

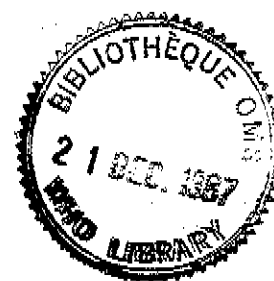


FHE/87.6

Distr.: LIMITED

**SAFE MOTHERHOOD INITIATIVE**  
**REPORT OF THE FIRST MEETING OF THE**  
**STEERING COMMITTEE**

**GENEVA, 13 - 16 JULY 1987**



WORLD HEALTH ORGANIZATION  
DIVISION OF FAMILY HEALTH  
GENEVA 1987



SAFE MOTHERHOOD INITIATIVE

Report of the First Meeting of the Steering Committee  
Geneva, 13-16 July 1987

CONTENTS

	<u>Page</u>
1. INTRODUCTION .. .. .	2
1.1. Opening address by Dr. Mahler. . . . .	2
2. BACKGROUND TO SAFE MOTHERHOOD INITIATIVE .. .. .	3
2.1 WHO activities .. .. .	4
3. THE SAFE MOTHERHOOD INITIATIVE PROGRAMME .. .. .	5
3.1 Its purpose .. .. .	5
3.2 Its objectives .. .. .	5
4. OPERATIONAL RESEARCH .. .. .	6
4.1 Definitions .. .. .	6
4.2 Scope of the programme .. .. .	6
5. STRATEGIES .. .. .	8
5.1 Generating proposals .. .. .	8
5.2 Information and promotion .. .. .	9
5.3 Mobilising human and financial resources .. .. .	9
5.4 Institution strengthening .. .. .	10
6. PROCEDURES AND MECHANISMS FOR REVIEWING PROPOSALS AND MONITORING PROJECTS .. .. .	10
7. PRIORITIES AND CRITERIA FOR PROJECT SELECTION AND SUPPORT .. .. .	11
8. REVIEW OF PROPOSALS ALREADY RECEIVED .. .. .	13
9. TERMS OF REFERENCE OF THE TECHNICAL ADVISORY GROUP .. .. .	13
ANNEX A	
Activities in maternal health research reported by:	
(a) Other agencies .. .. .	15
(b) Countries .. .. .	17
ANNEX B	
List of participants .. .. .	21

## 1. INTRODUCTION

The Safe Motherhood Initiative (SMI), was launched at the Safe Motherhood Conference in Nairobi in February 1987, but it has its roots in the growing global recognition of the unacceptability of the poor health of the majority of the world's women, in large part due to complications of pregnancy and delivery and to illicit abortion.

The WHO and UNICEF International Conference on Primary Health Care, held in Alma Ata in 1978, pointed to the gross inequalities in the health status of peoples and formulated the Primary Health Care (PHC) approach as the a means of bringing health to all. One of the eight essential elements of PHC identified in the Alma Ata Declaration is maternal and child health care including family planning.

The UN Decade for Women helped to focus international attention on women's rights as equal partners in development and on the critical role their health plays in enabling them to fulfil their multiple roles. Improving their present poor health and reducing the high rates of maternal mortality and morbidity in most developing countries requires a committed effort by national governments and as well as by the international community. The Forward Looking Strategies, formulated at the end of Decade Conference in 1985, call for a reduction in maternal mortality to a minimum level by the year 2000.

A similar concern had already been voiced in earlier international fora. The International Conference on Population, held in Mexico City in 1985, made very specific recommendations on the needed reductions in the unacceptably high levels of maternal mortality in most developing countries.

This world wide interest in raising the status of women and in improving their health culminated with the Conference on Safe Motherhood, cosponsored by the World Bank, WHO and UNFPA, in cooperation with UNDP. The major question addressed by the conference was what could be done to bring down the very high incidence of maternal death and ill health in developing countries. The conference concluded that most of the necessary knowledge and technology to achieve this reduction was already available and that what was needed was wider operationalisation of this knowledge through applied research. The Safe Motherhood Operational Research Programme, to be known as the Safe Motherhood Initiative, was established, and funds were committed by the World Bank, UNDP and, later on, by the Rockefeller Foundation. The planning and organization of the first phase of three years was delegated to WHO, Geneva, as an integral part of its programme of Maternal and Child Health including Family Planning.

As an essential first step the Director General of WHO convened a Steering Committee to guide them in their work. This committee is to advise the Organization on the overall strategy and approaches, on the issues and questions to be addressed and on the appropriate mechanisms to be employed.

The present meeting was the first meeting of the SMI Steering Committee. It brought together participants from the fields of midwifery, research administration, obstetrics and gynaecology, epidemiology, sociology, Women's issues, psychology and public health administration from 14 different countries, as well as representatives of eight international agencies and organizations.

### 1.1 Opening address

The meeting was opened by Dr. H. Mahler, Director-General of WHO. He began his address by pointing to what he considered to be a major flaw in development ideology; namely the refusal to accept social productivity as being of equal importance to economic productivity. This last decade has seen the marginalisation of woman, man, and child by aggressive economic acquisitiveness. WHO, in its Health for All Strategy, is struggling against this marginalisation, and at the same time

trying to reorient the activities of the "health" field - 90% of which is really conventional medical wisdom - to get nearer to health in the sense of WHO's Constitution. This is not merely a matter of reducing mortality. In the present initiative we are concerned not only to reduce appallingly high levels of maternal mortality, but also to strive positively for women's health.

'Safe Motherhood' is one entry point into this subject, and operational research is one means to our objective. Dr. Mahler then discussed what was meant by operational research. Epidemiology lays the foundations of the knowledge we need, but has to be followed by quick application of results and an up-grading of the existing health systems. The objective of operational research is to generate lifesaving and health-promoting action, and now, not in some distant future. How we can make this happen is one of the subjects on which the guidance of this carefully selected Steering Committee is being sought. Can WHO carry out such a programme? Is WHO not too complex, with too little freedom to manoeuvre? We need to have some confidence in each other. The programme will definitely be managed as a global programme, but the experience of the maternal health studies of the last few years has laid a precedent of excellent cooperation throughout the whole structure of WHO, at headquarters, regional office and country levels.

