

Executive Summary

Re-Visioning Emergency Obstetric and Newborn Care (EmONC) Framework: Bangladesh Case Study

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Background:

The 1997 Guidelines for monitoring the availability and use of obstetric services described a set of connected indicators to measure and monitor the availability, utilization, and quality of emergency obstetric care (EmOC) in low- and middle-income countries. This framework, built around signal functions (relevant services) and the designation of basic and comprehensive levels of emergency obstetric care had been enormously influential over the last 30 years. However, significant changes have taken place in the health systems and maternal and newborn health (MNH) landscape in the last 30 years. Though the EmOC framework and indicators were updated once in 2009, after a decade, the need for further re-vision of the framework and indicators has been realized by the global expert group for improvement of MNH services. Thus the Re-Visioning emergency obstetric and newborn care (EmONC) project has been initiated to revise the framework led by the Averting Maternal Death and Disability (AMDD) group based in Mailman School of Public Health, Columbia University, USA. As part of a multi-country study this Bangladesh research has been planned by icddr,b in partnership with James P Grant School of Public Health, BRAC University.

Objectives:

The main objective of the Bangladesh case study was to learn about the knowledge and familiarity of the providers and managers of the EmONC framework; how to make the EmONC framework and the indicators more useful for planning, implementing and monitoring along with exploring possibilities for developing new indicators for round-the-clock (24/7) EmONC services in public facilities and finding ways for bringing the private sectors under the EmONC framework.

Methods:

The study employed Human-Centred Design (HCD) methods integrated with qualitative research techniques. We conducted the study in the central level/Dhaka and three other districts, namely Kurigram, Jashore and Dinajpur purposively selected. Dhaka was selected as the centre of the country with dominant presence of the key stakeholders (policymakers, high level program managers, professional bodies) that were relevant to this study. Kurigram and Jashore were selected as low and high

performing districts for maternal health indicators respectively. To explore the role of private sector in EmONC, the study selected one non-profit missionary private facility LAMB (that has reputation for good clinical practices for maternal health) from Dinajpur district and a for-profit private facility called Ad-Din Hospital with high caseload, from Jashore district. In the selected districts, we conducted workshops with doctors (specialist and medical officers) and nurse/midwives of public hospitals such as Medical College Hospitals (MCHs), District Hospitals (DHs), Mother and Child Welfare Centers (MCWCs) and Upazila Health Complex (UHCs). In-depth interviews were conducted with the facility managers of the respective hospitals. At the district level, we had separate workshops with the members of the Private Medical Practitioners' Association and Owners of the Private Clinics and Diagnostic Centers as well as civil society representatives of different public hospital committees. We also conducted key informant interviews (KIIs) with the members of national and sub-national health management teams including Mayors of City Corporations and Members of Parliament.

Findings:

The study found that most of the providers and managers were not knowledgeable about the EmONC framework including the signal functions (SFs) and the indicators. However, once it was explained, they could relate the SFs with the day-to-day services that they provide. Throughout the consultations, they could provide different suggestions to revise the present framework considering the present context. They also gave their opinions about some new signal functions and indicators to be incorporated in the revised framework. The data suggested that providers and managers did not have any orientation or training on the framework. Only the central-level programme managers and policymakers had some knowledge of the EmONC framework. The indicator-specific findings are as follows:

Indicator 1 (availability of basic and comprehensive EmONC facilities): Most of the respondents agreed that indicator #1 is important and should be kept in the framework. They stressed that the already designated EmONC facilities should be made functional by making all the SFs available, particularly by taking the necessary steps to ensure the required human resources (HR) for 24/7 services. However, some informants emphasized on increasing the number of Comprehensive EmONC (CEmONC) facilities per 500,000 population by upgrading the presently designated Basic EmNOC (BEmONC) facilities to CEmONC so that one CEmONC facility is available for every 100,000 population. Moreover, in our health system, presently as there is a shortage in designated BEmONC, and to fill-up this gap, many suggested incorporating private facilities into the framework, provided that they ensure 24/7 quality EmONC services.

