

Critical Issues in Reproductive Health

*Issues in
Essential Obstetric Care*

ISSUES IN
ESSENTIAL OBSTETRIC CARE

**Report of a Technical Meeting
of the Inter-Agency Group
for Safe Motherhood**

May 31–June 2, 1995

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EXECUTIVE SUMMARY

Introduction

This report summarizes the proceedings of a meeting on essential obstetric care (EOC) convened by the Population Council on behalf of the Inter-Agency Group for Safe Motherhood (IAG). The IAG is comprised by the United Nations Development Programme (UNDP), the United Nations Children's Fund (UNICEF)—which hosted the meeting—the United Nations Population Fund (UNFPA), the World Bank, the World Health Organization (WHO), the International Planned Parenthood Federation (IPPF), and the Population Council, and receives secretariat support from Family Care International (FCI). It aims to promote safe motherhood by stimulating national and international collaboration in maternal health through, for example, meetings on key areas for related programming. It is clear that EOC is key to reducing maternal mortality. This technical meeting was held to clarify the definition of EOC, bridge the gap between research and program planning, and stimulate field-level activity.

Scene-setting

Despite achievements in maternal health, the difference between maternal mortality ratios in developed and developing countries remains staggering. The major causes of maternal death are obstructed labor, hypertensive disorders of pregnancy, hemorrhage, infection, and the complications of unsafe abortion. Many of these complications cannot be prevented or predicted with any certainty in advance. As such, it follows that all women must have access to *emergency* obstetric services, such as blood transfusion and cesarean section, to deal with any complication that arises. The group agreed that these emergency services are key, but that they should form part of a set of essential obstetric services— including non-emergency services; just as there is no point in providing community-based maternity care to women unless referral services to treat complications exist, many feel that the converse is also true. The broader set of services known as EOC has been defined variably by a number of agencies, and it was agreed that the group should come to some consensus in this regard. WHO agreed to draft a definition for consideration, which will continue to be discussed and refined.

Operations research in this field has generated some important lessons regarding the two possible points of intervention to reduce maternal mortality: interventions to prevent the complication from arising or those to prevent it from being fatal. Various key research endeavors were described—both in terms of their methods and outcomes—and discussed.

WHO described its newly developed Mother-Baby Package in terms of its objectives, content, and underlying philosophy. The Package intends to accelerate country-level action to improve maternal health, and focuses on preventing, detecting, and managing the major causes of maternal mortality. While EOC is emphasized, a broad-based approach to maternity care is considered essential.

Country Examples

In Vietnam, the Population Council is working with the government and the World Bank to explore the impact of upgrading commune health stations and district hospitals on the percentage of deliveries that are appropriately managed. The upgrading to be undertaken will include essential infrastructure improvements, life-saving skills (LSS) training, and instituting the capacity for cesarean section in district hospitals.

In Mexico, recent research has shown that the care pregnant women receive differs based on their socioeconomic status. While the situation is improving, work remains to be done. Fortunately, maternal health is now higher on the national agenda. A national Safe Motherhood Committee, formed after the national Safe Motherhood Conference in 1993, has undertaken a range of activities to ensure that the conference recommendations are implemented.

In Zimbabwe, the maternal mortality ratio has been rising slowly since 1990, and there are numerous problems related to the provision of EOC. Activities to improve the current situation are underway. The government aims, for example, to improve the staffing of rural health centers (RHCs). It has also upgraded and equipped eight district hospitals and their respective RHCs for improved communications and transport, and plans to extend this to more facilities.

Meeting the Community Halfway

It was suggested that the entire health system must be examined before recommending increased training in and delegation of maternal care functions. Arguments for and against including a task in the job description of any type of health worker must consider the frequency of its performance, its importance, and its level of difficulty. If one analyzes maternal care functions, it is clear that they share many common sub-tasks; it can thus be argued that a health worker performing any of the activities on a regular basis is maintaining a set of skills common to other essential activities. Training programs, however, must place much more emphasis on the development of problem-solving skills and on practical training.

A wide range of conditions associated with maternal mortality and/or severe morbidity was examined in terms of both primary and secondary prevention. It was suggested that while primary prevention measures for some complications are not yet known, secondary prevention is possible in all cases if early detection, transport, and health personnel with the necessary skills and resources are available.

Strategies to reduce maternal mortality must ensure that the community is aware of the warning signs of complications, knows what actions to take, and is motivated to take them—in addition to ensuring that equipped facilities, trained staff, and transport are available. The group learned about the steps required to develop an information, education, and communication (IEC) campaign that is most likely to change behavior. Involving the

community throughout the process is essential if people are to understand, accept, and act on IEC messages.

Improving Existing Services: Quality of Care

A situation analysis tool has been developed by the Population Council to make possible the evaluation and improvement of essential obstetric services. The tool is designed to assess the status of equipment, supplies, infrastructure, and service provider skills required to manage life-threatening maternal conditions. Use of the tool in Vietnam has indicated that it has great potential for bringing service delivery problems to light, and therefore in guiding responses to these problems.

Strengthening referral systems is key to improving the quality of care. An improved midwifery outreach service in The Gambia has had a significant impact on maternal mortality. Quality midwifery care was determined to be key to strengthening the referral system. The relationships between midwives and traditional birth attendants (TBAs), and between midwives and higher level referral services, were also considered to be important, as was 24 hour availability of transport.

Some maternal health interventions are either under- or overutilized in certain contexts; rigorous evaluation of these interventions can help correct this situation. This was demonstrated with regard to a range of interventions. In addition, a strategy was outlined to assist in determining the interventions to include in a package of maternity services.

Improving Existing Services: Human Resource Development, Management, and Training

The 1992 maternal mortality study in Egypt found that poor diagnosis and management on the part of the obstetric team or general physicians contributed to 59 percent of maternal deaths. It was determined that medical school curricula were in need of review and revision. At Al-Azhar Medical School, a committee was established to develop a curriculum, which is now being tested. The curriculum reduces the teaching of non-essential details and repetition and emphasizes basic skills, relevant knowledge, positive attitudes and ethics, and practical training.

In Ghana, midwives are the main providers of health care in rural areas, where 70 percent of the population resides. The Life-Saving Skills (LSS) training program aims to provide midwives with an expanded number of skills for preventing and managing obstetric emergencies and complications. Both trainers and trained midwives report positive results. There is a need to increase the number of training sites, to enable more midwives to benefit. A range of key issues also need to be addressed: When should the trained midwives receive refresher training? How often and what skills will need to be reinforced?

A training manual has been developed by the Program for Appropriate Technology in Health (PATH) in collaboration with other institutions to improve inter-personal communication and counseling (IPC/C). IPC/C has four basic elements: it requires two-way communication;

it intends to support the correct use of services; it helps people make voluntary, informed, and well-considered decisions regarding their own health; and it involves respecting each person's needs and realities. The use of the IPC/C methodology in Bolivia was described to the group.

In Brazil, national, state, and local committees on maternal mortality have been established. Local committees are responsible for performing audits in cases of maternal death. The committee in São Paulo meets to discuss cases and propose or carry out remedial measures. The committee has found that almost all of the maternal deaths reviewed could have been avoided. Numerous factors promote persistently high mortality despite the availability of the resources necessary for EOC. Areas for action include increasing awareness of the problem among health personnel and increasing referrals for hospital delivery—and ensuring that there is space available for those who are referred. This was the most significant problem in many of the cases examined.

Evaluating and Disseminating Information on Components of EOC

The World Bank has developed a model to enable the evaluation of the costs of EOC. It is intended for country-level use: relevant, setting-specific data need to be entered into the model to provide cost estimates for that setting. Using hypothetical demographic, epidemiological, and infrastructural assumptions, the model was used to illustrate the costs of EOC by input and by intervention. Salaries represent a very large proportion of input costs; management of normal deliveries represents the bulk of intervention costs.

The group then considered the issue of randomized controlled trials (RCTs) related to pregnancy and childbirth. It was suggested that the only way to promote the beneficial effects of interventions, and to guard against their harmful effects, is to conduct well-designed clinical trials with sample sizes that are large enough to enable the derivation of correct conclusions.

Various evaluation methods were discussed. It was suggested that RCTs may not always be the solution for evaluating the kinds of complex health packages that governments put into place on a large scale, for a range of reasons. In reviewing 150 articles related to maternal health services, it was found that most studies are of poor quality. Only 22 used any form of comparison at all. Developments in research to assess the quality of EOC were also presented and discussed.

The steering committee of WHO's Safe Motherhood Operational Research Programme (SMOR) recently met to consider lessons learned and chart a future research agenda. The primary recommendation was that research should focus on efforts to maximize or improve the impact of various components of the Mother-Baby Package. Plans are also afoot in the areas of health services research and technology development and assessment, as well as to incorporate the user's perspective by involving women in the development of research strategies from the onset.

For many technical reasons, maternal mortality levels cannot be used easily to chart progress in reducing maternal mortality. Instead, well-chosen and well-crafted process indicators, which measure the means by which we hope to achieve impact, are needed to design, monitor, and evaluate programs. Two of the indicators used by the Prevention of Maternal Mortality (PMM) Network of Columbia University—the admission-to-treatment interval and the case-fatality rate—were used as examples. It was also emphasized that there is a need to move from a clinical to a public health perspective in this field; newly developed indicators such as the unmet need for EOC can help us to take this perspective.

Research results need to be communicated to program managers and policymakers to be effective. The example of the concept of quality of care in family planning was used to illustrate this process. First, a community of common interest was found, and small informal meetings were held to raise doubts about the status quo. This was followed by formal substantive meetings to validate the agenda. Next, a user-friendly framework of quality was developed; a state-of-the-art paper was published; country-level meetings were held; and indicators were developed and evaluated. The effort is now focused on reaching operational staff and policymakers through, for example, disseminating the results of situation analyses of service delivery points and information on programs that are doing better than average.

From Rhetoric to Reality: The Enabling Environment

Capacity building for maternal-child health (MCH) service provision in Tanzania focused on increasing the availability of technologies and skills used in executing tasks, but ignored other aspects of capacity building. Among other problems, MCH is not highly valued at the policy level; low wages and poor management result in limited staff commitment; and leadership and resources are lacking in the community. Many recommendations for change—including establishing a living wage for service providers, developing and enforcing a supervisory and managerial system, and ensuring that donors invest in demand-driven initiatives—were proposed to help build an environment in which capacity is truly developed and EOC can function effectively.

While the Safe Motherhood Initiative has had many successes, particularly in raising awareness and galvanizing research, the extent to which rhetoric has been translated to reality is less clear. Maternal mortality rates have not declined over the last ten years and many barriers remain. A number of these, such as the culture of health service providers and the structure of health services, were presented to and discussed by the group. The low status of women health workers—on whose shoulders many of the responsibilities of improved EOC fall—is particularly key. Gender is a factor that cannot be ignored in efforts to reduce maternal mortality: as an example, doctors, who are predominantly male, have been unwilling to delegate responsibility to midwives, who are predominantly female, yet experience has demonstrated the key role midwives can, and must, play.

Conclusion

Ms. Margaret Catley-Carlson, President of the Population Council, summarized and closed the meeting. She drew parallels between the work of the IAG and that of the Task Force for Child Survival; in the initial stages of the latter initiative, there were preliminary disagreements on the directions intervention strategies should take. The Task Force drew its strength from recognizing the value of all perspectives: disagreement is part of a process of moving toward a goal of common interest. She noted that the IAG is making progress, but that work remains to be done. Progress will begin to occur more rapidly when we are able to prove that lives have been saved and to state definitively that an intervention package has worked. She noted that in order to improve women's health, we need to step up global advocacy and enable the world's women to become advocates for their own health. We also need to translate our wisdom into the vernacular, and to pledge to make our research as relevant, rapid, and accessible as possible.

"We must communicate, communicate, communicate: great ideas are not great ideas unless they are communicated to those who can use them to better the status quo."

INTRODUCTION AND SCENE-SETTING

Welcome and Introduction

France Donnay, UNICEF, USA

I am happy and honored to welcome you to UNICEF for this important meeting. Programs in maternal health are evolving; this meeting is an important step in our exchange of views and experiences.

I would like to take this opportunity to reaffirm UNICEF's commitment to assist governments in their efforts to address the major causes of maternal mortality and morbidity. UNICEF's role in maternal health is particularly apparent when one thinks of the high risks faced by adolescents. UNICEF plans to promote the following five key interventions, which were adapted from WHO's Mother-Baby Package, as its strategy for women's health.

1. Promotion of emergency obstetric care at health centers and district hospitals.
2. Promotion of safe or safer delivery, with an emphasis on the training and deployment of *skilled* providers, such as nurses, professional midwives, and physicians, rather than traditional birth attendants (TBAs). We will also emphasize counseling women and their families on early recognition of the signs of pregnancy-related complications and on the importance and means of taking action quickly when these complications arise.
3. Mobilization of community-based women's groups to improve women's health through, for example, their involvement in organizing transport systems for women with complications.
4. Creation of national coalitions on safe delivery to monitor maternal mortality and morbidity and serve as advisory boards on key women's health issues.
5. Advocacy for the establishment of integrated reproductive health services for women, men, and adolescents including family planning, the prevention and management of the complications of unsafe abortion, and the prevention and treatment of sexually transmitted diseases (STDs) and reproductive cancers.

Youth health and newborn care are also essential components of our strategy. In summary, UNICEF plans to use its implementation capacity in the area of adolescent and women's health, not only through education and advocacy, but also through health promotion and service delivery. Most of the issues outlined above will be discussed at this meeting. UNICEF is certainly the right place to hold it: the word "woman" is not bracketed in this house!

On behalf of our new Executive Director, Ms. Carol Bellamy, I wish everyone here the best for a productive meeting.

Review of Inter-Agency Group for Safe Motherhood Role and Activities, 1992–1994

George Brown, The Population Council, USA

The Inter-Agency Group (IAG) was formed soon after the groundbreaking 1987 Safe Motherhood Conference. It is comprised of seven agencies: UNDP, UNFPA, UNICEF, the World Bank, WHO, IPPF, and the Population Council. From the outset, FCI has provided the group with secretariat support. The original goal of the IAG was to help promote the achievement of the goals of the Safe Motherhood Initiative, including the stimulation of national and international collaboration, reaching outside the group for expertise and cooperation as much as possible. Each member carries out activities to improve maternal health according to its specialty areas. IAG members have convened meetings, prepared protocols and guidelines, and conducted research for program and policy development in safe motherhood.

In 1992, the World Bank, then the IAG Chair, convened a meeting to invite interested agencies to become more involved in the Initiative, review the Initiative's progress up to that point, and set priorities for the future. The meeting underscored the fact that many agencies, especially bilateral donors, wanted to be more involved. The meeting also charted a turning point from an emphasis on advocacy to an emphasis on country-level action.

The experience of developed countries has taught us that maternal mortality cannot be reduced by socioeconomic development alone. It requires improvements in health care infrastructure and behavior. Several essential action areas have been delineated: the prevention and management of unwanted pregnancy and safe abortion services; safe pregnancy and delivery services; the prevention and management of sexually transmitted diseases (STDs), including AIDS; the promotion of positive health practices, using both public education and counseling; and the prevention of practices harmful to health, such as violence against women.

Over the last eight years, we have learned several important lessons that we can incorporate into programs: to be effective, safe motherhood programs must reach everyone in the community; family planning is an essential but not sufficient service to reduce maternal mortality; prenatal care is linked to improved maternal health, but is not enough on its own; emergency care must be available in order to reduce the toll of death from unpredicted and unpredictable complications; postpartum care is neglected, despite the fact that postpartum complications account for a substantial proportion of maternal deaths; there must be a continuum of care, moving from the community to skilled medical back-up, in order to save women's lives; safe, humane and cost-effective services for the management and prevention of abortion complications can reduce the prevalence of maternal mortality substantially; adolescent reproductive health services are urgently needed; and, finally, maternal health is not an isolated problem—women's lives are constrained by their low status, which has an impact on their chances of surviving pregnancy.

This meeting will focus specifically on program development in one particular area: essential obstetric care (EOC). We felt the time was right for a technical meeting that

would begin to bridge the gap between related research and its use in program planning.

Meeting Overview

Beverly Winikoff, The Population Council, USA

During this meeting we will review what we have learned about essential obstetric care (EOC), beginning by examining its definition, importance, and significant related research. We will then turn our attention to country examples of the delivery of EOC in different environments. Next, we will look at some of the components of improved services. We will examine how services can reach the community and how the community can be empowered to reach services. We will also deal with the importance of improving the quality of services and developing human resources.

We will then turn to evaluation and information dissemination. If programs are to be implemented, they must be cost-effective and affordable. We will look at how to evaluate the cost of interventions and how to judge their effectiveness. Without such evaluations, we will not know which interventions to emphasize and may persist in using program components that are at best wasteful and at worst detrimental to well-being. Next, we will turn our attention to the role of research, including the ways research results can be communicated to policymakers to help ensure that they are incorporated into programs. Finally, we will look at the ways in which the environment surrounding programs influences their success.

Tackling the problem of maternal mortality is daunting; yet it is only part of a comprehensive movement to improve women's health. We must not forget to deal with other health issues, including reproductive health issues that are not specifically linked to pregnancy. We must remain concerned, for example, with high rates of reproductive tract infections and anemia, and domestic violence, rape, and sexual abuse.

The importance of reproductive health was highlighted forcefully by the Programme of Action of the International Conference on Population and Development (ICPD) held in Cairo in September, 1994. This document places safe motherhood within the broader framework of reproductive health and underscores the international community's acknowledgement of the continuing relevance of activities related to reducing maternal mortality and morbidity. We must not lose sight of the importance of these issues as we approach the Fourth World Conference on Women to be held in Beijing. We need to convey clear, programmatically relevant messages to reinforce the strong and progressive words that were crafted in Cairo. With this in mind, it is our hope that during this meeting we can review the current status of EOC, provide an opportunity for technical assistance and donor agencies to develop a common approach to EOC, stimulate collaboration and partnerships, and reinforce our mutual commitment to work for the improvement of women's reproductive health and status.

