------------------------------|----------|------------|</p>
<table>
<thead>
<tr>
<th>Indicator</th>
<th>No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of known HIV-positive women at entry at prenatal care</td>
<td>438/1829</td>
<td>23.9</td>
</tr>
<tr>
<td>Proportion of women with unknown HIV status at entry at prenatal care</td>
<td>334/1829</td>
<td>18.3</td>
</tr>
<tr>
<td>Proportion of HIV-positive mothers assessed for ART at prenatal care</td>
<td>485/772</td>
<td>62.0</td>
</tr>
<tr>
<td>Proportion of HIV-positive mothers started on ART at prenatal care</td>
<td>82/772</td>
<td>10.6</td>
</tr>
<tr>
<td>Proportion of HEIs tested by 12 months</td>
<td>765/1480</td>
<td>51.7</td>
</tr>
<tr>
<td>Proportion of HEIs aged 6 months who are exclusively breastfed</td>
<td>749/973</td>
<td>77.0</td>
</tr>
<tr>
<td>Proportion of HEIs aged 12 months issued with ARV prophylaxis</td>
<td>691/897</td>
<td>77.0</td>
</tr>
</tbody>
</table>

Abbreviations: ART, antiretroviral therapy; HEIs, HIV-exposed infants.
Despite relatively higher prenatal care attendance at the end of the pilot than at the beginning, low early prenatal care attendance and high prenatal care dropout rate continue to be a major barrier to early and continued initiation of needed services.

From the findings, it is apparent that improvement in the community-based PMTCT initiative may have been largely due to the sustained engagement of the key stakeholders and collaboration with the various partners working in the area through all the stages of the program. Stakeholder participation was ensured in the process of identifying challenges, problem-solving, prioritizing targeted solutions, and mobilizing resources for solutions that were already well packaged in the RED approach. These same factors have been shown as catalysts for systematic changes at institutional and national levels within PMTCT programs in 34 global countries [19].

Regarding capacity building of CHWs, the master trainer model using CHEWs was found to be an efficient, inexpensive, and expedient way to train CHWs in their local setting. However, it was necessary to complement the training approach with regular and structured supportive supervision; requests to share challenges and successes; and a mechanism for more regular and timely data collection. Uwinma et al. [20] identified the need for systematic skill-building, enhanced scopes of practice, and consistent supervision of CHWs as critical to the success of PMTCT integrated programming, with the corollary need to equip these training and supervision programs with a reliable referral and monitoring and evaluation system.

The service delivery component of the RED for PMTCT approach faced other challenges, including difficulties tracking the women during the prenatal and postnatal periods, given that Kenya uses cross-sectional prenatal and postnatal care registers from which patients’ histories were not documented in a manner that allowed for follow-up. To overcome this challenge, the health prenatal and postnatal care services provided were recorded in mother—child booklets that the mothers were required to present during all clinic visits. However, some mothers routinely did not carry the booklets thus obtained new ones each visit while others, in order to avoid stigmatization, altered the entries in the booklets, especially with respect to their HIV status. In addition, some community members did not want their HIV status known to their CHWs and therefore did not disclose their HIV status to them. As a result of this missing information, service providers at health facilities could not reliably generate defaulter lists for the HIV-positive population. A number of studies, including a systematic review of PMTCT services in 12 countries in Sub-Saharan Africa, confirmed the persistence of stigma as a major barrier to the uptake of ARV drugs for PMTCT [19,21].

Defaulter tracing of the HEIs is often difficult, a finding reported elsewhere [21–23]. The present study also documented this challenge. In addition, HIV-positive infants had to be referred out of their primary facilities when they were 18 months old. On top of this, there were occasional regional stock outs of HIV commodities that influenced PMTCT service delivery, especially EID.

Bondo District had a number of partners with frequently competing priorities. CHWs who were part-time volunteers often supported on many intervention areas including MNCH, HIV, tuberculosis, water and sanitation, and malaria. Frequent engagement of facility-based health workers in offsite meetings and trainings by other partners sometimes caused artificial staff shortages and adversely affected service delivery. Barron et al. [24] identified the need to ensure good coordination with technical partners, such as international health agencies and international and local nongovernmental organizations, to improve program outcomes.

### 6. Conclusion

Implementation of RED for PMTCT resulted in improved early access to and increased utilization of PMTCT services by HIV-positive pregnant women and their children in the low-resource setting of Bondo District, Kenya. It also enabled PMTCT services to be delivered effectively and in a sustainable manner in the context of Kenya’s national community strategy, which is an important effort to bring quality services closer to the people who need them. RED for PMTCT integrates a known package of best practices and underscores the importance of community-driven approaches to improve the uptake of and retention in PMTCT services. With funding from USAID, the RED for PMTCT model will be rolled out in two other Kenyan districts, Igembe North and East Pokot, providing an opportunity to test solutions aimed at addressing the challenges observed in Bondo and collect additional data. Further scale-up of this model will be largely dependent on interest from the Government of Kenya and its implementing partners.

