

1999

Special Publication

Operations Research Project
Health and Population Extension Division

**Strategies for Ensuring
Referral and Linkage for
Essential Obstetric Care:
A Review**

**M A Quaiyum
Shameem Ahmed
Ariful Islam
Parveen A Khanum**





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1999

ICDDR,B Special Publication No. 95

C

Edited by: M Shamsul Islam Khan

Layout Design and Desktop Publishing: Jatindra Nath Sarker

Cover Design: Asem Ansari

ISBN: 984-551-183-X

ICDDR,B Special Publication No. 95

© 1999. ICDDR,B: Centre for Health and Population Research

Published by:

ICDDR,B: Centre for Health and Population Research

GPO Box 128, Dhaka 1000, Bangladesh

Telephone: (880-2) 871751-60 (10 lines); Cable: CHOLERA, Dhaka

Fax: 880-2-871568, 880-2-883116

URL: <http://www.icddrb.org> and <http://www.icddrb.org.sg>

Printed by: Uttara Group of Publications Ltd., Dhaka

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Acknowledgements

The Operations Research Project (ORP) is a project of the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B) that works in collaboration with the Ministry of Health and Family Welfare (MOHFW) of the Government of the People's Republic of Bangladesh, supported by the United States Agency for International Development (USAID).

This publication is funded by the USAID under Cooperative Agreement No. 388-A-00-97-00032-00 with ICDDR,B: Centre for Health and Population Research. The Centre is supported by the following countries, donor agencies and others which share its concern for the health and population problems of developing countries:

- The aid agencies of Governments of Australia, Bangladesh, Belgium, Canada, European Union, Japan, the Netherlands, Norway, Saudi Arabia, Sweden, Switzerland, the United Kingdom, and the United States of America;
- UN agencies: United Nations Development Programme (UNDP), UNICEF, and World Health Organization (WHO);
- International organizations: International Atomic Energy Agency (IAEA), International Centre for Research on Women (ICRW), International Development Research Centre (IDRC), Population Council, Swiss Red Cross, and the World Bank;
- Foundations: Aga Khan Foundation, Child Health Foundation, Ford Foundation, George Mason Foundation, and Rockefeller Foundation;
- Medical research organizations: International Life Sciences Institute (ILSI), National Institutes of Health (NIH), New England Medical Centre, Northfield Laboratories, Procter and Gamble, Rhône-Poulenc Rorer, and Thrasher Research Fund;
- Universities: John Hopkins University, Karolinska Institute, Loughborough University, London School of Hygiene & Tropical Medicine; University of Alabama at Birmingham, University of Goteborg, University of Pennsylvania, and University of Virginia;
- Others: American Express Bank, Helen Keller International, Lederle Praxis, NRECA International Ltd., The Rand Corporation, Save the Children Fund-USA, Social Development Centre of the Philippines, UCB Osmotics Ltd., and Wander A.G.

The authors are grateful to the reviewers, Ms Nancy Gerein and Dr. Momena Khatun for kindly reviewing this paper and giving their valuable comments. The authors would like to give due credit to M Margaret Neuse, Mr. Richard Greene, Dr. Zareen Khair, Dr. M. Alauddin, Dr. Shabnam Shanaz and Dr. Ferdousy Begum for their valuable comments and suggestions in preparing this report.

Glossary

AD-CC	Assistant Director, Clinical Contraceptives
AHI	Assistant Health Inspector
ANC	Antenatal Care
BAMANEH	Bangladesh Association for Maternal and Neonatal Health
BCC	Behaviour Change Communication
BCCP	Bangladesh Centre for Communication Program
BDHS	Bangladesh Demographic and Health Survey
BHC	BRAC Health Centre
BMRC	Bangladesh Medical Research Council
BPHC	Bangladesh Population Health Consortium
BRAC	Bangladesh Rural Advancement Committee
BRDB	Bangladesh Rural Development Board
CA	Clinic Aid
CC	Community Clinic
CHW	Community Health Worker
CM	Community Mobilizer
CS	Civil Surgeon
DD-FP	Deputy Director, Family Planning
EOC	Emergency Obstetric Care
EPI	Expanded Programme on Immunization
ESP	Essential Services Package
FDSR	Family Development Services and Research
FOFS	Faisalabad Obstetric Flying Squad
FPI	Family Planning Inspector
FRO	Field Research Officer
FWA	Field Welfare Assistant
FWV	Family Welfare Visitor
GoB	Government of Bangladesh
H&FWC	Health and Family Welfare Centre
HA	Health Assistant
HPED	Health and Population Extension Division
ICDDR,B	International Center for Diarrhoeal Disease Research, Bangladesh
LGRD&C	Local Government, Rural Development and Cooperatives
MCH-FP	Maternal and Child Health-Family Planning
MCWC	Mother and Child Welfare Centre
MO-MCH	Medical Officer, Maternal and Child Health
MIS	Management Information System

Glossary (Contd.)

MO	Medical Officer
MOHFW	Ministry of Health and Family Welfare
MWH	Maternity Waiting Home
MWRA	Married Women of Reproductive Age
NGO	Non Government Organization
NIPORT	National Institute for Population Research and Training
NIPHP	National Integrated Population and Health Program
OGSB	Obstetric and Gynaecological Society of Bangladesh
ORP	Operations Research Project
OT	Operation Theatre
PMM	Prevention of Maternal Mortality
PNC	Postnatal Care
PO	Programme Organizer
RSDP	Rural Service Delivery Partnership
SACMO	Sub-Assistant Community Medical Officer
SC	Satellite Clinic
SMI	Safe Motherhood Initiative
Sr. FWV	Senior family Welfare Visitor
SRS	Sample Registration System
SS	<i>Shastha Shebika</i>
TBA	Traditional Birth Attendant
TTBA	Trained Traditional Birth Attendant
TFPO	Thana Family Planning Officer
THC	Thana Health Complex
THFPO	Thana Health and Family Planning Officer
UNDP	United Nations Development Program
UFHP	Urban Family Health Partnership
UNFPA	United Nations Fund for Population Activities
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VDP	Village Defense Volunteer
VO	Village Organization
WHO	World Health Organization

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Summary

Complications of pregnancy and childbirth are the major causes of high maternal mortality in Bangladesh. The situation of maternal morbidity is also alarming with at least 16 morbidities per maternal death. In the context of high maternal mortality and morbidity in developing countries, there has been a global reappraisal of the potential of various programme strategies to improve maternal health. Maternal mortality cannot be reduced substantially unless women have access to emergency obstetric care services (EOC). Thus, timely identification of problems, appropriate care seeking and management of obstetric complications are essential. Although a reasonably good maternal and child health (MCH) service infrastructure is in place in rural Bangladesh, its use is, however, low. Therefore, raising community awareness about the complications of pregnancy and childbirth and where a woman should go for services if complications arise are also essential. It is equally important to strengthen the linkage system between the various service-delivery tiers.

