

MATERNAL HEALTH AND SAFE MOTHERHOOD PROGRAMME

PROGRESS REPORT UPDATE

October 1990-91

This document presents a summary of activities undertaken by the World Health Organization's Maternal Health and Safe Motherhood programme over the period 1990-1991, presented according to the overall framework and approaches recommended by the programme's Scientific and Technical Advisory Group (STAG). Taken together with the Progress Report 1987-1990, of which this document is an update, it describes the framework for the Organization's work and outlines the initial progress in the four main areas of technical cooperation with countries; research; advocacy and information analysis and dissemination; and human resources development. A certain amount of overlap between the two documents is inevitable in order to ensure that the report is as coherent and complete as possible.

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1. INTRODUCTION

Half a million women die every year as a result of pregnancy and childbirth. Many more suffer the debilitating consequences of ill-health resulting from poorly managed pregnancies and deliveries. All but 5,000 of the maternal deaths which occur every year are in developing countries, with maternal morbidity being highest in sub-Saharan Africa and Southeast Asia (Figure 1).

The World Health Organization seeks to alleviate this burden of suffering through its Maternal Health and Safe Motherhood programme which represents WHO's contribution to the Safe Motherhood Initiative. This is a global collaborative effort to reduce levels of maternal mortality and ill-health significantly by the year 2000. The common strategy of the Initiative, shared by all partners, is directed at redressing the social inequalities confronting women; ensuring that access to family planning information and services is available to all those who need them; developing community based maternity care; and providing backup and support at the first level of referral for those women who require skilled obstetric care. Reducing maternal mortality and morbidity is not only essential for the health of women in their own right but will also reduce neonatal mortality and improve the health of the newborn.

The recognition that death during pregnancy and childbirth was a hidden problem of large dimensions emerged gradually during the 1980s when studies, many of which sponsored by WHO (originally supported by UNFPA and SIDA), first drew attention to the underlying epidemiology of maternal mortality. The medical causes of maternal deaths are similar all over the world though the relative importance may change from one area to another and also with the level of provision of health care. Haemorrhage, infection, eclampsia, obstructed labour and abortion account for over 80% of maternal deaths in the developing world. (Figure 2).

The factors leading to a maternal death are complex and lie along the continuum of a woman's life, from her health and nutrition during infancy and childhood to her development during adolescence and prevailing marriage and fertility patterns. Promoting the nutrition and education of women, improving their social status, and raising the age at marriage would have an impact on maternal mortality. These are, however, essentially long term solutions.

The immediate solution to the problem of unsafe childbirth lies primarily in the provision of high quality maternal health services at the community level and including referral of high risk pregnancies and access to care for obstetric emergencies together with accessible family planning information and services. Most life-threatening complications require skilled medical interventions such as caesarean delivery, blood transfusion, drug therapy etc.

Evidence for the vital importance of medical care during pregnancy and childbirth comes from studies which have assessed maternal mortality among different population groups with varying access to health care. This information is summarized in Figure 3.

Figure 1: Maternal mortality by UN regions
(maternal deaths per 100,000 live births)

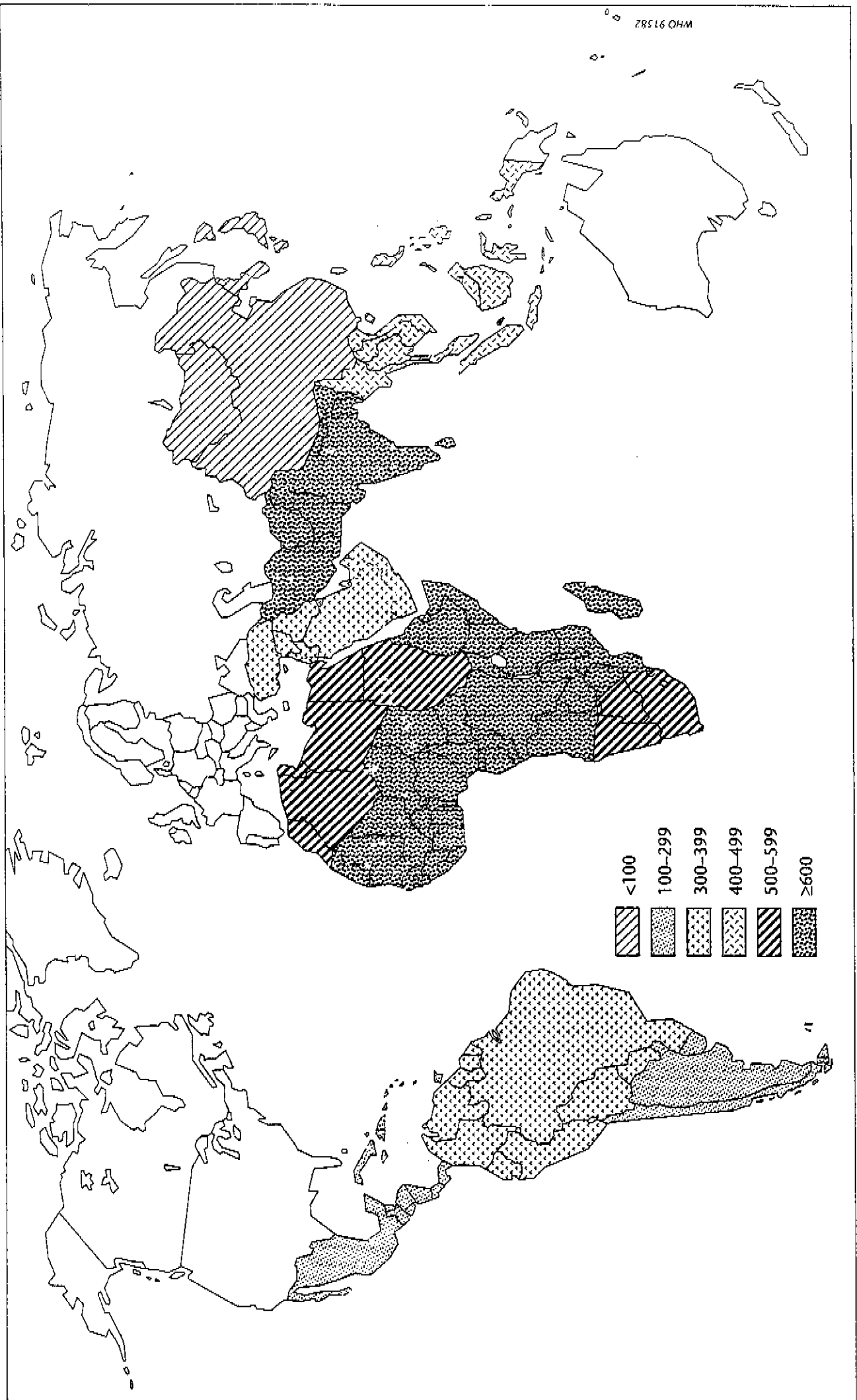
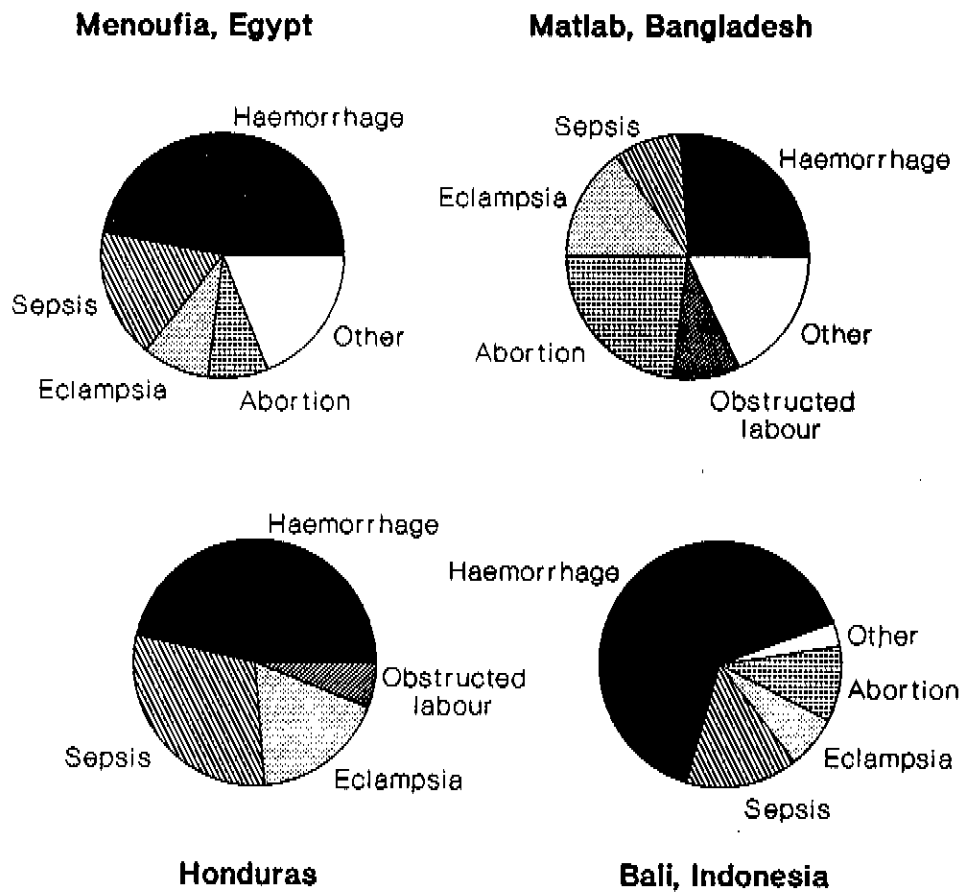


Figure 2: Causes of maternal deaths in different countries



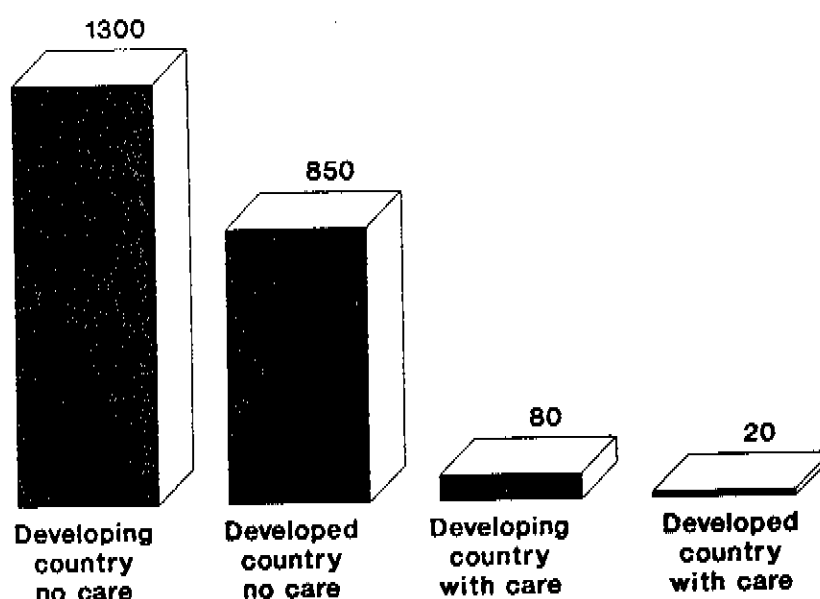
2. THE WHO MATERNAL HEALTH AND SAFE MOTHERHOOD PROGRAMME (MSM)

2.1 The role of WHO in safe motherhood

The WHO Maternal Health and Safe Motherhood programme is based on the premise that the knowledge and technologies needed to prevent the overwhelming majority of maternal deaths have largely been available for decades. What is missing is the ability to translate that knowledge into effective action at the local level. This implies the adaptation of known, tried and tested techniques and their cost effective utilization in the difficult circumstances prevalent in those countries where the problem is most acute. This process requires evaluation of alternative maternal health interventions and their incorporation into the programme and activities as an integral part of national health development.

