

Engaging National Professional Society to Combat Postpartum Hemorrhage Using Bundle Approach - A FIGO-SAFOG-OGSB-MGH Project: Experience of Implementation in Bangladesh

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Abstract

Objective: To reduce the incidence and death due to post-partum Hemorrhage (PPH) and capacity building of health service providers by using PPH Emergency response using Bundle Approach.

Method: Planning and implementation of WHO formulated PPH Bundles [Active Management of Third Stage of Labour (AMTSL), First response Bundle and Refractory PPH Bundle] by Obstetrical and Gynaecological Society of Bangladesh (OGSB) in 14 different levels of public and private hospitals in Bangladesh. After discussion with International Federation of Gynaecology and Obstetrics (FIGO) and South Asian Federation of Obstetrics and Gynaecology (SAFOG) team, a Memorandum of understanding (MOU) was signed; permission from Ministry of Health and Family welfare (MOHFW) was obtained through Directorate General of Health Services (DGHS) and also from all the institutions. The project period was from November 2019 to September 2022 in a spoke-and-hub fashion. A group of master trainers and a technical advisory group were developed comprising of senior obstetricians and gynecologist of Bangladesh. Data were obtained through record keeping of the respective hospitals and Management Information System (MIS) of DGHS, monitoring was done by OGSB and Massachusetts General Hospital (MGH)-FIGO team.

Results: Consultative and planning meetings were organized among OGSB, FIGO, SAFOG and MGH: 16 master trainers, 74 trainers were produced and 740 health service providers (Doctor, Nurses, midwives) and 450 non clinical staffs were trained. All clinical and non-clinical bundles were implemented in 14 facilities in spoke-and-hub fashion. Occurrence of PPH, detection rate of PPH, filling up PPH checklist and debrief forms were improved. Data collection system, understanding about data improved a lot. Facility readiness, team work, data monitoring & supervision, network integration and leadership skills were instituted and shown excellent positive changes. Regular simulations were continued which helped old & new service providers to learn and continue proper use of the clinical and non-clinical interventions. Scale up was planned and continued.

Conclusion: PPH emergency response using bundle approach was found to be an important practical way to reduce occurrence, death and disability related to PPH. Needs for surgery has reduced also. Quality of services improved in terms of providing standard care, record keeping and reporting. Regular supervision and monitoring; data management and personal motivation are the challenges.

Key Word: PPH Bundle Approach, PPH Emergency response, NASG, NON Clinical Bundles, Leadership

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Introduction:

Maternal mortality in Bangladesh and SAFOG Countries (excluding Sri Lanka and Bhutan) are unacceptably high. MMR of Bangladesh is 196/1,00,000 live Births¹. Haemorrhage, mainly PPH (33%) is the biggest killer of the mothers¹. Postpartum hemorrhage (PPH) occurs in approximately 5% of all live births and, despite concentrated efforts, remains a leading cause of maternal morbidity and mortality.² Because most PPH-related deaths are preventable through the implementation of effective interventions, the recent shift from home births to facility births across low and middle-income countries (LMIC) raises new opportunities for saving women's lives.^{3,4} Unfortunately, inconsistent and/or delayed use of effective interventions for prevention and treatment of PPH, in addition to other systemic problems in health services (e.g., lack of blood banks, inadequate staffing), has led to continued unacceptable rates of hemorrhage-related maternal deaths.⁵⁻⁸ Care bundles have been associated with improved patient outcomes when adherence is high.⁹⁻¹⁰ The concept of care bundles is similar to that of packages and checklists, which have been used by healthcare providers for decades with a similar goal of standardizing and expediting care. Care bundles may include behaviors, such as the widely used "ABCs" designed to help practitioners remember the sequence for resuscitation, or a number of interventions packaged together, such as the "Active Management of the Third Stage of Labor" (AMTSL) package used to prevent PPH.

The Bundle Approach: A bundle is a structured way of improving the processes of care and patient outcomes: a small, straightforward set of evidence-based practices - generally three to five - that, when performed collectively and reliably, have been proven to improve patient outcomes. Quality teams should resist the impulse to label any list of good changes a bundle¹¹. The power of a bundle comes from the body of science behind it and the method of execution: with complete consistency. It's not that the changes in a bundle are new; these are well established best practices, but are often not performed uniformly, making treatment unreliable, at times idiosyncratic. A bundle ties the changes together into a package of interventions that people know must be followed for every patient, every single time. It resembles a check list, but a bundle is more than that. A bundle has specific elements that make it unique. The changes are all necessary and

all sufficient. It is a cohesive unit of steps that must all be completed to succeed. The changes are all based on randomized controlled trials, Level 1 evidence. They've been proven in scientific tests and are accepted, well-established. There should be no controversy involved, no debate or discussion of bundle elements. A bundle focuses on how to deliver the best care — not what the care should be. The evidences so far have proven the effectiveness of bundle approach in prevention and treatment of medical conditions. In 2001, the Institute for Healthcare Improvement (IHI) developed a formal approach to bundling care to increase the quality and efficiency of care delivery.¹¹ The IHI defined bundles as "small sets of evidence-based interventions for a defined patient population and care setting that, when implemented together, result in significantly better outcomes than when implemented individually".¹¹ The "bundles" approach was designed to increase uptake and compliance to recommended interventions (Box 1).¹¹ Care bundles differ from other care packages in that compliance is achieved only when all the bundled interventions are completed and recorded. Thus, compliance for the bundle as a whole implies higher rates of compliance for its individual elements.¹⁰ Teamwork, communication, and cooperation are emphasized, because these health systems' processes are required for quality and sustainability.¹¹

Box-1: Content of a Bundle in clinical practice¹¹

A trigger

A set of evidence-based interventions (3-5)

All elements are completed (under contra indicated or not indicated)

¹¹In 2012, WHO published its "Recommendations for the Prevention and Treatment of Postpartum Haemorrhage" to provide evidence informed clinical care recommendations for hemorrhage due to uterine atony.¹² However, adherence to these recommendations remains a challenge.⁷ The bundle approach has been proposed as a potential solution to suboptimal adherence to PPH guidelines.⁵ Healthcare bundles have been proposed for maternal conditions including placenta previa, elective induction, labor augmentation, vacuum delivery, maternal sepsis, and obstetric anal sphincter injury,^{13,14,15} but evidence of their success or failure is lacking. Although many current patient safety programs target PPH,^{4,6,16-18} there are no patient care bundles for PPH as defined by the IHI. In

early 2017, WHO decided to explore whether bundling current WHO-recommended evidenced-based interventions for PPH due to uterine atony might accelerate adoption and adherence to PPH guidelines.