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**Conflict of interest**

The authors have no conflicts of interest.

**References**


Commentary

Eyes on the prize: Linking pre-service education to outcomes

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Education outcomes
Health worker
Health workforce
Pre-service education

1. Introduction

The pre-service or initial education of a health worker prior to deployment into the healthcare system is critically important. It ensures that all workers begin their careers with a foundation built on competence and are prepared to be lifelong learners and potential leaders. There has been long-standing global attention to developing and strengthening pre-service education (PSE) pathways for health workers in low-resource settings as a means to address an ongoing, severe shortage of human resources for health (HRH). Unfortunately, many efforts have failed to achieve the sustainable results intended [1,2]. Minimal educational and infrastructure resources, poorly constructed systems for ensuring educational quality, and other daunting influencing factors have combined to impede improvements in community and health systems outcomes through PSE.

1.1. Pre-service education conceptual model

The pervasive lack of documented results despite a steady stream of well-intended innovations suggests a need for a new approach to designing and strengthening PSE systems. The conceptual model depicted in Fig. 1 [3] provides a visual link between desired pre-service outcomes, the inputs needed to achieve them (for example, students, teachers, clinical practice sites), and the influencing factors affecting the education, deployment, and assimilation of graduates into the healthcare system. The authors hope that this commentary will result in readers making the wisest investment possible in a complex system that is influenced by a host of factors, sometimes beyond educators’ control. We aim to convince readers that future efforts to improve PSE must begin with careful consideration of the performance outcomes that graduates need in order to improve outcomes in their community and the larger health systems to which they will dedicate their careers.

2. A case for starting on the right side of the model

Optimal health and health system outcomes cannot be achieved without a fully capable health workforce prepared to provide the range of services needed to achieve them. While we must trust that this assumption is valid, we can also measure the performance outcomes of students and, to some extent, the impact that they have on their community.

During the planning or at the outset of projects aimed at improving PSE, leaders are advised to closely examine health workforce requirements at both the national and community levels. They should consider government packages of health services outlining service expectations at varying levels of the health system, job descriptions for the cadres being educated, and regulatory documents outlining professional scopes of practice. Task analysis, a method of surveying graduates about the frequency and importance of tasks they perform in their work, can provide valuable evidence guiding PSE inputs [4–6]. Stakeholders should ask whether essential resources and materials required for graduate performance are in place before adding competencies to a curriculum. Stakeholders might consider whether communities are ready to accept the services that graduates are prepared to offer and should consider whether the health system authorizes the graduates to perform those services. Educating students to provide care that they are unable to deliver is a completely wasted effort.

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Education and development experts must understand these outcomes and prepare for them with a measurable set of indicators as a first step in any project aimed at improving PSE systems. With measurable outcomes, direct linkage of results with pre-service education is feasible. For example, the community outcome of greater utilization of local health centers for healthy timing and spacing of pregnancy links with PSE clinical experience in the community, emphasis on counseling skills, and development of community relationships with the health facility and the educational institution.

3. Linking the left side of the model to the right side

Given that the purpose of PSE is to graduate competent new service providers who can be absorbed into the health system with relative ease, both sides of the model must be examined and considered in implementing any plan.

3.1. Students

Student selection criteria should be evaluated and possibly revised in relationship to the outcomes desired. The traditional criterion of academic grades or scores on admission exams, though predictive of academic success, limits the pool of students. With limited resources for HRH, it is important to select students who will not only matriculate and graduate, but will also remain in the profession and contribute to the health workforce. There are numerous examples of targeted recruitment that positively affect student selection and subsequent retention [7–11].

Some programs have found it imperative to include a cultural lens in student selection. For example, in Afghanistan, candidates for education as community midwives are selected by their communities. In a culture where a woman is required to obtain permission from her father or husband, at a minimum, to work or go to school, community support of the student is imperative [8]. Although some countries assign students to cadres without considering the students’ interest in the profession, this is likely to be a detriment to successful education and deployment. Fowler and Norrie [12] note that absence of expressed interest in the profession is a predictive factor for attrition. Enlisting community and professional stakeholders in efforts to identify qualified candidates may lead to recruitment of qualified students who would otherwise be overlooked. Students who enter with the encouragement or sponsorship of professionals in their chosen field may have the advantage of being vetted by their future colleagues. Targeting recruitment to specific geographic or population groups may increase the likelihood that graduates will return to their communities, particularly if recruitment is paired with support such as graduate internships or other bridge programs, academic mentoring, and peer tutoring [10,11,13,14].