We are looking to attain, as soon as possible, the target of five million dollars for the first few years. Viewed in relation to the problem being tackled, this is a small sum for such a purpose. He hoped that the Committee members themselves would become advocates of the programme. He thanked those who had already cooperated, in different ways, in Safe Motherhood with WHO, who have given us strength and inspiration: UNFPA, the World Bank, UNDP, SIDA/SAREC, the Rockefeller Foundation, the Carnegie Corporation. We need that kind of initiative if in this miserable world of today we are to create a better value system. We are threatened less by the nuclear bombs of the East-West disputes than by the human time-bomb of the gross disparities between rich and poor, of which the disparities in maternal mortality are an example which cannot be tolerated for ever.

## 2. BACKGROUND TO SMI

Each year at least half a million women die from causes related to pregnancy and childbirth; 99% of them, all but about 6,000, take place in developing countries which account for 86% of the world's births. When a woman living in the poorest countries of the world becomes pregnant her chances of dying as a result are between 100 and 200 times higher than those of a pregnant woman in affluent countries. Abhorrent as they are, such differentials are also, to a large part, evidence of the progress made in health care in most developed countries in the past half century. They demonstrate that a large proportion of the maternal deaths taking place in developing countries are preventable with attainable resources and skills.

Maternal mortality is the end result of a whole series of antecedent causes. For every maternal death there are a considerable number of women suffering from short and long-term morbidity. Although maternal mortality is only the tip of the iceberg, it is also true that strategies to reduce mortality are basically the same as those that would also reduce morbidity. Hence efforts directed toward preventing maternal mortality should have a general effect in improving the health status of all women of reproductive age and the health care available to all pregnant women.

A group of five immediate causes have been shown to account for about three quarters of maternal deaths in developing countries. These are; complications of illicit abortions, haemorrhage, sepsis, eclampsia and obstructed labour. Although the proportion of women dying from each may vary in different countries, they are all important causes and demonstrate clearly that, particularly in the short term, strategies to prevent maternal mortality are critically dependant on the availability of good quality medical care.

## 2.1 WHO activities

As more reliable information on the magnitude of maternal mortality in developing countries became available in the late 1970's it became evident that official maternal mortality rates were grossly underestimating the true rates and that the lack of information was one of the reasons for the lack of action to combat the problem. In the early 1980's the Division of Family Health of WHO began, as part of its MCH/FP Programme, the systematic documentation of all available data on maternal mortality and on the coverage of maternity care. This data bank was subsequently expanded to cover other aspects of maternal health and has provided a valuable resource upon which to base global and national estimates of the magnitudes and causes of maternal deaths and ill health. The data base has also served as resource material for a monograph on the prevention of maternal mortality which will be ready for publication by the end of 1987.

In 1984 WHO, with support from UNFPA, began its collaboration in a series of country investigations into maternal mortality and its causes and into the unmet needs for maternal health and family planning care, carried out in areas where data were not previously available. Studies have been completed in seven countries and national workshops to disseminate the study findings held in all but one. Additional studies are in progress in four countries and in various stages of preparation in five others. The study methodologies vary greatly, depending on the skills and interest of the investigators and the resources available to them. Nevertheless, they had a number of common features, among them the modest level of funding which had to be complemented by local resources and the close collaboration of WHO's regional offices. The results of the studies confirm the epidemiological patterns of causes described above and, in addition, identified some of the major factors commonly associated with adverse outcomes: lack of access to transport in emergency, absence of timely referral, of treatment of sepsis, low levels of family planning use, particularly among high risk groups, and the barriers surrounding abortion.

In November 1985 the Organization convened in Geneva, an Interregional Meeting on the Prevention of Maternal Mortality, which reviewed the results of some 23 country maternal mortality investigations and made specific recommendations for action on four priority issues, namely, the measurement of maternal mortality and its causes, training and research, the organization of essential obstetric services, and the role of family planning in the reduction of maternal mortality. Subsequent WHO work has followed up these issues. A manual on how to measure maternal mortality is in its final stages of compilation and will be ready for circulation later this year. A regional research training workshop on this subject was held in New Delhi in October 1986 and similar workshops are planned this year and next. The databases mentioned above have now been computerized and are being continuously updated. Tabulations of the data are published periodically (Doc. FHE/85.1 and FHE/86.3). A working group on Essential Obstetric Functions at the First Referral Level met in June 1986 and drafted a document of the same name (Doc. FHE/86.4).

Concurrently, and in related areas, the WHO MCH/FP Programme has carried out research and development of appropriate technologies in MCH/FP which has concentrated on screening and interventions at the PHC levels. Particular attention has been given to providing safe and effective care for those at low risk of complications during pregnancy and delivery, and to identifying those at risk of developing complications. Technologies developed include a village assembled delivery kit for family or traditional birth attendant's (TBA) use, a haemoglobinometer for use by PHC workers, and a home based maternal record for MCH and FP care. The latter has been tested in 13 centres. Preliminary results are very encouraging and show an increased use of MCH and FP services and a greater awareness of the rationale and nature of the care provided. The WHO Interregional Study on the Hypertensive Disorders of Pregnancy which included studies in seven countries and covered over 20,000 pregnancies has yielded useful results, inter alia on the use of risk indicators for predicting eclampsia. A network of WHO Collaborating Centres for pregnancy and perinatal care have been set up to carry out

health service research as well as training teachers in MCH and institution strengthening at national levels. There are currently eight such centres.

The Special Programme of Research, Development and Research Training in Human Reproduction (HRP) of WHO, whilst it does not specifically concern itself with maternal mortality, carries out research on fertility regulation which has a direct impact on maternal health. In addition, it constitutes a considerable reservoir of research skills and experience. At present HRP has two major components. The first is concerned with institution strengthening, with helping countries to solve their own problems in reproductive health. The second is concerned with research and development into fertility regulation methods and services. As regards the present day situation, research is mainly concerned with how to make the best use of what exists. The three main areas of research are: (a) the safety and efficacy of contraceptive methods; (b) the behavioural and social determinants of fertility regulation; (c) health services research. As regards the future, HRP is concentrating on the development of fertility regulation technologies appropriate for use in developing countries.

Within its programme of Maternal and Child Health, including Family Planning, WHO Geneva is now coordinating three major components concerned with maternal mortality research. The first aims at improving methods of measurement of magnitudes and causes, the second with the assessment of unmet needs - both supported by UNFPA and, more recently, also by SIDA/SAREC - and the third is operational research through SMI. Other activities cover advocacy, information and training needs, as well as continuing technical and managerial support to country MCH/FP programmes. It is important that the three main research initiatives be closely coordinated. Whilst administratively separate, programmatically the three activities are mutually supportive and care must be taken not to create artificial boundaries which will be meaningless to the countries with whom SMI is already collaborating or is intending to collaborate.