Given its mandate for directing and coordinating international health work and its long experience in collaborating with governments in the establishment and maintenance of national health systems, the Organization is centrally placed to provide technical leadership to the international effort to make childbirth safer. The WHO commitment to maternal health dates from the inception of the Organization, and MCH/FP are key elements of Primary Health Care. The

Figure 3: Maternal mortality at different levels of care
(maternal deaths per 100,000 live births)



Organization's policy has been continually reinforced by a series of World Health Assembly Resolutions, the most recent of which are:

- Resolution WHA38.22 on Maturity before Childbearing and Promotion of Responsible Parenthood; (1985)
- Resolution WHA40.27 on Maternal Health and Safe Motherhood (1987);
- Resolution WHA41.9 on Family Planning, Maternal and Child Health (1988);
- Resolution WHA42.42 on Women's Health (1989);
- Resolution WHA43.10 on Women, Children and AIDS (1990); and
- Resolution WHA44.42 on Women, Health and Development (1991).

2.2 Development of the WHO programme

The recent milestones, activities and events in the development of the Organization's MSM Programme are outlined in chronological sequence in Table 1.

Following the 1987 Safe Motherhood Conference in Nairobi an operational research programme, for which WHO is the executing agency, was established. A Scientific and Technical Advisory Group (STAG) was created to give overall technical guidance as to how such a programme should be developed. The first meeting of the STAG was concerned only with the operational research. The second STAG, which met in October 1990 and again (in the form of a smaller working group) in February 1991, was mandated to cover the four main activity areas of WHO's maternal health and safe motherhood programme, namely:

- technical cooperation with countries in the planning, management and evaluation of maternal health and family planning programmes;

- epidemiologic, operational and behavioural research;
- information analysis, dissemination and advocacy;
- human resources development.

Table 1: Chronology of Key Events in WHO's Programme of Maternal Health and Safe Motherhood

1984 - present	Research on unmet needs in family planning and the epidemiology of maternal mortality and morbidity -- Funded by UNFPA
1985	WHO Interregional Meeting on Preventing Maternal Mortality, Geneva, November 1985.
1987	International Safe Motherhood Conference, Nairobi, February. -- Cosponsored by UNDP, UNFPA, World Bank and WHO Safe Motherhood Operational Research programme announced and initially funded by UNDP, World Bank, Rockefeller Foundation and WHO First meeting of the Scientific and Technical Advisory Group for the Safe Motherhood Operational Research programme (STAG), Geneva, July 1987 International Conference on Better Health for Women and Children through Family Planning, Nairobi, October 1987 -- Cosponsored by UNFPA, UNDP, UNICEF, World Bank, WHO, IPPF and the Population Council
1988 to present	The sponsoring agencies of both conferences combine the follow-up and coordination activities under the auspices of an informal Inter-Agency Group - representatives meet approximately twice a year with the secretariat functions rotated every 12 to 18 months among the agencies/organizations.
1988 to present	Meetings of Interested Parties for Safe Motherhood organized on behalf of the Inter-agency Group, bringing together country representatives, technical cooperation agencies, non-governmental organizations and other institutions for an exchange of experiences and review of progress (1988, 1989 and 1990 organized by WHO; 1992 to be organized by the World Bank)
1988 to present	Twice annual meetings of the Steering Committee of the WHO Safe Motherhood research programme to review specific proposals for support and funding, progress in on-going studies and overall strategy.
1988 to present	Collaborating agencies/organizations, individually or as a group, with additional donor agency funding, organize and sponsor regional, sub-regional and national meetings for Safe Motherhood (see Appendix III for a partial listing of those meetings, conferences and workshops)
1989	WHO and UNICEF submit to the United Nations General Assembly as part of the preparation of the Fourth United Nations Development Decade, their Common Goals for Women and Children by the Year 2000, including those goal related to maternal mortality and the needs of the girl child, women's education, nutrition and health.
1990	Fourth International Child Survival Conference organized by the Task Force for Survival, Bangkok, March 1990, includes maternal health goals in its Affirmation. Declaration and the Plan of Action of the World Summit for Children includes the Common Goals for maternal health, and the nutritional and education needs of girls, New York, September 1990. Second meeting of the Scientific and Technical Advisory Group (STAG) for the Maternal Health and Safe Motherhood Programme. Terms of reference expanded to include technical cooperation, training and information and advocacy in WHO's programme, October 1990
1991	Meeting of an <i>ad hoc</i> Working Group of the STAG for detailed programme strategy development, February 1991.

The 1990 STAG concluded that the nucleus of WHO's programme should be support to and active involvement in the planning, implementation and evaluation of country action for the development of accelerated national plans for improved maternal health. The WHO programme should be directed at increasing the understanding of the causes of maternal death and ill-health and defining the preventive and curative actions that will reduce both; transmitting this information to all those able to bring about improvement in women's health; and collaborating in the process of national programme planning and development in order to accelerate its implementation. STAG strongly urged that additional resources should be made available to enable WHO to manage the Programme as recommended.

3. WHO SUPPORT TO NATIONAL PROGRAMMES FOR MATERNAL HEALTH AND SAFE MOTHERHOOD

3.1 Activities at Global and Regional Levels

The responsibility for developing and implementing sustainable programmes for maternal health lies with governments and national authorities. They alone are able to make full use of all the resources within a country, including community organizations, academic experts, voluntary health facilities and non-governmental organizations. They are best placed to coordinate and direct technical support to their programmes. Moreover, improvements in maternal health require a range of complementary activities in other sectors including education and development. The establishment and maintenance of effective maternal health services can only be successfully undertaken in the context of a coordinated and comprehensive national plan. Given WHO's constitutional mandate to assist governments in strengthening their health services when so requested, the Organization has a unique role to play in safe motherhood by providing technical and managerial support to national authorities in developing national strategies and implementing the plans derived from them.

Direct country support through technical cooperation is, therefore, the prime focus of the Organization's efforts in maternal health and safe motherhood. Global efforts in research, training, data collection, information dissemination and advocacy are combined with and adapted to an active approach to technical cooperation with countries in the planning, management and evaluation of their maternal health and family planning programmes. A comprehensive national plan is a pre-requisite utilizing implementing operational, epidemiologic, and behavioural research results, guiding training needs, utilizing information gathered, and promoting advocacy efforts. Indirect support to countries consists primarily of setting standards, defining norms, developing and promoting guidelines, strengthening research and training capabilities in countries and overall evaluation and monitoring.

3.2 Technical cooperation with countries

While the global and regional levels of WHO have worked together and collaborated with most Member States in strengthening their maternal and child health and family planning programmes, it is only recently that the intensified efforts have been directed at maternal health *per se*.

While the STAG has recently recommended that the centre-piece of the WHO MSM programme should be its technical cooperation with developing countries, because of resource constraints at regional and global levels, the Organization has only been able to respond to requests for technical support in an *ad hoc* manner and on a very limited basis. The WHO's collaboration with the government of Bangladesh (see below) which began in 1988 was funded, until mid-1991, entirely out of the Organization's limited regular budget in MCH/FP. Similarly,

the initiatives of SEARO in the support of activities in Indonesia, were funded either through *ad hoc* country funds from other agencies or added on to operational and epidemiological research projects.

Over a dozen countries have requested support for national maternal health programme development either from the global or regional programmes of WHO. At various meetings and conferences representatives of many other countries have indicated a desire for such technical support from the Organization. Staff limitations and lack of funds have constrained our response to a few of these countries. Table 2 summarizes the stage of development and WHO input into the national programme development in these countries.

There is a wide variation in the initial stimulus and the process by which this development has been brought about. Interest and programme development have been stimulated through research, participation in international, regional or national meetings, conferences or workshops, during staff or consultant visits to the country, or, as a direct consequence of publications and guidelines.

Seven countries have been involved in or begun the process of safe motherhood programme development in collaboration with WHO, often with other bilateral or multi-lateral agencies. The American Region has drafted a regional plan for improvement of the maternal health situation in up to 15 countries. AFRO is drafting plans for the rapid assessment of the maternal health situation in 12 countries. EURO collaborated in the organization of the international conference "From Abortion to Contraception", held in Tbilisi, Georgia, USSR, 10-13 October 1990. The participants emphasized the need for comprehensive reproductive health services of high quality and urged governments to reallocate the budgets to provide the necessary support.

Bangladesh has reached the stage of implementation. Participation by representatives of Bangladesh at the Nairobi Conference served as a critical stimulus to initiating action; the WHO guidelines on Essential Obstetric Functions at the First Referral Level provided a technical guide as to what could be done to improve the maternal health services; data already available in the country provided the scientific foundation for national programme development. A Maternal Health Subcommittee of the National MCH Advisory Committee was organized and identified gaps in needed information. Both the WHO Regional Office and HQ and NORAD provided technical support for the in-depth documentation for a national workshop on maternal health, which was cosponsored by the government, WHO and UNICEF.