An international technical consultation was conducted in 2017 to develop draft bundles of clinical interventions for PPH taken from the WHO's 2012 and 2017 PPH recommendations and based on the validated "GRADE Evidence-to-Decision" framework.¹⁹ Twenty-three global maternal-health experts participated in the development process, which was informed by a systematic literature search on bundle definitions, designs, and implementation experiences. Over a 6-month period, the expert panel met online and via teleconferences, culminating in a 2-day in-person meeting. The consultation led to the definition of two care bundles for facility implementation. The "first

response to PPH bundle" comprises uterotonics, isotonic crystalloids, tranexamic acid, and uterine massage. The "response to refractory PPH bundle" comprises compressive measures (aortic or bimanual uterine compression), the nonpneumatic antishock garment, and intrauterine balloon tamponade (IBT). Advocacy, training, teamwork, communication, and use of best clinical practices were defined as PPH bundle supporting elements. For the first response bundle, further research should assess its feasibility, acceptability, and effectiveness; and identify optimal implementation strategies. For the response to refractory bundle, further research should address pending controversies, including the operational definition of refractory PPH and effectiveness of IBT devices (Table 1).¹⁹

Table-I

Description of WHO-recommended clinical interventions for PPH, 2012–2017¹⁹

Intervention	Description
Uterotonics	Administration of oxytocin (IV/IM); ergometrine/ methylergometrine or other fixed drug combination of oxytocin and ergometrine (IM); misoprostol (oral).The preferred drug for prevention of PPH is oxytocin (10 IU, IV/IM). If unavailable, give IM ergometrine/methylergometrine or the fixed drug combination of oxytocin and ergometrine, if not contraindicated. If IM or IV uterotonics are unavailable, give oral misoprostol (600 ig)
Controlled cord traction	After delivery of the newborn and it is assessed that there are no other fetuses in utero, gentle traction is applied to the umbilical cord with one hand, while the other hand applies abdominal counterpressure on the uterus
Uterine tonus assessment	Palpate the uterus to assess uterine firmness/tone; if the uterus is soft or flabby this may indicate uterine atony
Isotonic crystalloids	Administration of a starting dose: 500 mL of isotonic crystalloids IV, in 30 min; and continuing doses of 500 mL of isotonic crystalloids IV, in 60 min
TXA	A fixed dose of 1 g of TXA (100 mg/mL IV at 1 mL per min), within 3 h of the time of diagnosis (if unknown, time of delivery); a second dose of 1 g can be given if needed 30 min after the first dose
Uterine massage	Circular rubbing of the uterus achieved via manual massaging of the abdomen. This is typically sustained until the bleeding stops or the uterus contracts
Intrauterine balloon tamponade	The procedure entails insertion of a deflated/ uninflated balloon into the uterine cavity and then inflating it to achieve a tamponade effect
Bimanual uterine compression	Two handed, one in the anterior vaginal fornix and one behind the uterine fundus, squeezing the uterus between the hands
External aortic compression	External compression applied with a closed fist at the level of the umbilicus and slightly to the woman's left
NASG	Used as a temporizing measure until source of bleeding found and treated. NASG is a lower body compression device made of stretch neoprene which closes tightly with Velcro in segments for the ankles, calves, thighs, pelvis, and abdomen and is applied rapidly starting at the ankles
A single dose of antibiotics	In the context of placental retention, the placenta should be extracted, and a single dose of antibiotics administered
Uterine artery embolization	If other measures have failed and if the necessary resources are available, the use of uterine artery embolization is recommended as a treatment for PPH due to uterine atony
Surgical intervention	If bleeding persists despite treatment with uterotonic drugs and other conservative interventions, surgical intervention should be used without further delay

Abbreviations: IM, intramuscular; IV, intravenous; NASG, non-pneumatic antishock garment; PPH, postpartum hemorrhage; TXA, tranexamic acid

The Beginning:

In an executive committee meeting of South Asia Federation of Obstetrics & Gynaecology (SAFOG), while Prof. Ferdousi Begum was serving as president of SAFOG and President Elect of OGSB, the prospect of SAFOG running project was discussed. Dr. Kusum Thapa working with JHPEIGO, was actively exploring and the connection clicked as FIGO was thinking of the implementation and extension of the project named “PPH Emergency Response using Bundle Approach”. A meeting was set with Prof. Jerker of FIGO with Prof. Ferdousi Begum to discuss the prospect and methodology of implementing this in SAFOG area.