### 3. THE SAFE MOTHERHOOD INITIATIVE PROGRAMME

The chief task facing the Steering Committee was to consider the main issues and research priorities needing to be addressed and to make recommendations for the implementation of this new research programme aimed at the reduction of maternal mortality and morbidity in developing countries<sup>1</sup>. Although this is a new initiative it should be borne in mind that it is not an entirely new activity and should be seen as a new stage in an ongoing programme and an integral part of the overall collaborative activities undertaken by the WHO Programme of MCH/FP.

#### 3.1 Its purpose

The Safe Motherhood Initiative has as its long-term objective the reduction of maternal mortality and morbidity and the promotion of women's health. It aims to:

- 3.1.1. create, in countries not yet committed to preventing maternal mortality, an awareness of the importance of the problem;
- 3.1.2. make widely available information on the options available to combat it;
- 3.1.3. provide technical and managerial support to national health programmes; and
- 3.1.4. promote intersectoral policies and actions which will improve the general health and well-being of women by meeting their reproductive health needs.

#### 3.2 Its objectives

The specific objectives of the programme for operational research in maternal health are to:

- 3.2.1 Promote, stimulate and support the selection, adaptation and application of known and innovative technologies and approaches in maternal health care.
- 3.2.2 Monitor and evaluate national and local experiences in operational research in maternal health care in order to develop general principles and guidelines for the planning, management and evaluation of maternal health care services.
- 3.2.3 Disseminate the results of operational research in maternal health care and to share information and experiences in the application of research results as a basis for extended and wide-ranging action.

#### 4. OPERATIONAL RESEARCH

##### 4.1 Definitions

Although there are differing views over what is meant by operational research, the term is being used here in a broad sense to mean health systems research. Operational research implies that the means and the technologies to reduce maternal mortality are presently known and available and that what is needed is a greater commitment to put these into practice. Operational research also implies a sense of urgency and the desire to see measurable improvements within the next few years. It does not imply a programme of longer term and basic research, or the research & D. development (R&D) necessary to find new technologies. For the purpose of this initiative, therefore, operational research is taken to be a programme of applied improvements to existing health services and related programmes and the wider adaptation and use of already known technologies and approaches. Operational research also requires the use of a wide variety of research methods and interdisciplinary skills ranging, for example, from participatory research and focus group discussions to large scale surveys and modelling for cost effectiveness studies.

The key features of operational research, so defined, include the following:

- 4.1.1 It uses both quantitative and qualitative methods.
- 4.1.2 It concerns applied, not basic, research.
- 4.1.3 It seeks better action approaches, not necessarily optimal ones.
- 4.1.4 It pertains to opportunity identification, not just problem solving.
- 4.1.5 It addresses one-time questions, as well as iterative cycles of test-revise-test.
- 4.1.6 It includes analytic studies, not just field interventions and experimental trials.

##### 4.2 Scope of the operational research programme

It is now generally accepted that maternal mortality and morbidity have their roots in a whole hierarchy of causes - beginning with the low social status of women and, in many cultures to the low value accorded to female children. Thus, for example, the poor nutritional and health status of women even before reproduction makes them more likely to develop pregnancy complications and more likely to die from such complications and emergencies as do arise. Very early marriage and childbearing before they themselves are fully mature compound the risks.

If maternal mortality is to be prevented, all these issues must be addressed. Not all, however, are amenable to intervention in the shorter term. Because of the urgency of the problem and the relatively limited resources available to SMI - some \$250 000 is pledged to date - it was generally felt that research priorities should be defined in a more closely focused way and should concentrate on areas which can demonstrate an impact within an 18 to 24 month time span.

It was recognised that priorities will vary from country to country and further, that these may change over time. SMI should be prepared to support a broad range of activities, some of which might be relevant only to a particular country. However, if the initiative being proposed is very country or culture specific it might be more appropriately addressed by supporting the training of researchers (possibly with funds from another source) rather than supporting the research itself.

Moreover, priorities for research should not be confused with service priorities - a substantive area only becomes a priority area for research if progress is being impeded by a lack of knowledge.

It was felt that as the main aim of SMI was to bring about improvements in the health of women through a reduction in maternal mortality and morbidity SMI should, as a first priority, support operational research which evaluates initiatives which focus on:

- (a) improving access to and coverage of prenatal, intranatal and postnatal care, and
- (b) improving the quality of this care.

As access to care is not only physical, but may also be economic, social or cultural, it was felt important that there should be a balance between medical and non medical initiatives. The communities' perceptions of their needs and of the health services' ability to meet these needs are one of the key elements in improving access, as is community participation in the provision of care.

The committee considered a number of possible subject areas and reached the following conclusions:

- 4.2.1 There was general agreement that family planning was an important component of safe motherhood. However, since research in family planning receives considerable support from a number of agencies and programmes (including WHO/HRP), SMI should provide support for family planning service research only as a component of a broader programme.
- 4.2.2 Since adolescent pregnancy poses special risks, it was considered a high priority area.
- 4.2.3 Because illicit abortion is an important cause of maternal deaths attention should be paid, both to the factors that lead to high levels of abortion and to the early management of abortion-related complications.
- 4.2.4 The risk approach is an essential component of health service planning. It implies the provision of basic care for all, and the identification of women at risk of developing complications in order that they may receive appropriate care. It should not erroneously be interpreted to mean that only such women receive care. All means of bringing essential services, including essential prenatal and intranatal care, closer to first contact level for all women should be explored.
- 4.2.5 Frequent late arrival, or non-arrival, of obstetric emergencies at first contact level, and the inability of that level to deal with such emergencies, contributes significantly to mortality. Attention should be given to ways of strengthening obstetric first aid at the primary care

level and the essential obstetric functions at first referral level. Since transport is a major constraint for referral, innovative projects on this topic should be encouraged.

- 4.2.6 The SMI programme should actively encourage proposals for operational research at the PHC level which originate with, or involve, the close cooperation of community groups especially womens organizations.
- 4.2.7 The need to keep cultural issues in mind should not be overlooked and high priority should be given to addressing the women's perspective of what is, after all, a women's issue.
- 4.2.8 Research studies should include an evaluation of the cost and effectiveness of different approaches. This would greatly increase the general value of the findings to programme administrators at country level.
- 4.2.9 Operational research is often characterized as being a rapid and not too rigorous way of finding quick solutions to pressing problems, and the majority of research projects to be supported by SMI will be of this nature. Nevertheless, the desirability of a few carefully designed longitudinal studies aimed at long-term trend analysis and a better understanding of the natural history of a cohort of pregnancies should not be overlooked, even if the present programme cannot wholly fund them.
- 4.2.10 Operational research is particularly appropriate when it provides support to the research and evaluation component of on-going or planned Health Development projects of government or other agencies.