Indicator 2 (geographic distribution of EmONC facilities): The respondents suggested refining indicator #2 by considering (1) travel time and (2) geographical characteristics for hard to reach areas. Key informants expressed that the designated CEmONC facilities should be within two hours of travel time for the catchment population. While considering travel time, geographical topology and available local transport arrangements to be taken into account using GIS technology. For hard-to-reach areas, depending on the context, arrangements should be made for water ambulances and/or mobile hospitals to facilitate referral of women to the nearby CEmONC facility. Another alternative suggestion for hard-

to-reach area was to transport high-risk pregnant women to the nearby EmONC facility with government-supported residential facilities for safe delivery.

Indicator 3 (proportion of all births in EmONC facilities): Most respondents thought that all births should be at an EmONC facility as these facilities are expected to effectively manage the complications that may arise at any time. The OGSB group suggested that the target for this indicator should be set at 50% instead of 100% given the country context and with the cut-off gradually increased. However, some of the respondents emphasized the importance of gathering the data from the private facilities for accurate estimation of this indicator.

Indicator 4 (met need for EmONC): Local-level providers and managers agreed that 100% of mothers with complications should be referred to EmONC facilities for effective management of the complications. However, they expressed that maternal complications are likely to have decreased over time and thus, further research is needed to reassess the denominator which is currently estimated assuming 15% of the pregnancies likely to have complication. The informants urged reassessing the precise percentage for estimating the expected number of complications to use as denominator for this indicator.

Indicator 5 (caesarean section as proportion of all births): While all participants agreed that Indicator #5 should be retained, they expressed concerns about the validity of this indicator due to the inclusion of unnecessary CS in the numerator. All the respondents raised concern that identifying unnecessary CS and excluding it from the numerator is difficult. Emphasis was placed on mandatory written documentation of the indications for CS. OGSB suggested a new indicator only considering the women having first time CS excluding women with a previous CS. Managers and providers suggested to introduce Robson's classification in the health facility which may give some idea what proportion of women is requesting CS and, hence, plan an intervention model. Some providers suggested introducing 'CS on demand' as a new indicator.

Indicator 6 (direct obstetric case fatality rate): All the informants at the local and central levels suggested that indicator #6 should be kept. However, it will be meaningful only when the private facilities will be giving complete and accurate data. Regarding cut-off value of this indicator, the majority of the informants believed that a threshold of <1% is appropriate, while some suggested reducing it to <0.5% as given the availability of modern technology, efficiency in managing complications and preventing deaths has improved.

Indicator 7 (intrapartum and very early neonatal death rate): Most informants emphasized the importance of this indicator but also raised several issues for consideration for its refinement. One suggestion was to reduce the cut-off value of the birth weight from 2.5 kg depending on the capacity of the health facility. For instance, for the DH, it could be 1.5 to 1.8 kgs since there are provisions for incubators and phototherapy services to manage a preterm low birth weight neonate. For MCWCs and UHCs, on the other hand, it should be 2.0 kg to 2.5 kg because they do not have such provisions. The respondents also suggested that gestational age (≥ 35 weeks) also should be considered alongside birth weight for this indicator.

Indicator 8 (proportion of maternal death due to indirect causes): The respondents favoured retaining the indicator because a substantial proportion of maternal deaths remains unaddressed. They considered this indicator important in planning interventions for those suffering from causes other than direct causes. At the same time they acknowledged the challenges in estimating of this indicator due to a lack of training of the providers and the absence of systematic death audits in the facilities.

In addition, the participants proposed a set of new indicators, including i) functionality of a facility (i.e. 24/7 facility readiness) ii) proportion of normal vaginal delivery iii) proportion of births by the midwives/nurses/paramedics iv) proportion of births for which a partograph was used v) 'CS on demand' by the women and their family members vi) proportion of births with maternal and neonatal near-miss vii) ratio of doctors, nurses, and support staff per facility viii) proportion of newborns attended by pediatrician/neonatologist immediately after birth.