With the continued technical support by all levels of the Organization, the strategy for maternal health and safe motherhood in Bangladesh has become a major component of the Fourth National Five Year Plan (1991-1995) and the Fourth Population and Family Health Project being developed by the government, the World Bank and the consortium of international agencies. The detailed work plan of activities on various aspects of maternal and neonatal health care under the Fourth Programme are being prepared. Among other activities, WHO is coordinating the training of 72 physicians at the upazilla (first referral) level in essential obstetric functions (EOF) in centres in Egypt, Nepal and Tanzania, because case loads in Bangladeshi institutions are too low for them to be used in training. The programme is expected to be operational in 4 of the 16 districts of the country by mid-1992.

Table 2: WHO Technical Collaboration

COUNTRY	STAGE OF NATIONAL PROGRAMME DEVELOPMENT	WHO ACTIVITIES CONTRIBUTING TO NATIONAL PROGRAMME DEVELOPMENT	OTHER AGENCIES INVOLVED	WHO INPUT
Bangladesh	National programme phased development in 4 of the 16 regions based on district system development and essential obstetric care; programme funded and is to start in 1992; National Committee formed	HQ and Regional Office support to national family planning quality control programme; National situation analysis and workshop	World Bank, NORAD, UNICEF, UNFPA and many bilaterals	Approximately 1.5 person/yr of staff/consultants; Seed money for planning, training, etc. - 80% funded from WHO regular budget, remainder from NORAD; Full-time advisor as of 1992
Indonesia	National programme based on midwifery strengthening as first stage; planning phase funded by UNDP; National Committee formed	Maternal mortality research study; partograph study	UNDP, Mothercare (USAID)	Approximately 0.6 person/yr staff/consultants; Research support and funds; Strong involvement of the WHO representative
Senegal	National plan drafted based on operational research and situation analysis funded by UNDP; ready for donor submission; National Committee formed	WHO execution of situation analysis contracted to Columbia University	UNDP, French Ministry of Cooperation	Full-time local staff; Technical and administrative support, consultants
Tanzania	National workshop with recommendations; National Committee formed, but unclear as to present status; Ad hoc activities include research and training	Epidemiological and operational research	UNFPA, UNICEF, NGOs	Site visits; Funding for research; Proposed research training for district teams; Training workshop for midwifery - with UNFPA
Mozambique	National workshop, with recommendations	Epidemiological research undertaken with great difficulty	UNFPA, UNICEF, Population Council	Consultant/staff visits; Funding for research
Guinea (Conakry)	National workshop, with recommendations; National Committee agreed upon but not convened	Epidemiological research undertaken	INSERM, French Ministry of Cooperation; joint funding of the research and workshop	Approximately 0.3 person/yr staff/consultants; Research support
Philippines	National workshop, with recommendations; National Committee designated but not functioning	Support to research on home-based maternal record and evaluation of rural maternal services	Australia	Site visits; Consultants and funding for research; Funds provided for national Task Force; APO funded by the Netherlands government from January 1992

Senegal is at the stage of presenting its national plans to potential donors. As early as 1986, the government was so concerned about the problem of maternal deaths that it launched, with UNDP funding, under WHO execution, a project on reduction of maternal mortality which was to culminate in a national programme for safe motherhood. The Senegal plan is a two-phase programme lasting for 10 years. In the first phase of three years, about 30% of the population is targeted. The second phase covers the entire population during the remaining seven years. The plan is currently being integrated with the overall national health development strategy which is based upon the regional and district plans. Only the region of Tambacounda has produced a comprehensive plan to date. This will be discussed by donors at the end of November 1991. In the meantime, the President of Senegal has provided additional impetus to the Senegal programme by making, by presidential decree, an Office of Prevention of Maternal Mortality as one of the three units within the Division of Maternal and Child Health, which is, in turn, under the Direction of Public Health.

Indonesia's development of a national programme for maternal health has drawn upon the combined resources of the global programme, the WHO regional office and the extensive involvement of the WHO representative. Plans for a community-based study of maternal mortality emerged from a WHO inter-country research training workshop and were implemented in central Java in 1986 with WHO technical support and funding from IDRC. The preliminary results provided the background for a national conference in June, 1988 and, two months later, a workshop for programme development. A national Task Force was created. With the technical support of the SEARO and funds from UNDP, the protocol for a national situation analysis of maternal health and health care services was undertaken. Simultaneously, and again, with the technical support of WHO, the health component of the World Bank's population project has focused on meeting midwifery needs as a key element in the national programme. The strategy calls for a programme which would result in the training and placement of 15,000 midwives in the rural areas of Indonesia. The training materials and results of the operational research on the partograph have been incorporated into the national training and the centres involved in the studies now serve as training centres for the adaptation of the partograph to district hospital and community levels.

Tanzania has been among the countries that have been actively involved in epidemiologic and operational research in collaboration with WHO, even before the Nairobi Conference. The research led to a series of conferences and workshops in 1989-1990 in which the essential ingredients of a national maternal health plan were defined, and a Parliamentarians' conference was held in early 1991 during which safe motherhood was discussed. While a national committee has been established, mechanisms for optimal use of existing information and the coordination of the various resources available in the country are being developed. In the meantime, safe motherhood activities have continued. A total of five research proposals were submitted to the MSM research programme for consideration at its last Steering Committee meeting in September 1991. Midwifery training has maintained momentum also, with a workshop in March 1991 for midwifery educators which resulted in a training/retraining plan for midwives based on a process developed at a WHO/UNICEF/ICM Pre-Congress Workshop held in Kobe, Japan, in October 1990. The national workshop was supported locally by UNICEF and UNFPA, with materials and staff support by WHO. Tanzania has also made some of its health facilities available to the government of Bangladesh for the training of Bangladeshi physicians in essential obstetric functions.

In summary, WHO's activities in technical cooperation have resulted in the following examples:

- National plans for maternal mortality reduction have submitted to and agreed to in principle by donors in Bangladesh and have been submitted to donors for funding in Senegal. Preparatory work for the training component of national programmes has been funded and is in progress in Bangladesh and in Indonesia.
- Committees for maternal health and safe motherhood have been set up in Guinea and are being set up in the Bangladesh, Guinea, the Philippines, Senegal and Tanzania, although the level of activity varies widely.
- A draft regional plan for maternal health and safe motherhood has been prepared by AMRO/PAHO and a proposed plan for a situation analysis in twelve countries during 1992 is being drafted by AFRO.
- A high level of interest has been demonstrated by a number of countries for technical cooperation, including Benin, Cameroon, Chad, Mozambique, Bhutan, Nepal, China. Visits have been made to several of these countries by staff from the global and/or regional programmes. These will be actively followed in 1992 as additional resources and staff become available.

4. COUNTRY SUPPORT THROUGH GLOBALLY APPLICABLE ACTIVITIES

4.1 Research

The recommendations of STAG, namely that the research component of the programme should become more focused, have resulted in a reorganization of ongoing activities coupled with a review of the type of research project which will be supported in the future. STAG suggested that supported research should be of three main types:

- the development and adaptation of techniques to reduce high levels of maternal mortality;
- the assessment of the cost-effectiveness of these techniques in maternal health services;
- the support of research studies on the evaluation of country specific innovative interventions to reduce maternal mortality which have the potential for wider dissemination.

STAG also advised that support to research should concentrate on interventions relevant to the major immediate causes of maternal mortality, namely, hypertensive disorders of pregnancy, anaemia, obstetric haemorrhage, obstetric infection and obstructed labour, consequences of unwanted pregnancy and abortion. Within each topic area due attention should be paid to preventive and educational health interventions and to barriers to the effective utilization of maternal health care including direct and indirect costs of care and social, cultural and behavioural issues. Research should continue on the epidemiology of maternal mortality and morbidity and on unmet needs for maternal health care and family planning.

Implementing these recommendations will be facilitated by establishing Technical Working Groups for the subject areas described. These will bring together experts in the field in order to assess technical developments, research needs and produce technical and managerial

guidelines. Following STAG's advice, research projects described in this report have been grouped into the above mentioned priority topic areas.

A number of research projects have been completed during 1990-91. The results will be published according to accepted WHO procedures. Figure 4 shows the geographic spread of the supported epidemiologic and operational research projects completed or in progress, as well as research and development projects. As the WHO programme moves into the next phase of its work, research is more closely linked to country needs in the planning and implementation of national safe motherhood programmes. Hence the focus of many recent research projects is on the cost-effective adaptation of technologies to local circumstances, the development of management guidelines and the examination of ways of overcoming barriers to the effective utilization of services, whether they be physical, economic or socio-cultural. Simultaneously, research continues into the dimensions of mortality in areas where little is known as well as into the epidemiology of maternal mortality in different countries. All research projects, whether completed, ongoing or newly supported are reported in this document. A full listing of supported research studies forms Appendix I of this document.

4.1.1 Hypertensive disorders of pregnancy (HDP)

Hypertensive disorders of pregnancy are important causes of maternal mortality, particularly in countries where deaths from haemorrhage and sepsis have been reduced. Because there is insufficient knowledge about the aetiology of hypertensive disorders of pregnancy several projects are attempting to identify risk factors. Three recently completed projects, one in Jamaica and two in China, established the incidence and risk factors for the development of proteinuric pre-eclampsia and eclampsia. As a direct result of these studies, work is now underway in both countries to establish guidelines for prenatal identification of risk factors for HDP, in order to guide preventive action.

Drawing on the documentation available in the WHO maternal health resource centre, a review paper on HDP has been prepared. This emphasized that research is still needed in three areas: the identification of effective interventions to reduce the incidence; how to ensure good quality of care; and improvement of the case management of women with eclampsia to reduce case fatality rates. However, reviews of trials of anticonvulsants and anti-hypertensive drugs in the management of eclampsia have not provided reliable estimates of the benefits and adverse effects of the various treatments available.