As the preliminary activity was ongoing in Sevagram, Mahatma Gandhi Institute of Medical Science (MGIMS), India, with Dr. Poonam Shivkumar as the lead, a tour was planned to Sevagram to observe the project activity and to discuss the details in Lucknow. (All India Congress of Federation of Obstetrics and Gynaecology of India, ICOG 2020, FOGSI) was planned. Accordingly, Prof. Ferdousi Begum & Prof. Sameena Chowdhury (President of OGSB) underwent the Training of the Trainer in Sevagram and Prof. Ferdousi Begum, Prof. Sameena Chowdhury, Prof. Kohinoor Begum, Prof. Laila Arjumand Banu met Dr. Thomus Burk of Massachusetts General Hospital

(MGH) and detail discussion was done in a two hour long meeting in Lucknow. The stage was set in several steps and a memorandum of understanding (MOU) was signed between SAFOG (OGSB) and FIGO including detailed work plan, manpower and budget. The project was named “Engaging National Professional Societies to Combat Postpartum Hemorrhage-Bangladesh” and as a SAFOG country Bangladesh was given the responsibility to implement the project. Project concept was formulated through a series of meeting with Dr. Kusum Tahpa from JHPIEGO and Prof. Jerker and FIGO & MGH. One very interesting and challenging point included in the project is scale up the project even after completion of the project. Steps followed in the implementation of the project, the organization/institution and people involve the spoke-and-hub fashion is shown in box 1-5. Given the high PPH rate and high maternal mortality for PPH in Bangladesh, the goals of the project set were; 50% reduction of PPH related maternal mortality and morbidity in the intervention institutes; and to improve the skills of the health service providers and improve the PPH emergency care (EmC) managements at the facility level. The project was funded by Bill & Melinda Gates Foundation (BMGF).