**Essential Obstetric Care as an Essential Service to Reduce Maternal Mortality:
The Definition of Essential Obstetric Care and Evidence of its Importance**

Allan Rosenfield, Center for Population and Family Health,
Columbia University, School of Public Health, USA

Ten years ago, Deborah Maine and I published an article in *The Lancet* called "Where is the "M" in MCH?"¹ which evolved from our belief that women's health, and especially pregnancy-related health, was being ignored by the public health community and even obstetricians and gynecologists.

It is now 1995. Where is the "M" in MCH now? A great deal has changed since 1985. The Nairobi Safe Motherhood Conference in 1987 led to the launching of the Safe Motherhood Initiative, bringing international attention to the neglected issue of maternal mortality. The International Conference on Population and Development (ICPD) held in Cairo in September, 1994 brought attention to a broader agenda of women's status and sexual and reproductive health, and placed continuing concern about maternal mortality in this more comprehensive context. Hopefully these gains will not be overturned at the Women's Conference in Beijing.

Despite our achievements, the difference between maternal mortality ratios in developing and developed countries remains staggering, ranging from 100 to 1,000 deaths per 100,000 live births in the former, compared to 8 to 15 per 100,000 live births in the latter, with some 500,000 women continuing to die each year from pregnancy-related causes. The major causes of death remain the same: obstructed labor and ruptured uterus; hypertensive diseases of pregnancy and eclampsia; postpartum hemorrhage; postpartum infection; and the complications of unsafe abortion.

Following are two intervention strategies that have been proposed to deal with the problem:

1. Essential Obstetric Care (EOC or EsOC), which, in some definitions, includes a broad array of services including family planning and antenatal, intrapartum, and postpartum care; and
2. Emergency Obstetric Care (EOC or EmOC), which includes more specific interventions such as blood transfusion, intravenous antibiotics, cesarean section, the management of abortion complications, and vacuum or forceps delivery.

There is a fundamental difference between the two approaches: EsOC, in some definitions, focuses on all pregnant women and is based on the idea that obstetric complications can be predicted and prevented, employing the concept of "high risk." EmOC, on the other hand, focuses on the prompt identification, referral, and treatment

¹ Rosenfield A. and D. Maine. 1985. "Maternal mortality—a neglected tragedy. Where is the M in MCH?" *The Lancet* 13, 2:83–85.

of women with obstetric complications.

Table 1 shows the number of cases of obstructed/not obstructed labor in Kasango, Zaire between 1971 and 1975, according to the women's obstetric history. While the relative risk of obstructed labor based on poor obstetric history is high, at 9.2, the sensitivity of this risk factor is poor, at 29 percent; the false positive rate of 90 percent, implies that, in the case of Kasango, 90 percent, or 141, of the women identified at being at high risk based on obstetric history did not develop complications—a very high proportion of false positives. Even though women classified as being at "high risk" do indeed have a higher risk of developing the complication, there are so many more women classified as being at "low risk" that they, in fact, account for the vast majority of complications and deaths.

TABLE 1			
Obstetric History: Kasango, Zaire 1971–1975			
Type of labor	Obstetric History		Total
	Bad	Good	
Obstructed	15	36	51
Not obstructed	141	3,422	3,563
Total	156	3,458	3,614
Relative risk: $(15/156)/(36/3,458) = 9.2$ Sensitivity: $15/51 = 29\%$			
False positives: $141/156 = 90\%$			

In the past, UNICEF and others made numerous attempts to address the problem of maternal mortality by providing prenatal care and training traditional birth attendants (TBAs) in settings with little or no access to the services needed to treat women with complications. In my opinion, this is the wrong order: one must put treatment modalities in place first. Cervical cancer provides a good analogy: there is no point in developing screening programs unless facilities are available to treat identified problems. Information, education, and communications (IEC) programs provide another example. There is no point in motivating the community to use services that are not in place; we decrease community confidence if we do not provide the means for them to put into practice what we have taught them.

The experience of the developed world clearly demonstrates that socioeconomic development and education alone are insufficient to reduce maternal mortality. Care for those who develop complications must be available. The U.S. and Europe were relatively developed in the early 1900s—but maternal mortality remained high. In a highly educated, current-day U.S. religious sect that not believe in medical intervention, maternal mortality is on a par with that in the least developed countries.

Effective community-based approaches have been developed to combat infant mortality, such as GOBI-FFF (Growth monitoring, Oral rehydration, Breastfeeding, Immunization, Family planning, Food security, Female education). In the area of maternal mortality, community-based family planning plays an important role: by reducing the number of pregnancies, one will reduce the number of maternal deaths. Community education can be used to teach people about safe delivery practices, how to recognize complications, and where to go if they arise—but again, services to treat these complications must be

available. Community mobilization and the development of transport systems is also key—but, yet again, services for the treatment of complications must be available. By and large, there is relatively little that can be done at the community level, other than family planning, to reduce maternal mortality—the interventions available to those who work in the area of child survival simply do not exist in our case.

Interventions that can be provided at the health post level include the provision of obstetric first aid, ergometrine, antibiotics, sedatives, and, possibly, vacuum aspiration to treat incomplete abortion. Other key interventions cannot be provided at this level. At the health center level, provided one or more trained workers and equipment are available, basic EmOC can be provided, including oxytocics, antibiotics, manual removal of the placenta, assisted delivery, and vacuum aspiration to treat incomplete abortion. At the district hospital level, comprehensive EmOC must be available, including blood transfusion, intravenous antibiotics, cesarean section—which general physicians and well-trained nurses can provide—and vacuum aspiration for the management of abortion complications.

We have been derelict in the area of abortion. We have not effectively advocated for women's early, ready access to treatment for complications using vacuum aspiration, which is safer and more effective than dilation and curettage (D&C), although this is essential to reducing maternal mortality. For years, UNICEF's essential health kit has provided the old D&C dilators.

Is "safe motherhood" the right term for our work? Many women have complications related to unintended/unwanted pregnancies and unsafe abortions; sometimes, the catchy term is not the right term.

Mahmoud Fathalla's "Road to Maternal Death" illustrates the factors that contribute to maternal death: lack of education, lack of access to family planning, lack of access to prenatal care, constrained access to facilities with EmOC, and inadequate care upon arrival at such facilities. Deborah Maine's "Three Delays" model, which includes delays in the decision to seek care, delays in reaching care, and delays in receiving care at the facility once the woman arrives, is also key to our thinking. There are interventions that can be effective in combating each of these delays: educating communities about when and where to seek care; mobilizing communities to improve transport for women with obstetric emergencies; and upgrading health centers and district hospitals to provide EmOC.

Once EmOC is in place and functioning, in our opinion, *then* the related array of maternity care services should be developed—*not* vice versa. Maternal mortality *is* "curable," that is, most deaths are preventable, even if the conditions leading to death usually are not. All that is needed is the will and the allocation of necessary resources. Upgrading for EmOC is affordable: expensive, tertiary-level "disease palaces" are not necessary.

**Operations Research in Safe Motherhood with Special Reference to
Emergency Obstetric Care**

Judith Fortney, Family Health International, USA

Operations research assesses the impact of an intervention on an outcome. Since the goal of the Safe Motherhood Initiative is to reduce maternal mortality, the outcome we want to measure is maternal mortality. Beginning with the assumption that complications (morbidity) lead to mortality, there are two possible points of intervention: one can intervene to prevent the complication or one can prevent the complication from being fatal. In the area of maternal mortality, interventions have been designed for both.

An assumption essential to applied research is that an intervention is logically capable of affecting the outcome; this requires thinking about the way it will do so. Surprisingly, interventions are sometimes proposed that either cannot logically achieve the desired impact or are dependent on other simultaneous interventions, which may or may not be in place, to have an impact.

A successful intervention will have a clearly defined intervention and outcome, and will be limited in scope. For example, an intervention could be to renovate an operating room to functioning status; the outcome would be more timely cesarean sections for obstruction, and, as a result, fewer deaths from this cause. Another example, which is similar on the surface, is to train traditional birth attendants (TBAs) to refer women with prolonged labor (the intervention). The outcome would be more referrals, and, again, fewer deaths from obstruction. There are difficulties here, however: the patient may not comply or services may not be available. Referral will be insufficient to achieve the desired impact without the presence of other factors.

Let us examine the research of some institutions active in this arena. As there are two speakers from WHO still to come, I will speak only briefly on their work. WHO's biggest contribution has been research to help guide recommendations for preventing or managing specific complications, including their studies of the partograph. This research found that the partograph was effective for monitoring the progress of labor in women delivering in facilities. A new WHO operations research project will evaluate the impact of a well-designed antenatal care (ANC) program.

The Prevention of Maternal Mortality (PMM) Network of Columbia University chose 12 teams to conduct a range of operations research activities. Each of the teams identified problems, determined which problems were amenable to intervention, and then developed, implemented, and evaluated the interventions. Each team focused on a single cause of death. Their experience makes it very clear that causal pathways merit close attention: What is the intervention's mechanism of action? Is impact logically possible?

The PMM Network has also taught us that the choice of outcome variables is crucial; there are several levels of outcome and these vary in terms of their proximity to the

intervention. The program has been very innovative in its use of process indicators and has measured both impact and process variables to evaluate the impact of interventions. The outcomes to which the PMM teams addressed their research are illustrated in Table 1.

Admission-to-treatment interval: this is a process indicator; adding another operating room, for example, will reduce this interval. If other factors remain the same, the assumption that case fatality will decline is not illogical.

Case fatality rates (CFR): this is an impact indicator; if the admission-to-treatment interval declines, and other factors do not deteriorate, then CFR will decline.

TABLE 1		
Outcome Variables		
	Process	Impact
Demand	Number of women with complications seeking treatment	Unmet need
Supply	Admission-to-treatment interval	Case fatality rates

Number of women admitted with complications: this is a process indicator; logically, women with complications who do not present for treatment will not be affected by any modifications of or improvements in services. If, however, community confidence in a health facility increases, demand for services will increase, and unmet need will decline.

Unmet need: this is an impact indicator. The Safe Motherhood Initiative has identified addressing unmet need for maternity care as essential to lowering maternal mortality. It can be measured by dividing the number of women presenting for treatment of specific complications by the estimated number of those complications in the population.

The Population Council is also conducting research in safe motherhood. Operations research projects are underway in Ecuador, Ghana, and Vietnam. In the interest of time, I will limit my comments to the project in Ghana. The interventions planned are emergency treatment, life-saving skills (LSS) for clinicians, use of clinical protocols, referral, and transport. Data will come from pregnant women as well as from institutions. The outcome variables are met need (percentage of complications treated); the cost of meeting this need; percentage of normal pregnancies receiving "appropriate" care; and maternal and neonatal outcomes. Met need is an excellent choice of variable, and is well defined. It is not clear, however, what the interventions have to do with "appropriate" care for normal deliveries, nor how that should be defined. The maternal and neonatal outcomes will need much more specific definition before we can tell if they are useful.

I will now describe two of MotherCare's projects, both in Indonesia. The first, in Tanjungsari, evaluated several interventions intended to increase the proportion of mothers with complications who delivered in a medical facility. The interventions were intended to influence the decision to seek care (by providing information, education, and communications to families and training TBAs to recognize and refer complications);

ease of transport (by building birthing homes on a road and providing four-wheel drive vehicles); and confidence in facilities (by upgrading facilities and training staff). The outcome variables were well chosen, and the interventions appear to have been relatively effective. Every process variable of importance changed in the right direction.

For example, the percentage of women with complications going to medical facilities was 31 percent in the study area, compared to 11 percent in the control area. Changes in impact variables have not been reported. The second project, in Probolinggo District, East Java, evaluated the use of an antenatal scoring system for its impact on maternal death (see Table 2). The end points, which were well chosen, included compliance with recommendations, sensitivity, and specificity. All three were found to be very poor.

The investigators concluded, correctly, that the sensitivity and specificity were too poor to warrant recommending general adoption of antenatal risk scoring. Even though "very high risk women" were 20 times more likely to die, they accounted for only 19 percent of the deaths. This particular risk scoring system was not well designed, however, insofar as it emphasized demographic risk factors.

I am now going to describe an excellent piece of operations research, the results of which are difficult to interpret. Midwives were stationed in villages in Matlab Thana, Bangladesh, with instructions to attend as many births as they could, and to provide ANC to as many women as possible. This was a good intervention—one for which the causal pathway is reasonable.

Appropriate process indicators (the percentage of women who received ANC from midwives, the percentage of deliveries attended by midwives, and the percentage of deliveries referred and accompanied) and impact indicators (maternal mortality ratio) were chosen. It was reported that the maternal mortality ratio dropped from 440 to 140 per 100,000 births in the study area while in the control area, it fell from 390 to 380. The logical conclusion, which the researchers drew, is that stationing midwives in rural areas can significantly reduce maternal mortality. However, the midwives attended only 13 percent of births, and visited only 44 percent of pregnant women; if we look only at women who were not attended at delivery by midwives and assume that they would have had the same risk of death as women in the control area, then there should have been 16 deaths instead of the six that in fact occurred; and the cause of death that showed the greatest reduction was abortion, which could not

TABLE 2			
Maternal Deaths by Risk Score			
Risk category	Maternal deaths (total)		Maternal deaths at home
Low	9	35%	8
High	12	46%	11
Very high	5	19%	3
Total	26	100%	22
Source: Rochjati, P., et al. 1995. <i>MotherCare Matters</i> 5(1): 12-15.			

logically have been influenced by the described intervention. It is evident from this that we do not fully understand how the introduction of midwives influenced maternal mortality. The causal pathway, while apparently simple, is far from clear. Researchers have an obligation to question welcome findings as rigorously as they question unwelcome ones.

Essential Obstetric Care—Its Role and Importance in the Mother-Baby Package

Carla AbouZahr, World Health Organization, Switzerland

The World Health Organization (WHO) has learned a great deal from five years of research in safe motherhood. Through epidemiological research, we have learned that the causes of maternal death are similar the world over, and that substandard care is a major contributing factor. From our operations research, we have learned that traditional birth attendant (TBA) training, on its own, has a limited impact on maternal mortality and morbidity; that antenatal care (ANC), on its own, is inadequate to reduce maternal mortality; and that communities do not have the information they need to make appropriate decisions on the use of health services.

The Mother-Baby Package developed by WHO drew on these research results. It was developed to accelerate country-level action to improve maternal health. It defines the minimum interventions to which all women must have access, presenting a more integrated approach to maternal health care within a broader reproductive health framework. The Package is not a prescriptive document; rather, it is a technical and managerial tool for health care providers to adapt to their own contexts.

The philosophy of the Mother-Baby Package is that safe motherhood involves improving maternal health as well as preventing maternal deaths, and that it also benefits babies. Additionally, it recognizes that some complications can be prevented, and most can be managed, through primary health care. Finally, it conceives of safe motherhood as an attainable objective, even in settings with limited resources.

The Package addresses all three pathways to reducing maternal mortality, as well as their associated interventions, as illustrated in Table 1. None of these interventions is sufficient on its own; all are necessary.

The Package recognizes the importance of empowering women, although this is a long-term endeavor. Short-term efforts must focus on ensuring access to maternity care for all. It also recognizes that any pregnant woman, even one who is well nourished and in good health, can develop complications at any time during pregnancy, labor, and the puerperium. The Package stresses the importance of intervention before delivery, especially for women with preexisting conditions, such as anemia or sexually transmitted diseases (STDs). The antenatal interventions promoted are only those known to be effective in improving maternal and neonatal outcomes.

TABLE 1	
Reducing Maternal Deaths	
Reduce:	Through:
· Number of high risk and unwanted pregnancies	> Family planning
· Numbers and severity of obstetric complications	> Pre-pregnancy care and ANC to prevent problems and detect complications early > Clean and safe delivery > Postpartum care
· Case fatality rates in women with complications	> Access to essential obstetric care

The Package focuses on preventing, detecting, and managing the major causes of maternal mortality. Indirect causes, such as anemia, are also given attention. It emphasizes the need for essential obstetric care, including:

- surgical obstetrics (cesarean delivery, surgical treatment of sepsis, for example, colpotomy), repair of high vaginal and cervical tears, laparotomy, removal of ectopic pregnancy, evacuation of the uterus, intravenous oxytocin, amniotomy, craniotomy, and symphysiotomy);
- anesthesia;
- medical treatment (of sepsis, shock, eclampsia, and anemia);
- blood replacement;
- removal of the placenta, repair of episiotomies and perineal tears, labor monitoring, vacuum extraction, and partography;
- management of problem pregnancies (intensified ANC); and
- neonatal resuscitation and management of hypothermia.

Some interventions can be planned for in advance, while others cannot. Not every case requiring essential obstetric care (EOC) will be an emergency. EOC will be needed for women classified as being at high risk, either because of factors present at the beginning of pregnancy (for example, previous cesarean delivery) or for those arising during the course of pregnancy (for example, pre-eclampsia). All EOC procedures should be available at the first referral level. Many, however, can and should be performed at lower levels of the system, in health centers and health posts. The

Package describes where different elements of EOC can be provided.

EOC is the end point in a continuum of care linking women and families to peripheral and district level health facilities. The link between these levels is best assured by an individual with midwifery skills who lives in the community alongside the women she cares for. Upgrading the skills of midwives to enable them to provide high quality care for all women and to respond to obstetric emergencies can help to reduce maternal mortality. Additional support is needed from doctors and obstetricians for the management of certain complications and the provision of surgical interventions.

In countries where TBAs attend a large proportion of home deliveries, training courses can be effective in upgrading their knowledge and strengthening the link between communities and health systems. This approach, however, should be seen as a way of "bridging the gap" until all women have access to professional midwifery services.

The Package recognizes the need to ensure a focused approach to avoid dispersing energy and resources, and acknowledges the limitations of interventions that have, in the past, often received the lion's share of funding, including TBA training and poorly defined and low quality ANC. At the same time, it emphasizes that a broad-based approach is essential and that a focus on any one component of care to the exclusion of the others cannot succeed. Successful delivery of EOC requires a functioning system that links communities with health services.