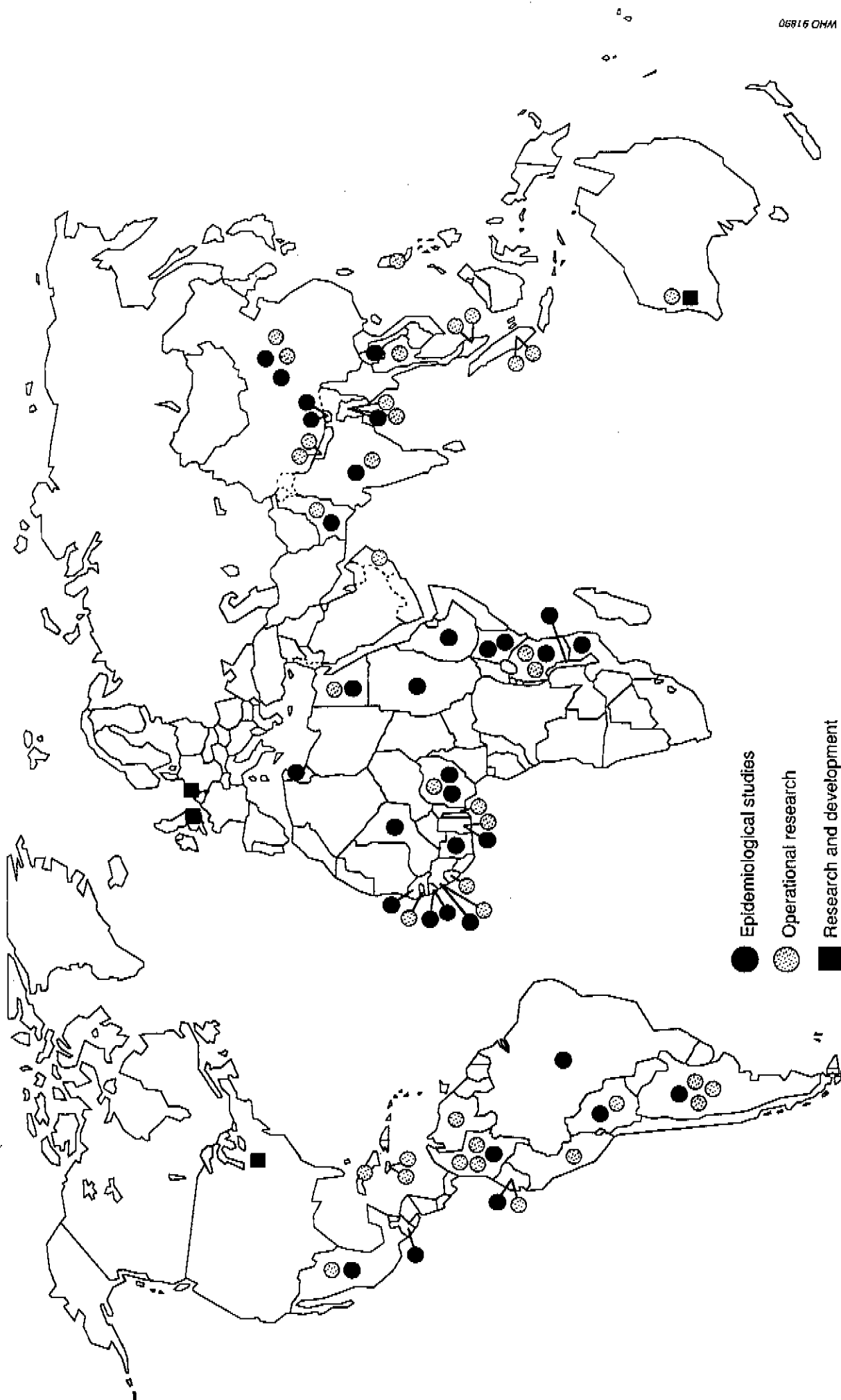
The programme is supporting three trials to assess the efficacy of different treatment regimens in reducing the incidence of eclampsia or in improving case management:

- Randomized controlled trial of low-dose aspirin in the prevention and treatment of HDP in primigravidae in Jamaica;
- Randomized controlled trial of calcium supplementation in the prevention of HDP in adolescent primigravidae in Ecuador;
- Randomized controlled trial of magnesium sulphate and diazepam in the management of eclampsia in Argentina, Colombia and Venezuela using a core protocol.

4.1.2 Anaemia

A considerable body of work has been built up within WHO on anaemia with particular focus on nutritional anaemia and anaemia during pregnancy. A Technical Working Group on the

Figure 4
Maternal health and safe motherhood research programme
Activities 1987-91



Prevention and Treatment of Severe Anæmia in Pregnancy met in Geneva on 20-22 May 1991. This brought together experts in a wide range of disciplines, including obstetrics and gynaecology, blood banking and transfusion, laboratory analysis, pathology, nutrition, drug supply, malaria control, sociology and anthropology. Background documentation prepared for the meeting included an update of the WHO estimates on the prevalence of anæmia which found that half of the pregnant women in the world and one-third of those not pregnant suffer from nutritional anæmia.

The Technical Working Group concluded that in most developing countries iron deficiency anæmia among non-pregnant women is very prevalent and with the additional demands for iron during pregnancy and usually inadequate intake of foods rich in iron, most women become progressively more anæmic during pregnancy and are severely anæmic when they begin labour. Iron supplementation is known to be effective and should be a part of maternal health programmes where the prevalence of iron deficiency anæmia is high i.e. most developing countries.

Many problems are encountered in implementing iron supplementation, however, and the Technical Working Group identified several priority research issues. Because it is recognized that compliance with oral iron prophylaxis is poor, WHO reviewed the literature on compliance, and presented the results to the Technical Working Group. The Technical Working Group concluded that health systems research is needed to gain a better understanding of weaknesses in supplementation programmes and evaluating innovative ways to improve both the supply of iron and compliance with regimens.

Following the recommendations made by the Technical Working Group, a core protocol is being developed to evaluate control programmes for pregnancy nutritional anæmia (Oman) and to improve compliance with iron supplementation during pregnancy (Tanzania).

Technological improvements were given a high priority, e.g. improvements in anæmia screening tests (including hæmoglobinometers) which can be used at the health centre and community levels, and are cheap, valid, repeatable and robust.

4.1.3 Obstetric hæmorrhage

A Technical Working Group was convened in Geneva in July 1989. The report of the meeting, identified the need for several types of research:

- audit of postpartum hæmorrhage (PPH); including studies to document the precise causes, the proportion of cases and fatalities occurring in women delivering in hospital and at home; types of PPH associated with maternal mortality, how these differ from nonfatal PPH, and avoidable factors associated with these cases.
- audit of management of the third stage of labour and of the care provided to women with PPH.
- pharmacologic studies concerned with the stability of oxytocic drugs and the development of alternative delivery systems for oxytocic drugs.
- clinical and operational field trials to assess the cost-effectiveness of promising innovative interventions to reduce the incidence and improve the clinical management of obstetric hæmorrhage.

Hæmorrhage is a major cause of maternal mortality for which interventions to reduce the incidence and to treat are well known. There are, however, many technical, cost and logistic

issues to be resolved if these interventions are to be feasible in developing countries. MSM is supporting studies to establish the stability and bio-availability of alternative delivery systems of oxytocic drugs; the most effective oxytocic, and the one with fewest side effects.

The programme is supporting large randomized controlled clinical trials to assess the efficacy of intra-umbilical cord injection of oxytocic or saline in the treatment of retained placenta (a major contributing factor to PPH). Another study reviews the use and misuse (including inappropriate nonuse) of blood for the transfusion of obstetric patients. The intention is to formulate criteria for the correct use of blood transfusion, and quality assurance systems for ensuring correct use. The Programme has supported Bangladesh and the Philippines in the development of studies to assess the feasibility of the Walking Blood Bank.

4.1.4 Obstetric infection and obstructed labour

Obstetric infection

The studies on obstetric infection that the programme has supported deal with reduction in the incidence and improvement in the clinical management of women who develop obstetric infection. A Technical Working Group will meet during the first half of 1992 to review in detail and advise on priority research on obstetric infection. The programme is collaborating with WHO's Expanded Programme on Immunization (EPI) to develop indicators for the assessment of clean delivery.

Ongoing research assesses the quality of hospital care, and estimates maternal mortality due to infection in Ghana, while two studies are underway to evaluate continuing education and supervision programmes for traditional birth attendants and puerperal sepsis in West Bengal, India and Comilla District, Bangladesh.

Obstructed labour

WHO has advocated the use of the partograph as a simple technology for use by trained physicians and midwives to monitor the progress of labour, and to ensure that intervention takes place as soon as necessary but only when necessary. Guidelines for the introduction and adaptation of the partograph, and training manuals, including a slide set, have been produced. To validate the partograph as a tool in the prevention of prolonged obstructed labour, WHO supported a large multi-centre trial (36,000 deliveries) on the evaluation of the partograph in four pairs of hospitals in Indonesia, Malaysia and Thailand. Results of the trial became available during 1991. The introduction of the partograph resulted in significantly reduced rates of augmentation of labour and emergency caesarean section among "normal" cases. There were slightly reduced rates of postpartum haemorrhage and puerperal sepsis.

WHO has supported a project to introduce the partograph in Assiut, Egypt, and studies are underway to evaluate the effectiveness of the WHO partograph in the timely transfer of women during labour from peripheral maternity units to a first referral centre in Dar-es-Salaam, Tanzania; and the Kankan and Kindia regions in Guinea.

While research supported by the programme shows clearly that use of the partograph should become standard management practice at the hospital level, further research is needed to evaluate its introduction at the health centre level.

4.1.5 Unwanted pregnancy and unsafe abortion

A Technical Working Group on the health consequences of unwanted pregnancy and abortion is planned in collaboration with HRP. The programme currently supports two projects, one on the evaluation of a community based programme to provide family planning services to women at high risk of unwanted pregnancy (San Borja, Peru), the other on the evaluation of a post-abortion family planning programme (Cotonou, Benin). Background papers have been commissioned on immediate postabortum contraception and on guidelines for the treatment of complications of abortion.

4.1.6 Health systems research and unmet needs

This section of the research programme covers a wide variety of issues including quality of care at the hospital and health centre levels, the effectiveness of antenatal care and accessibility (in the widest sense) of maternal care services.

The Organization has convened (in collaboration with HRP) a Technical Working Group to develop a core protocol for a trial of alternative packages of prenatal care in developing countries. The meeting will take place in November 1991 and is intended to review and assess the effectiveness of different antenatal care practices in screening for risk factors, preventing the development of obstetric complications and in treating existing conditions. Some antenatal interventions are of proven effectiveness in preventing or treating conditions which can lead to maternal death or severe morbidity, while for others there is no clear proof of effectiveness and a need to formulate and examine research questions. As background documentation for the meeting, the programme prepared a review paper on the effectiveness of antenatal care in developing countries.