The Operations Research Project (ORP), formerly the MCH-FP Extension Project of the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B), undertook an intervention "Strengthening maternal and neonatal health: improving linkages at all levels" in June 1996. As part of the intervention, the project facilitated the upgradation of the maternity unit at the Abhoynagar Thana Health Complex (THC) for basic EOC services and at the Mirsarai THC for comprehensive EOC services. A pictorial card depicting the symptoms and signs of complications of pregnancy and childbirth was introduced to raise awareness among pregnant women about these complications, and to encourage them to use the health facilities. A pregnant women register was also introduced, both for Family Welfare Assistants (FWAs) and Family Welfare Visitors (FWAs), to ensure referral and linkage activities. This intervention was introduced in three unions each of Abhoynagar and Mirsarai.

The referral and linkage activities, undertaken by the ORP of ICDDR,B and other agencies, are currently being reviewed, with a view to modify and adapt strategies for better referral and linkage for essential obstetric care and increase the utilization of facilities for management of obstetric complications. In the review process, different CoB-international agency collaborative EOC projects and activities on pregnancy care and childbirth undertaken by various non-government organizations (NGOs) were visited, key personnel were interviewed, and available documents about their activities and performance were reviewed. The relevant international experiences on EOC were also reviewed.

The review of international experiences revealed that activities undertaken on pregnancy and childbirth care in different countries emphasized to address the issues related to three delays in EOC. Findings of these programmes showed that interventions to address the three delays, including involvement of traditional practitioners in the referral and linkage system, and community awareness through local formal and informal leaders, can play an important role in ensuring EOC services to women.

The EOC projects, undertaken by UNFPA, WHO, and UNICEF, in collaboration with the GoB, renovated and upgraded the facilities at various levels of the health service system. They also initiated training programmes for providers (physicians) on anaesthesiology, gynaecology and obstetrics, and blood transfusion. WHO also trained the health and community level workers in a few of their project thanas as part of a community mobilization effort. The UNICEF-Obstetric and Gynaecological Society of Bangladesh (OGSB) project mainly emphasized the training of physicians. In all of these projects referral and linkage for the use of available EOC services was found limited. Managers of these three projects reported an increased use of the facilities. However, documentation on their performance is very limited. Moreover it has also been observed that proper supervision and monitoring is still lacking.

The review of NGO activities showed that NGOs provide antenatal, postnatal and general healthcare services to their catchment population. Their own field workers perform domiciliary visits, provide preventive services, and refer clients for appropriate care to their clinics. At the clinics, the NGOs have their own paramedics who provide pregnancy care along with other services. Almost all the NGOs have their trained traditional birth attendants (TTBAs) who were trained, supervised and paid by them. These TTBAs get incentives based on their performance in bringing the pregnant woman at the facility for ANC, for referring women with obstetric complications, and for accompanying the patients to the referral hospital.

Referral and linkage between the service-delivery points was found to be limited for obstetric care. The NGOs usually referred patients to the government facilities. Use of a referral slip was mentioned by only six of 17 BPHC funded NGOs, but its use was not universal, and there was no standard format, implying non-institutionalization of the referral system and weak coordination between the facilities. The field workers of NGOs followed-up the referred patients in their homes and collected information about the referral during their routine visits. Very few NGOs, such as BRAC, FDSR, Al-Falah have the facilities for delivery and first-aid EOC services. Financial assistance and transport facilities were also reported by some BPHC-funded NGOs.

The maternity care programme in Matlab, ICDDR,B has drawn considerable attention with regard to the establishment of a linkage from the

community to the district hospital. The nurse-midwives are responsible for conducting domiciliary deliveries, for providing immediate support and first aid to the pregnant women with complications, and for referring them to the block sub-centre. A boatman and a helper were always available to accompany patients to the Matlab hospital. Patients requiring Caesarean section or blood transfusion were referred by an ambulance to the Chandpur district hospital. A substantial decline in direct obstetric deaths was reported in the study area from 20 maternal deaths annually in 1987 to 6 in 1989.

The review of the project work on referral and linkage for EOC showed that women who had received the pictorial card either from the FWA during home visit or from the FWV at SCs or H&FWC were more likely to receive antenatal care from the trained providers compared to those who did not receive the cards. The number of deliveries attended by trained providers including TBAs, however, were still found to be limited. The number of deliveries attended by trained personnel was found to increase by three percentage points at Mirsarai. The use of Thana Health Complex (THC) for management of obstetric complications was increased from 1.7 to 5.0 percent during a period of one year. Very few women who were identified as high-risk pregnancy and were referred from the unions actually used the THC facility for management of obstetric complications or for delivery. The majority of the women with obstetric complications till consulted or received care from the village practitioners, who rarely have the training to manage obstetric complications. It is also found that husbands were the major decision-makers for care providers about their wives' treatment and were actually less knowledgeable than their wives about when to refer a woman with obstetric complications to a health facility.

The lessons learned from the review are: i) the pictorial card developed by the project is an effective tool for raising community awareness about the symptoms and signs of complications of pregnancy and childbirth, and improving linkage among the different service delivery tiers; ii) women still receive care from the village practitioners; iii) husbands are the major decision-makers about care-providers for their wives; iv) referral and follow-up mechanisms are weak; v) no standardized supervision and monitoring system for referral and linkage is practiced; vi) incentives to the community providers help to improve performance; and vii) transportation for referred patients is an area of concern for the utilization of EOC services.

Programmes needs to be designed to aware the community regarding complications of pregnancy and childbirth involving males specially the husbands, social elite, and various formal and informal groups. Also the village practitioners should be involved in the referral process for EOC.

Background

Complications of pregnancy and childbirth, such as haemorrhage, eclampsia, sepsis, obstructed labour and complications of abortion are the five major causes of maternal mortality in Bangladesh [1,2]. In Bangladesh, the current maternal mortality is estimated to be 4.5 per 1,000 live births [3]. An estimate shows that for every maternal death there are at least 16.5 morbidities. More recent estimate suggests that this figure is far too low, and there may be as many as 10 morbidities for every pregnancy or childbirth related death [4]. A cross-sectional study of parous women of reproductive age showed that 80 percent of them reported one or more morbidities, the majority of which were occurred in the postpartum period [5]. High fertility norms, poor access to and use of health services, and socio-cultural barriers are all causes for the country's high maternal mortality and morbidity.

Substantial level of awareness exists at all levels of the health care infrastructure about the maternal health problems of the country. Current efforts to reduce pregnancy-related problems include preventive approaches, such as antenatal care (ANC), tetanus toxoid immunization, iron-folic supplementation, training of traditional birth attendants (TBAs), and family planning. These approaches, however, have not been effective in reducing maternal mortality. Although a reasonably good infrastructure for MCH services is in place in rural Bangladesh, and the services provided are free of charge, the use of existing service facilities is still low. One study conducted in Matlab and many other studies revealed that the detection of high-risk pregnancies by the field workers was low in sensitivity and specificity, and had very poor predictive values [6]. In the context of high maternal mortality and morbidity in developing countries, a global reappraisal of the potential of various programme strategies to improve maternal health has taken place. Antenatal care by itself have little impact on prediction of complications during childbirth, and research has shown that maternal mortality cannot be reduced unless women have access to EOC service [7]. Timely identification of problems care-seeking and appropriate management of obstetric complications are essential to reduce maternal mortality and morbidity.