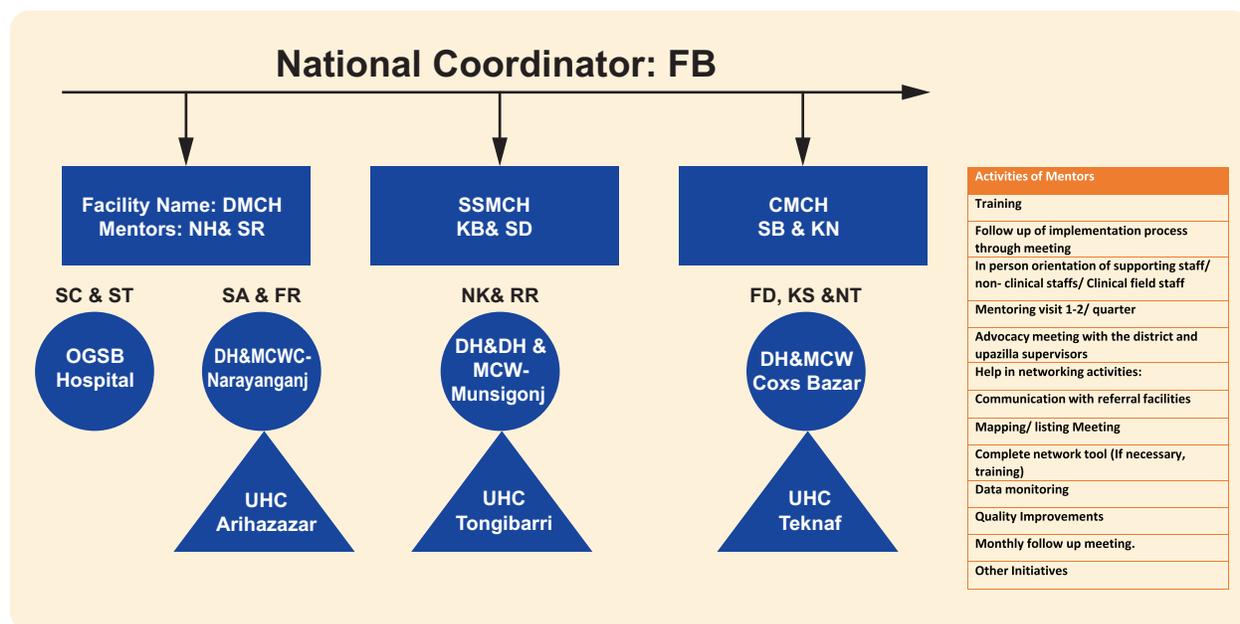


Fig.-1: The mentorship model

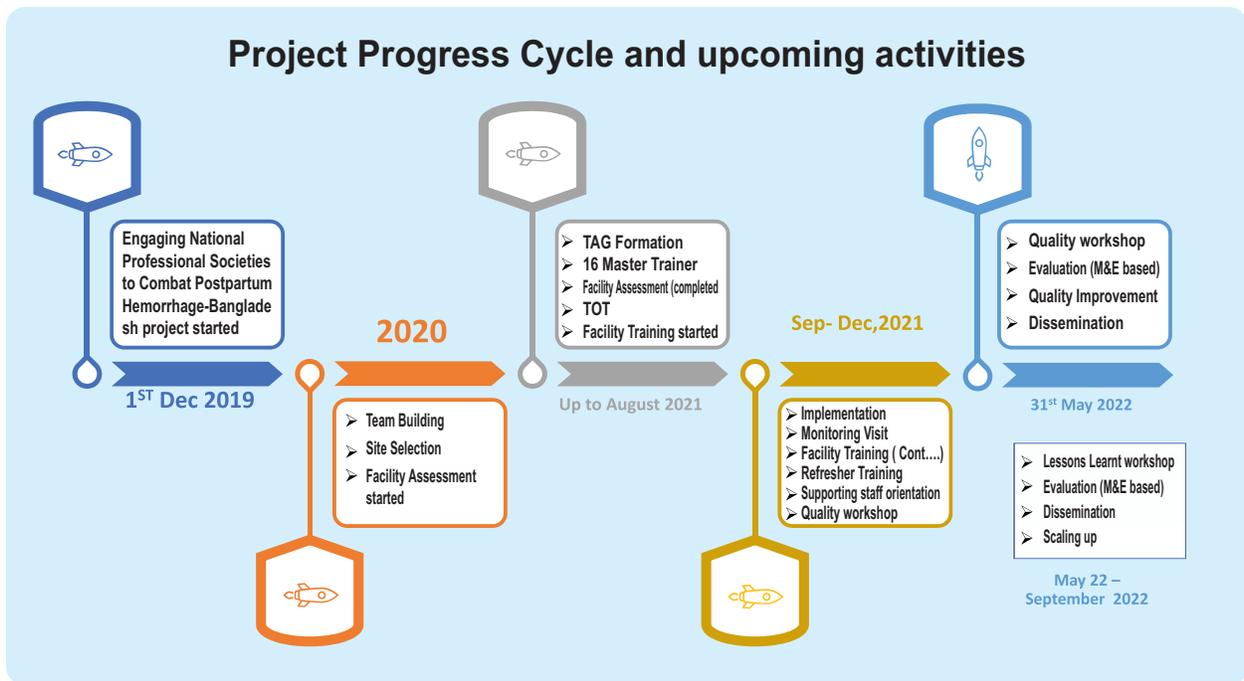


Fig.-2: The Project cycle

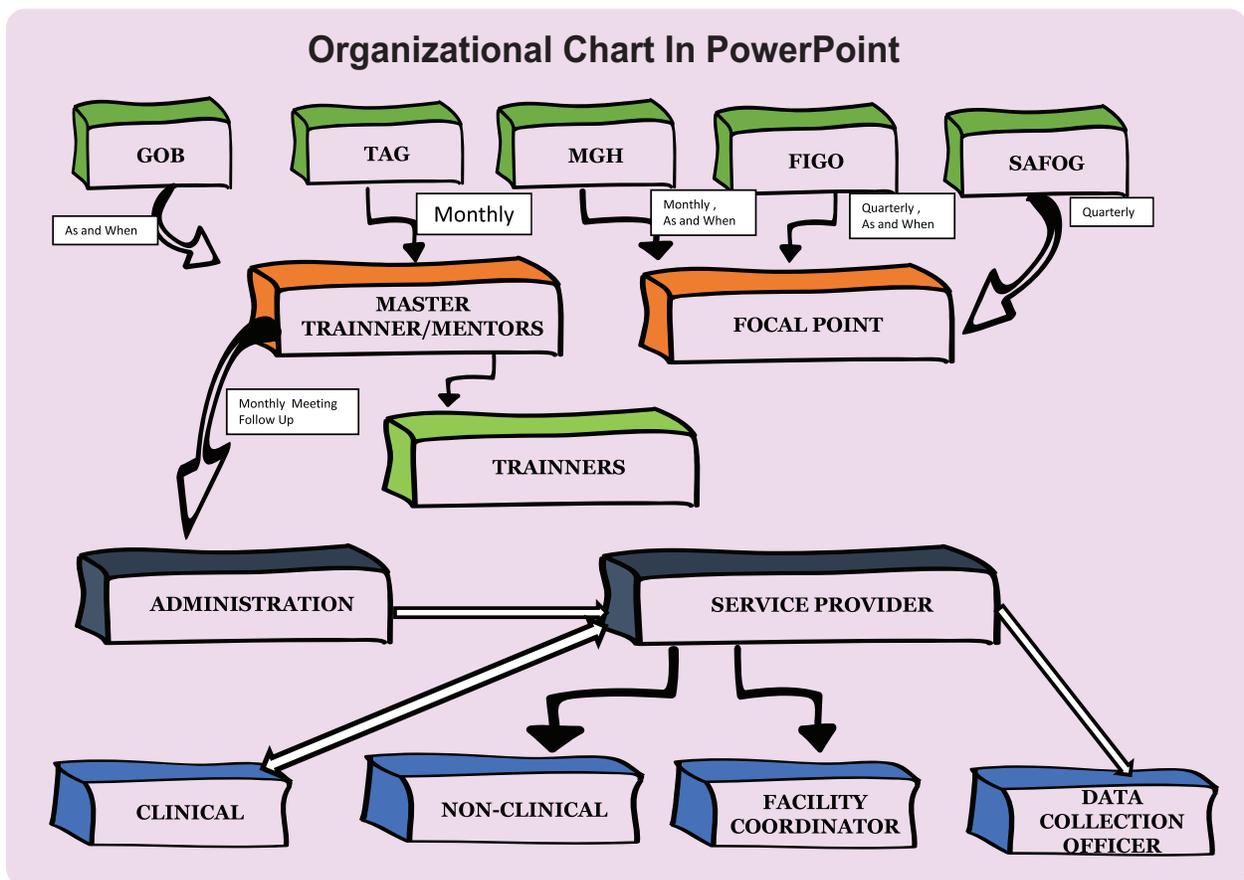


Fig.-3: PPH bundle framework in Bangladesh: models of activities and actors

Box 2. Major Planned Activities of the Project and Quality Improvement Activities:

- Formation of FIGO, MGH Core committee
- Creation of SAFOG Core committee
- Formation of Technical Advisory Group (TAG)
- Selection and involvement (issuing letters) of Stakeholders
- Selection of master trainers
- Clinical Training: In 3 phase
 - Phase I: Training of the 16 Master trainers/core trainers
 - Phase II: ToT of the 64 Service providers
 - Phase III: Facility based training of the 690 health service providers
- Refresher training : 210
- Non clinical support staff orientation: 160
- Implementation of PPH EmC in 14 selected health facilities
- Monitoring & evaluation and mentoring of the PPH EmC implementation
- Quality Improvement (QI)
- Meeting with SAFOG/FIGO/MGH/Govt of Bangladesh/Stakeholders
- Visit by MGH/FIGO Team to OGSB conduction of Text
- Batch ToT. Visit to project site (Cox's Bazar Upazilla Health Complex)
- Lesson learnt workshop. Middle dissemination with stakeholder (online).
- Final dissemination workshop
- Recommendation/Follow on activities

Quality Improvement (QI)

Meeting with SAFOG/FIGO/MGH/Govt of Bangladesh/Stakeholders

Visit by MGH/FIGO Team to OGSB conduction of Text

Batch ToT. Visit to project site (Cox's Bazar Upazilla Health Complex)

Lesson learnt workshop. Middle dissemination with stakeholder (online).