## 5. STRATEGIES

### 5.1 Generating proposals

There are basically three ways in which the programme can obtain proposals for operational research. By:

1. awaiting proposals from individuals or oranzizations;
2. inviting proposals from designated individuals or organizations within a broadly defined problem area; or
3. developing collaborative proposals dealing with common themes and promoting their implementation by researchers from different countries.

As a strategy, the first approach was considered rather too passive, although it was acknowledged that very worthwhile proposals might be submitted as the initiative of motivated individuals or groups. Given the time and financial constraints, the second two approaches were to be preferred. This emphasis on a 'coordinated thematic' approach to proposal generation would ensure that proposals submitted were in consonance with the priorities of the programme and would, hopefully, diminish both the workload and the frequency with which proposals would need to be refused or returned for reformulation. The focused approach should not, however, work to the detriment of individually prepared proposals which fall within the programme priorities.

It is important that there should be room in the programme both for individual projects and for coordinated multi-country studies on important themes. For the latter, SMI will need to develop a coordinating mechanism, which will ensure appropriate information exchange.

## 5.2 Information and promotion

For the programme to move forward, to gain recognition and to be effective in supporting research, various promotional activities were needed. The use of an announcement leaflet, containing information on the nature of the programme and WHO's interest and of the availability of technical and financial support was recommended. This approach has been used successfully by HRP, for example. In the first instance, the leaflets should be broadly informative and not contain guidelines for research. Initially the leaflet should be sent only to organizations which support research related to maternal health and to other collaborators of WHO. There was a danger that too wide an initial distribution might bring in many inappropriate proposals and thereby generate disappointment.

Newsletters will be a useful tool for the wide and rapid dissemination of research findings to individuals and groups around the world. Their use should be postponed until research results begin to flow in, hopefully in a year or so.

To ensure that the findings of research projects supported by SMI will be communicated to and used by health programme administrators, policy makers and others, each project, or group of projects, should have communication and dissemination components built into it. These would include dissemination workshops, which could either be a single country exercise bringing together concerned researchers, administrators and community representatives from different parts of the country, or a meeting serving several countries with common interests and goals.

Discussions which took place during the meeting concerning specific proposals which had already been received, demonstrated clearly that there was a need for preparing and distributing guidelines on how to draft research proposals. The Secretariat was requested to draft such guidelines, keeping them as flexible as possible, and to submit them to the Technical Advisory Group (see below) for approval.

## 5.3 Mobilising human and financial resources

Given the limited resources available and the enormity of the task facing the programme, every effort must be made to make use of all available sources of financial and manpower support, within and outside the WHO system. Efficient use should be made of existing research and or training centres and of the expertise to be found in other divisions and programmes of WHO. To ensure increased and continuing financial support it was necessary to be able to demonstrate rapid results. To this end it was recommended that the programme should initially concentrate on a group of countries with high rates of maternal mortality and which are susceptible to change. The programme will need to demonstrate its ability to generate and carry out effective research and to absorb and efficiently to use projected resources, if it is to ensure continuing support. This implies a need for concrete and demonstrable impact within 18 to 24 months, at least in some areas, to ensure additional donor support before the end of the present three year term.

There has to be a certain selectivity among research topics. Research into cost effectiveness, for example, would not only be useful to demonstrate results, but should also prove popular with actual or potential funders.

Some of the research training and technical back-stopping activities of the operational research programme will be combined with the activities carried out under other parts of the WHO programme of maternal and child health including family planning. Notable among these are the maternal mortality/unmet needs studies supported by UNFPA. Other activities include appropriate technology research and development in MCH/FP, the adolescent programme, and some aspects of the HRP programme (R&D in MCH/FP, FP Guidelines etc.).

Wherever feasible, the experience of other WHO programmes in the area of programme review and quick diagnostic studies should be taken into consideration in developing or soliciting research proposals.

#### 5.4 Institution strengthening

Every effort should be made to build the research capability of existing agencies and institutions in developing countries where maternal mortality is high and its causes are unknown. This was seen as a vital part of the SMI programme. Given the limited resources available to the programme, however, such institution strengthening should be focused on the immediate needs of the research project being supported, strengthening through 'learning by doing' rather than by trying to build up new institutions in a more formal way. These goals may be achieved through the provision of short-term consultants and the organization of workshops aimed at training national researchers, in addition to financial support to the research projects themselves.

The following guiding principles were agreed:

- 5.4.1 All efforts should be made to recruit national or regional advisers/consultants and to use as advisers those specialists already familiar with supporting the work of the WHO Programme of MCH/FP.
- 5.4.2 The present officially recognised WHO Collaborating Centres in MCH/FP should be used wherever possible and, if necessary, strengthened appropriately to fulfil a regional responsibility.
- 5.4.3 Project proposals may include reasonable requests for equipment, training, travel and workshops.
- 5.4.4 Academic institutions, e.g. universities, and professional bodies such as those grouping gynaecologists and obstetricians, or midwives and nurses associations, as well as women's organizations, have a potential role to play in the promotion of new ideas and as a source of new research proposals. These bodies should therefore be involved in the local research, training and dissemination activities of the programme
- 5.4.5 Programme funds should not be used to support the development of new collaborating institutions (other than the support necessary for a particular study)

#### 6. PROCEDURES AND MECHANISMS FOR REVIEW OF PROPOSALS AND MONITORING PROJECTS

While it was the task of the Technical Advisory Group (see below) to decide whether a proposal should be accepted and supported by SMI, it is clearly not possible for a small group, meeting once or twice a year, to carry out such a large task alone. Apart from the sizeable work load this would impose on the Group, such a system would cause unacceptable delays in responding to research proposals. To alleviate the situation a number of review mechanisms were identified by the committee, but it was stressed that the process of review should at all times remain flexible. Throughout, it should be borne in mind that the purpose of review is to improve the project quality rather than merely to decide whether to accept or reject it.

All research proposals are to be channelled through the WHO Secretariat, who will, in effect, preprocess the proposals before they are considered by the TAG. Vis-a-vis the researchers who are submitting the proposal, the function of the secretariat is to act as support group which will guide them and help them to develop viable proposals.