Much of the research in this area looks at ways of making health services more accessible to women needing obstetric care either by bringing them closer to hospitals to await delivery (maternity waiting homes), improving transport systems for obstetric emergencies or by getting emergency help out to women (flying squads). Research guidelines on the evaluation of maternity waiting homes have been prepared. Little is known about this at present. Several studies to examine these issues are currently supported, including the evaluation of a mobile maternal health care service in Keneba, Gambia. The programme is preparing to evaluate maternity waiting homes in Cuba, an obstetric flying squad in Faisalabad, Pakistan, and the cost effectiveness of "reference health centres" for low risk deliveries in Cali, Colombia. During 1990-91 several studies of unmet needs were completed in Bhutan, Pakistan, Senegal and Sudan. A study assessing baseline maternal health needs in Shinyaga, Tanzania is underway.

The completed studies show that mothers may prefer home delivery when they are supported by friends and relatives and that home delivery is considerably cheaper when transport costs are high. Transport costs contribute to delays in referral for obstetric emergencies. These are exacerbated by the failure of TBAs to recognize many common complications and their inability to stabilize the women's condition prior to referral. Lack of child care is also an important factor limiting hospital delivery. Nonattendance for prenatal care was related to several factors including distance, delays in receiving attention, pressure of household and other tasks, and shyness.

Within the health care systems there are often chronic shortages of essential follow up supplies, and health care providers identify lack of training and supervision as factors reducing

their capacity to provide full and adequate care during pregnancy and delivery. The quality of care provided was frequently poor and questions about well-established risk factors (history of operative delivery, bleeding during the current pregnancy) were not always routinely asked by health care personnel.

Women lack the basic information on signs and symptoms of obstetric complications. In some cases women reported that they were not able to take the decision to seek medical care if a complication arose but had to refer to the husband or another member of the family, thus adding considerably to delays during emergencies.

Flexibility in the formal health care system should be encouraged so that women's views and preferences be taken into account. Improving the quality of services would go some way towards increasing utilization. Women and their families also need education about signs and symptoms of obstetric complications and the importance of seeking skilled assistance in good time. Transport and cost issues are major considerations in the decision whether or not to seek assistance.

Much more research is needed on quality assurance, communication with patients, supervision of health care providers, cost effectiveness, and on establishing connections between health services and women in need. Research is needed on the effectiveness of specific antenatal interventions with a view to defining guidelines on minimum standards and the cost-effectiveness of different permutations of care. Many of these issues are under examination in the following ongoing projects:

- Mobilizing rural youth in Bangladesh;
- Home based maternal records in the Philippines;
- Evaluation of community-based maternal health care in Indonesia;
- Evaluation of community-based interventions in Miyun County, China;
- Utilization of health services in rural Bolivia;
- Improving the communication skills of health workers in Salta, Argentina;
- Prevention of maternal mortality in selected hospitals of Nepal.

4.1.7 Social and behavioural aspects of maternal mortality and morbidity

It has become increasingly evident that a cultural, social and behavioural issues impede women's use of maternal health care services even where these are available. To clarify these issues the programme has supported several related research projects. One of these (Motherhood in Guinea Bissau: what women know about the risks: An anthropological study), examined women's perception of pregnancy complications and was undertaken alongside the epidemiologic study mentioned later. The results of these two studies clearly illustrate the advantages of a multi-dimensional approach to maternal mortality and provide a good example of how very different research questions and methodologies can provide mutually reinforcing information.

A similar study of women's perceptions of the formal health services was carried out in Ecuador. This project educated women and their families about danger signs of complications during pregnancy and delivery, and educated health care providers to improve communication with women. The researchers concluded that the informal health services (which are popular and have the confidence of the women), should be integrated into the formal sector to improve the skills of the traditional health care providers while simultaneously creating confidence in the formal sector. In both countries workshops were held to discuss the implications of the projects for national maternal health care planning.

Studies on similar themes are underway. In Mexico the programme supports a study which examines patterns of fertility and social costs in a rural area. A study in Nigeria looks at the interplay between the traditional birth attendant and the hospital system and how this contributes to choices pregnant women make in the utilization of obstetric services. A study of cultural factors influencing use of maternal health services in rural Kenya is now ready for implementation.

In Kathmandu, Nepal an educational programme to improve the knowledge and advice of mothers-in-law regarding the behaviour of their pregnant daughters-in-law. It showed the importance of targeted educational messages to improve knowledge of the significance of major complications of pregnancy and delivery and the necessary action to take so that effective use be made of maternal health services.

Although not all the supported studies have been completed it is already evident that many socio-cultural factors inhibit use of maternal health care services. While the reasons for under use are country/area/culture-specific, there are commonalities which transcend national and ethnic boundaries. Utilization can be improved by giving women, families and communities simple health messages such as danger signs of obstetric complications. Health care providers need to gain the confidence of communities; one way to facilitate this is by improving collaboration between the informal sector and formal services.

4.1.8 Epidemiology of maternal mortality and morbidity

The programme continues to support epidemiologic studies on the magnitude, causes and nature of maternal mortality. Eight epidemiologic studies have been completed and final reports received from China (3 studies), Colombia, Ecuador, Guinea, Guinea Bissau, and Malawi. In some of these countries, it is the first time that reasonably reliable data on maternal mortality are available. Community-based studies of deaths to all women of reproductive age were undertaken and a variety of sources was used to identify the deaths, ranging from doctors, midwives and other health care providers to religious leaders and graveyard attendants. The studies in China and Colombia, which examined death certificates in detail, found substantial under-reporting of maternal deaths in official statistics. In China, in two provinces with different average income levels, family income was an important risk factor for maternal death. This led to the recommendation that women from low income families should be classified prenatally as high risk and treated accordingly. The implications of the findings have been examined in national workshops in China, Guinea, and Guinea Bissau, and one is planned for Malawi.

Epidemiologic studies are underway in Bhutan; Marilla Region, Sao Paulo, Brazil; Abidjan, Côte d'Ivoire; Guatemala; Laos; Mali; a rural area of Veracruz State, Mexico; Maputo, Mozambique; and Tunisia. A review of 15 years experience in a maternal and child health projects, Matlab, Bangladesh is being conducted. Maternal mortality studies in Buenos Aires, Argentina; La Paz, Bolivia; and Kassena Nankana, Ghana are ready to start.

Epidemiologic research in countries where little is known often stimulates researchers and health care providers into considering maternal mortality in their area and stimulates into action those able to bring about change. Hospital-based studies, such as that in Malawi, can provide considerable understanding of health service factors and can show where action needs to be taken to improve referral, treatment of emergencies and management of complications.

Maternal mortality is difficult to study, however, and there continues to be a need for guidelines on measurement and for standard protocols for researchers. These would elaborate the

strengths and weaknesses of different ways of measuring, evaluate the significance of cause of death data, explain how to select the most appropriate use for case-control studies, and clarify the relative value of community-based and hospital studies.

The programme is giving increasing priority to studies of reproductive morbidity. The Report of a Technical Working Group (which met in Geneva, 30 August-1 September 1989) emphasized the need to stimulate research into morbidities resulting from pregnancy and childbirth by clarifying conceptual issues, identifying crucial questions and developing appropriate research methodologies. Guidelines on measuring reproductive morbidity are now complete. The guidelines consist of a series of modules to be used under different circumstances through which it is hoped to measure morbidity by combinations of direct questioning, clinical examinations and laboratory testing. The programme is now evaluating on a small scale one of these modules.

Related research, completed during 1991, measured reproductive morbidity in two rural communities in Lower Egypt. Not only do women accept as a normal part of life considerable discomfort, pain and weakness resulting from their reproductive functions but they are also reluctant to use the local health services. In part this was due to the lack of consideration with which they were treated at the health centres and the failure of the health care providers to communicate effectively with them. A workshop (co-funded by WHO and the Population Council) was held to discuss these findings and concluded that personnel other than health care providers should be involved in setting up and running health facilities to make them more responsive to women's needs. The role of social scientists, psychologists etc. should not be underestimated in improving communication between health care providers and the communities they serve.

Obstetric fistula is perhaps the most severe non-fatal condition to result from badly managed labour. A Technical Working Group on fistula was held on 17-21 April 1989. The programme also conducted a postal survey and commissioned a literature review on incidence, risk factors, consequences and management of fistula. The resulting document is now available and shows, for the first time, the geographic spread of the problem, its dimensions and aetiology.

Two related research projects have been completed, one in Addis Ababa, Ethiopia, on the epidemiology of vesico-vaginal fistula, and one in Sokoto State, Nigeria, which used focus group sessions to ask women what they know about fistula, its causes and consequences. The studies in Addis Ababa and Sokoto found that obstetric fistulae are common where there are barriers preventing women from receiving effective care during labour and delivery. These barriers may be physical (such as remoteness), cost, or transport difficulties, or sociocultural. For example, in some societies women cannot themselves take a decision to seek medical care but are dependent on permission of their husband or another family member. In cases of prolonged obstructed labour, the resulting delay in reaching skilled assistance is a major cause of fistulae.

4.1.9 Other research activities

A study on poor nutritional status, maternal stunting, fetal growth and risk of obstetric complications was completed in 1991. The study, which consisted of a literature review and data analysis on obstructed labour and maternal stature, confirmed that short maternal height is consistently related to higher incidence of caesarean delivery and that shorter women delivering larger infants had higher rates of caesarean delivery than taller women delivering smaller infants. While these results are epidemiologically well-established, their applicability in terms of the predictive power of screening, remains to be ascertained. To this end a secondary analysis of existing data from over 20 community-based studies in several countries is being undertaken to determine whether weight gain is sufficiently sensitive and specific to distinguish a normal from

an abnormal pregnancy. The work derives from the recommendations of two meetings on Maternal Anthropometry for Predicting Pregnancy Outcomes which took place in 1990. The meta-analysis will be complete by early 1992 and an investigators' meeting is scheduled in collaboration with PAHO and USAID.

4.2 Information and advocacy

4.2.1 Information gathering, analysis and dissemination

The programme's information analysis and dissemination activities provide to countries, collaborating agencies and partners, scientifically sound information, in an appropriate form, on the nature and dimensions of maternal mortality and morbidity in different areas, what can be done to alleviate them and how change can be brought about. In countries selected for intensified efforts, information gathering and dissemination serves to stimulate programme development and evaluate progress. Activities during 1990-91 have concentrated on identifying gaps in needed information and producing estimates of prevalence and bibliographies on matters of particular interest. Efforts to share the wealth of data now available at WHO with others working in the field has continued in spite of short of funds.