Final dissemination workshop

Recommendation/Follow on activities

Methods/Process and the Project:

The duration of the project was two year (start date November 2019 and end date May 31, 2022; But due to outbreak of Covid-19 the project had been started from November 2020. No-cost extension was done and the project finally ended in September 30, 2022. Partners of the Project were Govt. of Bangladesh, FIGO (International Federation of Gynecology and Obstetrics), SAFOG (South Asian Federation of Obstetrics and Gynaecology), OGSB (Obstetrical & Gynaecological Society of Bangladesh) and MGH (Massachusetts General Hospital). The specific directorate linked with was "Maternal, Children and Adolescent Health (MNCAH)" of Directorate General of Health Services (DGHS) under Ministry of Health and Family Welfare (MOHFW). Program Manager, deputy and assistant program managers of MNCAH directorate were involved. In addition Director of Hospital Management Services, Upzilla Health, Director General of Health and Family Planning (DGFP) and MNCRAH directorate were also involved. Development partners including UN Agencies were involved from the very beginning as stakeholders.

Many innovations have to be done for the training due to Covid-19. The training manual was prepared by MGH. Based on the content, an online version, the

'Thinkific' Module was developed where lectures, quizzes and videos were included. Trainees were given a link by MGH and they can complete different lessons individually or in groups. A certificate was sent online upon successful completion of the whole course. It was very user friendly and useful.

The content of different Bundles for PPH management (both clinical and nonclinical bundles) are shown in Table-2 and Box-5.

Training was conducted in three phases: Phase 1- Training of the 16 Master trainers (core trainers), Phase II- ToT of the 64 Service providers, Phase III- Facility based training of the 690 health service providers. Technical Advisory Group (TAG) was formed and their active participation and guidance were vital in the implementation of the project, which were instituted through regular online meetings. Stakeholder's involvement were ensured during launching, midterm and final dissemination. Monitoring of the PPH EMC implementation was done regularly in a structured way. Most of the facility training was done virtually. The local trainers and trainees sat in a group. Online lectures were delivered. Skills were taught and trained in groups with the mentors/local experts online/ in person. An online version of simulation was developed. After the Covid-19 wined off, in person and refresher

training were conducted. Whenever possible in person training was conducted and/ as repeated. Personal tour by the mentors to the respective institute conducted as per the plan of the project after decrease in Covid-19; otherwise regular monitoring was continued online. Many adaptation of methodology has to be done through team discussion among master trainees and TAG.

Project manpower and their Terms of Reference: National Coordinator: Overall planning and execution of the project. Deputy National Coordinator: Working with the National Coordinator. Project Manager: Managing and maintaining overall project activities. In addition central data collection officer, facility

coordinators and facility level data collectors of every facility worked regularly.

Monthly FIGO-SAF0G-MGH-OGSH Calls and M&E meetings were conducted (online). Certain amount of money was saved due to online training: no cost extension was planned. Regular M&E activities continued in 14 facilities. As a first step in scale up additional 50 facilities (in addition to the 14 planned facilities) were brought under the project. TOT to senior OBGYN of Facilities (Medical College, District Hospital, Upazilla Health Complex) were done. In addition, OGSH is on the way to develop a Model of PPH Bundle approach interventions in Dinajpur district hospital and its 13 sub district hospitals.

Table-II
The Bundle Concept in PPH

A. Clinical

A.1 Active management of third stage of Labour

Trigger: Delivery of the baby

Action (3)

- i. Oxytocin 10 IUIM within one minute (after delivery of the baby and excluding 2nd baby in the uterus)
- ii. Delivery of the placenta by controlled cord traction (with the next uterine contraction)
- iii. Massage of the uterus to ensure uterine contraction (Immediately and at the interval of 20 min till 2 hours after delivery)

Supportive Massages (3)

- a. Check tear and repair if necessary
- b. Empty the urinary bladder
- c. Initiate breastfeeding

PPH Emergency Response

1. Call for Help: Ring a loud alarm to let everyone know an emergency has occurred and the concerned people to rush to the emergency area.
2. Open the PPH Box

A.2 First Response Bundle

Trigger: PPH

Action (4)

1. Uterine massage to make uterus contracted and to express clots
2. Uterotonic medication
3. IV, Crystalloid fluid
4. Tranexamic acid

Supportive measures (3)

1. Check for tears & take necessary action
2. Catheterization & emptying the bladder
3. Empty the uterus if needed

A.3 Refractory PPH interventions

Trigger: PPH Continues after First Response Bundle Action (3)

1. Compression: Aortic compression and/or Internal Bimanual compression
2. Uterine Balloon Tamponade (preferably in a single pack) (UBT)
3. Anti-shock garments (Non-pneumatic Anti shock Garments, NASG)

Supportive Measures (3)

1. Blood transfusion
2. Referral
3. Surgery/ Uterine Artery Embolization.

B. Non clinical Bundles

1. Respective maternity care. Quality of Care; Provision of Positive Experience of care
 2. Team work & communication
 3. Leadership
 4. Facility Readiness
 5. Network integration: Home, Community, Primary care center, referral center (two way communication)
 6. Improving quality of Care: Data, Measures and Monitoring (Record Keeping & Reporting); Using Data: Reflect back & plan
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Additional Best Clinical Practices

PPH Prevention

- ▶ Anemia prevention and early detection
- ▶ Malaria prevention, detection, and control
- ▶ HIV status and treatment if necessary
- ▶ Identification of previous and current co-morbidities
- ▶ Birth planning and complication preparedness

First Response

- ▶ Early recognition of excessive bleeding
- ▶ Monitor vital signs (pulse, BP, temperature, and respirations), volume and rate of blood flow, level of consciousness or anxiety, skin color, and response to treatments
- ▶ Laboratory Testing for Hgb/HCT, clotting factors (or bedside clotting test), and Type and Cross match
- ▶ If Placenta delivered, was it intact, or is it retained?
- ▶ Reassurance to woman and her family that everything is being done