Discussion points following the introductory session included:

- Dr. Sibley stated that Dr. Rosenfield's presentation seemed to propose that if EmOC capacity has not been achieved, then one should not, for example, provide iron supplementation in the prenatal period. In response, Dr. Rosenfield stated that providing iron supplementation prenatally will *not* reduce maternal mortality; achieving that goal requires being able to *treat* complications that arise. He added, however, that such interventions do have other benefits—in this case, reducing the prevalence of anemia.
- In response to Dr. Fortney's presentation, Ms. AbouZahr asked whether or not changes in risk factors in the community could also contribute to the decline in the case fatality rate (CFR). Dr. Fortney noted that women could, if community demand for services increases, arrive with less advanced complications, which would influence the CFR.
- Ms. Maine and Dr. Fortney noted that the nature of maternal mortality is such that people tend to react emotionally when confronted with the *mathematical* fact that the risk approach to maternity care does not work: as stated by Ms. Maine, if the prevalence of a condition is low—as is the case with maternal mortality—one is better off flipping a coin to predict it than to attempt to predict it using the risk approach.

· A number of participants noted that maternal morbidity was neglected in the model presented by Dr. Rosenfield. Dr. Mehta noted that, too often, intervention models in this field focus exclusively on preventing death, and that, from a public health perspective, morbidity should be the focus. In response, Dr. Rosenfield reiterated the point that all factors that cause mortality cause morbidity—and that the same interventions are required for treatment. The conditions that cause maternal mortality or major morbidities are the same, only in one case you survive, in the other you do not.

· Traditional birth attendant (TBA) training was a focus of the discussion related to Ms. AbouZahr's presentation. Dr. Rosenfield noted that there is a 30-year history of TBA training, and that the major programs have not been evaluated; funding TBA training programs has become a "reflex" response, and millions of dollars have been and are being spent on this intervention, which has no impact. In response, Ms. AbouZahr stated that she considers it important to evaluate the work of TBAs and to *improve* their training, certain aspects of which can have an impact (for example, training them to stop engaging in dangerous practices, such as inserting foreign objects into the vagina, heavy massages, and so forth). She also noted that one cannot go from a situation in which no care is being provided to one in which ideal care is provided; it is essential to build on what is available.

· In response to the session in general, Ms. Tinker expressed hope that the group would come to some agreement regarding the definition of EOC, so as not to confuse those in developing countries who are working to develop related programs. She asked whether there are studies available regarding the impact of EmOC on its own—without the supporting structure of other aspects of the maternity care continuum. Finally, she noted that the ethos regarding women's health that was reflected at the International Conference on Population and Development, held in Cairo, should be kept in mind: we should not limit our interest to the small number of women who develop complications.

DELIVERY OF AND ACCESS TO ESSENTIAL OBSTETRIC CARE: COUNTRY EXAMPLES

Vietnam: Safe Motherhood Demonstration Project

Kirrin Gill, The World Bank, USA

The Safe Motherhood Demonstration Project in Vietnam, which is being undertaken in the provinces of Bac Thai in the North and Lam Dong in the South, is a joint effort of the World Bank and the Population Council. It is being conducted in collaboration with the Vietnamese Ministry of Health and UNICEF, and has the potential for expansion into a national program for upgrading essential obstetric care (EOC).

The project focuses on upgrading commune health stations and district hospitals to improve EOC and abortion services, including referral and transport. The purpose of the project is to determine the costs of upgrading obstetric services and the impact of these interventions on the pregnancy outcomes of women who deliver institutionally, who are the majority in Vietnam (experts estimate that 75–80 percent of births take place in health facilities). Official estimates place the maternal mortality ratio at 110 per 100,000 live births, but other estimates point to far higher figures.

The outcome indicator for the study has been defined as the percentage of institutional deliveries appropriately managed, and at what cost. The study design is illustrated in Table 1.

TABLE 1			
Study Design: Project Province			
District 1	District 2	District 3	District 4: UNICEF
Control (no upgrading)	Hospital EOC upgrading	Hospital & commune health station EOC upgrading	Hospital & commune health station MCH/FP upgrading

Upgrading at the commune level will include some essential infrastructure improvements, improvements in supplies and equipment, life-saving skills (LSS) training for midwives, referral and arrangement of transport for emergencies, and, possibly, Manual Vacuum Aspiration (MVA) training for safe abortion. District hospital upgrading will include similar measures, as well as efforts to institute the capacity for cesarean section. The UNICEF package includes a broad range of maternal-child health (MCH/FP) and family planning services, but is not focused on obstetric care.

This is our plan—but putting it into practice will be more complex. Upgrading is in progress and completion is planned for the end of the summer of 1995. Baseline situation analyses and quantitative assessments of the project districts have taken place, which have enabled us to identify issues related to upgrading in the Vietnamese context. Some of these are discussed below.

Facilities at the commune level are in very poor condition, which may contribute to underutilization. As such, it is proposed that the government work with the project on essential infrastructure improvements, such as protective roofing and adequate lighting, which will help to remedy the situation.

Drugs are outdated, and some essential drugs and supplies are unavailable. As a result, the essential drugs and equipment necessary for midwives to practice LSS will be supplied through the project.

The skill levels of midwives were found to be much poorer than expected; infection control is a particular problem. As such, the project will train both primary and secondary midwives; in addition, one trainee in each province will be a doctor, to ensure the support of the medical community and improve prospects for ongoing training.

Emergency transport from commune health stations ranges from motorcycles to public buses to hammocks. Travel time to district hospitals averages about a half hour to an hour. The LSS training will need to emphasize working with communities to establish improved referral and transport systems.

There were 1.5 million abortions in Vietnam last year (compared to two million births) and post-abortion infection appears to be a common problem. The project will, therefore, work with International Projects Assistance Services (IPAS) and the Ministry of Health to train midwives and physicians in MVA.

The capacity to perform cesarean sections does not exist in most provinces at the district hospital level. Blood banks do not function due to financial problems and irregular electricity.

Numerous factors point to the strategy used in this demonstration project as being an appropriate strategy for the Vietnamese context: most women deliver institutionally; a health care infrastructure exists; there is a real need for upgrading both skills and facilities; commune facilities are underutilized; there is strong government and professional commitment to the project; trained professionals exist, making it possible to focus on upgrading their skills; there are training sites with significant case volume; and various agencies in Vietnam have shown interest and support.

These factors are also likely to contribute to the success of this type of project in other countries. This project, therefore, is appropriate for countries with an extensive health care infrastructure.

Project constraints include the difficulties inherent in effective coordination and the cost of upgrading: many improvements are needed, and funds are limited.

Essential Obstetric Care and the Safe Motherhood Initiative in Mexico

Ana Langer, The Population Council, Mexico

Maternal mortality in Mexico decreased from 529 per 100,000 live births in 1940 to 45 in 1993. Nonetheless, it is still high relative to other countries, and the gap that has always existed between Mexico and developed countries has increased: in 1940, the relative risk of dying due to maternal causes in Mexico and the United States was 1.4:1; in 1985, it was 7.4:1.

The results of the Demographic and Health Survey (DHS), as well as a more recent survey conducted in 1994, have facilitated our understanding of the maternal health services available and utilized by women of different socioeconomic categories in Mexico. The levels of care and treatment that pregnant women receive differs according to such factors as level of education, the size of the area in which women live, their degree of marginalization, and their economic circumstances. Poor women in rural settings, for example, have less access to care.

Access to prenatal care in Mexico varies significantly based on women's socioeconomic status. While data from the 1994 survey reveal that the proportion of women who receive no prenatal care has decreased from 16 to 7 percent in the last six years, only 21 percent of women who lack education and 8.7 percent of those who live in small villages receive such care. Factors that may be related to recent improvements in overall prenatal care coverage include rapid urbanization, a decrease in illiteracy, and an increase in women's participation in the labor force, in addition to an expansion in the coverage of care per se.

The 1994 survey also included questions on key prenatal interventions. The prenatal interventions provided vary depending on the type of health care provider involved. Blood pressure monitoring and the prescription of iron supplements are more common when the woman is seen by a physician than when a traditional birth attendant (TBA) provides the care, yet tetanus toxoid immunization is more likely to be administered by TBAs than by doctors.

Access to delivery care is also uneven. In 1987, two-thirds of women were cared for by a physician during delivery, while the remaining 34 percent were delivered by a TBA. In rural areas, however, untrained TBAs attended 45 percent of deliveries, while in urban areas almost all women were delivered by doctors. Two-thirds of women with no schooling were delivered by a TBA, or delivered alone. Data from the 1994 survey indicate that the situation is improving: 88 percent of women are currently cared for by a physician at delivery. The proportions are very similar in rural and urban areas: 85 percent and 89 percent, respectively. Differentials by level of schooling are also now weaker: only 25 percent of illiterate women are delivered by TBAs. This improvement is due partly to efforts to increase coverage in neglected areas and social groups, as well as to improvements in the socioeconomic factors referred to above.

Social, economic, and other factors are linked to differentials in maternal mortality, and

provide us with an indirect way of determining the extent to which women's needs for maternal care are being met. For instance, women with no formal education are nine times more likely to die than those who have finished high school; and women who live in highly marginalized areas are three times more likely to die than those who live in the least marginalized areas.

Until 1987, hemorrhage was the principal cause of maternal death in Mexico. Since then, eclampsia has been the principal cause, at various times; infection is the third most frequent cause; and abortion the fourth. It must be noted that severe under-registration in the case of induced abortion makes it difficult to interpret national data. Obstructed labor, however, a common cause of maternal mortality in other countries, is a very infrequent cause in Mexico. Socio-demographic profiles have been established to classify deaths by cause as a strategy for estimating access to essential obstetric care (EOC): preventable causes of death, such as hemorrhage and infection, are concentrated among women who live in highly marginalized areas, have limited education, and lack social security.

Maternal health appears to have become a priority for the government, due in part to the 1987 International Safe Motherhood Conference and the 1990 World Summit for Children. Strategies to reduce maternal mortality in Mexico have focused on improving women's status and the coverage and quality of family planning services and pregnancy and delivery care. The Mexican national health system has demonstrated its commitment to the following remedial measures recommended by international fora through a range of programs. "Maternal Mortality Committees" have been set up in all health institutions, and a National Program for Maternal and Child Health—which includes strategies to increase obstetric coverage, train primary health care personnel and TBAs, promote community health, and improve information systems—has been established. These programs, however, have been implemented with varying degrees of intensity, and no evaluation has been conducted to date.

In addition, a National Safe Motherhood Committee was created in March, 1993, to follow up on the recommendations of the National Safe Motherhood Conference held in Mexico earlier that year. The conference, which is widely regarded as a turning point for reproductive health and rights in Mexico, involved multi-partisan parliamentarians, academics, representatives of women's groups, health service providers, technical experts, and a range of other groups. The Committee formed following the conference has helped to galvanize and foster collaboration among a range of organizations and to institutionalize commitment to safe motherhood at the national level. Its activities have included the development of a three-year plan of action to implement the conference recommendations, the production and wide dissemination of *Safe Motherhood in Mexico*, a book that compiles conference information on the dimensions of and potential remedial strategies related to maternal mortality in Mexico, and the production of a biannual newsletter. In addition, the Committee developed a brochure to assist the mass media in its effort to provide accurate information to the public.

The Committee has also organized and supported state-level conferences and committees and has convened workshops on key issues. Furthermore, it is currently

testing a community-based model for the timely detection of problems during pregnancy. "Health posts" are being established where women gather in public places as part of their routine activities. Each pregnant woman will be provided with care by two persons: one who will measure blood pressure and check for the presence of edema and anemia; and one who will complete a questionnaire including a "high risk score." Women who are found to have a problem and/or an important risk factor will be referred to the nearest health care facility.

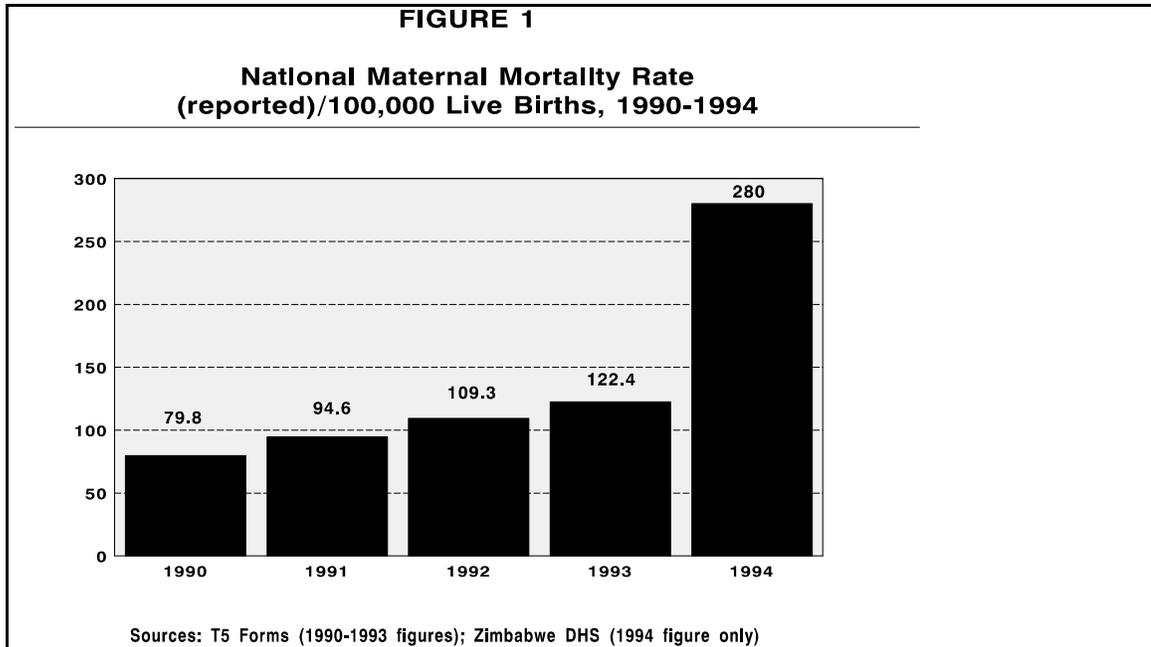
The Committee is also designing a research project to identify strategies for preventing maternal mortality using the *verbal autopsy* methodology, which is based on interviewing relatives of deceased women to aid in the establishment of the cause of death and factors surrounding it.

While maternal health in Mexico has improved, it is evident that persistent inequalities in access to and quality of care remain and are based on social differences. Maternal mortality is one of the most telling indicators of the disparities between, for instance, educated and uneducated women. Recent developments, most notably increasing commitment to address the problem, give us cause to be optimistic. Nonetheless, the challenge is enormous. Changing women's social status is a long-term objective that can only be attained within the framework of Mexico's social development. It is essential to expand the coverage and quality of services; such efforts should be focused, above all, on those regions in greatest need and on underprivileged groups.

Zimbabwe: The Current Status of Essential Obstetric Care

Buhle Ncube, Ministry of Health, Zimbabwe

According to facility-based studies, the maternal mortality ratio (MMR) in Zimbabwe has been *rising* slowly since 1990, from 79.8 deaths per 100,000 live births to 122.4 in 1993 (See Figure 1). The most recent data available from the Zimbabwe Demographic and Health Survey (DHS) indicate that the MMR may be far higher than the less representative facility-based data indicate, at 280.



The government of Zimbabwe has adopted a primary health care approach to meet the population's health needs, premised on the following beliefs: that the promotion of health depends fundamentally on improving socioeconomic conditions and on the elimination of poverty and underdevelopment; that in this process, the people should be the major activists and the main beneficiaries; and that the entire health care system should be restructured to support activities at the primary level, which respond to the health needs of the people.

Community participation is part of the country's tradition and is encouraged in the health system. This includes contributing materials and labor for construction of local health centers and mobilizing the community to seek preventive health care and assist with the identification of cases of communicable disease. The system, which is four-tiered, promotes mutual respect and communication between health care providers and patients; it is illustrated graphically in Figure 2.

**Figure 2
Structure of Health Services
Zimbabwe, 1995**

PRIMARY LEVEL	COMMUNITY WORKERS RURAL HEALTH CENTERS
SECONDARY LEVEL	DISTRICT HOSPITALS
TERTIARY LEVEL	PROVINCIAL HOSPITALS
QUATERNARY LEVEL	CENTRAL HOSPITALS SPECIAL HOSPITALS (for example, psychiatric hospitals HEAD OFFICE OF MINISTRY OF HEALTH AND CHILD WELFARE

Maternity services include tetanus toxoid immunization, antenatal care (ANC), and medically supervised delivery. The percentage of women who receive the two doses of tetanus toxoid needed to prevent neonatal tetanus has fallen, however, from 93 percent in 1990 to 53 percent in 1993. On the other hand, ANC coverage increased from 90 percent in 1984 to 93 percent in 1994 (See Table 1). The proportion of medically supervised deliveries has remained steady at almost 70 percent over the last decade, with about 57–59 percent performed by nurse-midwives and 11–13 percent by doctors. Traditional birth attendants (TBAs) attend about 7 percent of reported deliveries, and about 20 percent are conducted at home by relatives or friends. Based on the results of a recent study, limited formal use of health facilities may reflect the poor attitude of nurses towards patients, the poor knowledge and skills of some health care providers, the high cost and limited availability of transport, and lack of access to services.

TABLE 1			
Maternal Care Services: National 1984, 1988, and 1994			
Type of Care	1984	1988	1994
Some form of ANC by trained medical personnel	90%	91%	93%
Medically supervised during delivery	70%	70%	68%
Sources: Zimbabwe Reproductive Health Survey, 1984; Zimbabwe DHS, 1988 and 1994.			

A manual of standard emergency obstetrics and gynecology practice, which is aimed at standardizing the management of obstetric emergencies at different levels of the health care system, is under development. Currently, an obstetric referral manual is available in all facilities where deliveries are conducted. In addition, the Zimbabwe Essential Drugs Action Programme (ZEDAP) has produced modules on the management of obstetric cases as reference material for all levels of the health care system.

At the community level, efforts to reduce maternal mortality should be tied to emergency obstetric care. Community participation is critical: many factors prevent women from obtaining timely medical care, including transportation, distance, and costs, as well as delays at the facility. Overall, some type of health care is available within eight kilometers of 85 percent of all married women. While this is a high level of coverage, it remains below the national goal of 100 percent.

Funding from UNICEF and UNFPA had enabled the training of about 32,000 TBAs by December, 1990. An evaluation of the program revealed, however, that it lacked both central coordination and critical components of training, such as observation of deliveries. In addition, while a national syllabus exists, most rural health center (RHC) nurses who conducted the training were not aware of it. The evaluation recommended that fewer, more literate TBAs be trained, but in more depth.