Databases are continually updated, strengthened and expanded into new subject areas as the need arises and as more detailed information becomes available, from, for example, demographic and health surveys. The bibliographic resource centre on women's reproductive health now contains some 3,500 entries and together with the indicator databases serves as a resource for the Safe Motherhood Initiative. The indicator databases on coverage of maternity care and maternal mortality each contain some 2,000 entries based on study results, government data and consultant reports etc. The tabulations on coverage are currently being broadened to incorporate data on the type of assistance provided at delivery - doctor, midwife or trained TBA.

Other related databases have been updated and expanded during the past year: sex disparities in infant and child mortality rates, the complications of unsafe abortion and the prevalence of nutritional anaemia in women. The last forms the basis of revised global estimates on prevalence among pregnant and nonpregnant women.

The estimate of 500,000 maternal deaths each year was made in the early 1980s when WHO had access to considerably less information than is now available. Work is underway to revise the global estimates in the light of the additional information. The new global estimates will be based on a more solid foundation and should bring to light any significant changes. It is anticipated that this work will be completed by late 1991.

The systematic collection and analysis of disparate pieces of information from varying sources is an essential ongoing task. As awareness of maternal mortality grows, so does the need for information on which to base interventions. As programmes and interventions are established, the need for monitoring to assess their impact is greater.

Information dissemination and publications

The publication *Preventing Maternal Deaths* is now into a second edition and over 9,000 copies in English have been sold or distributed worldwide. The French version appeared in May 1990. The Spanish version is currently in translation.

September 1991 saw the publication of *Maternal mortality: A global factbook*, which sets out the facts and figures needed to understand why so many women continue to die as a result of pregnancy and childbirth. The main body of the factbook, which runs to some 600 pages, consists of country profiles which bring together and analyze the results of all available surveys and studies on maternal mortality, women's reproductive health and allied subjects, as well as indicators on the coverage of maternity care, family planning and other background data. Each country profile follows a common format and includes an annotated bibliography and lists of further reading and information sources. The interpretation of this vast amount of data is facilitated through the inclusion of four introductory chapters which provide an overview of the dimensions and causes of maternal mortality and describes different ways of measuring maternal mortality rates and ratios and the strengths and weaknesses of each. The factbook is aimed at policy makers, health professionals, communicators, researchers and all those interested in improving women's health and making motherhood safer. Three thousand copies have been printed, of which 600 were for advance orders. The factbook will be regularly updated as new information becomes available.

Another recent publication is *Essential elements of obstetric care at first referral level*. This book is aimed at those responsible for the planning, organization and management of maternity care services, particularly in developing countries. The book discusses the major causes of maternal deaths and indicates the level of skill and facilities required for a wide range of procedures such as caesarean delivery and the treatment of sepsis. Practical details of surgical and medical supplies and facilities are contained in the annexes.

Following the 1989 Technical Working Group on The Prevention and Treatment of Obstetric Fistulae already referred to, a literature survey and postal enquiry were undertaken to assemble more information on the prevalence of fistulae, their aetiology and treatment and prevention. The results of this enquiry were issued during 1991 in the document *Obstetric fistulae: A review of available information* (WHO/MCH/MSM/91.5). The document brings together all available information and helps to clarify understanding on the nature and extent of the problem.

In view of the serious public health problem posed by abortion and the magnitude of the mortality and morbidity associated with unsafe abortion practices, a review of all that is known about the problem was conducted and incidence, frequency and mortality estimated. The findings were published in the document *Abortion: A tabulation of available data on the frequency and mortality of unsafe abortion* (WHO/MCH/90.14). This is a summary of the data contained in abortion database described above.

Other documents are in the final stages of preparation and will be issued soon. One describes maternity waiting homes which are operating successfully in several countries; to date there has been little information on their organization and their role in preventing maternal mortality. A subsequent document will examine the alternative solution to the problem of physical accessibility, namely improvements in transport of women to hospitals and, where that is not feasible, emergency flying squads to bring medical help to the women.

Following the Technical Working Group on Measuring Reproductive Morbidity in 1989, guidelines for measuring obstetric and reproductive morbidity have been prepared. This will be published early in 1992 and incorporate lessons learnt from research supported by WHO and others.

Following the recommendations of the Technical Working Group on the Prevention and Treatment of Severe Anæmia in Pregnancy which took place in May 1991 guidelines are being prepared for health care providers on the assessment and treatment of anæmia in pregnancy.

As a sequel to the publication *Essential elements of obstetric care at first referral* the programme is preparing a document describing the skills, facilities, organization and management needed for coping with obstetric emergencies. A full list of relevant publications by MSM and other WHO programmes during 1990-1991 is included in Table 3.

4.2.2 Advocacy

Following the advice of STAG, WHO efforts in this field have concentrated on the production of advocacy materials specifically for the education, orientation and training of health and other social workers and on those with a technical and health care content. Efforts have also been made to provide scientific and technical input into advocacy materials produced by others thus ensuring consistency of messages for all partners in the Safe Motherhood Initiative.

The Safe Motherhood Newsletter was launched in 1989 and three issues had been distributed when the Maternal Health and Safe Motherhood Progress Report 1987-1990 was published. Since then three more issues have been published and the seventh is in preparation. Each Newsletter includes news stories, a list of forthcoming events and resource materials, and has a specific theme which provides a focus for analysis of a topic of particular importance to safe motherhood. The Fact File in each issue contains data related to the current theme in a succinct and comprehensible form. Themes of past Newsletters have included epidemiology of maternal mortality (issue 1), risks of adolescent pregnancy (issue 2), education (issue 3), nutrition (issue 4), emergency transport (issue 5) and sex discrimination during childhood (issue 6). Issue 7 will take as its theme will be the effect of family planning on maternal mortality. It will also report on developments at the FIGO Congress in Singapore, during which each delegate received a copy of the Newsletter.

The print run for the first edition of the Newsletter was 6,000 English and 2,000 French. Circulation doubled within the first year and currently stands at 10,000 English and 4,000 French.

To better gauge and respond more fully to the needs of readers and to better target the audience, Newsletter 6 included a readership survey. Responses to the questionnaire are still coming in and evaluation and analysis will start before the end of 1991. The survey is the first attempt to find out what those working at the grass roots level think about the Newsletter and what their needs are in relation to information and advocacy materials.

The Newsletter has been instrumental in alerting local NGOs and other bodies to safe motherhood and requests for funds are frequently received. To be able to respond more positively in the future a document is now in preparation which will list funding agencies able to support small scale local projects.

While it is too early to anticipate the full results of the readership survey it is clear that many readers would like additional information such as summary treatment guidelines and advice on acquiring and maintaining essential supplies and drugs. Sharing experiences is clearly an important part of the process of developing capabilities and skills for dealing with difficult problems.

TABLE 3

PUBLICATIONS AND DOCUMENTS
available during 1990 and 1991

- Hypertensive Disorders of Pregnancy, Report of the WHO/MCH Interregional Collaborative Study, February 1991. (WHO/MCH/91.4)
- Iron Supplementation during Pregnancy: why aren't women complying? (WHO/MCH/90.5) 1990.
- Measuring Reproductive Morbidity, Report of a Technical Working Group. (WHO/MCH/90.4) 1990.
- Obstetric Fistulae, a review of available information. (WHO/MCH/MSM/91.5) 1991.
- Maternal Mortality: A Global Factbook, September 1991. (WHO/MCH/MSM/91.3).
- Essential Elements of Obstetric Care at First Referral Level, November 1991.
- Abortion: A Tabulation of Available Data on the Frequency and Mortality of Unsafe Abortion. (WHO/MCH/90.14) 1990.
- The Children Who Sleep by the River. 1991.
- Midwifery Education, Action for Safe Motherhood, Report of Pre-Congress Workshop in Kobe, Japan, 5-6 October 1990. (WHO/MCH/91.3).
- Three-part Guide for TBA Training.
- Four-part set of modules for home-based mother's record training.
- Draft prototype midwifery training modules for reduction of maternal mortality.
- Report of Working Group of the Task Force on Human Resources Development for Safe Motherhood, Stockholm, 30-31 May. Social and Cultural Issues in Human Resources Development for Maternal Health Safe Motherhood (in press).
- Maternal Health and Safe Motherhood programme - Progress Report, 1987-1990. (WHO/MCH/90.11) 1990.
- Human Resources Development for Maternal Health and Safe Motherhood - Report of a Task Force Meeting, April 1990. (WHO/HRD/90.1) 1990.
- Injectable Contraceptives: Their Role in Family Planning Care, 1990. (ISBN 92 4 154402 3).
- Integrating Maternal and Child Health Services with Primary Health Care, 1990. (ISBN 92 4 156138 6).
- Surgery at the District Hospital: Obstetrics, Gynaecology, Orthopaedics and Traumatology, 1991. (ISBN 92 4 154413 9).

Other activities include the continued technical support to groups making films on the themes of maternal health and safe motherhood and the up-dating of the portable Safe Motherhood exhibit which was recently shown at the XIII International Congress of Obstetrics and Gynecology in Singapore.

4.3 Human resources development

The strategy of the human resources development (HRD) component of MSM as endorsed by the STAG is to target health care providers at the health centre and first referral level hospital (physicians, nurse-midwives, midwives, maternal health care personnel staffing primary health centres, and the trainers of all these cadres). Priority training activities emphasize the development, testing and implementation of health learning materials and training programmes for these categories of workers and the reinforcement of institutions in each of the regions which can promote and support national training activities. Prototype training packages, which should be developed at the global level, are to be adapted for use in each country. Priority fields for training, as identified by the Human Resources Development Task Force in April 1990 and endorsed by STAG, are training of midwives, training of district health teams in essential obstetric functions, and training of managers and trainers.

As with the other components of MSM, first year objectives were only partially met during the past 12 months. However, a start was made on several of the priority activities with the limited funds which were available. In addition, during this transitional period, activities which had been started earlier, were continued or completed (e.g., *Guide for TBA Training* and training modules for the home-based maternal record).

In May 1991, a small group of the Human Resources Development (HRD) Task Force members met in Stockholm to consider the social and cultural dimensions of human resources development for safe motherhood. This meeting resulted in recommendations which are now in press.