Response to Refractory PPH

- ▶ Inform woman and her family of treatment options, provide reassurance
- ▶ Continue monitoring for status and development of shock, if shock suspected begin shock management
- ▶ Surgical Management
 - Uterine compression sutures
 - Uterine or utero-ovarian artery ligation
 - Begin with conservative management, try to spare the uterus
 - If woman continues to bleed, perform hysterectomy

PPH Emergency Response

AMTSL

CALL FOR HELP & OPEN THE PPH KIT

First Response Bundle

Uterine Massage



IV Fluids



Uterotonics



Tranexamic Acid



SUPPORTIVE MEASURES

Treat tears



Empty bladder



Empty uterus

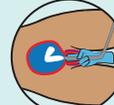


Refractory PPH Interventions

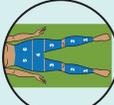
Compression



Uterine Balloon



Anti-shock Garment



SUPPORTIVE MEASURES

Transfusion



Referral



Surgery



Quality PPH Emergency Care



ENGAGING NATIONAL PROFESSIONAL SOCIETIES TO COMBAT POSTPARTUM HAEMORRHAGE - Bangladesh

Created by
Massachusetts General Hospital
Division of Global Health Innovation



Fig.-4: PPH Emergency Response Using Bundle Approach

Results and Policy Implications:

The mentorship model of the project is shown in Box 1. Activities of mentors includes: planning and conducting training, follow up of implementation process through meeting, in-person orientation of supporting staff/ non- clinical staffs/ clinical field staff, mentoring visit 1-2/quarter, advocacy meeting with the district and upazilla (sub district) supervisor, help in networking activities, communication with referral facilities, mapping/ listing meeting, complete network tool (if necessary, training), data monitoring, record keeping and reporting, leadership development, quality improvements, monthly follow up meeting and other initiatives as necessary.

The performances under different project activities are shown in Box 4. The intervention areas, number of deliveries and PPH cases dealt with are shown in Box-6. Input, output and outcome of the activities are shown in Box-7.

The Project Cycle is depicted in Box 2. Strengths of the project were: total 76 facility covered (Initial plan

was 14), 967 health care providers trained (target was 690), eclampsia bundle included within new 62 facility training, (aim is management of PPH and Eclampsia together contributes to 55% reduction of maternal death), two directorates works simultaneously for the PPH reduction, mentorship model used, active Govt. involvement, OGSB took the lead for scale up / extension of the PPH bundle activities, helpful interventions(Obstetric Rapid Response Team- ORRT, debrief Tool, simulation practice and mentorship model).

PPH EmC using bundle approach follow on activities ongoing are: advocacy meeting within the institution, TOT to the service providers, training of the all service provides, implementation of PPH bundle activities, regular monthly reporting to OGSB, refresher training, non-clinical (support staff training), monthly regular communication with mentors and facility coordinators, in-person monitoring, regular simulation practice; regular meeting with FC, DCO, Mentors and other stakeholders.

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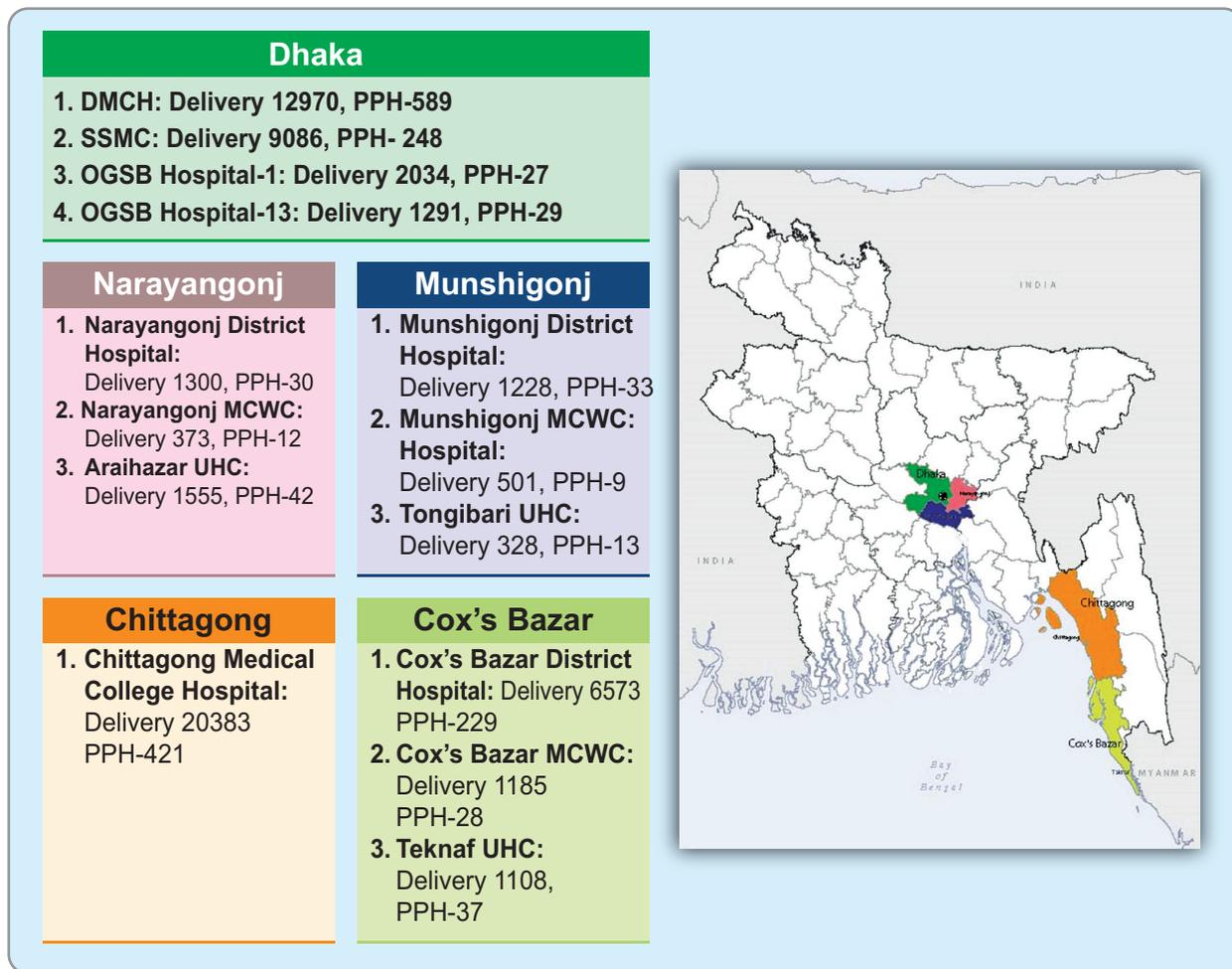