The government aims to improve the staffing of RHCs, posting three nurses, two of whom are trained in midwifery, at each. Currently, one to two nurses staff the RHCs. Problems arise when nurses trained in midwifery are off duty and the need for care at delivery arises. To achieve this goal, the government has upgraded midwifery training centers.

Equipment for essential obstetric care (EOC) at RHCs varies. Most, but not all, have emergency drugs, electricity is not widespread, and oxygen cylinders exist but need to be better maintained. Resuscitation equipment is available in all RHCs.

During the first phase of Zimbabwe's Family Health Project, eight district hospitals and their respective RHCs were upgraded and equipped for improved communications. The district hospitals were provided with at least one ambulance with a two-way radio for communicating with RHCs. In addition, telephones or radios were installed in most of the RHCs. Depending on the distance between the RHC and the hospital, however, it can still take hours to transport women in need of care. In communities where other vehicles exist (for example, police or army vehicles), these are used to transport women. Staff accommodation was also improved, increasing staff retention, and, therefore, access to services. Similar activities will be carried out in the project's second phase, which will cover 16 districts.

At the district level, a lack of doctors has resulted in disruptions to the referral system, hampering access to EOC. Each of the 34 district hospitals should be staffed by at least one District Medical Officer (DMO). One province has no DMOs, and another has only one, an expatriate. In addition, each of the country's provincial hospitals should

have a specialist in obstetrics and gynecology. Currently, only one of these facilities has such a specialist. As a result, most women with complications that are not manageable at the district level must be referred to the central level, increasing the delay between the onset of complications and the receipt of care. Central hospitals are better staffed; they are located in the larger cities and are more attractive to physicians.

In conclusion, it is important to note that about 24 percent of Zimbabwe's population of 10.95 million are women of reproductive age; the population growth rate is 3.14 percent, implying a doubling of the population in only 22 years. These figures underscore the need to improve the quality of and access to maternal health care. While current facilities are providing services to the majority of women of reproductive age and some indicators have improved, there are areas in need of improvement. The creation of a home-based maternal record card to monitor maternal care indicators, for example, is one potential improvement. In addition, the management of patients should be standardized for more rapid referral of women in need of additional care. RHCs should be staffed by nurses with midwifery training. Finally, women's status needs to be improved, primarily through education.

Discussion points following the session on country examples of delivery of and access to EOC included:

- Dr. Koblinsky noted that all three countries represent settings where a large proportion of women deliver institutionally, while in most of the countries where MotherCare is active, about 5–10 percent of women deliver in institutions, and this is very difficult to change.
- Ms. Foord and Dr. Gardiner stated that it is important to remain aware of what women want and questioned whether or not it is best to institutionalize care.
- In response to a question related to the decline in the number of deliveries at commune health posts in Vietnam and the related human resource situation, Ms. Gill noted that the situation relates almost exclusively to the changed political system. Previously, the health care system had been based on government support. Providers are now not being paid, and are not present in the facilities. (Dr. Sloan added that, as of this year, providers will begin receiving some payment from the government.)
- Dr. Fortney expressed concern about the outcome being used in the Vietnam demonstration project (appropriate care for normal deliveries). She noted that there are definitional problems with both "appropriate" and "normal," but that the project's technical advisory group is making progress in operationalizing "appropriate." Dr. Sloan concurred that these terms are difficult to define but that work at the Population Council is proceeding to make them functional.
- Dr. Gardiner noted that each country presentation positioned EOC within a reproductive health context, and that this is very reassuring given our desire to view reproductive health in a more integrated manner and health problems in a more holistic context.

MEETING THE COMMUNITY HALFWAY

The Feasibility of Decentralizing Essential Obstetric Care to Peripheral Facilities

Iain W. Aitken, Harvard School of Public Health, USA

Nine years ago, the WHO defined the skill and facility levels required for the performance of essential obstetric functions; since then, debate about the delegation of these functions has continued. Case studies have demonstrated that midwives and other paraprofessionals are capable of performing a range of related procedures, including cesarean sections. These skills, however, are generally not available in rural communities, and midwifery personnel in these communities have not been trained. Doubts remain about the feasibility and wisdom of this approach.

It is important to recognize that countries vary significantly in terms of where, and by whom, deliveries are performed. As such, the entire maternal health care system must be examined before recommending increased training in and delegation of maternal care functions, to ensure that expectations can be met. For instance, if midwives are already overloaded with responsibilities, training them to perform more tasks will not improve the status quo. In some cases, staff availability, rather than training, may be the problem. In addition, we must remember that rural people are pragmatists and have much more faith in experience than in formal qualifications. It *is* feasible to decentralize essential obstetric care (EOC) to peripheral facilities, but the burden of proof is on us to demonstrate that communities can have confidence in the "halfway house," by making it possible for health workers to perform EOC functions effectively. In addition, regardless of the degree of delegation, the referral system remains key: training must be accompanied by the upgrading of district hospitals and corresponding reorganization of staff time and work.

For many, the major concern is whether midwifery personnel are able to perform essential obstetric functions in a safe and competent fashion. Arguments for and against including a task in the job description of any particular type of health worker must consider three key aspects of that task: the frequency of its performance, its importance, and its level of difficulty. For instance, if case loads are large, trained midwives will be able to perform tasks frequently enough to maintain their skills, but case loads are often not large enough for this to be the case. In considering the importance of a task, one must determine the consequences that would result if a needed procedure is not performed, or is performed poorly. The time factor is important here: it can be argued, for example, that the relative urgency of controlling eclamptic fits makes it a more important task than the management of sepsis. The difficulty of a task can be determined by asking how often it is performed badly or incompletely. For example, the repair of high vaginal and cervical tears is more difficult than the repair of an episiotomy.

There are different types of skills, which require different abilities and pose varying levels of difficulty to health workers with different levels of education and training. Abbatt and MacMahon¹ distinguish three main types: manual skills, decision skills, and

communication skills. The debate over delegation of emergency care tasks often focuses on such manual procedures as manual removal of the placenta. These may not be performed frequently; therefore, it is suggested, they are likely to be performed badly. An analysis of many of these functions, however, demonstrates that they share common sub-tasks (which are also common elements of other aspects of women's reproductive health care). The table below lists a number of reproductive health tasks related to the essential skills involved in performing and interpreting a pelvic examination: conducting a speculum examination, introducing and removing instruments into and from the cervix, and conducting a bimanual examination.

TABLE 1	
Tasks Related to the Performance and Interpretation of a Pelvic Examination	
Activities	Related tasks
Prenatal care	Diagnose and manage/refer cases of abortion, ectopic pregnancy, acute pelvic inflammatory disease, and urinary tract infection
Delivery care	Monitor labor with partograph Use oxytocic drip and vacuum extractor to assist delivery Manual removal of placenta Repair vulvo-vaginal tears
Postpartum care	Recognize and refer uterine infection
Family planning	Insert and remove IUDs, having excluded pregnancy and infection
Abortion care	Diagnose length of gestation Diagnose stage of abortion and any complications Perform manual vacuum aspiration (MVA) of retained products if indicated Perform MVA for menstrual regulation as indicated
Reproductive tract infections (RTIs)	Make clinical diagnoses of infection and treat according to protocols

Thought of in this way, it can be argued that a health worker engaged in any of these activities on a regular basis is maintaining a set of skills that are common to other essential tasks and activities.

A mix of different proportions of problem-solving skills is found in all populations in both industrialized and developing countries. Obstetric management, especially in the case of complications, requires problem-solving skills, and often the consideration of several different issues at one time before reaching a judgement. The fact that specialist obstetricians often disagree on how to manage particular cases serves only to underscore the difficulties that may face midwifery staff in this regard.

In approaching the task of training midwifery staff for independent rural practice, therefore, we should be aware of the trainees' problem-solving capacities. Problem-

solving skills can be developed, especially for specific situations, but training programs need to foster the development of such skills.

While knowledge is important, training programs need to place much more emphasis on practical experience. Only in this way can midwives develop competence in the range of manual skills that will allow them confidently to manage situations that arise less frequently. Only by having to take responsibility for making decisions while they are in training will they develop and consolidate problem-solving skills. They must be given the opportunity, within a supportive training context, to be responsible for teaching traditional midwives or running a community-oriented activity. Only in this way will they develop the skills and confidence they need to relate to communities and their leaders. Sadly, evidence from Africa and Asia indicates that training programs do not function in this way; these skills are not effectively fostered.

Is it possible to decentralize EOC to peripheral facilities? I believe that many manual skills can easily be learned and maintained by midwifery staff. Some of the management and decision skills may not be managed so well. Before we proceed, however, we need to examine the whole maternal care system into which we propose to introduce these extra skills and to make sure that training programs are going to deliver what we expect.

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The Prevention, Early Detection, and Management of Complications of Pregnancy

Richard Guidotti, World Health Organization, Switzerland

The Mother-Baby Package recently developed by WHO fosters the principle that most pregnancy-related complications can be prevented or managed without expensive technologies or drugs. Three major elements are necessary: informing women about pregnancy-related warning signs; ensuring community assistance with referral and transport; and ensuring that health services are capable of preventing and treating complications.

The following discussion describes the prevention, early detection, and management of antenatal complications that are significantly associated with maternal mortality and/or severe morbidity. Two categories of prevention will be discussed: primary prevention, or averting the occurrence of disease using a range of prophylactic methods, and secondary prevention, or early detection of disease and appropriate treatment to prevent progression to a more critical phase. Sixteen significant antenatal maternal health conditions will be reviewed. The strategies recommended for managing these conditions are illustrated in Table 1.

TABLE 1

The Prevention, Early Detection, and Management of Complications of Pregnancy

Complications	Detection	Primary prevention	Secondary prevention
Nutritional anemia	Clinical signs/symptoms (blood test, if available)	Nutritious diet Iron/folate	Iron/folate Intramuscular iron Blood transfusion (where safe blood transfusion services are available)
Malaria (low level of transmission)	Clinical signs/symptoms (microscopy, if available)	None recommended	Anti-malarials
Malaria (high level of transmission)	Clinical signs/symptoms (blood test, if available)	Chemoprophylaxis	Anti-malarials
Hookworm	Clinical signs/symptoms (stool test, if available)	Sanitary efforts	Anthelmintics
Syphilis	Blood test (VDRL; Rapid Plasma Reagin)	Condom use	Antibiotic therapy
Urinary tract infection (UTI) (symptomatic)	Clinical signs/symptoms (urine test, if available)	Unknown	Antibiotic therapy
Prolonged rupture of fetal membranes	No delivery within 12 hours of rupture of membranes	Unknown	Antibiotic therapy
Placenta previa	Painless third trimester bleeding	Reduce incidence of cesarean section	Hospitalization for diagnosis and treatment
Abruptio placenta	Painful bleeding during third trimester or labor	Control of hypertension?	Hospitalization for diagnosis and treatment
Ectopic pregnancy	Missed menstrual period Lower abdominal pain Syncope	Condom use Early diagnosis and treatment of sexually transmitted diseases (STDs)	Hospitalization for diagnosis and treatment

Complications	Detection	Primary prevention	Secondary prevention
Spontaneous abortion	Vaginal bleeding during first five months Passage of tissue	Unknown	Uterine evacuation Oxytocics Antibiotics (for prevention of infection)
Septic abortion	Vaginal bleeding during first five months Passage of tissue Signs of infection	Family planning Safe abortion practices	Uterine evacuation Oxytocics Antibiotics Hospitalization
Severe pre-eclampsia	Blood pressure Proteinuria Edema Clinical signs/symptoms	Calcium supplementation?	Anti-hypertensive therapy Anti-convulsive therapy (magnesium sulfate) Hospitalization for definitive treatment
Eclampsia	Convulsions	Anti-hypertensive therapy Anti-convulsive therapy (magnesium sulfate) Hospitalization for definitive treatment	Anti-convulsive therapy (magnesium sulfate) Hospitalization for definitive treatment
Presenting with complaint of vaginal discharge	Syndromic diagnosis has been suggested where no definitive laboratory tests for specific RTIs are available Laboratory testing is the gold standard	Condom use	Antibiotic therapy
Asymptomatic bacteriuria	Urine dipsticks	Unknown	Antibiotic therapy

Nutritional Anemia in Pregnancy

It is estimated that more than half the pregnant women in the world have anemia; in many studies, it is cited as the most frequent indirect cause of maternal mortality. WHO recommends that all pregnant women in developing countries be given iron/folate during the antenatal period as a prophylactic measure. Women who are determined to need treatment should be given a higher dose of oral iron. In a situation in which anemia becomes life threatening to the woman, she will need immediate hospitalization and intramuscular iron or even blood transfusions (but only where safe blood transfusion services are available). Hemoglobin measurement is useful in evaluating the therapeutic effect of iron therapy, which, if found to be unsatisfactory, should lead to the investigation of other possible causes of anemia.

Malaria in Pregnancy

Every year, approximately 45 million pregnancies occur in malarious regions of the world. Malaria during pregnancy may result in acute hemolytic anemia, cerebral malaria, and fetal complications. Strategies for both the management of acute malaria and the prevention of maternal, placental, and fetal malaria have relied almost entirely on the use of anti-malarial drugs. The spread of resistant malaria has left the impression that low dose prophylaxis will be ineffective and will lead to increased drug pressure, promoting ongoing selection of resistant strains. However, studies have demonstrated the benefits of providing efficacious anti-malarial drugs to treat or prevent malaria in pregnancy. The objectives of drug intervention differ according to malaria endemicity. In all settings, but especially in settings with low transmission and low maternal anti-malarial immunity, pregnant women are at high risk of developing severe malaria-related complications, and the objective is to treat malaria illness in order to eliminate the risk of maternal or fetal mortality. In settings with high levels of malaria transmission, the objective is to eliminate or limit placental infection in order to reduce fetal exposure.

Hookworm in Pregnancy

Hookworm infection and related iron deficiency are significant health problems in developing countries. An estimated 44 million pregnant women are infected each year. Recent research in Sri Lanka found that treating pregnant women with anthelmintics and iron supplementation had a more significant impact on hemoglobin levels than iron supplementation alone. Recent recommendations state that in areas of high prevalence, all pregnant and lactating women should receive single dose oral anthelmintic treatment. Treatment should not be administered during the first trimester of pregnancy.

Sexually Transmitted Diseases (STDs)

The incidence of STDs in developing countries is believed to be high. Complications of untreated STDs can include infertility, fetal wastage, neonatal and maternal infections, and ectopic pregnancy. Syphilis, for example, can result in spontaneous abortion, fetal death in utero, premature delivery, and congenital syphilis. Although health services should aim to prevent STDs in the general population, many women will not be diagnosed until they present for antenatal care. The adverse outcomes of maternal syphilis are preventable. The key to effective intervention is to improve existing

antenatal care with an emphasis on motivating women to attend clinics early in pregnancy, adequate screening at first attendance, and early treatment of women and their partners with a reactive test. Diagnosis of other STDs is more difficult, however, and many developing countries do not have the laboratory facilities required. A syndromic approach to the management of STDs has therefore been developed and promoted in a large number of countries. Since this approach is based on identifying consistent groups of symptoms and easily recognized signs and providing treatment to deal with the majority of organisms responsible for producing each syndrome, it cannot be used in asymptomatic populations; the large majority of antenatal patients are asymptomatic.

Urinary Tract Infections (UTIs)

UTIs are the most common complication during pregnancy. Where possible, pregnant women should be screened for asymptomatic bacteriuria, which is estimated to affect up to 10 percent of pregnant women; around 30 percent of these women will eventually develop acute pyelonephritis.

Prolonged Rupture of the Membranes

WHO recommends immediate prophylactic treatment with antibiotics for possible prolonged rupture of the membranes (where delivery has not occurred within 12 hours of the rupture of the membranes), in order to prevent ascending infections and possible septicemia.

Antenatal Hemorrhage

Antenatal hemorrhage can result from abruptio placenta and placenta previa. Women and health workers must be advised that painless third trimester bleeding (possible placenta previa) and painful bleeding during the third trimester or labor (possible abruptio placenta) indicate a need for immediate medical assistance.

Ectopic Pregnancy

Women and health workers must be advised that lower abdominal pain and missed menses, particularly in areas with high STD prevalence and/or if the woman has a history of pelvic inflammatory disease, may be indicative of ectopic pregnancy. Medical assistance should be sought immediately.

Abortion

The complications of abortion account for 10–50 percent of all maternal deaths. Facilities should be equipped to handle both simple evacuations and more difficult septic abortions. Preventing abortion-related deaths requires both increasing access to family planning and safe abortion services.

Fetal Malpresentation/Multi-fetal Pregnancy

Fetal malpresentation is associated with difficult and/or obstructed labor, and their consequences. All women with a malpresentation/transverse lie must be referred to the first referral level. While primary prevention is not possible, detection during antenatal care is critical. It is also essential to identify and refer women with twin pregnancies for institutional delivery, as they face higher risks of maternal and fetal morbidity.

Pre-Eclampsia/Eclampsia

Health workers are capable of ensuring the early detection and management of hypertensive disorders of pregnancy. Early detection depends on measuring blood pressure, notably before and after 20 weeks gestation, measuring proteinuria, and assessing for edema. Magnesium sulfate is the treatment of choice. Anti-hypertensives should be administered if blood pressure is very high. Referral for definitive treatment should be initiated if eclampsia is diagnosed.

In conclusion, while primary prevention measures for some of the complications discussed above are not yet known, preventing an existing complication from progressing is achievable in all cases. It requires early detection, transport, and health personnel with the necessary skills and resources. It also requires will and cooperation among governments, NGOs, and other agencies.

Essential Obstetric Care: Community Awareness, Involvement, and Support

Ellen Themmen, Family Care International, USA

Many maternal deaths in developing countries occur outside of medical facilities, either in the home or on the way to the hospital. Large numbers of women also die in medical facilities after they have overcome such barriers as distance, poor transportation, and cost. Appropriate, high quality, and timely care can save many of these lives. As a result, strategies to reduce maternal mortality must be three-pronged: facilities that provide life-saving services must be available and accessible; emergency transportation systems must be set up with community involvement and support; and the community must be aware of the risk factors and symptoms of obstetric complications, know what actions to take, and be motivated to take them.