Emergency Obstetric Care

Emergency obstetric care (EOC) comprises various life-saving obstetric services that can be provided at different levels of the health care delivery system. EOC has been divided into the following three categories according to the types of services provided and the level at which these services are offered: a) first-aid EOC at the union level clinic (H&FWC), b) basic EOC at the sub-district or

thana-level hospital, and c) comprehensive EOC at the district-level hospital. Details of the different components are given in Table 1.

On the other hand, **Essential Obstetric Care** services encompass all aspects of pregnancy and delivery care; it includes antenatal care, delivery care, postnatal care, and EOC as well.

Table 1. Components of EOC

First-aid EOC	Basic EOC	Comprehensive EOC
Ergometrine (injectable)	All first-aid EOC services	All basic EOC services
Antibiotic (injectable)	Manual removal of Placenta	Caesarian section
Anticonvulsant (injectable)	Assisted vaginal delivery	Blood transfusion
	Vacuum aspiration	

Source: UNICEF, 1993 [8].

Levels and Trends

In Bangladesh, most mothers do not receive any ANC, and home delivery is almost universal. Ideally, all pregnant women should have regular antenatal checkups either by a paramedic or by a doctor. However, less than one-third (27%) of the pregnant women who gave birth during the five years prior to the 1996-97 BDHS survey received any ANC, and only 19 percent had two or more ANC checkups [3]. Results of this survey showed that the trained personnel (doctor, nurse, paramedic) conducted only 8 percent of the deliveries. Deliveries attended by TTBA's alone were rather low, accounting for only 8 percent. The evaluation of TTBA's performance showed that 17 percent of the deliveries were conducted by the GoB TTBA's who are still continuing the harmful practices when attending deliveries [9].

Findings of many studies indicate that women have very limited knowledge about the life threatening complications of pregnancy and childbirth. The husbands, who actually make the decision for use of obstetric care services are even less knowledgeable than their wives [10,11]. A study conducted in two rural field sites of the Operations Research Project (ORP) of ICDDR,B showed that only 16 percent of the women with obstetric complications were treated by medically qualified practitioners like physicians, paramedics (FWVs) and medical assistants. The rest of the women consulted either a village practitioner or a homeopath or did not consult anyone at all.

These providers, however, are not qualified to provide obstetric services [12]. Similar results were reported by others as well [13]. Results of a qualitative study conducted in Abhoynagar showed that the majority of the women consulted the untrained providers for the treatment of their obstetric complications before coming to the THC [14].

A review of the use of EOC services in Bangladesh showed that the average number of monthly admission of obstetric cases at the THC was six. Seventy-two percent of these patients were referred to the district hospitals [10]. This study suggested that for the improved use of services provision should be made for transportation of patients from the referring to the referral centres, use of trained TBAs with functional linkages with the infrastructure, and making the pregnant women and her husband aware about the danger signs of complication for its quick referral to appropriate facilities. Referral and linkages for EOC are very weak in the national programme, since historically very little emphasis has been placed in this area. It is due to this weak linkage that women do not receive appropriate and timely care during emergencies. To make effective use of the EOC services and to refer patients to the appropriate higher level timely, linkage between the tiers of the healthcare delivery system is essential. Another essential aspect of referral and linkage is the availability of appropriate services at the referral facilities. If appropriate care is not available at the referred facility, the woman may need to be referred to the next higher level, resulting in delays and further endangering the health of the mother and her baby.

Review of Activities on Pregnancy, Childbirth and EOC

With a view to modify and adapt strategies for effective referral and linkage for essential obstetric care, activities undertaken by the project, and other government and non-government organizations on pregnancy care and childbirth were reviewed. In the review process, different GoB-international agency collaborative EOC projects and activities on pregnancy care and childbirth undertaken by various non-government organizations (NGOs), such as Pathfinder International, BRAC, CARE, Bangladesh Women Health Coalition (BWHC), Bangladesh Population Health Consortium (BPHC). Nari Moytree, were visited, key personnel were interviewed, and available documents about their activities and performance were reviewed. Some of the experiences of different countries world-wide were also reviewed.

International Experience

The World Health Organization (WHO) convened probably the first international meeting on maternal mortality in Geneva in 1985. In 1987, the World Bank, in collaboration with WHO, UNFPA and UNDP, sponsored the Safe Motherhood Conference in Nairobi, Kenya and issued an international call for an action on the Safe Motherhood Initiative (SMI).

Following the conference, the World Bank, United Nations agencies and others funded a series of national and regional Safe Motherhood meeting to raise awareness among policy makers. During 1987-1994, at least 18 such meetings were held, with participants from over 90 countries [15]. Although the meetings produced plans of action, these were often very broad in scope and included a daunting array of recommended activities. Nevertheless, virtually all discussions on women's health now make at least a general reference to maternal deaths, and most governments of developing countries have pledged to fight this long-neglected problem.

In 1985, Rosenfield and Maine raised a question in their article titled "Where's the 'M' in 'MCH'?" published in the *Lancet* indicating that maternal mortality is neglected by international health programmes and called for an action, resulted in the creation of Prevention of Maternal Mortality (PMM) Network [16].

The network comprised 12 teams—seven in Nigeria, two in Ghana, two in Sierra Leone and a technical support team at Columbia University with a Regional Office in Accra, Ghana. Each of the teams designed its own projects aiming at reducing maternal deaths in their study areas. The following 'Three Delays Model' [17] developed by PMM was used for identifying the points at which delay in receiving EOC can occur: (i) delay in deciding to seek EOC; (ii) delay in reaching an EOC facility; (iii) delay in actually receiving care after arriving at the EOC facility. The focus of the teams' interventions was on improving the availability, quality and use of EOC services for women with serious complications. The projects of the teams included interventions in health facilities to improve skills and services, and to reduce delays in treatment and interventions in communities to address lack of transport, funds and information concerning obstetric complications. The teams started by upgrading services at the health institutions before undertaking the community interventions. The network relied heavily on existing material resources to upgrade services at facilities. The teams' results offered several lessons for programme planners [18]. Despite difficult conditions in the project countries, the teams demonstrated that it is almost always possible to make improvements in the delivery of EOC. Their work showed that EOC can be improved not only by concentrating on hospitals and physicians, but also by focusing on peripheral

facilities and other qualified staff. Improving EOC need not be costly, because in many areas the necessary facilities exist and staff are already in place. The teams' findings regarding use of EOC suggested that more people utilize services when they know them to be functioning well. Community efforts, including education and mobilization, have a role to play in improving use of services once those are in place. The PMM network also disseminated the following results:

- i. Health services must be upgraded before the community is mobilized to use the services [19].
- ii. Community-managed loan and transport systems for women with obstetric emergencies can be established and administered by the community and may contribute to reducing delay in obtaining EOC [20,21].
- iii. The Community can be made aware about the recognition of and need for prompt treatment of obstetric complications and also about the men's role as decision-makers by meetings with community opinion leaders, video shows, posters, and handbills. However this may not increase the use of obstetric services [22].
- iv. Community contact persons can play a valuable role in facilitating referral of women with obstetric complications and supporting health education activities [21].