This pre-TAG review might be carried out in a number of stages, and will involve correspondence and possibly also country and site visits. Some expense might be involved, and a balance will have to be found between expenses incurred at this stage and the cost of the study itself. A number of ways were suggested in which the cost might be kept down, notably by the use of outside personnel to work on site with the potential researchers. The following persons might be suitable: UN and Agency country staff, experienced researchers from nearby locations, WHO panel members, collaborating centres.

The Technical Advisory Group will review project proposals that have already passed through these preliminary stages. In order to expedite matters in the initial stages of the programme, it was suggested that TAG members might be consulted by mail to give their opinion on the suitability of proposals for support. Later on the Secretariat will keep TAG members informed of projects that are in the pipeline from the inception of the review process.

Both the Secretariat in the preliminary stages, and TAG in its deliberations, will be guided by the priorities identified by the Steering Committee and set out in this report. General priorities have been described above and more specific criteria which might prove useful in the review process are set out in the sections that follow.

A need for mechanisms for monitoring the progress of research projects was also identified. In addition to written progress reports, which should not be required more than annually, visits to projects are deemed essential. Use should be made of country representatives, experts and field staff of WHO and of other agencies for the monitoring of projects. Drop-in visits by WHO staff and others should be encouraged. Such visits would have a supportive role in addition to their monitoring function. In order to ensure that maximum use will be made of the study findings and recommendations, potential users in the country should be kept informed of the project, rather than only being presented with the results once the project is over.

WHO will use its usual mechanisms for financial control, keeping in mind the requirements of the funding agencies.

#### 7. PRIORITIES AND CRITERIA FOR PROJECT SELECTION AND SUPPORT

It was agreed that preference will be given to proposals:

- (a) that originate from a developing country where maternal mortality is high and where there is a clear government commitment to tackle the problem;
- (b) where the principal investigator(s) is from, or collaborating very closely with, the ministry of health, particularly the MCH/FP and health planning sections, thus maximising the chances of implementation of the study recommendations. The desirability of close collaboration with government agencies should not, however, lead to the exclusion of non-governmental agencies such as country based women's organizations, academic institutions, individual researchers and community groups, who are also important partners for this type of research;
- (c) that are based on primary health care approaches including the essential back-up to the primary level;
- (d) where the intervention is judged to be capable of producing improvements to access, coverage and/or quality of the health services within two to three years;

- (e) which clearly include mechanisms for utilising the findings and recommendations, such as the inclusion in the next national health plan, workshops, publications and reports to those in a position to take the necessary action.
- (f) Which also address the women's perspective, e.g. perception of services and of their needs.

The following more specific criteria will be taken into consideration during the review process.

A. Content of the proposal

- Are the problems or issues requiring operational research clearly stated?
- Do they fall within the priority focus theme?
- Are they important?
- How general are they?
- Has the available local, national, and regional information been thoroughly reviewed and have the correct conclusion been reached?
- Is the proposal clearly focussed on the evaluation of an intervention?
- Is it feasible to apply operational research to the problem and obtain useful results?
- What are the chances that the results will be applied on a larger scale?
- Have PHC workers, community representatives, (particularly women's groups) been involved in the design of the proposal?
- Have any pilot studies or enquiries been carried out?

B. Support for the proposal

- What experience and operational research skills do the applicants already have?
- Have the applicants consulted and/or involved others planners of research centres?
- Will the main applicants continue to be in charge or involved throughout the period of the proposal?
- Is the project or proposal supported by the Ministry of Health and/or Planning or by other major national agencies?
- Are there any special reasons why WHO and SMI should be involved?

C. Other considerations

- Is the application primarily concerned with the evaluation of an intervention or is it basically a request for infrastructure and/or programme development?
- Is the problem or issue being addressed by other centres?
- Is similar operational research being supported by other agencies?
- Are there other agencies which might or could support the application?
- Is the proposal a part of a larger national development or non-governmental initiative? Which agencies are involved?

In considering operational research proposals submitted to SMI, there will commonly be four phases in the decision making-process as to whether the proposal should receive funding or not. In addition to the general criteria enumerated above, the following criteria should be kept in mind.

1. On receipt and consideration of initial proposal:

- a. Is there a realistic and clear formulation of an important and critical problem, which is suitable for operational research?
- b. Do the applicants demonstrate strong enthusiasm, willingness and commitment to tackle the problem?

c. Is there a good chance that the results will be utilised and the subsequent changes evaluated?

2. Early development of the proposal:

a. Are the objectives and methods suitable and clear?

b. Is the request for support and funds a reasonable one?

c. Is consultant or other support needed to further develop the proposal?

3. More advanced proposals:

a. Is the proposal sound with regard to the statement of the problem, objectives, methods and use of results?

b. Is the proposal feasible?

c. Is it clear how the findings will be used and disseminated?

4. Proposals ready for consideration by TAG:

a. Has the proposal been adequately reviewed?

b. Are there supporting statements from national and international agencies?

c. Are there any special circumstances that need documenting and putting before the TAG?

8. REVIEW OF PROPOSALS ALREADY RECEIVED

In the course of the meeting the participants reviewed, individually and collectively, proposals which had been solicited and/or received by the Secretariat prior to the present meeting of the Steering Committee. The proposals being considered were from Benin, Ethiopia, Ecuador, Brazil, Nepal and one from the Secretariat itself. They covered a variety of topics, ranging from the "classical" hospital study to an innovative approach to ensure the availability of blood in emergencies. The review and evaluation process served not only to make recommendations on the proposals themselves, but also proved to be a very fruitful means of identifying the problems inherent in the screening process, and the criteria to be used in project selection.

The experience gained in the review process were taken into account in the formulation of priorities and strategies contained in the present report.

9. TERMS OF REFERENCE OF THE TECHNICAL ADVISORY GROUP.

The Steering Committee recommended that a Technical Advisory Group (TAG) be set up to assist and advise the secretariat in carrying out its duties as executors of the SMI Operational Research Programme. The TAG, which is to be a very much smaller group than the Steering Committee, is to act as its representatives, applying the principles and priorities laid down by the Committee and acting on behalf of the Committee in advising and guiding the Secretariat. Its members will be chosen from among those experienced in research who have a sound knowledge and practical understanding of the problem of maternal mortality and morbidity in developing countries and of its causes.