The availability of signal functions, challenges in their provision and the need for refinement of certain signal functions and proposals for new signal functions were also discussed. Services related to signal functions 1–5 (parenteral oxytocics, parenteral anticonvulsants, parenteral antibiotics, manual removal of the placenta, removal of retained products) were discussed together. In UHCs, MCWCs, and DHs, parenteral oxytocin (SF 1), parental anticonvulsant (SF 2) and parenteral antibiotic (SF 3) are provided for managing complications. However, the use of multiple drugs was also common in controlling the complications. For example, to manage postpartum haemorrhage (PPH) along with oxytocin other drugs, including Carbetocin/Duratocin, Tranexamic acid and Misoprostol are used. To manage eclampsia - Phenobarbitone and anti-hypertensive (Hydralazine and Labetalol) are used in combination with magnesium sulphate. Providers and managers suggested redefining SF#1 by including tranexamic acid (either injectable or oral form) with Oxytocin to control PPH.

Some also suggested redefining SF#2 by including parenteral antihypertensive with magnesium sulphate. In addition to the existing signal functions,, the respondents suggested incorporating some new signal functions in the EmONC framework such as i) infection prevention, ii) painless delivery iii) referral, iv) repair of perineal, vaginal and cervical tear and v) maternal resuscitation. Manual removal of placenta (SF 4) and removal of retained product (SF 5) are conducted in both the UHCs and DHs, however, MCWCs are not always fully equipped to carry out these procedures. As the concept of EmONC, signal function has not been formally introduced in private facilities and they usually send women with obstetric complications to public facilities due to fear of fatal risks.

Assisted vaginal delivery (AVD) i.e. SF#6 is not regularly practised in either public or private facilities in Bangladesh. Reasons include the unavailability of trained providers, a lack of instruments, and low motivation of providers to perform AVD because of concerns about the risks associated with this method and a lack of confidence in providers' skills in using the instruments. In public facilities, nurses, midwives, and FWVs who conduct normal deliveries, are not trained in AVD. In private facilities except at LAMB Hospital, AVD is not performed because it is not considered profitable by the clinics, and consultant physicians are not interested in performing it. Some key informants believe that AVD should no longer be considered as a signal function anymore, while others argue that it should be reintroduced

in EmONC facilities to reduce the CS rate. Nevertheless, LAMB Hospital provides a unique example by training the providers and systematically applying AVD in the delivery process. Providers at LAMB were confident in conducting AVD and considered this method a way of controlling unnecessary CS.

Neonatal resuscitation (SF 7) including services related to care for small and sick newborns is highly limited at all levels of the system, but particularly at lower levels of public and private facilities. Several factors contribute to this problem. Providers and managers express frustration that they do not have adequate technology, infrastructure, or skills to provide appropriate care for premature and very small newborns. They particularly lack specialists, such as pediatricians and neonatologists, and are compelled to refer to district hospitals for more advanced newborn care. Private facilities often refer newborn cases to government hospitals because they lack the capacity as well. The Neonatal Intensive Care Unit (NICU) and Special Care Newborn Unit (SCANU) facilities are supposed to be available in district hospitals, however, they have similar challenges in functionality, particularly due to lack of trained providers.

Blood transfusion-related services (SF 8) and its management system face multiple challenges in both public and private facilities. Families often have to take responsibility when blood transfusion is required, using arrangements outside the facility to collect, group, cross-match, and screen blood. If the family is unable to do so, providers sometimes may take on the task, by either donating or purchasing blood for the patients. This can cause significant delays in care, during which the patients' condition may worsen. Although some public facilities are expected to provide blood transfusion services, the skilled health workers are often unavailable due to vacant posts, insufficient numbers of approved posts, or lack of 24/7 service coverage. Additionally, important equipment is often missing; many facilities do not even have refrigerators for blood storage. Women who require blood transfusion are often referred to district hospitals, from lower-level facilities or the private sector, creating a high volume of demand that district hospitals cannot manage.

The high volume of caesarean sections (CS) (SF 9) especially in private facilities has become a major public health challenge in Bangladesh. According to health-system managers and providers the concept of a "valuable child" and the desire for a "painless delivery" by the pregnant women and their family members are two major factors driving the high demand for CS in Bangladesh. Additionally, some physicians at private facilities are more likely to perform CS even when it is not medically necessary, either for financial reasons or out of fear of litigation/liability. Public facility providers also face pressure from patients to perform CSs, even when they are not medically necessary.