The first edition of the *TBA Trainers' Kit* was produced and distributed to 350 individuals in 50 countries in 1985 and evaluated in 1988 and 1989. A revised edition was produced in 1990. The new *Guide for TBA Training* contains three parts. The first is addressed to TBA trainers and offers ways to develop a systematic training plan so that the tasks and activities performed by TBAs can be improved. The second part consists of a flipbook (book in the form of a small flip chart) of illustrations with essential messages needed in training TBAs. The third is a guide for master trainers. It presents a suggested framework and methodology for planning and implementing a TBA training programme ready for adaptation to local situations.

This second edition was printed and distributed to over 20 centres in seven countries for field testing in 1990. The ease of use and adaptability of materials to various cultural settings and their relevance at different stages of programme development was evaluated in particular. The materials were then finalized and are now in press and scheduled for distribution by the end of this year.

In an effort to develop and evaluate innovative educational and training approaches, the programme is exploring the use of stories and popular literature as a vehicle relating the personal experiences of health workers to the problems with which they are confronted. As a first step the programme has supported the publication of a novel, *Children Who Sleep by the River*, in which maternal and child health themes are woven into the story line. Guidelines for the use of the novel in training programmes have been developed and will be field tested by the Collaborating Centre in Zimbabwe. As a general vehicle for advocacy of MCH/FP issues, the novel is also being commercially distributed in developed countries.

A good example of the "ripple effect" (global or intercountry activities leading to direct country action) in the area of training for safe motherhood is the Pre-Congress Workshop on

Midwifery Education - Education for Safe Motherhood, jointly sponsored by the International Confederation of Midwives (ICM), WHO and UNICEF, held in Kobe, Japan on 5 and 6 October 1990. Forty participants at this workshop were taken through the process of creating an educational framework for training midwives in the reduction of maternal mortality and morbidity. The report of this workshop reproduces that framework and was made available for midwives around the world to use in implementing safe motherhood training activities.

The first direct result of this workshop was a national workshop for midwifery tutors in Tanzania in 1991, mentioned in the section above on Direct country support. Two other workshops have resulted from the Kobe experience and are planned for 1992: a regional workshop on midwifery education sponsored by the Southeast Asian Regional Office of WHO, and an intercountry workshop for countries of Asia and the Pacific sponsored by ICM and the Australian government.

The MSM programme is developing a set of training modules based on the Kobe educational framework. These, too, focus on the community, prevention, treatment of each of the problems which lead to the majority of maternal deaths, and follow up. The first part of the community module has been completed and was field tested in Botswana in October, 1991. The government of Zambia has also expressed interest in having field testing in that country, and as a further example of TCDC, the midwife advisor from Tanzania who participated in the Botswana testing will test the material in her country as part of Tanzania's midwifery training programme (see Direct country support, above). Completion of the modules is expected by the end of 1992.

Written training materials are required for training in essential obstetric functions (EOF). These will be produced by a centre for the development of health learning materials in Nepal. Work is expected to begin on these by the end of this year. Once written, the materials will be tested as part of the training programme for Bangladeshi doctors (see Section 3.2 above). Once tested, the materials will be reviewed for adaptation and production on a global basis as prototype EOF learning materials.

Institutions have been identified as potential members of a network of training institutions which can support regional and national training activities for maternal health and safe motherhood. WHO publications and training materials produced with WHO support have been sent to these institutions. When full funding is available, a regular programme of network activities will be started.

Several documents relevant to human resources development have been produced and are listed in Table 3.

5. COORDINATION AND COOPERATION

In providing support to Member States striving to achieve the target of reducing maternal mortality by half, the MSM Programme has been able to draw on its broad base of technical and programme resources within WHO. (Table 4)

Table 4
**Collaboration between the Maternal Health and Safe
 Motherhood Programme and other WHO Programmes**

<u>WHO Programmes:</u>	<u>Collaborative Activities</u>
<u>Division of Family Health (FHE)</u>	
Family Planning and Population (FPP)	Family planning guidelines; MCH/FP programme management and rapid evaluation methodologies
Child Health and Development (CHD)	Clean delivery for neonatal tetanus control (with EPI); maternal anthropometry and outcome of pregnancy (perinatal mortality and low birth weight)
Adolescent Health (ADH)	Promotion of responsible sexuality and the prevention of unwanted pregnancy and sexually transmitted diseases
<u>Other Divisions</u>	
Special Programme of Research and Research Training in Human Reproduction (HRP)	Joint Working Group on Unwanted Pregnancy and Unsafe Abortion; studies on prenatal care; HRP collaborating centre network
Expanded Programme of Immunization (EPI)	Clean delivery strategies; indicator development; operational research; TBA training and supervision, and technical cooperation
Health Protection and Promotion (HPP) and Nutrition (NUT)	Maternal nutrition research
Office of International Cooperation (ICO)	National programme development in context of intensified country support: Guinea, Bangladesh
Global Programme on AIDS (GPA)	Guidelines and policy statement on MCH/FP and HIV/AIDS
Development of Human Resources for Health (HRH)	Human resource development planning; nursing/midwifery policy and programme development
Strengthening of Health Services (SHS)	District health system development and planning; health economics and costing of health services

Programme coordination and cooperation among agencies has taken several forms, both formal and informal. Coordination is maintained at policy, advocacy and operational levels. At times it takes place in the context of broader MCH/FP issues, at other times it is focused specifically on maternal health and safe motherhood. The main mechanisms for such coordination among agencies are set out in Table 5. Technical agencies are working increasingly towards common policies, approaches and messages in support of national programmes for MCH/FP. The WHO/UNICEF Joint Committee on Health Policy (JCHP) has identified the common and complementary activities of their organizations in the fields of women's health, safe motherhood and newborn care.

Table 5. Coordination Bodies and Mechanisms

Coordination Group	Activities/Functions
WHO/UNICEF Joint Committee on Health Policy	Constitutionally established; most recent action - recommendations for follow-up of Child Summit and activities for women's health, safe motherhood and newborn care.
Coordination Committee for MCH/FP (WHO, UNICEF, UNFPA)	Agreed by heads of agencies; joint policy statements on adolescent reproductive health, traditional birth attendants, MCH/FP and HIV/AIDS, family planning and breast feeding; joint activities - brochures, exhibits, country initiatives.
Inter-agency Group for Maternal Health and Safe Motherhood (WHO, UNICEF, UNFPA, UNDP, World Bank, IPPF, Population Council)	Organized by senior secretariat; coordinates global joint activities - Meeting of Interested Parties, regional, sub-regional and national meetings; promotes and facilitates country collaboration.
Meeting of Interested Parties (multi- and bilateral agencies, country representatives, NGOs, institutions, etc.)	Forum for exchange of information and experiences and review of priority issues; maintains advocacy and promotes continued support.
Task Force for Child Survival (WHO, UNICEF, World Bank, UNDP, Rockefeller Foundation)	Consists of agency heads and senior level policy leaders; has added maternal health and safe motherhood goals.

Further support for the Organization's contribution has been provided through its wide network of collaborating centres, including those of MCH/FP, HRP and other technical programmes (Appendix II).

To reinforce their common goals for women and children by the year 2000 and to encourage coordinated activity at all levels, the Director-General of WHO, the Executive Directors of UNICEF and UNFPA, and the Administrator of UNDP have sent a joint letter to their respective staffs noting the complementarity of the agencies' programmes and urging collaborative activity in support of national programmes. The Task Force for Child Survival, at its fourth conference held in Bangkok and again at its fifth conference in Montreal, called for the reduction of maternal mortality by 50% from its 1990 levels and for the support of women's education and health.

In supporting the complementarity of their respective skills and mandates, WHO has worked closely with UNDP in its review and assessment of the latter's role in maternal health and safe motherhood. In an effort to accelerate international and national action, and to mobilize additional resources, WHO and UNDP have jointly supported consultants to develop a methodology for implementing such accelerated action: a new international partnership.

Effective and complementary collaboration among governments, agencies and non-governmental organizations has been a guiding principle of the Safe Motherhood Initiative from the start. Representative of the International Planned Parenthood Federation (IPPF), the Population Council, UNDP, UNFPA, UNICEF, WHO and the World Bank continue to meet on a regular basis at the informal Inter-agency coordinating group for safe motherhood. These linkages are reinforced by the inclusion of safe motherhood and improved coverage of maternity care as key elements of the Task Force for Child Survival.

The Organization has increased its working relations and collaboration with a number of bilateral technical cooperation agencies at both the global and national levels. Examples include the joint sponsorship of activities on maternal nutrition with USAID and AMRO/PAHO, complementary and coordinated support by WHO and GTZ to the WHO Collaborating Centre in MCH/FP in Zimbabwe, and similar collaborative efforts with the French Ministry of Cooperation in safe motherhood research and advocacy in Guinea-Conakry. Discussions with several other agencies have focused on a variety of modalities for collaboration in specific countries.

6. PROGRAMME RESOURCES AND ALLOCATIONS 1990-1991

With the collaboration of many international agencies and foundations, a wide variety of resources has been mobilized by the Organization. Some funding agencies have specified the programme activities to which their support is to be directed; others have asked that the funds they provide be used for the whole range of safe motherhood activities. While the support to WHO from the Rockefeller Foundation, UNDP, UNFPA and the World Bank was initially directed towards research, the support received from the Carnegie Corporation has enabled the Organization to expand and develop activities in other fields.

The on-going and consistent support by several of the organizations, agencies and foundations has allowed for some forward planning and commitments by the programme. However, to the extent that support has been irregular or tightly earmarked, the programme has been constrained in implementing the strategies and lines of activities elaborated by the STAG.

**Table 6 Contributions by source of funding
 as of 30 October 1991 (US \$)**

	1987	1988	1989	1990	1991
UNFPA	272 700	384 050	476 200	474 450	317 250
UNDP	160 000	226 000	351 000	757 100	242 950
UNDP/SENEGAL		316 000	57 371	98 860	97 584
UNICEF	20 000	30 000		15 000	15 000
WORLD BANK	500 000	250 000	300 000		250 000
WHO* (DG development fund)		200 000		300 000	
AUSTRALIA		53 430	166 545	172 350	177 660
ITALY				256 807	121 075
NORWAY		145 127			
SWEDEN	126 201	204 081	92 807	99 211	76 452
USA		15 000	85 000	39 000	112 000
ROCKEFELLER FOUNDATION	167 000	167 000	191 000	360 000	
A.H. MELLON FOUNDATION			120 000		
CARNEGIE	230 000	115 000	230 000	240 000	
TOTAL	1 475 901	2 105 688	2 069 923	2 812 778	1 409 971

* The figure does not include WHO contributions from sources reallocated in the Division of Family Health which, in terms of staff time above amounted is over US \$2 million over the period 1987-91. Similarly, regional staff time is not included.