Fig.-5: The project area and Total no of deliveries and PPH cases delt during the project period

These are being done by initiative from OGSB, support from Govt. and local organization are motivation of local managers and OGSB members working at peripheral level including local branches of OGSB.

Challenges were: Transfer out of some skilled human resources; working with partners (Govt workers are busy specially with COVID 19 and other priorities), training and meeting modalities adaptation (from in person to virtual) due to pandemic, shortage of trained person-COVID 19 infection and specific duties of the trainer and trainee, ensuring quality of training, less commitment of some of the facility leaders, commitment of the service provider and their workload, recording and reporting (not always done and sometimes inaccurate data) and project sustainability (scaling up). Manpower: commitment of some of the service provider and their workload. Data: understanding data definitions and availability, uniformity and filling up of registers has to be supervised to maintain the standard. Financial and

technical support are needed to maintain the quality and quantity of case management and quality assurance.

Unfortunately, one of the biggest disasters of 21st Century took place in 2020-2022: The Covid-19 outbreak. The first case started in Dec 2019 but quickly spread all over the world. It affected the project activity in several ways: initiation of the project was delayed about one year; implementation was challenging (its difficult to teach skills online): most of the planning meeting was done virtually; initial visit by MGH for TOT was cancelled; Training of the master trainers was conducted in Feb-March 2021 with proper Covid-19 precautionary measures by OGSB Team. ToT and most of the peripheral level trainers were conducted virtually. Many innovative techniques were used.

Opportunities: Mandate of the Government for SDG Targets to be achieved and to reduce maternal death, esp. death due to PPH. Personal motivation & culture

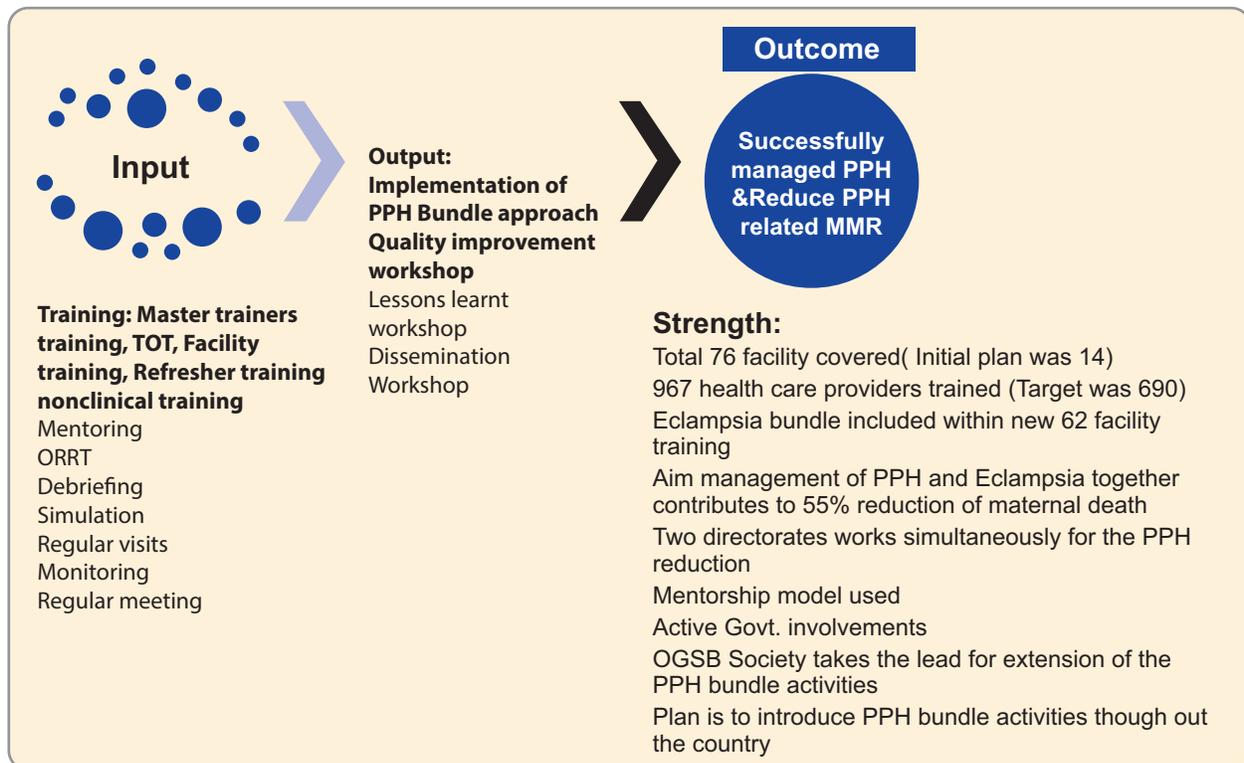


Fig.-6: Major Achievements of “Engaging National Professional Society to Combat Postpartum Hemorrhage Using Bundle Approach - A FIGO-SAFOG-OGSB-MGH Project”

of the institutions helped a lot. Commitment of the professionals of OGSB, SAFOG and FIGO were the working drive.