It is envisaged that the TAG will meet twice a year and that it will carry out the following functions:

1. It will review the research proposals passed to it by the WHO Secretariat (i.e. those that have already passed through the Secretariat review procedure described above) and make recommendations as to their suitability for SMI support. If a proposal is not deemed suitable, other sources of assistance might be identified by TAG and suggested to the applicant.
2. Advise the Secretariat on appropriate strategies for soliciting research proposals and assist in drawing up guidelines and information materials.
3. Review and monitor the progress of studies and advise on follow-up action.
4. Review programme priorities and, taking into account technical, political and other developments, advise on newly emerging priority areas.
5. Members of TAG will act as resource persons for the Secretariat, providing technical advice as needed.

ANNEX A(a)

Statements by representatives of other agencies

1. Dr. A. Measham, representing the World Bank, reported that, apart from SMI, the Bank generally does not support research in the area of maternal health except occasionally through its project lending. Such an example is the study of adolescent fertility in Kenya. He recommended that SMI take into account the work of Family Health International.

2. Ms K. Springer, of UNDP, stated that as a consequence of the Nairobi Conference on Safe Motherhood, UNDP has systematically screened the community-based PHC programmes it supports financially (at the national level there are 52 PHC projects and 28 MCH projects). There was found to be startling lack of inputs and activities specifically addressing maternal mortality and morbidity, even though objectives generally stated that this area was an important one. Building in this component and using existing infrastructure was one possible way of implementing SMI's priorities with little or no additional resources.

The first pilot project targeting Safe Motherhood specifically was beginning now in Senegal. In addition sensitization workshops in the least developed countries of Africa, where mortality is highest, on the already known aspects, were under discussion on a subregional basis.

Finally, the Administrator of UNDP was one of the two contributors who made pledges to the SMI at the Safe Motherhood Conference in Nairobi. One million dollars was pledged for activities which would assist UNDP in building maternal mortality and morbidity concerns into its operational programmes at the country and regional level.

3. Dr. Ofusu-Amaah, representing UNICEF, stated that UNICEF, being an agency for children, is naturally interested in the role and health of mothers. The Executive Board has increasingly insisted on programmes for women as women.

Over the past years UNICEF has been involved in a broad range of research and training programmes aimed at promoting the health and well being of women and children. It has been one of the main supporters of TBA training projects in many countries. It has also supplied midwifery kits and equipment for rural MCH work. UNICEF and WHO have issued a joint statement on Maternal and Perinatal Care, and are in the process of operationalizing this.

4. UNFPA is currently supporting a number of WHO-executed projects directly concerned with the reduction of maternal mortality and morbidity. These have been described in section 2.1 above.

5. Speaking for USAID, Ms A. Tinker reported that since the Alma Ata Conference her agency has become very interested in the PHC approach and in the expansion of basic health and family planning services. Two years ago the US Congress appropriated supplemental funds for the launching of a child survival initiative. Over the last year USAID has become concerned about the close linkage between maternal health and infant survival and the negative impact of high maternal morbidity and mortality on the health and well being of children and their families. This awareness has led to new steps being taken to address maternal health and the nutrition needs of mothers and children. The agency's current assistance programme

aims at reducing maternal mortality and morbidity through improved nutrition and health services, particularly at the primary level. Over the years USAID has supported operational research projects, principally developed and conducted by local investigators in over 50 developing countries. The objectives of these studies have ranged from improving the delivery of health and family planning services to a delineation of linkages between family planning and maternal and infant mortality. The agency has supported country studies on maternal health, covering such topics as nutrition, genital infections and maternal health attitudes and practices and service demand. A new project entitled The Maternal and Perinatal Health Project was launched last month which will support analysis of secondary data and field studies over a two year period. AID looked forward to collaborating with WHO and its Member States to ensure access to and better utilisation of essential maternal health and nutrition services.

6. Dr. Lucas, representing the Carnegie Corporation of New York, reported that the Corporation has developed a special programme to collaborate with global efforts aim at reducing maternal mortality. Through this programme, which aims at strengthening human resources in developing countries, the Corporation will support community-based studies to understand specific social and medical determinants of maternal mortality and morbidity and to test innovative solutions. The Corporation is also supporting the development and evaluation of appropriate, efficient and effective tools for reducing maternal mortality and morbidity in developing countries. The programme also includes studies dealing with the status of women, including education, the relationship of economically productive activities of women to child bearing and childrearing, social norms and mores affecting reproduction and other aspects of women's lives,

As part of this programme, the Carnegie Corporation has made grants to support the Safe Motherhood Conference in Nairobi, the Programme for Appropriate Technology in Health (PATH), the Centre for Population and Family Health at Colombia University, New York, as well as the WHO Safe Motherhood Programme and the Mexican Health Foundation.

7. Reporting for the Center for Population and Family Health of Columbia University, Dr A. Rosenfield described some of the recent activities of the Center. These include the production of the Chartbooks on the health impact of family planning. Specifically on maternal mortality and with Carnegie support, the Center was setting up a collaborative network in Commonwealth countries and was soliciting proposals for small projects in sub-Saharan Africa. The emphasis would be on innovative approaches, similar to the Zaire experience of nurses performing C.S. The Center is planning to collaborate with WHO in setting up information bases of resource and source materials. Close cooperation with WHO is a key element of the programme.

8. Speaking for the Rockefeller Foundation, Dr. S. J. Segal said that the Foundation paid priority attention to reproductive health. It has given a first grant to SMI, and is supporting MASEAN. The (\$ to S , what is this?) cooperation in Population Sciences has a component that deals with maternal mortality. Two projects are now at the protocol stage. One, in Kenya, Zimbabwe, Zambia and Nigeria is to deal with preventing repeat abortions. The second is a multicentre study on the causes of maternal mortality in sub-Saharan Africa. The Foundations hopes to integrate these with WHO efforts.

9. Dr S. S. Ratnam reported on the activities of MASEAN (Medical Association of South East Asian Nations). An Obstetrics and Gynaecology chapter of MASEAN having been formed in 1985 more attention was now being paid to maternal mortality. At a recent meeting in Indonesia, it was decided to discontinue hospital studies and to carry out a collaborative study identifying deaths taking place in the community. It was hoped that this would be completed by July 1988. Based on the findings, the group will make recommendations to governments of ASEAN countries and will undertake intervention studies in areas where quick results are anticipated.

ANNEX A(b)

Country reports

Reporting on the work done in Pakistan, Dr. I. Kamal noted the dearth of reliable information regarding the extent and causes of maternal mortality. She then went on to summarize her pioneer work in the area of TBA training and utilization, both in Pakistan and in other parts of South East Asia.