It is clear from the literature on essential obstetric care (EOC) that more attention and funds are allocated to upgrading services than to informing and educating communities. Before women with obstetric complications will seek care, however, they must be able to recognize the danger signs and understand their seriousness. In Ghana, for example, a study in one district found that ignorance about maternal complications contributed significantly to delays in seeking treatment. A well-focused information campaign *can* address such problems by bringing about behavioral change. A radio campaign in Nigeria, for example, was developed to alert women and communities to the danger of labor lasting more than 24 hours. During the years following the campaign, the incidence of vesico-vaginal fistulae decreased significantly at the hospital serving women within the catchment area of the campaign.

Developing an information campaign to change behavior requires a great deal of thought and effort. There are eight closely related steps in the process, as described below. This eight-step plan was developed by Family Care International (FCI) as part of a manual entitled "Getting the Message Out: Designing an Information Campaign on Women's Health."

1. The first step is to *ask the community which problem or problems they think are urgent and should be addressed*. Depending on the local causes of maternal mortality, a specific problem, such as hemorrhage, may be chosen.
2. Step two consists of *gathering information on community knowledge, attitudes, and practices*. Focus group discussions and in-depth interviews are the best research methods to use since they enable people to talk about their perceptions and behaviors, and the reasons behind them. Messages can then be designed to encourage them to think about or do things differently. Discussions during this phase should also encourage people to explore possible solutions to problems. Target groups should include not only women of reproductive age, but also men, family members, local leaders, and care providers who influence what women do or, in some cases, even make decisions for them.
3. The third step involves *analyzing the research* to set the specific objectives of the campaign and determine the content of the messages.
4. Step four involves *creating the messages*. Members of the target groups, as well as professional writers, artists, and technical specialists, should be involved. Messages should be targeted to a specific group, focused on a specific problem, and action oriented.
5. Step five, *choosing information channels*, should be taken concurrently with step four; the form and content of the messages must vary according to the information channel used. Potential channels include print, folk, mass, and visual electronic media, as well as special events and personal communication and counseling, each of which has different advantages.
6. *Pretesting the messages* with members of the target group is the sixth step; changes must be made to ensure that people understand and like the messages, and feel that they are relevant. Many campaigns fail because they skip this step.
7. Step seven involves the *production and distribution of the messages*, which requires careful consideration of the target audience. Posters, for example, should be placed where many people will see them, and radio broadcasts should be scheduled when the target group is most likely to be listening.
8. The eighth and final step involves *monitoring and evaluating* the campaign's effectiveness. This step can help identify where improvements can be made. Monitoring should be ongoing and built in to campaign development from the onset.

Information campaigns have been highly successful for services such as family planning; of the few campaigns that have been conducted on EOC, some have been successful, and others have not. Many have not been evaluated. The most effective campaigns tend to be very specifically targeted or run in conjunction with a new or improved service.

In Faisalabad, Pakistan, for example, an emergency ambulance service was developed to bring life-saving treatment to women with complications. The service, however, was poorly utilized. An intensive campaign was undertaken to increase awareness of the service, targeting lady health visitors, traditional birth attendants, doctors, influential community members, and expectant mothers and their elder female relatives. Within a year, requests for the service had increased significantly. Another example is provided by a campaign conducted in rural areas around Accra, Ghana. Commercial transportation workers, who had tended to be unwilling to transport emergency cases or had charged very high prices to do so, were targeted. The campaign aimed to increase their awareness of maternal health problems and their critical role in saving women's lives.

In summary, to change behavior, an information campaign must be well focused, it must give people clear instructions about what to do, and it must help them overcome the obstacles they face. Involving the community throughout the process is essential; only then will messages be understood, accepted, and acted on by the people they are designed to help.

Discussion points following the session on meeting the community halfway included:

- In response to Dr. Aitken's presentation, Dr. Koblinsky asked whether it is possible to model the number of complications needed for skill maintenance or the loss of skills over time. Dr. Aitken responded that one could indeed model the former, but that we do not yet know how to model the latter. He also reiterated the fact that there are a number of commonalities among skills, and that, as such, one could monitor the performance of related sub-tasks. Dr. Taylor asked about the appropriate time for midwifery staff to return for refresher training and how to determine which of their skills need to be reinforced. Dr. Aitken responded that one can get a sense of the problems that are being mishandled at the referral level or talk to the midwives about the problems they are confronting, and what they feel they need.

- Dr. Koblinsky noted that training is costly, and that women do not use improved services; demand creation—to improve use of mid-level health services—has not worked. As such, should we focus on the hospital and community, and skip the middle level of the system—a level that is often bypassed by women? She referred to the limited time-frames for achieving results imposed by donors. Dr. Aitken responded that the time-frame is the critical issue: making significant changes in 10–15 years is difficult. He also agreed that user bypassing of the middle rung is a common phenomenon and indicated that unless there is major investment in this level of the system so that adequately trained staff are available, this situation will not change. Ms. Tinker added that user bypassing of the middle level is leading to overcrowding at higher levels of the health system and that bypassing this level in terms of investment will only exacerbate this already significant problem. Drs. Senanayake and Fortney agreed that donor time-frames are too restrictive: real change takes longer to occur than is allowed within their funding cycles.

- Dr. Fortney stated that while she agrees that it is better to train staff in their own setting—to ensure comfort, for example—in the case of maternity care one cannot train staff to cope with emergencies unless they are trained in hospitals with high case loads. In Nepal, for example, there is only one hospital where such training is possible. Training is a bottleneck in efforts to improve essential obstetric care; it *must* accompany facility upgrading to ensure effectiveness.
- In response to a question regarding whether his work focused on all pregnant women or on women who were either at either low or high risk, Dr. Guidotti responded that it is difficult to predict risk. He went on to indicate that a decision must be made on whether to invest in emergency obstetric care (EmOC) or the more comprehensive approach he presented, bearing resource constraints in mind. He emphasized that there is not sufficient information available to justify a sole focus on EmOC; the complications that lead to death are preceded by a long, causal chain of events, and the chain must be broken somewhere along its path—and not necessarily at the final stage.
- Dr. Winikoff asked how one could prioritize among the comprehensive list of treatable morbidities presented by Dr. Guidotti. In response, Dr. Holck noted that prioritization beyond what was presented should be done on a setting-specific basis.
- Dr. Winikoff also asked how one can ensure effectiveness in sexually transmitted disease (STD) management now that there is evidence that syndromic screening is not effective. Dr. Guidotti responded by indicating that there are clinical signs that can be dealt with at the community-level antepartum, and that the syndromic approach has proven useful, along with presumptive history, in symptomatic women. Dr. Winikoff went on to express concern about its effectiveness in dealing with *asymptomatic* women. Determining the way in which STD management is conducted must be done on a community-specific basis, taking the prevalence of specific STDs into account. Using the syndromic approach in the case of STDs associated with lesions is more simple than in the case of gonorrhea or chlamydia.
- Dr. Taylor requested WHO's opinion on routine HIV screening of pregnant women. Dr. Guidotti responded that it is never mandatory and that testing has shown no clear positive effect on behavior change; as a result, recommending it for *prevention* is not warranted. It can, however, play a role in terms of life planning, including whether or not to have the child, counseling regarding abortion, and so forth. Where resources permit, voluntary testing and counseling is being made available to pregnant women. WHO does not recommend it in developing countries, however, due to resource constraints.
- With regard to information, education, and communication (IEC), Dr. Sacks advised the group that Uganda has national and sub-national meetings regarding community-based programs of this nature.
- It was noted that it is difficult to evaluate IEC. What are the end points? Ms. Themmen responded that the starting point is current knowledge, attitudes, and behavior, which can be assessed through a survey; the end point is to determine, using

the same survey, how these factors—and especially behavior—have changed. Ms. Starrs noted that one should look at facility data in evaluating IEC programs, insofar as there may be facility-based practices that prevent women from using services, even if their knowledge and attitudes change. Ms. Themmen concurred, and added that a lack of behavior change following an IEC campaign does not necessarily imply that there was something wrong with the campaign per se. There are many obstacles to behavior change, beyond lack of information. In Bangladesh, for example, lack of funds was an important factor impeding women's use of services. Ms. Starrs went on to emphasize that to be effective, IEC must be integrated fully into the health care system rather than implemented as a one-time, isolated effort.

· Ms. Tinker went on to discuss the issue of transport and communications. She noted that in parts of India women have to take the bus to facilities, but buses only run during limited hours; in Paraguay, women travel by road, but these can be impassable—a virtual sea—when it rains. In such circumstances, how does one get women in need of care to the hospitals? Are two-way radios or maternity waiting homes possible answers? Ms. Maine went on to say that it is most important to focus on doing better with existing resources, and that this is possible in the area of transport. The PMM teams have developed various modalities. When they were active in Sierra Leone, they used two-way radios. In other settings they have set up community transport funds. Ensuring that the services available at the "end of the line" are effective will also diminish the problem. Dr. Senanayake added that In Sri Lanka, they use a roster of the three-wheelers available; one person is always available to take any pregnant woman to a facility. Dr. Koblinsky indicated that MotherCare projects had used two-way radios, transport subsidies, and other methods, but that the principal problem was whether or not women were going to use the services at all because of their cost.

IMPROVING EXISTING SERVICES: QUALITY OF CARE

Situation Analysis for Obstetric Services

Nancy Sloan, The Population Council, USA

A situation analysis tool has been developed by the Population Council and the American College of Nurse Midwives (ACNM) to enable the evaluation of essential—including emergency—obstetric services. Materials previously developed by ACNM, WHO, and the MotherCare Project provided essential background material for the development of the tool. Because saving women's lives is the first priority of safe motherhood programs in many countries, the tool is designed to assess the status of equipment, supplies, infrastructure, and service provider skills required to manage life-threatening maternal health conditions, with the ultimate objective of guiding program design and improving maternal care services.

The tool can help determine the requirements for upgrading primary and secondary health facilities and training related staff. It may also be used to evaluate change in essential/emergency obstetric services, by conducting the analysis both before and after an intervention and comparing the results. Finally, it may be used in conjunction with community- and/or other facility-based assessments to evaluate the provision and receipt of essential/emergency obstetric services.

The instrument used in the situation analysis contains the following sections: staffing; service statistics (patient information, treatment of complications, and referrals); emergency transportation; status of referral sites; clinical facilities (infrastructure, storage of equipment and supplies); provider background and skills; and inventory of equipment and supplies. The methodology involved is as follows. All primary and secondary maternal-child health facilities in the program area should be assessed. If the area is too large to make this possible, a representative sample, stratified by level of care, should be assessed. The instrument should be reviewed, translated, and pretested, preferably near, but not in, the program area. Any changes to the tool should then be made, and it can then be modified and reproduced. Data collectors, in teams of two, then undergo two to three days of training. Data should then be collected, entered, analyzed, and assembled into a report.

One member of the data collection team will be responsible for evaluating inventories of supplies and equipment, while the other will be responsible for interviewing health care providers. Ideally, the data collectors should be from the program area and have a solid foundation in obstetrics. The collector responsible for conducting interviews should interview the health professional considered to be the most adept and active in attending deliveries. The skills assessment will thus reflect the best level of delivery care attainable at each site.

The tool includes a codebook and databases with valid value checks, which were developed in EPIINFO, to facilitate entry. EPIINFO analysis programs are also included to facilitate analysis. The data collection tool, codebook, databases, and analysis

programs are all provided on diskette to facilitate site-specific modification and use.

Providers' skills are evaluated based on their responses to hypothetical life-threatening situations. Answers are ranked on a scale: a rank of "1" reflects that the provider mentioned all of the appropriate practices and a rank of "4" or "5" indicates that the provider did not report any of the appropriate practices or mentioned a dangerous or harmful practice.

The situation analysis has been used in the Council's research project in Vietnam. Preliminary data are now available on a range of issues. The results have been illuminating, particularly regarding poor emergency skills among providers at the commune level, despite the fact that those interviewed—physicians and secondary midwives—are relatively well trained.

The majority of responses to questions regarding practices on observation of antepartum bleeding were incorrect. In fact, many providers mentioned that they would engage in a harmful practice (performing a vaginal exam). In cases of postpartum hemorrhage, many did not know what action to take, including referral. Skills upgrading is clearly a priority in this context—and the tool has made it possible for us to make this determination.

Strengthening Referral Systems

Frances Foord, Medical Research Council Laboratories, The Gambia

The results of an improved midwifery outreach service in West Kiang, an isolated rural area of The Gambia, demonstrate how referral systems can be strengthened as part of an overall improvement in maternal health care.

Since 1982, 22 villages of West Kiang have been served by government-sponsored primary health care and maternal-child health (MCH) services. Villages of 400 or more inhabitants have a trained traditional birth attendant (TBA) and village health worker; groups of five villages are assigned a community health nurse, who assists the TBA. Services are provided from the health center, and MCH clinics are held monthly. Women who require more intensive antenatal care (ANC) or supervision are referred to a regional health center or national hospital.

In 1989, an improved midwifery outreach service was established in the 22 government-served villages in West Kiang, supported by the Medical Research Council (MRC)/Dunn Nutrition Unit and the Gambian government, with cooperation from WHO and UNICEF in the project's early stages. The service places an extra midwife at the health center and increases the extent and frequency of visits to villages. It also integrates services by ensuring formal contact between midwives and TBAs.

Twice a month, the same midwife visits each village to provide antenatal and postnatal care, family planning advice and services, health education, and referrals to regional hospitals, as necessary. Traditional birth attendants (TBAs) are expected to be present

during the clinics. They are also responsible for home deliveries, seeking assistance when necessary, and for accompanying referred women to the hospital during labor when an institutional delivery is warranted. Emergency cases are transported to the hospital, which is three hours from the health center. While referral costs are covered, each woman is asked to pay U.S. \$3.00 when registering for care.

An evaluation of the project's effectiveness was conducted using a control area in Upper Baddibu, where maternal health care is provided almost exclusively by the government. Maternal mortality figures comparing the villages served by the West Kiang program and those in the control area reveal a lower incidence of maternal mortality in the West Kiang-served areas (700 and 130 per 100,000 live births, respectively). A comparison of the two areas and the services they received is provided in Tables 1 and 2.

TABLE 1		
Comparison of Two Areas		
	West Kiang Sept. 1989–Dec. 1991	Upper Baddibu Jan. 1991–Dec. 1991
Number of women aged 15-44	1,973	3,693
Number of women delivered	794	722
Number of study months	27½	12
Service providers		
Midwives	2	1
Community health nurses	4	4
Trained TBAs	40	10
Midwife:maternity ratio	1:173	1:722

As the results make clear, the West Kiang-served area was characterized by a greater number of referrals, a greater number of facility-based deliveries, a higher proportion of women delivered by trained TBAs, and more postnatal contact. While antenatal coverage between the two areas was similar, women in West Kiang tended to seek care earlier in pregnancy and to be seen more often.

TABLE 2				
Comparison of Two Areas: Antenatal Attendance, Referrals, Place of Delivery, and Postnatal Contact				
	West Kiang		Upper Baddibu	
Antenatal attendance				
ANC coverage	99.9%		98.8%	
Weeks pregnant at booking	22.2		27.0	
Number of times seen	5.8		3.3	
Referrals				
Antenatal referrals	24	3.1%	13	1.9%
Labor/emergency referrals	23	2.9%	18	2.7%
· first stage	7		5	
· second stage	5		2	
· third stage	2		1	
· postnatal	5		4	
· other emergency	4		4	
Total referrals	47	6.0%	31	4.6%
Place of delivery				
Number of women delivered	794		722	
Place of delivery				
· hospital	28	3.5%	8	1.1%
· health center/post	135	17.0%	87	12.0%
· home	631	79.5%	627	86.8%
Home births assisted by TBA as % of all women delivered	98.0%		63.0%	
Postnatal contact				
Number of women seen postnatally	498	63.0%	31	4.3%
Number with poor outcome (maternal or perinatal death)	44		33	
Number seen within week of delivery	27	61.0%	12	36.0%

The program also had an impact on a range of pregnancy outcomes. As illustrated in Table 3, one woman died in West Kiang—a primigravida who developed eclampsia. In Upper Baddibu there were five deaths; at least three of the five were due to severe anemia or blood loss during delivery. All women who died delivered in the village. Perinatal mortality was higher in West Kiang due to the number of stillbirths. The number of early neonatal deaths in each area was similar, but in Upper Baddibu it is believed that stillbirths were underreported due to less intensive midwifery coverage.

TABLE 3		
Comparison of Two Areas: Pregnancy Outcome		
	West Kiang Sept. 1989–Dec. 1991	Upper Baddibu Jan. 1991–Dec. 1991
Number of deliveries	794	722
Number of maternal deaths	1	5
Maternal deaths per 100,000 live births	130	700
Number of perinatal deaths	44	29

Numerous factors were essential to strengthening the referral system. *Quality midwifery care* is perhaps the most important component: without this in place, essential obstetric care (EOC) will only "pick up the pieces." Quality ANC provided by a midwife is essential to getting women to the right place at the right time. It can also reduce the number of women who need intensive care. In West Kiang, the addition of the second midwife, the increase in the number of villages visited, the increase in the frequency of clinics, and the reduction in the number of women seen at any one clinic session enabled the midwives to deliver better quality care. The close working relationship between TBAs and midwives, built on mutual respect, opened a previously underutilized channel of communication. The midwives provide the TBAs with continuous support and supervision as necessary. In addition, the midwives and TBAs feel accountable for events that occur in their respective villages.

The relationship between midwives and higher referral level services is also important to effective referral, especially with regard to feedback and follow up on referred cases. Midwives in West Kiang have a good working relationship with these services, and, in general, referred cases are well received—a factor women recognize, and which renders them less resistant to referral.

Twenty-four hour availability of transport is also key. This was always available in West Kiang, and the TBAs were generally quick to call for assistance. There were very few cases of delay in getting to the health center. Unfortunately, one case involved the primigravida with eclampsia; the resident community health nurse, on whom the TBA relied, was away with his motorcycle.

Another key difference between the care provided in the two areas was that in West Kiang, women requiring skilled obstetric care were sent directly to the tertiary referral center, since it is only there that facilities exist for blood transfusion and cesarean section. The major health center overseeing the area is not yet functional.