The Mother and Child Welfare Association of Faisalabad (MCWAF) in Pakistan had an initiative to overcome the problem of financial barriers to effective use of transport for obstetric emergency services among the urban poor. This represents a good example of providing outreach services, bringing together traditional birth attendants (dais), lady health visitors, and hospital obstetric staff as a team [23].

The Faisalabad Obstetric Flying Squad (FOFS) is one component in a series of activities undertaken by the MCWAF to combat maternal and child mortality in the city. The programme activities of the MCWAF include;

- i. organization of training and refresher courses for traditional birth attendants (dais);
- ii. establishment of maternal and child health (MCH) centres, including family planning services;
- iii. organization of free maternity services at the Allied Hospital in Faisalabad;

- iv. organization of extensive programmes of public health education through use of media and "mobile health camps"; and
- v. ensuring improved liaison between dais, lady health visitors, hospital staff, and patients.

During 1989-1992 FOFS received 394 emergency calls, representing 2-5% of all obstetric hospital admissions. Evaluation of the project found that users were generally highly satisfied with the services particularly since it was free of charge. Users noted, that the services provided, in conjunction with the traditional dais who accompany the women to the hospital, helped reduce the fear of the institution. The integration between community and hospital services was much appreciated. The dais themselves were very positive in their evaluation of the service. They felt that the ability to refer women with problems reduced their exposure to major obstetric complications and risk of maternal death—an outcome which reflected poorly on their skills and damaged their reputation. Recognition of their work by the "institutional" health services enhanced their status in the community. The users more specifically mentioned that the service came quickly when called for; mothers were transported in comfort; trained staff accompanying each case; use of the FOFS speed up hospital admission formalities; dais gained respect and status (families made additional payments); and families had more confidence in the hospital services.

Staff at the allied hospital were deeply impressed with the services. The additional exposure of junior staff members and the medical students to preventive obstetric care at the community level was appreciated. It contributed to their training, and alerted them to the public health aspects of their work.

In a WHO meeting held in 1985, it was suggested to train midwives to do caesarean section in areas where physicians are not available to undertake this activity [24]. Such a programme was undertaken in rural north-western Zaire. Nurse of the Karawa and Wasalo hospitals were trained to do caesarean sections, laparotomies, and supra-cervical hysterectomies. The experiences showed that non-physicians can be trained to do emergency obstetric operations with good results. Nurse-surgeons of both at Kawara and Wasolo performed most caesarean sections, with a low-fatality rate [25].

The concept of maternity waiting home (MWH) was aired to ensure timely referral of selected pregnant women to a health facility in case of obstetric emergencies. The term maternity waiting home is used for describing a facility where women at high risk of delivery complications can wait and receive supervision during the last few weeks of pregnancy. Such facilities are usually designed for women with major obstetric abnormalities and for whom operative delivery is anticipated, but whose homes are in the remote and

inaccessible rural areas. In northern European countries, waiting homes near a hospital existed at the beginning of the century to service women in the remote geographical areas, deprived of obstetric facilities [26].

In Ethiopia, the MWH is called a 'tulku'. In one isolated area in Attat, a tulku was built and opened in 1979 near a community-based hospital with community participation. The trained traditional birth attendants (TTBA) referred the mothers to the tulku. A nurse from the hospital visited the tulku once a day. It was reported that the stillbirth rate for the women who came directly to deliver at the hospital was 10 times higher than the tulku women [27]. Maternity waiting homes similar to this or with some variation also exist in some other African countries.

To facilitate accessibility to medical services among pregnant women of the remote and under-served areas, Cuba built maternity homes near the local hospital (primary level) and provided shelter to women in the last few weeks of pregnancy to assure them medical care at the moment of delivery. Complicated cases were referred to the nearest first referral-level hospital equipped for operative deliveries. Over the years, the MWHs have progressively increased from 22 in 1970 to 148 in 1989. A total of 45,465 pregnant women, corresponding to 30 percent of all deliveries, went through a MWH in 1989. Although no evaluation of the MWHs has so far been conducted, most health authorities in Cuba agree that the MWHs have greatly contributed to the reduction of maternal and perinatal mortality.

Collaborative EOC Efforts of GOB and International Agencies

The EOC project, undertaken by UNFPA in collaboration with the GoB, has been operating at the Mother and Child Welfare Centres (MCWCs) at the district level to provide comprehensive EOC services since June 1995. Twenty-nine MCWCs have so far been included under this programme and 18 more will be functioning soon. The project has renovated and upgraded these MCWCs for comprehensive EOC services, ensuring supplies of drugs and instruments, and facilitating training of doctors; one for anaesthesia and one for gynaecology and obstetrics. One of the reports showed that the performance of these centres went up sharply since the launching of the project [28]. This report has shown that number of ANC visits increased by 54 percent in 1996 and another 29 percent in 1997. Caesarean sections increased from 134 in 1996 to 469 in 1997 and blood transfusions increased from 128 in 1996 to 200 in 1997.

A joint circular was issued by the Director General of Health Services and the Director General of Family Planning to improve linkages at various service-delivery tiers for EOC. Networking between the lower centres—the MCH unit at the THCs, the H&FWCs at the union level, and the SCs at the

village level is being promoted by the district and thana managers to increase the use and availability of reproductive health, family planning, and EOC services and referral of complicated cases to the MCWCs. During review visit, one of the doctors working at a MCWC reported that the satisfied clients acted as the promoter of EOC services at the MCWCs.

The **Obstetric and Gynaecological Society of Bangladesh (OGSB)** has a collaborative effort with the GoB with the assistance from UNICEF since 1994 with the objective to provide comprehensive EOC at the district hospitals, basic EOC at the THCs and first-aid EOC at the union-level H&FWC. The project has currently been operating in all of the thanas of 31 districts, and 23 more districts will be covered in future. The programme concentrates to develop the providers' skills for management of obstetric complications. The collaborative effort helped post consultant obstetrician and anaesthesiologist at the district hospital, and supply necessary equipment for EOC services. Doctors and nurses from the THCs have also been trained to provide basic EOC, and some paramedics from the H&FWCs were trained for first-aid EOC. The transfer out of trained doctors, however, has been hampering the proper functioning of the referral system from thana to district level. Although 136 paramedics were trained for first-aid EOC, the project could not initiate the activities of H&FWCs as the first-level referral point due to inadequate supplies of medicine and instruments. Moreover, educating and informing the rural community regarding obstetric complications for the use of EOC services was found poor.