A study of training and utilization of TBAs in the Eastern Mediterranean Region of WHO revealed that three out of the 19 countries who responded to an enquiry stated that they had no TBAs because health care facilities were adequate. Two countries had no data available and 14 were training TBAs. Up to 95 per cent of the rural births and up to 65 per cent of the urban births took place in the home because of cultural reasons and the personal preference of the mother. Most of these were attended by a birth attendant or a family member.

TBAs perform their traditional role of midwifery during the intra and postnatal period, but very little antenatal care is given by them. After training they are expected to function as referral agents, thus acting as liaison between the community and the health services. They are also supposed to do some health teaching.

Supervision and follow-up were the weakest areas and the negative attitude of the medical profession was considered one of the major problems.

In one country different coloured pictorial referral cards had proved very successful and the community had demonstrated increased confidence in the trained TBAs.

A network of MCH centres exists in all countries, but with one or two exceptions, MCH centres do not provide intra-natal care. So even though the woman gets some ante- and postnatal care she is left with no choice but to be delivered by a TBA or a family member. Institutional obstetrical care is very expensive and beyond the means of the large majority of population in developing countries.

Reporting on the situation in Iran, Dr A. Mehryar also noted that there was no reliable information on the extent and causes of maternal mortality. Given the high fertility rate and a cultural emphasis on early and universal marriage, pregnancy related complications may be expected to be rather common. He then referred to the de-emphasis on family planning and birth control by the revolutionary Government since 1979. He noted that despite this de-emphasis at the policy level, family planning has remained as part of the services provided by the Ministry of Health. According to existing statistics, over 12 million packages of pills and condoms were distributed in 1984. He emphasized the favourable attitude taken by the Ministry of Health viz-a-vis family planning and suggested that research about the extent and correlates of high maternal mortality rates can go a long way in raising the consciousness of national decision makers regarding the need for family planning services as an essential part of MCH programmes.

Dr S. Mehta reported on the situation in India. She noted that there could not be a more opportune time for a focus on this issue. National level statistics on maternal mortality and its causes are not available. It is accepted that the rates are high as evidenced from reports from individual hospitals or small scale population surveys. It is estimated that 110,000-140,000 women may be dying every year due to pregnancy and associated causes (equivalent to 300-400 deaths per day).

She presented a brief overview of the ICMR (Indian Council of Medical Research) activities. Of special interest to the Committee were:

(a) The completed studies on abortion, indicating that a favourable shift towards safe methods, along with methods becoming more safe had taken place between 1975-77 to 1981-82. Similarly, a population based survey indicated that the prevalence of illegal abortion was twice as high as legal abortion, reflecting the limited availability of services in rural India.

(b) The WHO-supported study aimed at improving accessibility to services and increasing community awareness about such services had reached the intervention phase. The final evaluation survey is now in progress.

(c) The final analysis and report writing of the risk approach study (a prospective follow-up of 7,000 pregnant women through pregnancy) is envisaged to be completed later this year. However, an intervention phase has recently been operationalized. This consists of strengthening PHC with minimum necessary equipment and skills, development of an appropriate referral from grass root level to tertiary institutions and community education for demand generation, aimed at improving utilization of services.

(d) Evaluation of quality of family planning and MCH care at PHC level.

(e) The home-based mothers record has been field-tested in six centres in the country and is now being proposed for more extensive evaluation as a child-linked mother's card.

Plans are underway for setting up programmes to monitor maternal mortality and related indices and for the documentation of cause specific maternal mortality. Both programmes will be population-based, since the majority of these events occur outside the health institutions, or, alternatively, a mixed approach linking both institutions and community contacts will be used.

Dr. S. Ratnam reported on the situation in Singapore. Maternal mortality studies have been undertaken since 1965 at intervals of about five years. The MMR has declined significantly from more than 110/100,000 (including abortion-related deaths) in 1985. In the 1960-1965 period there were 9-25 maternal deaths from septic abortion each year, whilst there has been no abortion-related maternal death between 1983 and 1985. Although all births and deaths are registered in the country, there must be an under-reporting of maternal mortality because deaths occurring in the puerperium from associated conditions may not be reported under maternal mortality. The same may apply to ectopic pregnancies from which women die in surgical and medical departments.

One interesting feature of maternity care in Singapore is the integration of the MCH services with institutional care. In the mid-fifties, the Midwives Board was established and by statute the Professor of Obstetrics and Gynaecology was Chairman of the Board. All service and training aspects of maternity care in the country are determined by the Board.

Until 1968, there was only one public maternity hospital, the Kandang Karbau Hospital. Forty-six more clinics in the country were linked to the hospital. The MCH provided domiciliary delivery and after care services from the hospital. Medical students and student midwives had to perform a set number of deliveries and home visits.

Traditional birth attendants were recognized and registered with the Midwives Board. They were provided training and retraining and were supervised by nurse midwives who carried out regular house visits. No new traditional birth attendants were admitted to the services. TBA and domiciliary midwives were suspended if they failed in their duties. Since 1978 all deliveries are performed by trained midwives or physicians and currently 98 per cent of all births take place in institutions.

Talking of her experiences in Zimbabwe, Dr Jane Mutambirwa called attention to the need for taking into account the users and their community's perceptions of the problem as well as the solutions offered. She referred to the existence of two health systems in most developing countries and emphasized that the traditional, informal system of health delivery deserves more attention than it seems to have received. She indicated that informal health networks are not only essential for the delivery of MCH and FP services, but they can also play an important role in the development of research proposals and the collection of meaningful data. She offered several examples from her own experiences to highlight how disregarding these "consumer perspective" may result in defeat.

Dr J. Pinotti, acknowledged the existing gaps in maternal mortality data in most Latin American countries and described some projects being conducted in Portugal and Brazil. The project carried out in Portugal is aimed at revealing unmet needs in the area of maternal health and family planning and is supported by WHO. It has revealed 97 per cent prenatal care coverage and high family planning acceptance. Yet the maternal mortality rate varies from 60 to 10. This is rather high for a country with high literacy rate where 77 per cent of deliveries are by midwives. The project conducted in Brazil (Sao Paulo) has just been started. Here the maternal rate is estimated to vary from 100 to 150 depending on the area of the country studied. Another study in Brazil (Campinas study) revealed declining fertility with 72 per cent of women covered by family planning services. The number of maternal deaths recorded by the Government is about 40 per cent of that established through a survey. Most of the deaths are due to Caesarean Section (CS). Forty-four per cent of all deliveries are by CS, almost half of those without medical indication. The aim is to reduce maternal mortality by 20 per cent.