Due to lack of facility readiness (in terms of infrastructure, logistics, equipment and drugs), public facilities struggle to provide care 24/7 and consequently fail to meet the needs and demands of women with labor complications and sick newborns. In some cases, these facilities are providing services to patients two to three times more than their capacity with severe resource constraints. Most of the public facilities operate with severe limitation of healthcare personnel, medicines and equipment. The relevant units and rooms for EmONC often are too small and located far away from each other. Medicines and supplies are insufficient because they are based on the number of beds rather than

patient volume. Pharmacies within and outside public facilities are often closed at night creating critical situations when women and newborns cannot access lifesaving medicines. Equipment is another problem as non-functional equipment takes a long time to repair or replace and the facility may not even have someone properly trained to use it efficiently. Yet, there are examples of facilities where strong teamwork and accountability have enabled some facilities to make the EmONC services functional to meet the demand.

Another major challenge to providing round-the-clock EmONC services by the government facilities is severe staffing shortages across all cadres. As a result, nurses often find themselves handling obstetric complications which are beyond their capacity and confidence. At night, trained medical officers are seldom available to assist the nurses. This leaves the nurses feeling overwhelmed, frustrated and stressed. This is a reflection of inadequate staffing and human resource in public facilities at sub-district and district levels. Not only the approved positions for different types of human resources are insufficient considering patient volume, many existing posts also remain vacant. In public facilities, specialists are generally available only in the morning, as they work in private facilities in the afternoon and evening. It is particularly difficult to find anesthesiologists and paediatricians beyond the morning shift. Consultants commonly do not respond to on-calls particularly at night. Instead, they often try to guide the nurses over the phone or recommend unnecessary referrals, which the nurses find stressful. A new cadre of midwives has been introduced, but they are not yet deployed in sufficient numbers. The workload is further compounded by shortages of support staff, whose recruitment has been largely halted over the last ten years. To address this problem, a mechanism has been developed for hiring support staff locally through outsourcing, however, this suffers from multiple challenges and failed to ensure the availability of the required support staff in public facility. Most of the staff are frustrated and overwhelmed in such situation, resulting in low morale.

Providers' well-being in public facilities has emerged as a new problem due to overwork and critical circumstances that they need to face under resource constraints. They feel frustrated that no one from the higher authorities to the community seems to care for them. Despite severe shortages in health personnel, providers are expected to serve for 24/7. As a consequence, they are required to take on numerous additional responsibilities beyond their job description and sometimes their skills. The ability to provide high-quality care is further complicated by the poor quality of logistics and equipment and unavailability of medicines. Patients also often arrive late with challenging complications that are difficult to manage due to all the barriers mentioned above. They report that there is neither routine formal supervision nor systematic monitoring of their work and functioning of the facility. This makes nurses feel that they have no avenue to voice their concerns and that no initiatives are focused on lessening their duties and stress. Providers reported feeling unsafe at work due to the poor security system, overcrowding, and potential for community reprisal.

Lack of readiness of public facilities and low confidence in public sector facilities to provide high-quality care are driving the clients towards private facilities for deliveries and other maternal and neonatal care. With an increased interest of small family size, each child is considered a 'valuable child' and families are thus making different choices. Both the private and public sector providers believe that this means

women and their families increasingly prefer CS delivery, as it is perceived less risky and less painful. The private sector is seen as mostly delivering babies by CS, while the public facilities have constraints in providing CS, largely due to human resource shortages along with high patient volumes and, of course,, denying to perform unnecessary CS. The lack of cleanliness and privacy, as well as under-the-table payments, also were raised as reasons for which families prefer the private sector. Private sector brokers contribute to this shift, by directing families to private facilities and convincing them that CS is safer. Yet, when specialists at private facilities encounter maternal or neonatal complications, they often refer women to public facilities to avoid the risk.