3.2. Teachers/tutors/preceptors

Although including investment in teacher preparation in improvements to PSE is intuitive, it does not always happen [2]. Effective teaching in competency-based education requires competent teachers [15]. Preparation of teachers and maintenance of teacher competency should be outcome-focused and integrated with the educational program, including preceptors and clinical sites. Preceptors should be a formal part of the faculty and have student assessment responsibilities and authority. When educational integration is extended to clinical sites, classroom tutors become part of the facility, reducing artificial academic–clinical barriers and connecting teachers and preceptors to the larger educational system. Teachers who are closely connected to clinical settings are aware of the parameters of facilities and are more able to develop lesson plans that leverage resources and mitigate challenges. The outcome focus of graduating competent providers should be grounded in reality, and all teaching staff (teachers and preceptors) must work with students to solve problems and provide the best care using available resources.

Retention of teachers and preceptors is improved when they are respected in the community. This is a reason for targeting faculty recruitment to areas where they are needed and more likely to share the language and culture of the community members. It is important that professional leaders demonstrate both academic and clinical competence. Overwhelming workloads in both classroom and clinical settings are disincentives for teachers and preceptors to be effective educators, much less take on additional professional work. Teacher/preceptor incentives must include manageable workloads, time for professional activities, and recognition of the need for ongoing preparation. Teachers may have great difficulty maintaining their own clinical competency, given their educational responsibilities. Providing teachers with opportunities for clinical practice should be encouraged but may be a challenge to implement with current teacher shortages.

3.3. Infrastructure and management

There is good evidence from the in-service training literature [16] that learners’ practice in simulated settings increases their engagement in their education and enhances their skill competency before they see patients. An appropriately equipped and organized simulation lab facilitates practicing in a situation that reflects the clinical setting as closely as possible. Use of standardized patients, cases, role plays, and simulations should replicate what is likely to be seen in the community.

An effective learning environment requires a sufficient number of teaching and learning tools for the student cohort, physical space for classrooms, and an area where students can study, whether it is a library or computer lab or a combination. Modern education practices require a computer lab. In areas of unavailable or irregular connectivity, there are...
offline resources such as the eGranary Digital Library from the WiderNet Project that work to reduce digital divide barriers [17].

Providing education models and resources to clinical facilities strengthens the PSE program and offers additional opportunities for staff to practice. Brief, on-site continuing education programs benefit the facility as well as the students.

3.4. Curriculum

The curriculum should reflect national health needs balanced with international competencies. International competencies for practice [18–21] can be appropriately integrated with the work that graduates must be able to do to affect outcomes in their country. Assignments should be consistent with local practices and culture; learning materials should be reflective of national health needs rather than classic texts. An example would be placing greater emphasis on kangaroo care for pre-term and low birth weight newborns and less emphasis on use of neonatal exchange transfusion. Support from regulators of educational programs such as relevant ministries and professional councils is needed for policy-level buy-in. Administrators and practitioners at sites associated with the school should understand the content and flow of the curriculum as well as the role of teachers.

3.5. Clinical sites

Clinical sites must reflect a balance that considers the needs of the learner, the needs of individuals seeking care, and the needs of the facility and providers. For an education program to be outcome-focused, the clinical sites must have the resources they need for education as well as the resources to achieve the desired outcomes. Educational institutions have to be part of a resource stream; health professional students require a significant amount of relevant, high-quality clinical practice to become competent providers. Competent providers working at a clinical practice site increase opportunities for engagement with the community that receives the services and therefore improve community health outcomes. High-quality clinical sites should be assessed by standard criteria for quality, maintain quality improvement systems, and place a high value on demonstration of professional behavior and ethics.

4. Conclusion

The parts of the PSE conceptual model are inextricably linked, and successful investment in PSE requires consideration of the whole model. Nongovernmental organizations that invest in PSE have different scopes of interest and implementation budgets. However, at a minimum, those interested in investing in, establishing, or improving education systems should go through the exercise of figuring out where their efforts fit with each part of the model. Factors on both sides of the model inevitably influence any investment in PSE. Consideration may need to be given to advocacy for alternative investments. For example, instead of a new curriculum, more critical needs might include stronger clinical sites, better-prepared teachers, and preceptors who can assess student learning. Implementers have an obligation to ensure that an intervention does not do damage to other parts of the model. Investment in PSE is a long-term commitment—and it is a crucial investment in preparing leaders for the future.

Conflict of interest

The authors have no conflicts of interest.

References