Dr E. Quamina reported that in the Caribbean most deliveries (75 per cent) take place in hospital and 95 per cent of women receive prenatal care. Despite a high proportion of teenage pregnancies the registered rates of maternal mortality are relatively low. She further observed that despite a high literacy rate, adequate health care, free family planning services, and low infant mortality, the fertility rate of the Caribbean has remained at a high level. She mentioned a hospital study which revealed eleven deaths in 34,727 deliveries, the MMR being 32. Main causes of death were toxæmia, hypertension and diabetes.

Referring to his experiences in socialist countries, Dr Z. Stembera indicated how a combination of readily available MCH services and family planning, including medically supervised abortion, has resulted in the lowering of maternal mortality in most socialist countries. He mentioned that in Cuba transportation is a major problem. To overcome this problem, waiting homes have been developed as part of maternity care services. Cuba has the highest rate of CS among socialist countries and a relatively high MMR (13-15% as compared with less than 10% in other socialist countries). Mongolia, another developing socialist country, has a pronatalist policy and high birth rate. In socialist countries MMR are probably somewhat inflated by the fact that maternal deaths due to other causes are included in the MMR statistics.

The Chinese experience in the area of promoting maternal health was summarized by Professor Yan Ren-Ying, as follows. China is a developing country with over one billion population. Before 1949, that is before the founding of the People's Republic of China, the Chinese people suffered from years of war, poverty and poor health. The birth rate and death rate were both very high and expectancy of life was estimated to be around 30-40 years. Childbirth was considered to be dangerous to a woman's life. In a paper from the Beijing Municipal Maternity Health Institute, the maternal mortality of the city of Beijing had been reviewed in the course of 35 years, showing that the maternal mortality in Beijing dropped perceptively from 685/100,000 in 1949 to 15/100,000 in 1958, simply by training the TBA in aseptic delivery and setting up an MCH network to improve antenatal care. In the second ten-year period, i.e. 1958-68, there has been a slow but continued lowering of maternal mortality. During the next ten-year period, however, "cultural

revolution" broke out, the MCH network was broken and immediately death from rupture of uterus, sepsis and eclampsia increased. In the last five years of this study social order began to return and the maternal mortality rate returned to approximately the 1959-1968 level. This shows that maternal mortality can be made to drop down rapidly, but if the climate changes, it can still go up, i.e. it needs continued effort.

A large-scale maternal mortality study was carried out in 1984, 21 out of 29 provinces and cities were involved, covering a population of 177,550,000. There were 2,483,269 deliveries with 1,211 maternal deaths, making the mortality rate 488/100,000. In the city of Shanghai, maternal mortality was the lowest, 17.7; eleven regions have a maternal mortality of 20-50/100,000, five between 50 100, 4 100. Geographically, those near the coast have the lowest maternal mortality and regions toward the interior have the highest. Maternal mortality in rural regions is double that of urban regions. In the former regions the first cause of maternal death is haemorrhage, accounting for almost 60 per cent of the deaths. In the urban area haemorrhage and HDP each accounted for one quarter of the maternal deaths. A further study is needed.

ANNEX B

List of Participants

Dr Imtiaz Kamal  
128D Block 5  
Federal B Area  
Karachi 3824  
Pakistan

Dr A. Lucas  
Carnegie Corporation of New York  
437 Madison Avenue  
New York N.Y. 10022  
Etats-Unis d'Amérique

Dr A. Mehryar (Rapporteur)  
Department of Psychology  
College of Humanities &  
Social Sciences  
Shiraz  
Iran

Dr J. Mutambirwa  
Godfrey Huggins School of Medicine  
University of Zimbabwe  
P.O. Box A178  
Avondale, Harare  
Zimbabwe

Professor J.A. Pinotti  
Centro de Atencao Integral à  
Saude de Mulher  
Universidade Estadual de Campinas  
Caixa postal 1170  
13100 Campinas - SP  
Brésil

Dr Elizabeth Quamina  
(Vice Chairperson)  
Chief Medical Officer  
Ministry of Health & Environment  
35-37 Sackville Street  
Port-of-Spain  
Trinidad

Dr V. Ramalingaswami (Chairperson)  
Visiting Professor of  
International Health  
Harvard School of Public Health  
665 Huntington Avenue  
Boston, Mass. 02115  
Etats-Unis d'Amérique

Professor S.S. Ratnam  
Department of Obstet./Gyn.  
National University of Singapore  
Kadang Kerbau Hospital  
Singapore 0821  
Singapour

Dr A. Rosenfield  
Director  
Center for Population and Family Health  
60 Haven Avenue  
New York, N.Y. 10032  
Etats-Unis d'Amérique

Dr S.J. Segal  
Director  
Population Division  
The Rockefeller Foundation  
1133 Avenue of the Americas  
New York N.Y. 10036  
Etats-Unis d'Amérique

Dr Z. Stembera  
Director  
Research Institute for the Care  
of Mother and Child  
Polodi, nahr. K. Marxu 157  
147 10 Prague 4  
Tchécoslovaquie

Professor Yan Ren-Ying  
Department of Obstetrics &  
Gynaecology  
The First Hospital  
Beijing Medical University  
Beijing  
Chine

Dr Suman Mehta (Rapporteur)  
Indian Council of Medical Research  
Ansari Nagar  
New Delhi 16  
Inde

Agencies

Dr A. Measham  
The World Bank  
1818 H. Street, N.W.  
Washington D.C., 20433  
Etats-Unis d'Amérique

Ms K. Springer  
United Nations Development Programme  
One, United Nations Plaza  
New York, N.Y. 10017  
Etats-Unis d'Amérique

Dr P. Severyns  
United Nations Fund for Population Activities  
220 East, 42nd Street  
New York, N.Y. 10017  
Etats-Unis d'Amérique

Dr Ofusu-Amaah  
United Nations Children's Fund  
United Nations  
New York, N.Y. 10017  
Etats-Unis d'Amérique

Ms A. Tinker  
United States Agency for International Development  
Washington D.C. 20523  
Etats-Unis d'Amérique

Secretariat

FHE: Dr A. Petros-Barvasian  
Dr R. Cook (Secretary)  
Mrs E. Royston (Rapporteur)  
Dr S. Sapirie  
MCH: Dr M. Belsey  
Dr R. Guidotti  
Dr J. Kierski  
Dr B.E. Kwast  
Dr L. Mehra  
HRP: Dr J. Barzelatto & Dr M. Fathalla  
SHS: Dr H. Khassay

Dr J. P. Vaughan, WHO Consultant  
London School of Hygiene & Tropical Medicine  
Keppel Street, London WC1 7HT, UK