Referral management for maternal complications is compromised by a lack of skilled providers, round-the-clock services, and essential supplies in public facilities. Inadequate services at lower tiers lead to many women being referred to higher-level facilities, which can be delayed and difficult. Also, these referrals often take place on an informal basis with no formal communication between facilities and often occur at night when staffing at the referring and receiving facilities is problematic. Private facilities also send women with obstetric complications to public facilities, fearing the associated risks.

Poor families face serious financial barriers to receiving comprehensive care for pregnancy and delivery despite government initiatives to assist the poor. The poor may have to spend most of their resources to pay for transport to a government facility, expecting that services will be free but in reality, the situation is different. While healthcare is supposed to be free in public facilities; services like medicines, tests and diagnostics are often unavailable forcing families to purchase them from outside the Govt. facility. Brokers, who are not affiliated with the facility, as well as support staff, may demand unofficial payments from families to access care. They may also direct families to private facilities, incurring even higher costs to the poor patients. If referral is required, compliance is difficult while the subsidized government ambulance fare is still too high for many. Families may sell their last assets to pay for delivery.

The respondents discussed the limitations in monitoring and reporting systems of the private facilities and the related suggestions to overcome the challenges. Although private facilities play a significant role in providing maternal and neonatal healthcare, but there is no effective monitoring system to ensure quality care. Private facilities are supposed to report their data to the national HMIS, but most do not do so due to fear of tax liabilities. The lack of coordination between the government regulatory authorities and the private sectors further complicates the issue.

government facilities also face various challenges in submitting the EmONC data to the national HMIS. Presently public health facilities report their service data either through paper-based or digital system, and the system is not yet fully developed to report digitally. Moreover, not all required data are captured in the current system to assess the signal functions. Monitoring EmONC is further complicated because the different directorates (Health and Family Planning) that manage facilities providing maternal and newborn care, have their own management information systems.

Gaps in accountability of the public health sector to the community came out as a major factor in poor performance of public facilities. The participants recognized that people are very conscious nowadays and make choices based on the quality of care, and the public health system needs to meet public

expectations. Local government bodies and health facility management groups need to have a role to play in informing the public about the services in government health facilities, and the importance of immediate care in the case of complications. Health facility committees, which are supposed to represent the communities' needs, meet infrequently with facility and other managers, and when they do meet, often they do not discuss service gaps and possible remedies. Ongoing corruption further complicates the relationship between the public health system and communities, and the community representatives are often powerless to intervene. Political pressures may also inhibit district and facility managers from taking necessary actions to mitigate the challenges, and community representatives feel that the central level is out of touch with the serious realities that they face.

Recommendations on orientation of the providers and managers on EmONC framework:

- For better orientation of the providers and managers with the EmONC framework, greater emphasis should be placed on developing IEC materials and disseminating them among the relevant stakeholders (providers, managers and policymakers) to improve their knowledge on EmONC framework which will ultimately help in better planning, service delivery, data management and monitoring of the EmONC services.

Recommendations on refinement of existing EmONC indicators and proposals for new indicators:

- Indicator 1 (availability of basic and comprehensive EmONC facilities): Already designated EmONC facilities should be made functional and equipped, particularly by taking the necessary steps to ensure the HR for 24/7 services. Presently designated BEmOC UHCs should be upgraded to CEmONC so that for every 100,000 population one CEmONC facility is ensured. There is also need to incorporate private facilities into the framework, provided that they ensure 24/7 quality EmONC services.
- Indicator 2 (geographic distribution of EmONC facilities): To refine indicator 2 considering maximum 2 hours travel time to reach the nearest CEmONC facility from the community by taking into account geographical topology and local transport arrangements using GIS technology. For hard-to-reach areas, especial arrangements should be made considering the local context with arrangements of water ambulance and/or mobile hospital to make women access to EmONC facility.
- Indicator 3 (proportion of all births in EmONC facilities): The target for this indicator should be set at 50% instead of 100% given the country context and with the cut-off gradually increased. For precise estimation of this indicator, data from private facilities should be regularly reported to the national HMIS.
- Indicator 4 (100% of mothers with complications should be brought to EmONC facilities): Suggestion was made to keep this indicator with refinement of the estimation process of the denominator as over time, there is a likelihood of reduction of maternal complications for availability of evidence-based interventions. Further research is recommended to reassess the current assumption of 15% of the pregnancies likely to have complication for estimation of maternal complications.