Under this project, the village practitioners of seven districts were oriented to refer complicated obstetric patients to the THCs and district hospitals. Two village doctors from each ward were selected to receive orientation on the danger signs of obstetric complications and the places where EOC services are available. However, documentation was not available about their performance on referral of complicated cases to the higher level.

The OGSB members working at various Medical College hospitals and district hospitals were assigned to monitor the performance of the EOC activities, but this element did not function well.

The **WHO-GoB collaborative EOC programme** has been operated in 31 thanas of four districts aiming at providing comprehensive EOC at the thana level since 1995. The maternity units of the THCs were upgraded to offer comprehensive EOC service. This programme has also trained one medical technologist on blood transfusion, two nurses for operation theatre management, and two physicians—one on anaesthesiology and one for obstetrics—from each thana. The Health Assistants (HAs), FWAs, FWVs of four selected thanas were oriented on EOC. The programme had developed IEC materials such as posters and flipcharts, and distributed them at the district and

thana levels. A sensitization workshop was also conducted at the thana and district levels and a similar workshop will be conducted at the divisional level soon. A modified rickshaw van was introduced in some unions as ambulance. This van ambulance contained a first-aid box, a stand for IV saline, and a stretcher for carrying patients.

After six months of operation, most thanas were required to stop providing any comprehensive EOC due to lack of trained providers, especially the physicians. Most doctors who were trained through the programme were either transferred or left for higher studies. At the end of 1996, the Shakipur THC under Tangail district began offering comprehensive EOC again. The Project Director reported that 45 C-sections and 150 blood transfusions have so far been done. Modhupur thana, under the same district, performed its first C-section in March 1998.

The Project Director, WHO-EOC project also reported that regular meetings were held to build a team spirit among the trained physicians, nurses technicians and others. Necessary measures were adopted to prevent transfer of trained doctors. The doctors working in the project thana are required to sign a bond for three years to work at the specified thana; no doctors are allowed to transfer or attend higher studies during the period. Study tours abroad are also arranged for the doctors working in the study thanas.

BCCP and OGSB have redesigned the ICDDR,B pictorial card slightly and incorporated pictures on other elements of EOC, along with the original pictures of obstetric emergencies.

NGO Initiatives on EOC

BRAC has an intensive maternal healthcare programme, which targets primarily village organization (VO) members, who form groups primarily for credit programmes and other activities, including their health needs. A *Shastha Shebika* (SS), who works currently as a depot holder, is selected from the group members and is responsible for working at the community level with 150 VO members. She records all demographic and healthcare information from the target VO members and visits each of them every three months. During her visits, she identifies the pregnant women and informs the block Programme Organizer (PO). The block PO is a female having at least 14 years of schooling, and BRAC gives her three months training on maternal and child health and family planning. The block PO then visits the pregnant woman at her home, records her reproductive history, screens for high-risk factors and advises her to go to their clinic known as BRAC Health Centre (BHC) for antenatal checkups. The BHC is a four-bedded clinic having a catchment area of 6,000 population with one physician and 2 paramedics. If a pregnant woman is identified as at

high-risk in the clinic, the block PO informs the SS who then goes to the family to make her understand the importance of taking special care of the pregnant woman and what to do in case a complication arises. She also motivates them to go to the BHC for ANC and delivery. In areas where a BHC is not available, the pregnant women are linked to the nearest GoB facilities where EOC services are available.

BRAC has established a referral and linkage system from the community to the higher levels, especially with regard to the GoB health facilities. When the pregnant women are referred to a referral centre, the TTBA/SSs accompany them. If a referral is made from the BHC, one staff member, usually the block PO, accompanies the patient to the hospital to ensure that services are provided. BRAC representative attends all regular meetings held at the district and thana levels where providers of the referral centres and their performance and the problem issues are regularly discussed for probable solutions.

BRAC also charges for services. A pregnant woman is required to pay Tk. 18.00 for ANC, iron tablets and checkup during her first visit. For a normal safe delivery at the BHC, a woman is required to pay Tk. 180.00. On the other hand, BRAC pays a referee Tk. 20.00 for referral and accompaniment of a client at the referral centre and Tk. 2.00 for bringing a pregnant woman to the centre for routine antenatal checkup.

The women who do not belong to a VO can also use the services offered at the BHCs. The SS, however, does not visit them at their houses.

CARE has recently been working in five thanas of two districts (Moulvibazar and Dinajpur), where the OGSB-UNICEF initiated EOC services. They have mainly concentrated on mobilizing the rural community to use the services when needed. CARE has its own field staff who work in the community. They do work with the GoB field workers, attend SCs, and introduce pregnant women to the TTBA. These staff orient the TTBA on safe delivery and symptoms of obstetric complications. They identify the gaps in knowledge of village practitioners about referring, orient them on signs of obstetric complications, and motivate them to refer patients with obstetric complications to the EOC facilities without delay. To ensure the services at the district level, CARE posted a PO-Nurse to counsel the patients and monitor the services provided to the EOC referral patients. Documentation on the performance of the activities was not available during the visit, but it was reported by the concerned coordinator that the performance of EOC services at the district hospital has increased.

Field workers of various NGOs (BWHC, Nari Moytree), working at the community level in urban areas, register all of the eligible couples of their catchment area. They are responsible for identifying and motivating pregnant

women to seek ANC from the paramedics at their neighbourhood static clinics/SCs. They also introduce the TTBA's to the pregnant women and motivate the women to call on the services of the TTBA's when their delivery time arises. Several NGOs trained, supervised and paid the TTBA's whom they kept as their staff. Other organizations were found to pay the TTBA's based on their performance in bringing the pregnant women to the facilities for ANC, attending deliveries, referring the women with obstetric emergencies, and accompanying them to the places of referral. The NGOs which were visited used to refer patients with obstetric complications to a nearby hospital, but linkage or coordination between them was poor. They, however, collect and record acceptance of their referrals through their field workers. In some cases, patients themselves report back to the clinics about the services they received from the referral hospital.

Nari Moytree, an NGO, has introduced a vehicle (baby taxi) to transfer the patients with obstetric complications to the hospital, specially to the Azimpur Maternity Hospital and the Dhaka Medical College Hospital. It was reported by the manager of Nari Moytree that they have a linkage with the Social Welfare Department at those hospitals. As a result, their patients receive services from the hospital. In most cases, the TTBA's of that area who were introduced in advance to the concerned officials at the hospital accompany their patients to the referral centre. The other NGOs directly refer patients to the government health facilities, such as Dhaka Medical College Hospital for management of obstetric complications.

The **Ad-din** Welfare Centre has a community-based healthcare programme and has field workers and TTBA's to work at the community level. The TTBA's are involved in other activities of the project and receive incentives which are paid based on their performance. A paramedic provides ANC, PNC and delivery care, and refers patients to the nearest THC. In addition, it also has maternity waiting homes. The Ad-din Hospital is a specialized hospital equipped with a complete set of modern EOC instruments and provides back-up support for complicated cases.