Overutilization of Ante- and Intrapartum Interventions

Jose Villar, World Health Organization, Switzerland

Prenatal and intrapartum care should be based on activities that are goal oriented for specific health problems and proven effective in improving such health problems by randomized controlled trials (RCTs). The same evidence of efficacy and safety should be required for both drugs and *non-drug forms of care*. Unfortunately, there is a tendency to provide surgery, information, education, and communication, or other clinical interventions to many women in developing countries without solid knowledge of whether they are effective; this tendency needs to be reversed. A typical example in which we were actively involved years ago is the wide-scale promotion of the risk approach to maternity care without solid scientific evidence of its effectiveness (Kestler et al., 1991). Now, this strategy has been almost abandoned without our knowing if it could have been effective or not.

I will provide examples of health interventions that are under- or overutilized and illustrate how their rigorous evaluation can help correct the situation or prevent their widespread use if this evaluation demonstrates that they are not effective. Evidence from Latin America and the Caribbean indicates that psychosocial support and general health education provided to pregnant women during antenatal care (ANC) does not improve the health of the mother or the baby (Villar et al., 1992); it increases knowledge but does not affect behavior (Belizán et al., 1995). As such, this is an overutilized or overrecommended intervention. Conversely, providing personal and social support to women in labor is an underutilized intervention: evidence indicates that it decreases the need for intrapartum anesthesia and cesarean sections (Sosa et al., 1980). An ANC screening procedure and a preventive intervention have been recently evaluated by RCTs: these have found that there is an overutilization of routine ultrasound evaluation on women at low risk (Ewigman et al., 1993), and that the routine use of low dose aspirin to prevent pre-eclampsia in women at low risk might also have been overutilized if a large RCT had not been conducted (CLASP Collaborative Group, 1994).

With regard to intrapartum care, it is clear that a cesarean section "epidemic" exists in parts of Latin America, particularly among healthy women. The evaluation of strategies to reduce unnecessary cesarean section should be encouraged and supported.

Similarly, the use of episiotomy has reached pandemic proportions among hospital deliveries. In one Latin American country, U.S. \$2 million could be saved annually through rational use of this procedure—one that has never proven to be effective in reducing major perineal tears. An RCT of selective versus routine episiotomy found that

only 30 percent of women need episiotomy, as illustrated in Table 1 (Argentine Episiotomy Trial Collaborative Group, 1993). The trial provides no evidence that routine episiotomy reduces serious perineal trauma. In fact, the group with routine episiotomy had more surgical repair of the perineum, increased perineal pain, and more wound dehiscence (Argentine Episiotomy Trial Collaborative Group, 1993).

TABLE 1		
The Randomized Controlled Trial of Selective Versus Routine Episiotomy		
	Selective	Routine
Nulliparous	778	777
Primiparous	520	531
Episiotomy was done	30%	83%
<p>Source: Argentine Episiotomy Trial Collaborative Group, 1993. "Routine vs selective episiotomy: A randomised control trial." <i>The Lancet</i> 342: 1517-1518.</p>		

Systematic steps should be taken by public health officials to determine the interventions to include in a package of maternity services. Assessing the results of RCTs by overviews or meta-analysis of RCTs is the best strategy for such a systematic process (Chalmers et al., 1989). This approach involves reviewing all RCTs, evaluating their methodology, and calculating the pooled, summary, or typical relative risk (and 95 percent confidence intervals). An intervention, then, could be selected if there is evidence of its effectiveness, that is, if it does more good than harm. We recently conducted a review using this methodology and presented evidence to support several pregnancy-related interventions known to be effective and discouraged those that are not warranted (Villar, Carroli, and Belizán, 1995).

A similar strategy could be used if one wants to expand ANC coverage in a population; the program should contain key interventions that are evaluated before being introduced to the general population (World Health Organization, 1995). An excellent opportunity to apply this strategy is during the introduction of the "syndromic approach" to sexually transmitted disease management. It should be evaluated within a large RCT before it is widely recommended; otherwise, in a few years, we will have the same concerns that we now have regarding the risk approach, and no answers. We have already demonstrated the feasibility of conducting large RCTs in developing countries for the evaluation of different forms of care (Argentine Episiotomy Trial Collaborative Group, 1993; Belizán et al., 1991; Langer, 1993), and have discussed their methodology (Villar and Carroli, 1993).

It is extremely important that we all work together in selecting the components of maternal and perinatal care, a complex and difficult task. Otherwise, we will have no impact or, if we do, it will not last when external funds and influence pull out.

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Discussion points following the session on improving the quality of care of existing services included:

- Dr. Mehta noted that the situation analysis approach described by Dr. Sloan used a questionnaire to evaluate skills, and asked whether or not an observation component was considered. She described work in India where more than 100 districts were evaluated, on a sample basis, in this manner. Dr. Sloan responded that they did not include an observation component because the focus of the situation analysis is on emergency care, and it is too unlikely that an emergency will come up on any given day. She agreed that observation of the provision of care is important, but too difficult with such rare events.
- Dr. Koblinsky noted that we had yet to see the usefulness of the situation analysis beyond providing information on institutional capacity—for example, in terms of the development of interventions. Dr. Sloan noted that while the tool is useful to determine the type of upgrading needed, it cannot serve as a substitute for the evaluation of interventions such as life-saving skills training.
- Dr. Donnay asked Ms. Foord for more information regarding the effect of training traditional birth attendants (TBAs) and midwives in The Gambia. Ms. Foord indicated that they did not separate the effect of the midwives from that of the TBAs.
- In response to Dr. Villar's presentation, Ms. Tinker noted that while the impact of health education in general may be low, it has been found to be effective in specific areas, such as breastfeeding, family planning, and when it deals with danger signs associated with specific complications in maternal health. Dr. Villar concurred that such efforts differ from the more general health education he had referred to.
- Dr. Campbell noted that RCTs have not been used to evaluate behavioral interventions. She also expressed concern about the broader package of services: while individual components have been evaluated, the package as a whole has not. In the area of education, one can always say that it might have worked if only another intervention had been in place. Dr. Villar responded that if all components in the package are known to be effective, one can hypothesize that they will have a greater impact in combination than in isolation; in this case, there would be no need for further evaluation. He also noted that while the information base on the evaluation of school-based education is very rich, most of the methodologies were developed by teachers and sociologists, and the evaluation of the non-medical components of maternal-child health care—such as maternal health education—lag far behind. Dr. Campbell added that even if each element of a package is known to be efficacious or effective on its own, one could, in theory, conduct a trial of different permutations of the package.

**IMPROVING EXISTING SERVICES:
HUMAN RESOURCE DEVELOPMENT, MANAGEMENT, AND TRAINING**

**Revising the Medical Curriculum in an Egyptian Medical School
for Improved Essential Obstetric Care**

Nabil Younis, Al-Azhar Medical School, Egypt

The 1992 National Maternal Mortality Study in Egypt found a maternal mortality ratio of 174 per 100,000 live births; 57 percent of the fetuses/infants of the women who died also died. Sixty-four percent of the deaths occurred in health facilities, 59 percent of which were hospitals.

Most significantly, the study found that 92 percent of maternal deaths had one or more avoidable factors, including poor diagnosis and management on the part of the obstetric team in 47 percent of cases, and substandard care from general practitioners in 12 percent. These findings signaled an urgent need for the development of protocols for the management of common obstetric emergencies for use in the training of physicians. Specifically, it was determined that medical schools, in collaboration with the Ministry of Health, should review post-graduate training programs and place greater emphasis on practical training.

At Cairo's Al-Azhar Medical School, which trains 10 percent of Egypt's physicians, a committee was established to revise the curriculum for diploma students (a one-year post-graduate program)—but, in fact, a curriculum did not exist. By all educational measures, the committee's task was to *develop* a curriculum. We began by setting educational objectives describing what the trainee should know or be able to do by the end of his/her training period and what he/she should do to demonstrate the knowledge, skill, or attitude required; the conditions under which the latter must be learned; and criteria for performance evaluation.

The principles we used in developing the curriculum included reducing unnecessary repetition and the teaching of non-essential details, and placing emphasis on imparting adequate basic skills, relevant knowledge, and positive attitudes and ethics, including those related to the doctor-patient relationship and communication skills. Several teaching units were developed, including: normal obstetrics, abnormal obstetrics, and surgical obstetrics. Two additional units, which are not currently taught at any other facilities in Egypt, are worth mentioning: attitudes, ethics, and clinic management; and health care delivery and obstetrics as part of primary health care.

For most procedures, the trainees are required to watch three to five, then perform five with the senior obstetrician's assistance, and then perform one with the senior obstetrician present. We attempted to determine how many cesarean sections should be performed before a student can be considered "trained." Fifteen procedures per trainee was determined to be appropriate and feasible, including at least five repeat cesarean sections.

The new curriculum is now being tested. Evaluation will consist of continuous monitoring of learning activities, as well as clinical, oral, and written evaluation at the end of training and prior to certification. We should be able to report on the results of this effort in 1996.

Ghana Life-Saving Skills Effort

Joseph Taylor, Central Hospital, Department of Obstetrics and Gynecology, Ghana

According to the Ghana Demographic and Health Survey (DHS) of 1993, the maternal mortality ratio (MMR) is 214 per 100,000 live births, with considerable regional variation; in some areas, the MMR reaches 800. Health resources, and particularly the pool of physicians, are inadequate and unevenly distributed. This is especially true in rural areas, where 70 percent of the population resides. Midwives are the main providers of health care in these areas, and also serve as the referral point for traditional birth attendants (TBAs). As a result, it has become necessary to review and expand their roles and functions, and give them additional responsibilities.

The life-saving skills (LSS) training program is a continuing education project for midwives. Nearly 400 midwives have been trained since the program began in 1990. The program's objectives include clinical updating of midwifery skills, fostering the development of an expanded midwifery role, and reinforcing good working relationships between the private and the public sector, and particularly between physicians and midwives.

A two-week, competency-based training course provides midwives with an expanded number of skills for preventing and managing obstetric emergencies and complications. It is divided into nine modules, as described below.

1. *Introduction to Maternal Mortality:* The first module focuses on the major medical causes of maternal death, as well as underlying socioeconomic and cultural factors.
2. *Antenatal Risk Assessment and Treatment/Referral:* During this module, midwives are trained in hemoglobin testing; reflex testing; early recognition and treatment and/or referral of pregnancy-induced hypertension; prevention and treatment of anemia; and assessment of gestational age.
3. *Monitoring Labor Progress:* The third module addresses the use of the partograph for early recognition and treatment/referral of obstructed labor and other complications.
4. *Prevention and Treatment of Hemorrhage:* During this module, midwives are trained in active management of the third stage; manual removal of the placenta; bimanual compression of the uterus; and digital evacuation of the uterus.

5. *Management of Difficult Deliveries:* Training in vacuum extraction is the focus of this module.
6. *Resuscitation:* During the sixth module, the midwives are trained in three forms of resuscitation—infant; adult cardiopulmonary resuscitation; and the Heimlich Maneuver.
7. *Episiotomies and Laceration Repair:* During this module, the midwives are trained to cut and suture episiotomies; inspect the cervix and vagina; repair cervical and other lacerations; and use local infiltration anesthesia.
8. *Hydration and Rehydration:* The midwives are trained in four related types of therapy using this module—intravenous fluid; rectal fluid; intraperitoneal fluid; and oral rehydration.
9. *Prevention and Management of Sepsis/Infection:* Elements of this module include chorioamnionitis; postpartum infections/endometritis; malaria; mastitis/breast abscess; thrombophlebitis; urinary tract infections; ophthalmia neonatorum; septicemia; and postpartum tetanus.

An assessment process takes place at the end of every module to enable the trainers to evaluate the midwives' performance and to demonstrate how midwives can use the checklists involved to assess their own skills. Support and evaluation visits have also been made to evaluate trainee performance, assess the program, and develop plans for follow-up projects to train as many midwives as possible in LSS.

The trained midwives report positive results, including improved outcomes through use of the suture-sparing method of episiotomy repair and a decrease in the rate of postpartum hemorrhage through routine use of active management of the third stage. Trainers also note that the midwives' work environments are cleaner and that they pay more attention to aseptic technique; they use the partograph successfully, improving their monitoring of the progress of labor and the timeliness of referrals; they are more successful in their infant and adult resuscitation efforts; they successfully perform manual removal of the placenta and bimanual uterine compression; their knowledge and skills related to pregnancy-induced hypertension are more up to date; and that they successfully perform vacuum extractions.

The majority of the midwives integrate the new skills into their work and say they feel more confident and competent. Private sector midwives reported utilizing the skills more than their public sector counterparts, perhaps because they practice alone, and, in most cases, without back-up from physicians in emergencies. Mutual respect has been fostered between midwives and doctors as the former demonstrate their competence in learning and using their new skills in practice. The results of the program indicate that with encouragement and support, midwives are capable of teaching and performing many interventions that were hitherto only carried out by physicians and obstetricians. They constitute an army of health professionals whose potential has not been fully utilized.

Program constraints initially included physicians' reservations about the capacity of midwives. Following the training, however, physician attitudes improved. An additional constraint relates to the fact that the training is competency-based and only a limited number of midwives can be trained at each session. There is a need, therefore, to increase the number of training sites to enable more midwives to benefit from the program. Finally, inadequate funding has adversely affected the expansion of the program.

In addition, it is important to address the following issues: When should the trained midwives receive an update or refresher course? Given that the skills might not be practiced regularly, how often and what skills need to be refreshed and/or reinforced?

Improving Interpersonal and Counseling Skills:

Carlos A. Ugarte, Program for Appropriate Technology in Health, USA

During this presentation, I plan to relate the experience of and concepts developed by Program for Appropriate Technology in Health (PATH), in collaboration with other institutions, in the area of interpersonal communications and counseling (IPC/C). IPC/C emphasizes the human aspect of the interaction between providers and clients, with the objective of improving the quality of life for both. Most of the work I will reference relates to our efforts in Latin American and the Caribbean.

With reference to clients, we focus on ensuring that they have the information they need to take steps to improve the conditions that threaten their health, life, and well-being. Emphasis is placed on *ongoing* interaction and sharing information in a culturally *competent* manner. The concept of cultural competence goes further than those of cultural sensitivity or appropriateness. Information may be appropriate insofar as it is provided in the right language; competence takes additional factors, such as the framework in which the information is exchanged, into account. The goal is to ensure that the client can relate to the information provided—experience it, feel it, and place it in his or her life context.

Providers can establish enduring, respectful relationships with clients such that it becomes one of the ways in which they fulfill their desire to provide quality care. Programs that have assisted providers to develop related skills have helped these providers gain a greater sense of self-worth by fulfilling both the needs of their clients and their own desire to provide better care.

Our approach supports and guides client-provider interactions. It acknowledges that counseling has different meanings in different contexts. In the United States, for example, counseling implies treating emotional problems, while in Latin America and the Caribbean, it implies giving advice.

There are four basic elements of IPC/C: it requires two-way communication; it intends to support the correct use of services by informing clients of the services available and

how they can benefit from using them; it helps people make voluntary, informed, and well-considered decisions regarding their own health; and it involves respecting each person's needs and realities.

IPC/C is a process; it does not occur overnight or through a one-time meeting. Information, education, and communication (IEC) is IPC/C's partner, and can be conducted by outreach workers, key "influencers," and others. The IEC and IPC/C process should continue with services in which the interaction becomes more focused on the specific needs of the individual.

We have found that it is important to involve *all* staff, from the receptionist to the manager, because the client is exposed to all such staff. All individuals with whom the client will come in contact should adopt a humanized approach to interaction if it is to be effective. In this regard, it is also essential to work on IPC/C among providers: if staff are overburdened, have unrealistic time limits for interaction with patients, and work within strict hierarchies, no one benefits.

The next step of the process brings us back to the community. In Peru, for example, we attempted to support related training in the community by training staff and by working with key influencers. It is a cyclical process: those who have gone through the process become key influencers. The process should be reinforcing and consistent at every step.

Obstacles to the process include women's lack of access to the health information they need most. This reflects the failure of the health system to reach out to the community with key messages: as stated above, IEC is a key partner to IPC/C. Communities also lack information on where information can be obtained. Mass media campaigns, for instance, may neglect to provide information on where the public can get additional information before seeking the services being promoted. Lack of language capacity, which hinders providers' ability to communicate with indigenous populations, is also problematic. In Bolivia, for example, the concept of counseling is not understood well in Quechua. Customs and practices on both the provider and client side can pose obstacles: the Western model of care may not be understood by the clients, and the traditional model may not be understood by the providers. Bridges, however, can be built.

PATH and Georgetown University's Institute for Reproductive Health have collaborated in Bolivia to develop IEC and IPC/C material with a local NGO, Centro de Investigación, Educación y Servicios (CIES), in indigenous communities of Sucre. This area was chosen based on the results of the Bolivian Demographic and Health Survey (DHS), which found very low contraceptive prevalence and a significant number of women using natural family planning; in addition, the majority of women (62 percent) either did not know when they were likely to become pregnant or had incorrect information on the subject.

We collaborated with the community in a process of self-diagnosis to determine problems, assess needs, and develop potential solutions in the area of birth spacing.

Community members stated that they did not talk or interact enough as a community, within couples, or with service providers. Community members helped design materials, such as puzzles and diagrams, on basic issues related to human reproduction—for both clients and providers. The response to the program has been overwhelming: it has resulted in an increase in the interaction between couples, as well as between the community and health care providers. Community members have also identified other issues on which they wish to work, such as domestic violence and alcoholism. Neighboring communities have also become very interested in the program, asking "key influencers" for information and to be trained to address their own issues.

Human Resources Management:
The Role of the Maternal Mortality Audit System

Ruy Laurenti, School of Public Health, University of São Paulo, Brazil

Epidemiological studies based on mortality data from the vital statistics system and supplementary survey data on each case of maternal death in São Paulo, Brazil, have indicated that maternal mortality rates are very high, and that physicians record the deaths and their causes very poorly. The results of this work led us to question why rates were so high in São Paulo, a city considered the richest in Latin America, and why they were being overlooked by the health authorities.