- Indicator 5 (caesarean section as a proportion of all births): Due to inclusion of unnecessary CS in the numerator, there is a great concerns about the validity of this indicator. Emphasis should be given on mandatory written documentation of the indications for CS in all the designated public CEmONC facilities and private facilities conducting CS. Suggested two new indicators are i) women having first time CS excluding women with a previous CS ii) 'CS on demand' by women and their family members.
- Indicator 6 (direct obstetric case fatality rate): This indicator should be kept, however, data from private facilities should be covered to make this indicator meaningful.
- Indicator 7 (intrapartum and very early neonatal death rate): To keep this indicator with some refinement i.e. by reducing the cut-off value of the birth weight somewhere between 1.5 to 1.8 kg depending on type of facility and considering gestational age ≥ 35 weeks.
- Indicator 8 (proportion of maternal death due to indirect causes): This indicator should be kept, however, training of the providers on recording of causes of deaths and systematic implementation of death audits in the facilities are needed for accurate estimation of this indicator.
- Proposed new indicators are - i) functionality of a facility (i.e. 24/7 facility readiness) ii) proportion of normal vaginal delivery iii) proportion of births by the midwives/nurses/paramedics iv) proportion of births for which a partograph was used v) 'CS on demand' by the patients and their family members vi) proportion of births with maternal and neonatal near-miss vii) ratio of doctors, nurses, and support staff per facility viii) proportion of newborns attended by pediatrician/neonatologist immediately after birth.

Recommendations on refinement of EmONC signal functions along with proposition of some new signal functions and suggestions in overcoming challenges in implementation of the signal functions:

- SF 1 (parenteral oxytocin to manage PPH): Signal function should be redefined 1 by including tranexamic acid (either injectable or oral form) with Oxytocin to control PPH.
- SF 2 (parenteral oxytocin to manage eclampsia): Signal function should be redefined 2 by including parenteral antihypertensive (hydralazine and labetalol) along with oxytocin
- SF 3 (parenteral antibiotic): No specific suggestions for this signal function.
- SF 4 (manual removal of retained product) and SF 5 (manual removal of placenta): These two signal functions are usually not performed at MCWCs and private facilities usually send women with complications to higher-level public facilities. There is a need to include the private facilities under the EmONC signal function with enhanced capacity.
- SF 6 (assisted vaginal delivery): Low motivation, lack of skills and fear of risk associated with the use of this method have led to low uptake of AVD in both public and private facilities. However, LAMB set a unique example of using AVD by training the providers and systematically applying

the methods in this facility. Intensive training and motivation of the providers (obstetricians, midwives and obstetric nurses) on AVD may help avoid unnecessary CS in public and private facilities.

- SF 7 (neonatal resuscitation): Appropriate neonatal care is available in DH and not in the lower tier of public facilities and private facilities. As such, DH receives many neonates with complications from these facilities through informal referrals. Periodic training should be arranged of the providers in all the designated public and private facilities on neonatal resuscitation.
- SF 8 (blood transfusion): Clients and frontline providers often struggle to collect blood during emergencies due to the lack of functional blood management systems in both public and private facilities. Unavailability of skilled health workforce, non-functional equipment, lack of 24/7 service coverage are the underlying causes. There is an urgent need for requiring the designated public and private facilities to ensure functional blood transfusion system by addressing the system limitation and strengthening of the monitoring and supervision.
- SF 9 (CS): Providers at public and private facilities feel there is high demand for caesarean delivery from women and family members due to the concept of 'valuable child' and 'fear of labor pain'. Unnecessary CS is very common in private facilities, either for financial reasons or out of fear of litigation/liability. To address this issue, the recommended interventions are - strengthening antenatal care (ANC), promoting painless delivery, proper documentation of indication of CS and, ensuring quality of care and setting similar costs for CS in public and private facilities. In addition, behaviour-change interventions are needed among the pregnant women and their family members to mitigate the high demand of caesarean delivery.
- Proposed new SFs are i) infection prevention, ii) painless delivery iii) referral, iv) repair of perineal, vaginal and cervical tear and v) maternal resuscitation.