A review of 17 BPHC-funded projects identified the need to further strengthen the referral system [29]. The BPHC package for maternal healthcare, based on that of the GoB programme, includes community-based distribution of contraceptives, health education, and maternal healthcare services to pregnant and post-partum women, immunization and other general healthcare services. Maternal healthcare to pregnant women is provided either directly at the static and/or SCs, or through referral to a GoB facility by the BPHC-funded NGOs. The activities of NGOs reviewed were of two types. The NGOs having type 1 activities have normal delivery unit and have some kind of financial

assistance for the referred patients, in addition to the other mandated activities. *Shishu Niloy* has a village committee with a community insurance plan to provide funds in emergencies. Of these eight NGOs, six have transport facility for referring clients to the facilities. The type-1 activities were found in operation primarily in urban areas. The type-2 activities were primarily undertaken in the rural areas. The review report showed that the performance for NGOs practicing type-1 activities is better than those of the NGOs which practiced type-2 activities in terms of the use of ANC services, deliveries attended by trained providers, and the use of institutional facilities for the management of obstetric complications.

The referral and linkage between the service-delivery points was found to be limited for obstetric care. The BPHC-funded NGOs usually refer patients to the government facilities. Although no formal linkage system was found with the other service-delivery points. Use of a referral slip was mentioned by only 6 out of the 17 NGOs reviewed; within these six, however, its use was not universal, and there was no standard format, implying non-institutionalization of the referral system and weak coordination between the NGOs and the GoB facility. In addition, maintenance of referral records by the NGOs was reported to be better in the rural areas compared to that of the NGOs working at the urban areas. The field workers follow-up the referral patients in their homes and collect information about the referral during their routine visits. The BPHC is currently designing a "referral slip" for their NGOs. One part of the slip will be given to the clients with detailed documentation of the services already provided. There is also a space for the referral hospital to record the type of services given to the patient. The field worker will collect the slip from the women and will bring it to the clinic. The paramedic posted at the static point is responsible for providing the referral information to the field worker.

Review of the Centre's Work

The maternity care programme in Matlab has drawn considerable attention with regard to the establishment of the linkage from the community to the higher centres. The Matlab research area is divided into the MCH-FP project area and the control area. The MCH-FP area has, approximately a population of 200,000. It has four subdivisions, referred to as blocks (A-D). In each block, there is a subcentre where two midwives are posted who are responsible for providing ANC, PNC at the SCs and subcentres, conducting home deliveries, treating women with complications, and referring them to the subcentre when they lack the facilities to manage these cases at their own level. The midwives are supported by another vital component of the programme, namely a referral chain, including a boatman and a helper who is available at night and day to

accompany patients to the maternity of Matlab clinic. Sometimes, the midwives accompany patients to the hospital. At the Matlab maternity clinic, trained paramedics and female physicians are available round the clock for an intensive surveillance, treatment, or further referral to a district hospital. Patients requiring Caesarian section or blood transfusion are taken by ambulance to the district hospital. This maternal health programme was initiated in two blocks (the intervention area), and the remaining two blocks were used as the comparison area.

A substantial decline in direct obstetric deaths was observed in the study area: from 20 maternal deaths in the intervention area in 1987 to 6 in 1989. In the comparison area, this figure remained the same (20 maternal deaths annually throughout the same period of time). This improvement was attributed to the combined efforts of the community midwife who attended deliveries at home and referred complicated cases to the Matlab maternity clinic by boat, and the efforts of the physicians of the Matlab clinic who referred patients to Chandpur District Hospital, whenever necessary [30]. Thus, provision of midwives in the community may be an important factor in reducing maternal mortality.

In 1997, a delivery unit was set up in one community block in Matlab. The husband and the in-laws are encouraged to bring the women to the delivery unit for childbirth. Moreover, the TTBA's are being motivated to accompany the clients to the delivery unit. In addition, the community health workers (CHWs) have been educating families about the signs of obstetric complications, using a pictorial card [31].

Review of the Project's Work

The former MCH-FP Extension Project (Rural) of the ICDDR,B collaborated with the Directorates of Health and Family Planning of GoB to improve service-delivery system. To strengthen the maternal health services, the Project designed and tested an antenatal-screening checklist to help the Family Welfare Assistant (FWA) to detect high-risk pregnant women. The evaluation of the intervention showed that the FWAs could not have use the screening checklist properly, and 60 percent of the pregnant women were identified as high risk. Moreover, the screening checklist was too long, and its modification was suggested [32]. Another intervention was then designed and tested on the FWA's new role in providing ANC in response to an early recognition of obstetric complications and timely seeking of EOC services. This was done through the introduction of a pictorial card given to the pregnant women in Abhoynagar thana. The evaluation of the intervention showed that ANC increased by 35 percentage points and postnatal care by 8 percentage points.

The use of the THC services for obstetric complications also increased [33]. This intervention, however, gave limited emphasis on addressing the issue of linking the service-providers and the facilities.

Based on the current situation of maternal health in Bangladesh and the lessons learned from the above mentioned interventions, the former MCH-FP Extension Project (Rural) undertook an intervention "Strengthening maternal and neonatal health: improving linkages at all levels" in June 1996. This intervention focused on improving maternal health by strengthening referral and linkage between the service-delivery tiers and raising awareness about the complications of pregnancy and childbirth in the community.

This ongoing intervention aimed at increasing (a) the knowledge of pregnant women regarding complications of pregnancy and childbirth, (b) the coverage of ANC and PNC, (c) the number of deliveries attended by the trained personnel, (d) the number of complicated cases managed by the trained personnel, (e) post-abortion contraceptive use, and (f) improving neonatal care services. Under this scheme, the THC maternity units were rehabilitated and upgraded for basic EOC services at Abhoynagar and for comprehensive EOC services at Mirsarai. A **pictorial card** was introduced to raise community awareness about the symptoms of complications of pregnancy and childbirth, and encourage women to use the health facilities in emergencies. A **pregnant Woman Register** was also introduced for both FWAs and the Family Welfare Visitors (FWVs) to record the pregnancy care related information as well as ensuring referral and linkage.

The flow chart in Annex-I shows the referral and linkage mechanism from the community to the higher-level health facilities.

At the community level, the FWA identifies pregnant women and gives them a pictorial card and an antenatal card. She explains the contents of these cards to the pregnant women. The FWA records the information in the pregnant women register and encourages the women to go to the FWV for ANC at the H&FWC/SC and also advises them to call the TTBA at the time of delivery. The FWA additionally tells the pregnant woman to go straight to the THC if they develop any of the complications shown in the pictorial card. The FWA also update the pregnant women register of the FWV time to time through her own register. At the H&FWC or at SC, the FWV provides ANC, records all information including services provided during each visit. She identifies risk factors and refers the women to higher facilities, if necessary. If a pregnant woman comes for an antenatal checkup without a card the FWV gives her the card and explains the contents of the card. If a pregnant woman comes to her with an emergency, she refers her to the THC. Complicated cases that cannot be managed at the THC are referred to the district hospital.