Fortunately, the fact that maternal mortality has gained increasing prominence on the international health agenda has led to increasing concern among the health authorities in Brazil. A National Committee on Maternal Mortality was created, for example, and in many of Brazil's 26 states, State Commissions on the Study and Prevention of Maternal Mortality have also been established. Similar entities have been established in the larger cities, including São Paulo, which was one of the first to introduce a maternal mortality surveillance system and a committee. As an epidemiologist, I was invited to participate in the work of this committee, as well as in that of the National Committee.

The National Committee is linked directly to the Ministry of Health, which establishes rules and guidelines for local investigations into maternal deaths. Activities also include developing national health policy related to maternal health, recommending legislation, allocating funds, developing services, and promoting community participation. The state committees function similarly, but at the state level. Local committees are responsible for performing audits in cases of maternal death, identifying the factors that may have contributed to the death, and developing proposals for remedial strategies.

The committee in São Paulo functions in the following way. Weekly, or every two weeks, the death certificates of women aged 10–49 are divided into three groups: those that, almost undoubtedly, were not maternal deaths (mainly deaths due to violence, malignant neoplasms, and so forth); cases declared as maternal deaths; and cases that, according to criteria developed by the committee, are assumed to be maternal deaths, although not registered as such. The majority of the latter are confirmed as maternal deaths. The committee meets every two months to discuss the cases and propose remedial measures. Some of the latter are implemented immediately, including visits to

the hospitals where a large number of the cases had occurred.

Our investigations, like those in other parts of Brazil, illustrate the same reality: most maternal deaths occur in women of lower socioeconomic status who use—or try to use—public health services. They also illustrate another painful reality: almost all of the deaths could have been easily prevented. In examining the obstetric histories of the women who died, it was found that, in a previous pregnancy, many had had the same complication that ultimately caused their death. Nonetheless, they were never provided with appropriate care.

The results point to numerous factors that promote persistently high maternal mortality, despite the availability of trained attendants, equipment, and drugs, at all levels necessary for the provision of satisfactory essential obstetric care (EOC). My involvement in the investigations enables me to make some recommendations regarding needed improvements. These are outlined below.

1. *Awareness of the problem:* Health personnel, and mainly obstetricians, tend to overlook the problem. They focus in a clinical manner on the case at hand, and have a limited understanding of the broader context in which the death occurs. This may relate to the fact that while rates are high, the absolute number of cases seen by physicians is relatively low. Health personnel need to be informed more effectively about the gravity of the problem.
2. *Information on maternal deaths:* Even in areas with good vital statistics, information on maternal deaths is recorded poorly. Audits have revealed that physicians need to be trained about the importance of completing death certificates accurately, as well as in how to do so. With this objective, I developed, at the request of the Pan American Health Organization (PAHO), a booklet for physicians entitled "Sources of Data and Definitions Utilized in Maternal-Child Health." The booklet, which is available in both Portuguese and Spanish, includes a chapter devoted to descriptions of the clinical histories of patients who have died and the correct way to fill out a death certificate in each case.
3. *Prenatal care:* The prenatal care received by the women who died was found to be deficient in both quality and quantity. Heavy workloads at the health center level result in very rapid consultations and limited follow up.
4. *Referrals of pregnant women for hospital delivery:* This was the most significant problem in a large number of the cases we investigated. Pregnant women are not generally referred and, when they are, there is not always space in the hospital. A study by Dr. Cristina Tanaka of the University of São Paulo found that "almost all pregnant women [are delivered in] hospitals/ maternities [but, to find space,] they have to go on a pilgrimage through various institutions."
5. *Hospital audits in cases of maternal death:* It is recommended that a hospital audit be conducted in each case of maternal death to gather more in-depth

information on its causes and/or possible hospital-level problems. In various of the cases we analyzed, the patient came to the hospital while physicians were changing shifts, the latter which caused a delay that contributed to her death. Audits are also recommended for all cases of serious complications that do not lead to death, which would enable the analysis of a larger number of cases.

6. *Geographical distribution of hospitals:* Hospitals with maternity care facilities are often clustered in the central area of the city, while most maternal deaths occur among women who live in the poorer, peripheral areas. More maternity care should be provided in peripheral areas.
7. *Birthing homes:* Establishing facilities where normal deliveries could be conducted, mainly by individuals with midwifery skills, would increase the number of beds available, as well as releasing space at secondary- and tertiary-level facilities for women at high risk of complications.
8. *Family planning:* Routine family planning services should be provided with particular emphasis on women who have experienced previous pregnancy-related complications.
9. *Midwives:* Brazil lacks trained midwives. More midwives should be trained and should play an important role in providing prenatal care at health centers and health posts, as well as in hospital deliveries.

In conclusion, it is important to point out that change *is* occurring, due to the work of such international agencies as WHO, UNICEF, Family Care International, PAHO, the Population Council, UNDP, and others. In our case, maternal mortality studies illustrating the seriousness of the situation have also played a role. Those factors stimulated the establishment of a system of epidemiological surveillance of maternal deaths and the committees described above, which have gathered information that has facilitated related programming. It is fundamental that we stimulate the establishment of such surveillance systems and committees in other areas where maternal mortality is high.

Discussion points following the session on improving existing services through human resource development, management, and training included:

- There was substantial discussion regarding the appropriate length of life-saving skills (LSS) training, given its intensive nature. Some felt that in Ghana, for example, it should be extended to three weeks. Dr. Taylor agreed, and indicated that many of the midwives noted that the training was too intensive. He said, however, that funding constraints are a serious problem, as is the fact that some midwives, particularly those from the private sector, would have trouble leaving their practices for a longer period.
- Dr. Aitken asked whether or not the LSS training course included the role of the midwife vis-à-vis the traditional birth attendant (TBA) and, if so, how the midwives react

to this component. Dr. Taylor noted that no problems had been encountered and that the development of team spirit was a critical part of the course.

- In response to a question from Dr. Donnay regarding who would be included in retraining efforts, Dr. Taylor indicated that the Ghana Registered Midwives Association would select the participants.

- Dr. Sacks asked whether or not responsibility for cesarean sections could be delegated to midwives in Ghana. Dr. Taylor responded that he did not know when this could be considered; even convincing medical colleagues that midwives should be trained in manual removal of the placenta was extremely difficult.

- Dr. Campbell noted that there is a need, for many reasons, to train physicians in LSS: some, for example, are not familiar with the partograph and are insensitive to related referrals. Training programs should be developed to increase physician sensitivity to partograph referrals.

- Ms. Tinker asked whether or not any of the training programs would include training in manual vacuum aspiration (MVA). Dr. Taylor noted that International Projects Assistance Services (IPAS) is involved in MVA training in Ghana, and that it may be incorporated into LSS training.

- Dr. Campbell noted that in many settings there is no midwifery cadre—all deliveries are conducted by physicians or TBAs. She also noted that in the U.S., for example, deliveries are almost always conducted by physicians, and obstetrics is thought of as anything related to pregnancy; in Europe, by contrast, the term obstetrics is used when a physician intervenes.

- Ms. Gill asked Dr. Younis whether or not the causes of the maternal deaths investigated were broken down any further, and, for example, which causes of death were related to diagnostic failure. Dr. Younis responded that there is a wealth of potential case study material at the Ministry of Health that includes information on a wide range of causal factors, including the reasons for delays in seeking care, such as cultural and economic constraints. He indicated that it is extremely important that doctors be trained in this area. Dr. Campbell added that they did not yet have a firm grasp on the reasons for poor diagnosis and delays in care provision, but further work is planned in this area; the case studies Dr. Younis referred to would be of assistance.

- In response to a question regarding the potential contribution of female genital mutilation (FGM) to maternal mortality in Egypt, Dr. Younis indicated that while more than 90 percent of women are subject to this practice, it is the less severe form (removal of part of the labia minora); while some women do die as a result of this type of FGM, the practice does not affect pregnancy. Dr. Campbell added that where infibulation (narrowing of the vaginal canal) is the common form of FGM, an LSS module on the subject is essential.

- Dr. Koblinsky asked Mr. Ugarte to explain who conducts the IPC/C training, how long it

takes, and how it is evaluated. Mr. Ugarte responded that the training is conducted through collaboration among international institutions, using curricula that focus on participatory skills, beginning with community self-diagnosis. The methodology calls for active participation of NGOs and committee members in training. The process takes about six months. The evaluation component includes pre- and post-tests, observational research, and interviews with clients. Both quantitative (for example, an increase in service utilization) and qualitative measures are used. Focus group discussions and in-depth interviews both before and after the training are the primary tools used.

- Dr. Sacks expressed his admiration for PATH's interest in using counseling, rather than mass media approaches as a way to change behavior, and noted the difficulty of evaluating impact. Mr. Ugarte indicated that the challenge is indeed to assess how effective IPC/C is in terms of behavior change. He indicated that we should rethink our approach to assessing behavior change. There are many intermediate steps before an individual decides to change his or her behavior. There may be other mechanisms or relevant changes—knowledge or attitudinal changes—that may affect *future* or *potential* behavior change. As such, we may want to look at other factors that may help predict the behavior change that we ultimately desire. He also agreed that the mass media approach is "saturating the airwaves," and that, while it is important, its effect is short term.

- With respect to maternal mortality committees, Dr. Donnay and others noted the importance of having a functional national, provincial, and local committee system.

- In response to a question from Dr. Guidotti regarding how the information for maternal mortality audits was obtained and anonymity ensured, Dr. Laurenti indicated that this was not a problem; audits were conducted both in the home of the deceased and in the hospital. The committees are under the domain of the secretary of health in the province or state, enabling work with private institutions. It is normal to have access to relevant records as well as to interview involved physicians.

- Dr. Campbell indicated that there has been great hope that audits and confidential enquiries would lead to problem identification and, ultimately, to change, and asked what the experience had been in São Paulo. In response, Dr. Laurenti stated that change is beginning. Each committee has a representative of the state's council of medicine responsible for ethical aspects of care. Once a case is discussed and it is determined that very poor care was provided, the physician is penalized. The problem is discussed with the physician two to three times—a process that helps to initiate change. He added, however, that the main problem discovered is that women go to several hospitals in search of care, frequently arriving only a few minutes prior to their death. When they arrive the providers may hurry, but in some hospitals and poor areas a lack of supplies (blood, for example) prevents them from providing immediate care. This situation is also changing through the work of the committee. The committee was initiated in 1992, but only began definitive work in 1993, so there has not yet been any measurable impact on maternal mortality, although they feel the situation has improved. Some hospitals do now provide higher quality care to patients.

· Dr. Koblinsky noted that MotherCare had tried to perform perinatal and maternal audits in areas without hospitals to link other providers into the discussion. Initially, this leads to suspicion and other problems. It is difficult to empower providers from the lower levels of the health system to speak up. Dr. Laurenti noted that they had not tried such an approach in Brazil and, as such, he could not lend any wisdom with regard to overcoming related problems.

EVALUATING AND DISSEMINATING INFORMATION ON COMPONENTS OF ESSENTIAL OBSTETRIC CARE

The Cost of Essential Obstetric Care Peter Cowley, Abt Associates, Inc., USA

In evaluating the costs of a range of health interventions, the World Bank found that reproductive health and maternal care interventions were among the most cost-effective available.

A model has been developed to enable the evaluation of the costs of essential obstetric care (EOC). The model makes it possible to determine the costs of providing EOC by health service location (health outpost, health center, hospital, or the three combined). The figures I will present today are hypothetical. The model is intended for country-level use: relevant, setting-specific data would need to be entered into the model to provide cost estimates for that setting.

The hypothetical demographic and epidemiological figures we used to derive our calculations are as follows: a population of 300,000; coverage of 95 percent; a crude birth rate of 40; an estimate of the number of pregnant women in the population; and estimates of the proportions of those women who could be expected to develop specific maternal complications, based on the information in WHO's Mother-Baby Package. The model also includes hypothetical figures related to infrastructure, such as the percentage of deliveries that take place in, and the average occupancy rate of, each health service location. In any particular setting, the numbers entered would depend on the actual number of people in that population, the birth rate in that population, the percentage of women estimated to develop particular complications in that population, the extent to which different types of health service locations deal with deliveries, and so forth.

Changes to any indicator in the model will change the costs of EOC. If, for example, the birth rate changes, so will the number of women expected to develop complications, which will influence all other aspects of the model and thus all cost estimates.

Both fixed and recurrent costs are included in the model. With regard to capital upgrade costs for the provision of EOC, the model assumes that all relevant structures exist, but that substantial upgrading will be necessary. The annualized costs of upgrading facilities, which includes the purchase of necessary equipment, are included and are based on the assumption that there is virtually no usable equipment available. It was also assumed that the program was new and that needed labor inputs did not exist; while trained labor was assumed to be available, it was not yet positioned in the EOC program.

The pie charts below illustrate the results of the model using the hypothetical demographic, epidemiological, and infrastructure assumptions described above. Costs are broken down by inputs (for example, salaries and drugs) and by intervention (for

example, management of normal deliveries and management of specific complications). As illustrated, salaries represent the largest proportion of input costs associated with EOC provision (31 percent), followed by infrastructure improvements (16 percent). When costs are broken down by intervention, management of normal deliveries represents the largest proportion (62 percent), and, among management of complications, hemorrhage management is the most costly (16 percent).

FIGURE 1

EOC Costs By Input (percentage)

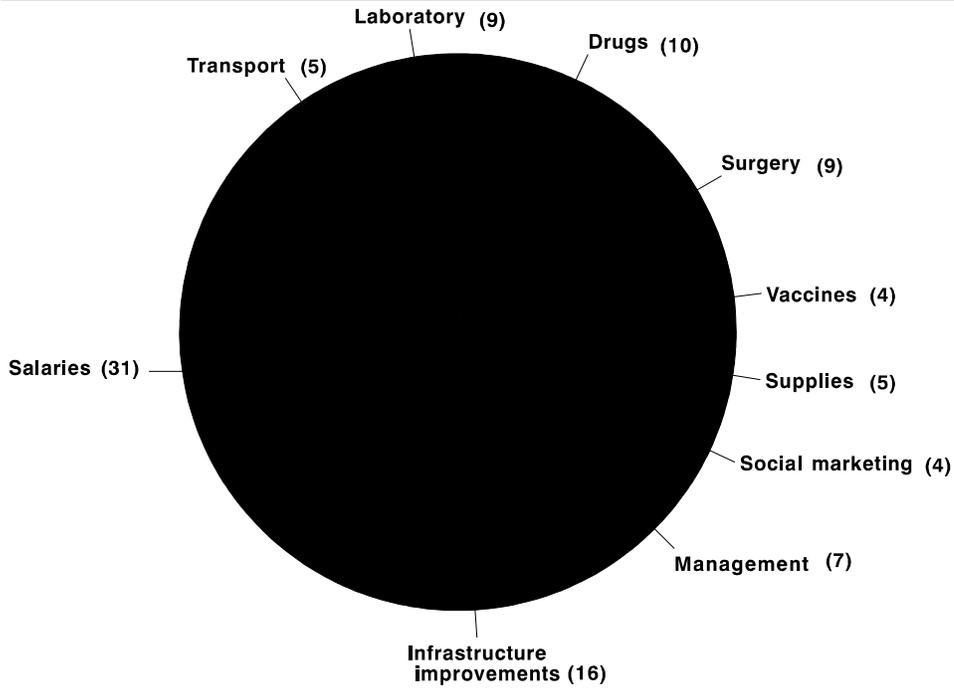
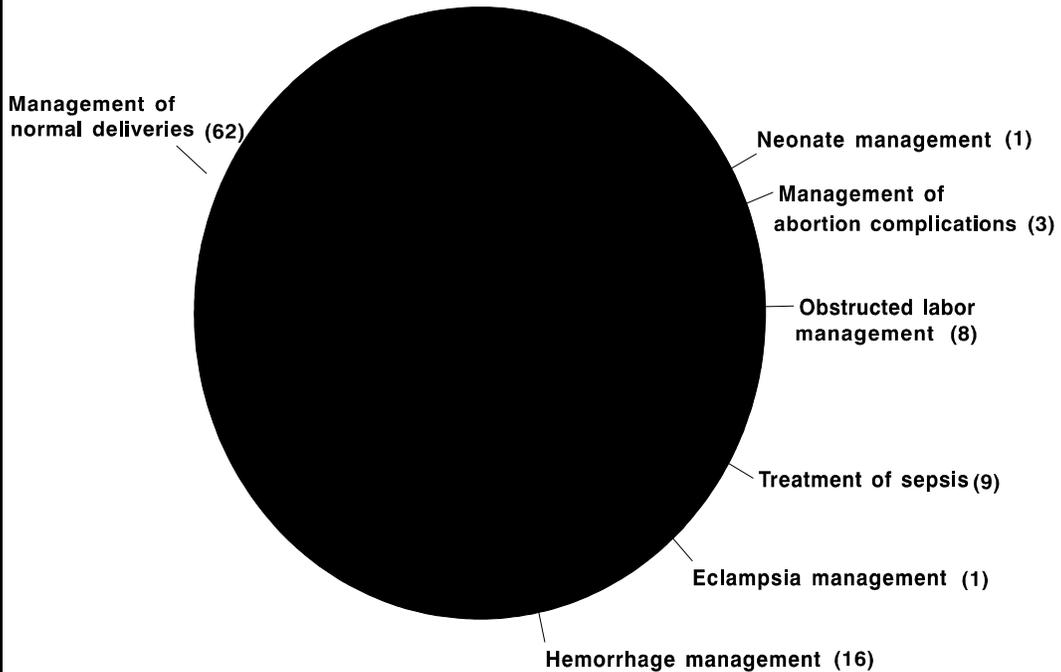


FIGURE 2

EOC Costs By Intervention (percentage)



Evaluation of Essential Obstetric Care Interventions

Kassam Mahomed, University of Zimbabwe, Zimbabwe

The majority of maternal deaths are preventable using interventions that do not generally require large-scale infrastructure and expensive technologies. Rather, "tried and true" techniques applied in a culturally appropriate manner are required.

In this presentation, I will briefly discuss the scientific basis for conducting clinical trials; refer to the results of, and process used in, the Cochrane collaboration, with an emphasis on the pregnancy and childbirth database; and address some of the common causes of maternal mortality and how these have been addressed in the context of clinical trials. While I will not go into detail about the process of conducting clinical trials, I would like to discuss a few related issues that I feel are important and often neglected by researchers.