Recommendations on system inputs such as infrastructure, logistics, equipment and drugs in the Govt facilities to provide 24/7 high-quality care.

- For the public facilities, a system should be developed for allocation of resources for infrastructure, human resources (HR), equipment, medicines, logistics and supplies according to the patient flow.
- For the new facilities, at the time of planning infrastructure, all other necessary support (HR, equipment, logistics, laboratory, food etc.) should be planned in coordination with the other relevant ministries.
- To reduce workload in the DHs, all the MCWCs at district level should be upgraded from 20 to 50 beds and strengthened to promote normal deliveries while DHs should be used as the referral facility for complication management.
- For better functionality, all district MCWCs to be autonomous based on lessons from other facilities in Dhaka (MFSTC, Azimpur Maternity and Lalkuthi Maternity) under the DGFP.
- Current procurement policy of drugs by the facility managers should be reviewed to give more authority and autonomy to the managers so that they can procure the necessary drugs in order to avoid the shortfall.

- In addition, efforts should be given to improve coordination between with EDCL and facility managers to improve efficiency in supply chain.
- There is a need to establish 24/7 Govt-owned functional pharmacies within the hospital premises.
- To break the influence of the syndicate surrounding the supplies of logistics and equipment and repair of machines, the Hospital Management Committee should remain vigilant by playing their leadership role through active participation in the monitoring and supervision of the procurement process
- Hospital managers should be given more authority and financial autonomy for repairing or replacement of a machine as the current tendering system which often requires a lengthy process
- In addition, there is a need to critically review the policies of procurement and maintenance and make necessary refinements by giving greater authority to the local levels.

Recommendations for filling the HR gaps, training needs and improved working environment in facilities to provide 24/7 EmONC services

- Availability of the pair (obstetrician and anesthetist) along with pediatricians, skilled FWV/nurse/midwives and other technical and support staff should be ensured for 24/7 EmONC services.
- Readiness for emergencies such as, functional blood transfusion system, ambulance service, and medicines also should be ensured to increase the credibility of the government facilities.
- Specialist providers (Obs./Gyn, anesthetist, and pediatrician) and the IMOs should be available in shift duties, and not in on-call basis.
- Among private facilities, only LAMB has the required mix of providers along with EmOC-trained MOs and nurses. The LAMB model should be reviewed thoroughly for possible adaptation of its good practices in other private and public facilities for EmONC services.
- The government previously initiated one-year courses in Obs./Gyn and Anesthesia for doctors and six-month courses for nurses/midwives. However, this training has been stopped resulting in a scarcity of EmOC-trained providers. We strongly suggest that EOC training for doctors and nurses should be started immediately.
- There is a need to reassess the number of EmOC-trained doctors and nurses along with provision for refresher training on a regular basis.
- To enhance motivation of the providers to stay in their duty stations, initiatives like good residential infrastructure facility, security, incentives such as promotion, training etc. for to remain in rural areas, recognition for extraordinary performances, non-practicing allowance, opportunity for institutional practice opportunities should be ensured.
- There is a need of periodic meetings of the hospital management with the nurses and other cadres to identify gaps in the services, training needs and finding ways to address the gaps in service provision.

- MCWCs still do not have sufficient midwives, an urgent decision is needed to deploy midwives for 24/7 delivery care.
- There is a need of periodic meetings of the hospital management with the nurses and other cadres to identify gaps in the services, training needs and finding ways to address the gaps in service provision.
- As the out-sourcing mechanism for hiring support staff has proved unsuccessful due to corruption and local power play, therefore, hiring of the support staff should be in the hands of the hospital management or it should be Govt.'s own permanent staff.