The findings of a mid-term evaluation of the above intervention, done in April 1997, indicated that women's knowledge about the common complications of pregnancy and childbirth had increased. An increased number of pregnant women has established contact with the FWVs for ANC care. Among pregnant women, the ANC visits to the qualified personnel increased from 25 percent to 39 percent in Mirsarai and 75 percent to 79 percent in the Abhoynagar intervention areas and the pictorial card had made an important impact in this regard. The pregnant women who received pictorial cards were more likely to use ANC services compared to those who did not have a card. Eighty percent of the pregnant women who had the pictorial card received ANC, while only 32 percent of those who did not have the cards received ANC from qualified providers in Mirsarai. In Abhoynagar, 97 percent of the pregnant women who had the pictorial cards visited a qualified health provider, while only 74 percent who did not receive the card, visited the qualified providers for ANC. Moreover, women who had cards were more likely to use the institutional facilities for management of their obstetric complications compared to those who did not. The percentage of complicated cases admitted at the THC maternity in Mirsarai and Abhoynagar was 1.7 and 6.5 respectively during pre-intervention period, which was increased to 5.0 and 8.4 respectively during mid-term evaluation [13].

Information about referrals from the community to the union level H&FWC/SC for ANC was collected from the service statistics (Pregnancy Register). These showed that, during the 6-months period, of the total number of expected pregnant women, 56 percent from Abhoynagar and 53 percent from Mirsarai were identified and referred to for ANC. Of the women referred to, 96 percent at Abhoynagar and 41 percent at Mirsarai visited the FWVs. Of the pregnant women who visited the FWVs at the SCs or at the H&FWCs, 78 percent at Abhoynagar and 66 percent at Mirsarai had the pictorial cards. Reasons for the discrepancy between the number of women referred to and the number of actually received care are: firstly, it could be possible that the FWA either did not give them the card or refer them properly; secondly, some pregnant women may not be available at the time of the FWA's visit as traditionally many pregnant women prefer to stay at their parents' home for delivery. That fewer pregnant women visited the FWV in Mirsarai may be due to the fact that it is a more conservative area. However, it is common for women to feel it unnecessary to go for antenatal checkups, even if referred to.

Referral from the union to the THC was low. A total of 59 and 36 women who were referred from the union level to the THC at Abhoynagar and Mirsarai respectively, were interviewed. Of them, 14 (24%) at Abhoynagar and 18 (51%) at Mirsarai visited the THC after referral. Reasons for not going to the THC were that the women did not feel the need to go (41%), did not

understand the importance of going to the THC (24%), husbands objected (7%), the THC was too far away (7%), did not understand that the FWV had referred her (7%) and other reasons (13%). Most women who did not feel that there was a need to go where referred, because they were aged either less than 20 years or above 35 years, their height was less than 145 cm, or they had oedema or anaemia. All of these women had normal deliveries in their homes. This suggests that these factors may not at all be high-risk factors.

The mechanism used for linking the union and thana facilities was not followed properly by the health and family planning staff either at the H&FWCs or at the THCs. A high-risk report form has been introduced for referral, but it was not used properly. Weakness in the system suggests a need for a more effective referral mechanism, perhaps including a referral slip and transport.

The mid-term evaluation also found that some SCs were often not held due to the absence of the FWV. This was an additional reason why the women could not receive ANC. This problem was more marked in Mirsarai area. Thus, lack of supervision and monitoring is an important impediment to an effective service delivery. It is also suspected that the lack of vigilance in supervisors is due to an internal conflict between the different cadres of the health and family planning department.

Thirty-one women at Abhoynagar and 44 at Mirsarai who were admitted at the THC maternity with obstetric complications were referred to a higher-level hospital between October 1996 and February 1997. Of them, 27 in Abhoynagar and 42 in Mirsarai were interviewed 15 days after referral. Almost all of women had gone to the referred hospital for management.

It was observed during the mid-term evaluation that women often consulted the village practitioners first instead of going to the FWVs or using the THC facilities. These local service providers do not have any professional training in handling emergency obstetric cases. It was also found that the husbands and the mothers-in-law were usually the primary decision-makers with regard to the person to be consulted for obstetric complications [13,33]. It was also found that most deliveries in both the areas were attended by the untrained birth attendants.

Lessons Learned

The lessons learned from the review are as follows:

- i. The pictorial card developed by the project is an effective tool for raising community awareness regarding obstetric complication and linkage among the different service-delivery tiers,
- ii. Women still seek care from the village practitioners,
- iii. Husbands are the major decision-makers for care providers,
- iv. Risk screening is not useful,
- v. Alternate channels for awareness building should be explored in the changed scenario of the service-delivery approach,
- vi. Referral and follow-up mechanism are weak,
- vii. No standardized supervision and monitoring system for referral and linkage is practiced,
- viii. Incentives to community providers such as TBAs, depot holders help in better performance, and
- ix. Issue of transport facility for referred patients is an area of concern for the use of EOC services.

The Future Needs

- a. The village practitioners, pharmacists (drug sellers), and homeopaths in the community need to be involved in the process of referral and linkage for EOC.
- b. Special programme efforts are needed for husbands and mothers-in-law to make them aware of the symptoms of obstetric complications and consequences of delay in EOC service use.
- c. Untrained and trained TBAs (*dais*) in the community should be oriented about the importance of timely referral for obstetric complications.
- d. Local groups (GoB and NGOs) such as, BRDB, Mothers Club of LGRD, VDP, Grameen Bank, Village Health Volunteers (VHV), VO members of BRAC, need to be involved to influence the process of decision-making for referral of women with obstetric complications.
- e. Provision of first-aid EOC at the H&FWC should be considered.

- f. Monitoring of activities, both at field and fixed service-delivery points, needs to be strengthened by the thana managers both from health and family planning wings.
- g. A referral slip and an effective follow-up mechanism should be designed and strengthened.

Conclusion

In spite of the programme effort the utilization of EOC services is poor, the referral for EOC is virtually non-functional and the compliance is also not satisfactory. People mostly go to untrained providers for obstetric emergencies. These practicalities need to be considered in designing any future programmes on maternal health.

Lessons learned from this review have led the Operations Research Project to modify its existing intervention on 'strengthening maternal and neonatal health: improving linkages at all levels' by including village practitioners in the referral mechanism and the males, the local groups, and the social elite in the awareness raising activities.