**Table 7 Allocations by programme area
 as of 30 September 1991 (US \$)**

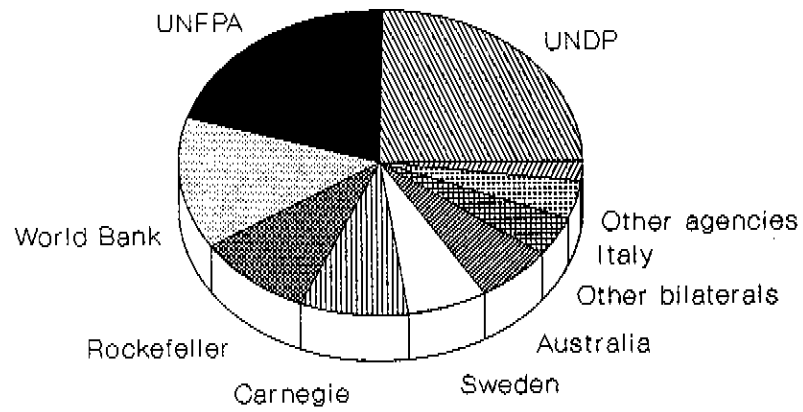
	1987	1988	1989	1990	1991
RESEARCH	1 225 901	*1 729 688	*1 735 542	*2 151 738	*994 633
INFORMATION/ADVOCACY	250 000	145 000	342 010	252 382	52 058
HUMAN RESOURCES DEVELOPMENT				309 798	83 613
TECHNICAL COOPERATION		316 000	57 371	98 860	**279 667
TOTAL	1 475 901	2 190 688	2 134 923	2 812 778	1 409 971

* Includes personnel costs for 2-3 full-time professional staff and 2 secretaries.

** Includes UNDP and other

Figure 5

Financial contributions to WHO by source of funding
cumulative total 1987-91



APPENDIX I

Studies supported by WHO's Maternal Health and Safe Motherhood Programme

Hypertensive diseases of pregnancy (HDP)

Completed

1. Pre-eclampsia, eclampsia and maternal mortality in Jamaica
2. Incidence of HDP in Shanghai, China

Ongoing

3. Randomized controlled trial of low dose aspirin in the prevention and treatment of HDP in primigravidas in Jamaica
4. Randomized controlled trial of calcium supplementation in the prevention of HDP in adolescent primigravidas in Ecuador
5. Randomized controlled trial of magnesium sulphate and diazepam in the management of eclampsia in Argentina, Colombia and Venezuela

Anæmia

Ongoing

1. Feasibility study on evaluation of a pregnancy nutritional anæmia control programme, Oman
2. Compliance to iron supplementation during pregnancy, Tanzania

Obstetric hæmorrhage

Ongoing

1. Laboratory study of the stability of injectable oxytocics under a range of temperature and light conditions
2. Bioavailability of rectal oxytocic preparations
3. Randomized controlled trial of oxytocin and oxytocin and ergometrine in the active management of the third stage of labour
4. Randomized controlled trial of intra-umbilical vein injection and retained placenta, Argentina
5. An epidemiologic study on blood transfusion: assessment of risks of transfusion and its appropriate use in pregnancy and delivery in a tertiary institution in Nigeria

Obstetric infection and obstructed labour*

Obstetric infection

Ongoing

1. Quality of hospital care and maternal mortality due to infection in Ghana
2. Evaluation of continuing education and supervision programmes for traditional birth attendants and puerperal sepsis in: a. West Bengal, India, b. Comilla District, Bangladesh

Obstructed labour

Completed

3. Multicentre controlled trial of the efficacy of the WHO partograph in the management of labour in Indonesia, Malaysia and Thailand

Ongoing

5. Studies of the effectiveness of the WHO partograph in timely transfer of women during labour
 - a. Dar-es-salaam, Tanzania
 - b. Assiut, Egypt
 - c. Freetown, Sierra Leone
 - d. Kankan and Kindia regions, Guinea

* Studies concerned with issues related to obstructed labour, and in particular the partograph, have received substantial support and have been categorized to this group because of the association with obstetric infection

Unwanted pregnancy and unsafe abortion

Ongoing

1. Evaluation of a community-based programme to provide family planning services to women at high risk of unwanted pregnancy, San Borja, Peru
2. Evaluation of a post-abortion family planning programme, Cotonou, Benin

Health systems research, i.e., evaluation of broadly based maternal health service interventions and particularly their cost-effectiveness

Health education

Completed

1. Evaluation of an educational programme to improve the knowledge, attitudes and practice of mothers-in-laws regarding the behaviour of their pregnant daughters-in law, Kathmandu, Nepal

Ongoing

2. Evaluation of campaigns to mobilize rural youth for the improvement of maternal health, Bangladesh

Organization of maternal health services

Completed

1. Application of the risk approach strategy to improve maternal health, Malaysia (final report awaited)
2. A review of the evidence on the effectiveness of antenatal interventions in developing countries, with regard to maternal health outcomes
3. Evaluation of the introduction of standardized clinical management guidelines in hospitals, Nepal (final report awaited)

Ongoing

4. Evaluation of a mobile maternal health care service in Keneba, the Gambia
5. Evaluation of the effectiveness of a maternity waiting home, Colombia
6. Evaluation of the effectiveness of maternity waiting homes in Cuba
7. Strengthening maternal health care through the use of the home-based maternal record, the Philippines
8. Evaluation of the effectiveness of packages of community based maternal health care, Lamongan, Indonesia
9. Evaluation of community based interventions to reduce maternal mortality, Miyun County, Beijing, China
10. Utilization of health services to improve maternal health in rural Bolivia
11. Reference health centres: a cost-effective model for low-risk deliveries in an urban area in Cali, Colombia
12. Evaluation of the Faisalabad obstetric flying squad, Pakistan

Health worker training

Ongoing

1. Evaluation of a scheme to improve the effective communication skills of maternal health care workers, Salta, Argentina

Epidemiology (including social and behavioral aspects) of maternal mortality and severe morbidity and unmet needs for maternal health care and family planning

Maternal mortality

Completed

1. A review of the causes and circumstances surrounding maternal deaths in 12 hospitals in 1989 in Malawi
2. The interdependence between primary and secondary levels of maternal health care services and maternal mortality in Ecuador
3. Factors contributing to maternal mortality in rural areas of Henan and Jiangsu Provinces, China
4. Maternal mortality in 21 provinces, municipalities and autonomous regions of China, 1985 to 1988; and 1989
5. Maternal mortality in Guinea Bissau
6. Maternal mortality in Guinea
7. Maternal mortality and risk factors in Medellin, Colombia

Ongoing

8. Risk factors for maternal mortality in Mali
9. Maternal mortality in Maputo, Mozambique
10. Maternal mortality in Marilla Region, Sao Paulo. Brazil
11. Maternal mortality in a rural area of Veracruz State, Mexico
12. Maternal mortality in Guatemala
13. Maternal mortality and risk factors in Tunisia
14. Maternal mortality surveillance in Bhutan
15. Maternal mortality in Laos
16. Maternal mortality in La Paz, Bolivia
17. Maternal mortality in Kassena-Nankana, Ghana
18. Maternal mortality in Abidjan, Ivory Coast
19. Review of 15 years experience in a maternal and child health project, MATLAB, Bangladesh

Maternal morbidity

Completed

1. Vesico-vaginal fistula in Addis Ababa, Ethiopia

2. Risk factors for and the prevalence of vesico-vaginal fistula, Sokoto State, Nigeria (pilot study).
Talking about women with VVF Report of a focus group study in North-Western Nigeria
3. Measurement and determinants of reproductive morbidity in two rural communities in Lower Egypt
4. The impact of poor nutritional status (acute and chronic) on maternal mortality: - maternal stunting, fetal growth and risk of obstetric complications

Ongoing

5. Maternal morbidity in a rural community of Tamil Nadu State, India

Cultural, social and behavioural factors

Completed

1. An anthropological study of the perception of pregnancy complications among women in Guinea Bissau

Ongoing

2. Maternal mortality: patterns of fertility and social costs in a rural area of Mexico
3. The traditional birth attendant and the hospital system - a study of factors which contribute to choices pregnant women make in the utilization of obstetric services, Nigeria
4. Cultural analysis of use of maternal health services in rural Kenya

Unmet needs for maternal health care and family planning

Completed

1. Maternal health care in Bhutan
2. The need for maternal health care services in Senegal
3. The formative research phase within the Bara maternal health care project, Sudan
4. Safe motherhood: consumer viewpoints of available health services, Pakistan

Ongoing

5. Baseline maternal health needs survey Shinyanga, Tanzania

APPENDIX II

WHO Collaborating Centres in MCH (Pregnancy and Perinatal Care)

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Indonesia

National Perinatal Epidemiology Unit
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Beijing Municipal Maternal Health Institute
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Latin American Center of Perinatology and
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Hospital de Clinicas
Piso 16
Montevideo
Uruguay

APPENDIX III

Meetings supported by WHO'S Maternal Health and Safe Motherhood programme

1990 - 1991

Pre-congress Workshop on Midwifery Education - action for Safe Motherhood, Kobe, Japan, 5 - 6 October 1990 (in collaboration with ICM/UNICEF).

Second Meeting of the Scientific and Technical Advisory Group (STAG), Geneva, 15 - 17 October 1990.

Meeting of the Working Group of STAG, Geneva, February 1991.

Technical Working Group on Prevention and Treatment of Severe Anaemia in Pregnancy, Geneva, 20 - 22 May 1991.

Working Group of the Human Resources Development Task Force, Stockholm, 30 - 31 May 1991.

WHO Collaborating Centres Meeting in MCH/FP, Geneva, 3 - 5 June 1991.

Leadership and Participation of Women in MCH/FP, Cairo, 24-29 August 1991.

13th World Congress of Gynecology and Obstetrics, Singapore, 15 - 20 September 1991.

- Pre-congress Workshop on Delegation of Authority (in collaboration with FIGO/MCI).
- Pre-congress Workshop on Participation and Perspectives of Women in Reproductive Health (in collaboration with WHO/FIGO Task Force).