Recommendations on issues related to providers' wellbeing in public facilities:

- There is a need to reassess the current workload of the nurses and increase the number of nurses in the public health facilities based on workload.
- Need to take initiative for better representation of the nurses in facility-level meetings to listen to their problems and take action to address those problems.
- There is also a need to assess the interaction between the managers/providers and other cadres and accordingly plan behavior change intervention programs among the providers for a good working environment with respect and dignity to each other.
- There is an urgent call for arranging proper security system in three shifts by posting police and/or Ansar (auxiliary security personnel).

Recommendations on ensuring EmONC for the poor families and those living in hard-to-reach areas:

- Although the Department of Social Welfare have some arrangements to support the poor in the facilities under DGHS, that provision is limited relative to the need and it is recommended to increase the budget to address the need of the poor.
- Moreover, facilities under DGFP such as MCWCs are not covered by the Department of Social Welfare to support the poor and should be brought under the welfare program for the poor.
- Local level planning is needed to develop context-specific solutions both for transportation and financial constraints of pregnant women living in hard-to-reach areas to reach the nearest EmONC facilities.
- In addition, large private facilities also be brought under the policy of serving poor for free of charge for a certain percentage of their patients.

Recommendations on regulating the private sector:

- Private facilities need to be brought under the national EmONC framework. As few private facilities perform only normal deliveries, facilities claiming to provide EmONC should be designated according to their actual service capacity, with comprehensive designation requiring fulfilment of CEmONC criteria.
- Indicators and SF for private facilities should be the same as those of public facilities that will ensure alignment of data reported to HMIS.

- The criteria for registration and renewal of the licenses of the private facilities should be revised and a strong regulatory system should be established to monitor the compliance of the standards.
- Representatives of the private facilities could be included in the monitoring team so that transparency is maintained in the supervision process and can communicate with the private facility association their limitations and action to be taken to mitigate the gaps.
- Computerized patient record management system should be introduced phase-wise for the private facilities (starting with larger facilities) along with a government order on mandatory monthly reporting to the HMIS. Failure to report service data for three consecutive months should result in forfeiture of the licence.
- On the other hand, rewarding private facilities for their good performance in terms of providing data to HMIS, maintaining high-quality services should be introduced which would motivate others.
- The government should also include private facility providers and managers in their different training programs on maternal and neonatal health and HMIS, which would not only motivate the private sector but also help improving quality of care and providing data to HMIS.
- The private facilities, that claim to provide EmONC services, should also be brought under a protocol to provide 24/7 services.
- There is an urgent call on designing intervention to control high CS rates in private facilities. Besides, all private facilities should be required to record the indication of CS and report to the HMIS for periodic review.

Recommendations on standardization of reporting and integration of HMIS

- As the national HMIS system is yet to be fully developed or be ready to generate information on indicators directly, there is a need to develop a standardized form to report data in standardized form across all three sectors (DGHS, DGFP and Private) to the MIS. There is a need to thoroughly review the data reporting forms so that all the required data for estimation of the EmONC signal function are reported in a standardized manner to the HMIS.
- Many policymakers suggested to combine both the MIS of DGFP and DGHS and form a National MIS (NMIS).
- Program managers and Line Directors of both the directorates need to take ownership and be informed what data are needed in DHIS2 to monitor the indicators and SF and so that the MIS can develop the dashboard.
- In addition, integration of data from private facilities to HMIS is important. For this DGHS has to play a leadership role to collect data from all licensed private facilities.

Recommendation on accountability of public and private facilities to the community

- The local and higher-level government authorities and the hospital management should be made accountable to the community by ensuring high-quality services in the facilities.

- The committee members should have leadership and management training along with extensive orientation on the entire facility and different programmes.
- Such training would equip them to better understand their duties, monitor service delivery to ensure quality care provision, hold relevant actors accountable, and help them to develop ownership to the facility.
- Hospital Committees and civil society organisations should play their due role to prevent interference of brokers and other illegal means and make the public facilities accountable to the community.

Consideration of above recommendations from Bangladesh perspective, on the one hand, represent the learnings from similar country context in revision of EmONC framework and on the other hand, help strengthen Bangladesh's EmONC service-delivery system.