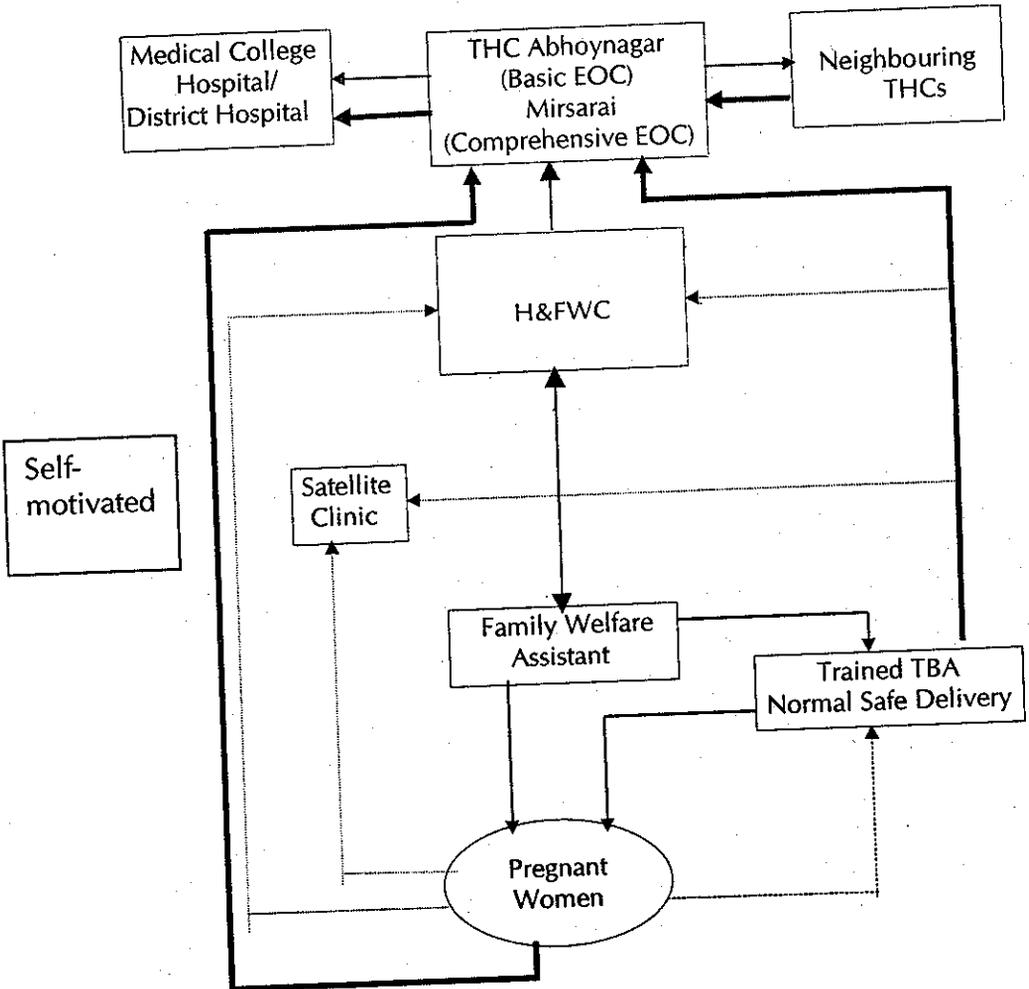
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Referral and Linkage Flow Chart



- Referral (complicated cases referred for basic/comprehensive EOC)
- Linkage (flow of information about EOC at THC/ANC-PNC)
- Referred to H&FWC/SC needing first-aid EOC
- Normal safe-delivery case

MCH-FP Extension Work at the Centre

An important lesson learned from the Matlab MCH-FP project is that a high CPR is attainable in a poor socioeconomic setting. In 1982, the MCH-FP Extension Project (Rural) with funding from USAID began to examine in rural areas how elements of the Matlab programme could be transferred to Bangladesh's national family planning programme. In its first year, the Extension Project set out to replicate workplans, and record-keeping and supervision systems, within the resource constraints of the government programme.

During 1986-89, the Centre helped the national programme to plan and implement recruitment and training, and ensure the integrity of the hiring process for an effective expansion of the work force of governmental Family Welfare Assistants. Other successful programme strategies scaled up or in the process of being scaled up to the national programme include doorstep delivery of injectable contraceptives, management action to improve quality of care, management information systems, and strategies to deal with problems encountered in collaborative work with local area family planning officials. In 1994, this project started family planning initiatives in Chittagong, the lowest performing division in the country.

The Centre and USAID, in consultation with the government through the Project's National Steering Committees, concluded an agreement for new rural and urban Extension Projects for the period 1993-97. Salient features include: improving management, quality of care and sustainability of the MCH-FP programmes, and providing technical assistance to GoB and NGO partners. In 1994, the Centre began an MCH-FP Extension Project (Urban) in Dhaka (based on its decade long experience in urban health) to provide a coordinated, cost-effective and replicable system of delivering MCH-FP services for Dhaka urban population. This important event marked an expansion of the Centre's capacity to test interventions in both urban and rural settings. The urban and rural extension projects have both generated a wealth of research data and published papers in international scientific journals.

In August 1997 the Centre established the Operations Research Project (ORP) by merging the two former MCH-FP Extension Projects. The ORP research agenda is focussed on increasing the availability and use of the high impact services included in the national Essential Services Package (ESP). In this context, ORP has begun to work with partners in government and NGOs on interventions seeking to increase coverage in low performing areas and among underserved groups, improve quality, strengthen support systems, enhance financial sustainability and involve the commercial sector.

ORP has also established appropriate linkages with service delivery partners to ensure that research findings are promptly used to assist policy formulation and improve programme performance.

The Division

The Health and Population Extension Division (HPED) has the primary mandate to conduct operations research, to disseminate research findings to program managers and policy makers and to provide technical assistance to GoB and NGOs in the process of scaling-up research findings to strengthen the national health and family planning programmes.

The Division has a long history of solid accomplishments in applied research which focuses on the application of simple, effective, appropriate and accessible health and family planning technologies to improve the health and well-being of underserved and population-in-need. There are various projects in the Division which specialize in operations research in health, family planning, environmental health and epidemic control measures. These cut across several Divisions and disciplines in the Centre. The Operation Research Project (ORP) is the result of merging the former MCH-FP Extension Project (Rural) and MCH-FP Extension Project (Urban). These projects built up a considerable body of research and constituted the established operations research element for child and reproductive health in the Centre. Together with the Environmental Health and Epidemic Control Programmes, the ORP provides the Division with a strong group of diverse expertise and disciplines to significantly consolidate and expand its operations research activities. There are several distinctive characteristics of these endeavors in relation to health services and policy research.

For one, the public health research activities of these Projects are focused on improving programme performance which has policy implications at the national level and lessons for the international audience also. Secondly, these Projects incorporate the full cycle of conducting applied programmatic and policy relevant research in actual GoB and NGO service delivery infrastructure, dissemination of research findings to the highest levels of policy makers as well as recipients of the services at the community level; application of research findings to improve program performance through systematic provision of technical assistance; and scaling-up of applicable findings from pilot phase to the national program at Thana, Ward, District and Zonal levels both in the urban and rural settings.



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Operations Research Project

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