The evidences so far gathered from India and Kenya (where same model & modalities were used), indicate effectiveness of Bundle Approach in Management of PPH and reduced incidence and death due to PPH. Bangladesh experience is positive. Especially the commitment of the professionals^{20,21}.

Despite challenges, PPH and Eclampsia management should be continued and strengthened as combating these two conditions will lead to 55% reduction of maternal death. Bundle approach is a systematic approach to prevent and treat these deadly complications of pregnancy and will definitely help to reach SDG targets and beyond.

Conclusion and Recommendation

Combating Postpartum Hemorrhage Using Bundle Approach is a proven way to reduce occurrence of PPH and reduction of death and disability due to PPH. So, these (Bundle approach for PPH and Preeclampsia and eclampsia are to be included in Maternal Health Strategy and action plan. Task force is a need on the

time to combat death and disability due to PPH, Preeclampsia-Eclampsia and all other causes. Financial and technical support from UN agencies, BMGF would help to scale up, capacity building, quality improvement and evidence generation.

Acknowledgement: SAFOG and OGSB are grateful to FIGO, MGH and Bill and Melinda Gates Foundation (BMGF) for their Initiative, funding and continuous support. We express our gratitude to the Govt. of Bangladesh, all managers and health service providers, OGSB branches and members for their commitment and hard work.

Reference:

1. NIPORT, ICDDR. Bangladesh Maternal Mortality and Health Care Survey 2016, 19.
2. Vogel JP, Outcome of the management of massive postpartum hemorrhage using the algorithm “HEMOSTASIS” Oladapo OT, Dowswell T, Gülmezoglu AM. Updated WHO recommendation on intravenous tranexamic acid for the treatment of post-partum haemorrhage. Lancet Global Health. 2018;6:e18–e19.

3. Berg CJ, Harper MA, Atkinson SM, et al. Preventability of pregnancy-related deaths: Results of a state-wide review. *Obstet Gynecol*. 2005;106:1228–1234.
4. American College of Obstetricians and Gynecologists District II. Maternal Safety Bundle for Obstetric Hemorrhage. 2015. <https://www.acog.org/-/media/Districts/District-II/Public/SMI/v2/HEMSI%20SetNov2015.pdf?dmc=1&ts=20190415T1839092369>. Accessed January 2, 2018.
5. Goffman D, Nathan L, Chazotte C. Obstetric hemorrhage: A global review. *Semin Perinatol*. 2016;40:96–98.
6. Lappen J, Seidman D, Burke C, Goetz K, Grobman W. Changes in care associated with the introduction of a postpartum hemorrhage patient safety program. *Am J Perinatol*. 2013;30:833–838.
7. Miller S, Abalos E, Chamillard M, et al. Beyond too little, too late and too much, too soon: A pathway towards evidence-based, respectful maternity care worldwide. *Lancet*. 2016;388:2176–2192.
8. Levy MM, Rhodes A, Phillips GS, et al. Surviving Sepsis Campaign: Association between performance metrics and outcomes in a 7.5-year study. *Intensive Care Med*. 2014;40:1623–1633.
9. Pronovost P, Needham D, Berenholtz S, et al. An intervention to decrease catheter-related bloodstream infections in the ICU. *N Engl J Med*. 2006;355:2725–2732.
10. Noritomi DT, Ranzani OT, Monteiro MB, et al. Implementation of a multifaceted sepsis education program in an emerging country setting: Clinical outcomes and cost-effectiveness in a long-term follow-up study. *Intensive Care Med*. 2014;40:182–191.
11. Institute of Healthcare Improvement (IHI). Improving Health and Healthcare worldwide. <https://www.ihl.org/resources/Pages/ImprovementStories/WhatIsaBundle.aspx>
12. Resar R, Griffin FA, Haraden C, Nolan TW. Using Care Bundles to Improve Health Care Quality. IHI Innovation Series white paper. Cambridge, MA: Institute for Healthcare Improvement; 2012. www.ihl.org. Accessed January 8, 2018.
13. World Health Organization. WHO Recommendations for the Prevention and Treatment of Postpartum Haemorrhage. Geneva: World Health Organization; 2012.
14. Abdu M, Wilson A, Mhango C, Taki F, Coomarasamy A, Lissauer D. Resource availability for the management of maternal sepsis in Malawi, other low-income countries, and lower-middle-income countries. *Int J Gynecol Obstet*. 2018;140:175–183.
15. Royal College of Obstetricians and Gynaecologists, Royal College of Midwives, National Patient Safety Agency. Safer Practice in Intrapartum Care Project: Care Bundles. 2012.
16. Borovac-Pinheiro A, Pacagnella RC, Cecatti JG, et al. Postpartum hemorrhage: New insights for definition and diagnosis. *Am J Obstet Gynecol*. 2018;219:162–168.
17. Alonso-Coello P, Schunemann HJ, Moher J, et al. GRADE Evidence to Decision (EtD) frameworks: A systematic and transparent approach to making well informed healthcare choices. 1: Introduction. *Gac Sanit*. 2018;32:166.e1–166.e10.
18. Campbell OMR, Calvert C, Testa A, et al. The scale, scope, coverage, and capability of childbirth care. *Lancet*. 2016;388:2193–2208.
19. Althabe F, Therrien MNS, Pingray V, Hermida J, Gülmezoglu AM, Armbruster D, et al. Postpartum hemorrhage care bundles to improve adherence to guidelines: A WHO technical consultation. *Int J Gynecol Obstet* 2020; 148: 290–299
20. Shivkumar P. Postpartum hemorrhage Emergency care (PPH EmC) Bundles: Kenya Experience. Workshop presentation. Mahatma Gandhi Institute of Medical sciences, Sewagram, India. 2020
21. Otieno B, Oguttu M. Postpartum hemorrhage Emergency care (PPH EmC) Bundles: Kenya Experience. Conference presentation. OGSB online Conference 2022.