One relates to the fact that statisticians tend to be neglected in the process of conducting clinical trials; often they are used only for data analysis. Their input should be solicited from the onset, to ensure appropriate randomization methods, sample size, and data collection methods, as well as proper data assembly and analysis.

Three key issues must be considered when planning a trial: the intended population, the intervention, and the outcome measure, as discussed below.

The population studied must be representative of the population to which the intervention would be provided. One has to be as precise as possible in defining the intervention. This is relatively easy with drug therapy, as one can decide on the dose, duration, and so forth, but can be difficult with non-drug related interventions. Outcome measures should be accurate, objective (unbiased), and consistent. Ideally, double-blind trials should be used, in which neither the client, provider, nor evaluator is aware of the intervention; this is difficult when evaluating non-drug related interventions. In some cases, it may only be possible to "blind" in relation to outcome evaluation.

The concept of *randomization* is key to avoiding bias. Patients should be randomly assigned to one form of therapy or another. While this idea is often not intuitively appealing, the need to do the study implies a degree of uncertainty regarding the effectiveness of the intervention; as such, it becomes almost unethical not to address it in this way.

Once one has accepted the need for a *control group*, one needs to determine how to obtain one. The only way to ensure that neither the control nor the treatment group gets unfair advantages or disadvantages that may affect the outcome is to ensure that the researcher does not know which intervention an eligible candidate is likely to receive. This may not always be possible, especially if allocation is randomized in terms of area or clinic. It is surprising how often studies use historical controls, given how difficult it is to avoid bias under these circumstances. The results of such studies should be regarded as suspect: the selection criteria, quality of the evaluation, and ancillary care may be different over time, among other factors.

Calculating the *sample size* of a trial must be done scientifically. The only way to do so is to base it on accurate definitions of the specific objectives and outcome variables of the trial. The conclusions of many studies are compromised because of their small size.

Many studies are performed over a specified, limited time period, often due to funding constraints, which is hazardous in this regard.

Compliance relates both to protocol adherence and client compliance with the intervention. If a trial is likely to last more than two to three years, it becomes difficult to adhere to the protocol. In such cases, *multicenter trials* should be considered, although these require a large degree of coordination to ensure that they run smoothly. It is relatively easy to monitor client compliance with certain interventions, such as drug therapy, but more difficult with others. This issue, however, must be addressed from the onset of any study, and decisions should be made on how to handle it during the analysis stage.

In looking at interventions and their evaluation, the pioneering efforts of Iain Chalmers, Mike Bracken, and others to promote the Cochrane concept of scientific evaluation must be strongly applauded. Their database, which began with interventions related to pregnancy and childbirth, has now been extended to cover other sub-specialties. The database is now available in the form of a textbook, as well as on computer disk, and is regularly updated.

The process has been as follows. All published and unpublished, English and non-English, trials on the subject are identified. Identifying unpublished trials is particularly important, as they are likely, for a range of reasons, to be those that failed to show positive effects or showed negative effects. Next, the trials are carefully evaluated to determine whether they are true RCTs, whether a valid process of randomization was used, the ways in which the authors avoided bias or ensured blinding, and the validity of the method of data analysis used. Many published studies fail to demonstrate significant differences between groups, which may relate solely to their small size. Meta-analysis, through which these studies are combined, can help to overcome this problem. RCTs have been used successfully to assess interventions related to some of the major causes of maternal mortality; some of these are described below.

Oxytocics (oxytocin and ergometrine) have prevented a large number of deaths from postpartum hemorrhage (PPH). Active management of the third stage has also become standard practice as a preventive measure. The former approach, however, has recently been called into question. RCTs shed light on this issue: after reviewing nine trials over 34 years, Prendiville and Elbourne concluded that routine use of oxytocics reduces the rate of PPH by 30–40 percent, but not by 90 percent, as previously suggested by the results of earlier uncontrolled studies. Interventions must be assessed in terms of both benefits and possible harm. In comparing oxytocin to ergometrine, both have a statistically significant hypertensive effect, but it is clear that the latter is associated with both a higher risk of hypertension and vomiting. Nonetheless, we continue to use ergometrine.

While various strategies have been proposed for the identification of women at high risk of pregnancy-induced hypertension, no clinically reliable method has been identified. However, when a woman arrives at a health facility with severe hypertension or eclampsia, anti-convulsants and sedative drugs are widely used. In the United States, magnesium sulfate is the treatment of choice, although this is rarely used in Europe and Australia, where diazepam is the most frequent choice. Until recently, there had been no effort to determine which was the best approach. Thanks to the efforts of a few individuals working with the Oxford Perinatal Trials Service, and with funding from WHO and ODA, a large multicenter study has now been completed, and will give us valid scientific evidence on the subject.²

One of the most important factors influencing abortion-related mortality is access to the safest technology for uterine evacuation. Although WHO recommends vacuum aspiration as an essential service at the first referral level, dilation and curettage (D&C) is still used in much of the developing world. Manual vacuum aspiration (MVA), a type of vacuum aspiration conducted using a hand-held syringe, can be performed on an outpatient basis with minimal pain control medication, making it possible for women to be treated as soon as they present and to be discharged shortly after the procedure. With the assistance of International Projects Assistance Services (IPAS), we conducted a study to compare the two methods of uterine evacuation and were able to show that MVA was safer and more effective than D&C. MVA has great potential for enabling us to decentralize abortion care to the primary level.

In conclusion, it is essential to promote the beneficial effects of interventions as well as to guard against potential harmful effects, both in terms of cost and lives. The only way to do this is by conducting well-designed clinical trials with sample sizes that are large enough to enable us to derive correct conclusions.

Country-level Essential Obstetric Care Program Evaluation

Oona Campbell, London School of Hygiene and Tropical Medicine,
United Kingdom

I prepared myself for this presentation by asking five questions: when to think about evaluating essential obstetric care (EOC), why evaluate it, who should evaluate it, what should be evaluated, and how should it be evaluated. The question "When should programs be evaluated" is asked first, since evaluation is often an afterthought, when in fact we need to plan the evaluation as we plan the intervention.

2

The study found that the drug of choice for the management of eclampsia is magnesium sulfate, which has been shown to be more effective than diazepam or phenytoin in preventing the recurrence of seizures (The Eclampsia Trial Collaborative Group. 1995. "Which anticonvulsant for women with eclampsia? Evidence from the Collaborative Eclampsia Trial." *The Lancet* 345: 1455-1463.). The most appropriate choice of anticonvulsant for the management of pre-eclampsia, to prevent eclampsia, awaits further research.

My focus today, however, is on *how* to evaluate programs. The scientific "gold standard" is the experimental model. While I am a great believer in the value of randomized controlled trials (RCTs) for evaluating both drugs and behavioral interventions, I question whether they are the solution for evaluating the kinds of complex packages of interventions governments put into place on a large scale—at the district level, for example.

For district-level interventions, RCTs require randomizing a large number of districts, which makes this approach difficult and costly. In addition, RCTs require a degree of control over the duration and intensity of the intervention that may not be feasible. Moreover, where interventions have multiple components, a myriad of possible comparisons make it difficult to decide the configuration of components in intervention and control districts.

I reviewed over 150 articles related to maternal health services, as well as those

addressing distance to health services in general. Most of the studies are of poor quality, and the evidence they produce, as rated by any standard, is poor. The methodologies used are indicated in Table 1.

As can be seen, only 22 of these studies used any sort of comparison at all, and only six used the best quasi-experimental approach of "before/after, intervention/control area." Several compared users and non-users, although there are many reasons to assume that these groups are not comparable. The studies used a very wide range of indicators, as illustrated in Table 2. Some of these indicators, such as "complicated maternal cases," were not defined. Others, such as "life expectancy," are too generic. In light of the deficiencies in these studies, how have we developed programs? We have relied on historical precedent and logical thought in trying to piece together ideas, as illustrated in Table 3.

TABLE 1	
Maternal Health Interventions Involving Access, Referral, or EOC	
Total number of studies reviewed	150
Methodologies used in evaluation:	
• Time series	
· national time series	5
· time series with 3–5 points	3
• Before/after	6
• Before/after, intervention/control area	6
• After, intervention/control area	2
Total number of studies reviewed using any comparison	22
In addition, one study compared to "best practice", one used case-control methodology, and several compared users and non-users.	

TABLE 2	
Indicators Used for Maternal Health Interventions Involving Access, Referral, or EOC	
Outcomes in women	Maternal mortality · all causes, cause specific · number of deaths, maternal mortality ratio Complicated maternal cases (not defined) · case fatality (non-cause specific) Cesarean sections, emergency cesarean sections
Outcomes in pregnancy/infant	Infant mortality, neonatal mortality, stillbirth, abortion rates Congenital syphilis
Life expectancy	
Outputs related to access and quality of care	Distance, time travelled Referral, correct referral Availability, knowledge, use of drugs Correct management, recording of risk
Other outputs	Contraceptive prevalence rate Number of deliveries

TABLE 3
What Do We Currently Base Our Programs On?
<p>Single treatments or interventions Oxford Database of Perinatal Trials/Cochrane collection</p> <p>Historical precedent Pattern of declines in England and Wales, and USA Ascribed to availability of antibiotics, blood transfusion, and better management of hypertensive disorders of pregnancy Contrasts of maternal mortality patterns with those of infant mortality Strengthened by Faith Assembly natural experiment of high maternal mortality in those refusing medical care Alternatively ascribed to conduct of medical audits/confidential enquiries or antenatal care</p> <p>Exception: 19th century pattern of decline in Sweden ascribed to home-based midwifery and antiseptic technique</p> <p>Thought experiments Skills of traditional birth attendants vis-à-vis ability to manage life-threatening complications Lack of strong association between morbidities treatable antenatally and causes of maternal mortality Lack of predictive power of antenatal high-risk screening tools</p>

It is very clear that obstetric care is key to reducing maternal mortality. Our questions relate to the specific content of the package, or the formulation of ways of delivering the care. I would argue the need to evaluate country-level EOC using alternatives to the experimental or even quasi-experimental approach. A more realistic alternative may be the approach used by evolutionary scientists or historians to describe events over which they have no control. An advantage we have over these is that we can ensure we collect, in advance, relevant data to confirm or refute our hypotheses.

Several research initiatives are underway, involving the United States Agency for International Development (USAID), UNICEF, and WHO, among others. Measuring the impact of interventions using maternal mortality indicators is a difficult and resource-intensive approach, and should not be expected by donors. We should increase our focus on such measures as morbidity, quality of EOC, and coverage of services, as well as newborn and other outcomes.

There are exciting developments in research assessing the quality of EOC. Indicators that have been used include case fatality; admission-to-treatment intervals (Program for the Prevention of Maternal Mortality); absolute cutoffs (for example, if a woman is admitted with a retained placenta and it is not removed, then the services are of poor quality) (MotherCare Project); and event-based indicators (for example, any sepsis occurring to a woman admitted with or without predisposing factors) (MotherCare Project, London School of Hygiene and Tropical Medicine). These approaches are important because they rely on existing registers and data.

Other exciting advancements have been made in measuring unmet need for EOC by comparing actual admissions to expected ones. Coupled with information on quality of care, we are moving forward in thinking through potential program approaches and their evaluation in a way that will enable us to put together a convincing picture of impact for governments and donors.

In conclusion, I would like to reiterate the importance of planning to evaluate from the start and ensuring that the intervention and evaluation are geared to the same level. We need to evaluate services using a range of methods and develop the skills to document different types of indicators.

**The World Health Organization's Future Research Agenda
and Efforts to Incorporate Women's Perspectives**

Suman Mehta, World Health Organization, Switzerland

Since 1984, WHO has supported studies to improve knowledge on ways to reduce suffering during pregnancy and childbirth among women in the developing world. Concern about continuing high levels of maternal mortality led to the International Safe Motherhood Conference in 1987, which ended with a "call to action." The latter emphasized the importance of applied research. This led to the organization of the Safe Motherhood Operations Research Programme (SMOR), with WHO as the executing agency. About eight years have now passed; we thought it was time to reflect on the lessons learned from this research, based on where we started and where we are now, in order to plan our future course.

WHO's Steering Committee on Research in Safe Motherhood recently met in Geneva. The highlights and main recommendations of the Committee will be outlined in this presentation. After long deliberations, the Committee set a course for WHO to follow under its continuing technical guidance. In setting this course, the Committee considered the lessons learned from research supported by WHO and other agencies/organizations and the strategy developed by WHO to help countries achieve safe motherhood (the Mother-Baby Package). It also recognized that incorporating women's perspectives is essential to the entire research process.

The Committee recognized that much progress has been made in improving our understanding of the problem of maternal mortality. Some interventions have been developed and evaluated, although the task is by no means complete. The Committee also recognized that WHO has faced constraints from which it should learn in shaping the future research agenda. Some of these are illustrated in Table 1.

Conducting health services research under the conditions prevailing in many countries posed special challenges. Study design, data collection and processing, and report preparation, for example, were often hampered by inadequate infrastructure, poor transport, difficult field conditions, and lack of familiarity with the particular difficulties of undertaking research on maternal mortality and morbidity.

Constraints from WHO's perspective were also significant. The research mandate agreed on was to respond to country needs, which, in many instances, and especially during the initial years, were limited to descriptive studies of maternal mortality. The quality of the proposals received was such that they required substantial technical assistance in their development. Operations research was constrained by the fact that WHO was able to support only the evaluation of the intervention, rather than the intervention itself. In addition, high expectations in this area were not matched by financial contributions.

The Steering Committee recommended that our research focus on efforts to maximize or improve the impact of various components of the Mother-Baby Package, as outlined in Table 2.

Plans in two areas of research—technology development and assessment, and health services research—are outlined in Tables 3 and 4, respectively.

TABLE 1	
Constraints	
Researcher's perspective	Constrained resources Difficult field conditions Lack of familiarity with research on maternal mortality
WHO's perspective	Research mandate Quality of proposals Limited technical contribution to interventions (policy decision based on financial constraints) Financial constraints High expectations

TABLE 2
Future Directions: Mandate
Focus on research needed to maximize or improve the impact of various components of the Mother-Baby Package
Shift from descriptive to action-based research
Support continuum of care approach
Health services research to determine how to do things in a better way

TABLE 3
Future Directions: Technology Development and Assessment
<p>Adaptation of known technology at peripheral levels of health care</p> <ul style="list-style-type: none"> · Labor monitoring · Oxytocics for prevention and management of postpartum hemorrhage <p>Alternative supplementation regimens for anemia prophylaxis</p> <p>Prophylactic antibiotics during labor for women at high risk of sepsis</p> <p>Essential elements of antenatal care in settings where women receive little or no care</p>

WHO accords great importance to the user's perspective and, in this case, women's perspectives, and to involving them in the development of research strategies. Progress has been made in this area. We are, for example, convening a series of regional workshops on the subject. The objectives of these workshops are to stimulate discussion on reproductive health needs as defined by women (both as providers and as clients); identify approaches for meeting these needs; and stimulate and foster partnerships between researchers, providers, and women's groups.

TABLE 4
Future Directions: Health Services Research
<p>Evaluate comprehensive package of maternal and newborn care interventions (costs, effectiveness, and quality of care).</p> <p>Test strategies to increase awareness and knowledge of the mother and family members about protective behaviors and danger signs during pregnancy, delivery, and the postpartum period. Evaluate whether this increase in knowledge and improved behavior optimizes utilization of maternal health services.</p> <p>Develop and evaluate strategies to rationalize available resources for maternal health care and improve availability of and access to services.</p> <p>Investigate the factors that influence health care seeking behavior, including cultural, social, economic, and geographic factors, and develop interventions to overcome the identified barriers.</p> <p>Design training strategies for health care providers appropriate to their expected functions and evaluate their effectiveness in terms of work performance.</p> <p>Test models aimed at taking advantage of women's attendance for maternal and neonatal health care to offer her comprehensive reproductive health services and reduce missed opportunities.</p>

Use of Research to Design and Improve Essential Obstetric Care Programs

Deborah Maine, Program for the Prevention of Maternal Mortality,
Columbia University, School of Public Health, USA

The United Nations and more than 100 governments have pledged to reduce maternal mortality by half by the year 2000. Implicit in this pledge is the idea that maternal mortality levels can be used to chart progress. Unfortunately, that is not feasible, for a variety of technical reasons. Even using the "Sisterhood Method"—the most efficient method for gathering information on maternal deaths—does not solve the problem; sisterhood studies produce an estimate of maternal mortality that refers to a period of about 10 years before the study. Few program planners want to wait that long to see the results of their efforts. In addition, studies of maternal mortality ratios (MMRs) do not yield very much information that is useful for programs. Knowing that the ratio is a certain level does not tell you, for example, whether the problem relates to health services, the transportation system, or community factors. As such, the MMR does not give you any guidance regarding ways to improve the situation.

Maternal mortality rates and ratios are "impact" indicators: they measure the event on which we want to have an impact—in this case, maternal death. "Process" indicators measure various aspects of the means by which we hope to achieve this impact. In selecting process indicators, one must be fairly certain that the process is closely linked to the desired impact. As a result, using process indicators forces us to be explicit about how we view the problem and its solution. The following represents, in my view, the statement about causality and prevention of maternal death that is best supported by the literature: once a woman is pregnant, most serious complications cannot be predicted or prevented, but they can be treated. This is the causal model underlying the process indicators discussed below.

Well-chosen and well-crafted research using process indicators is needed to design, monitor, and evaluate programs. Ideally, we want to offer our colleagues in developing countries "user-friendly" methods for assessing their situation prior to program design. If possible, the data should be available from existing record systems and be readily interpretable and usable.

To illustrate, I will use examples from the Prevention of Maternal Mortality (PMM) Network, which has teams in Nigeria, Ghana, and Sierra Leone. One of the indicators of quality of care used by the PMM teams is the admission-to-treatment interval. The assumption underlying this indicator is that the faster the woman gets treatment, the more likely she is to survive. In some places, the necessary data were available from existing records. In others, however, it was even difficult to identify women with complications from hospital registers. The average admission-to-treatment interval was found to be as much as 10 hours in some teaching hospitals. The indicator is also responsive: in Zaria, Nigeria, for example, it increased from 3.5 to nearly seven hours between 1983 and 1988.

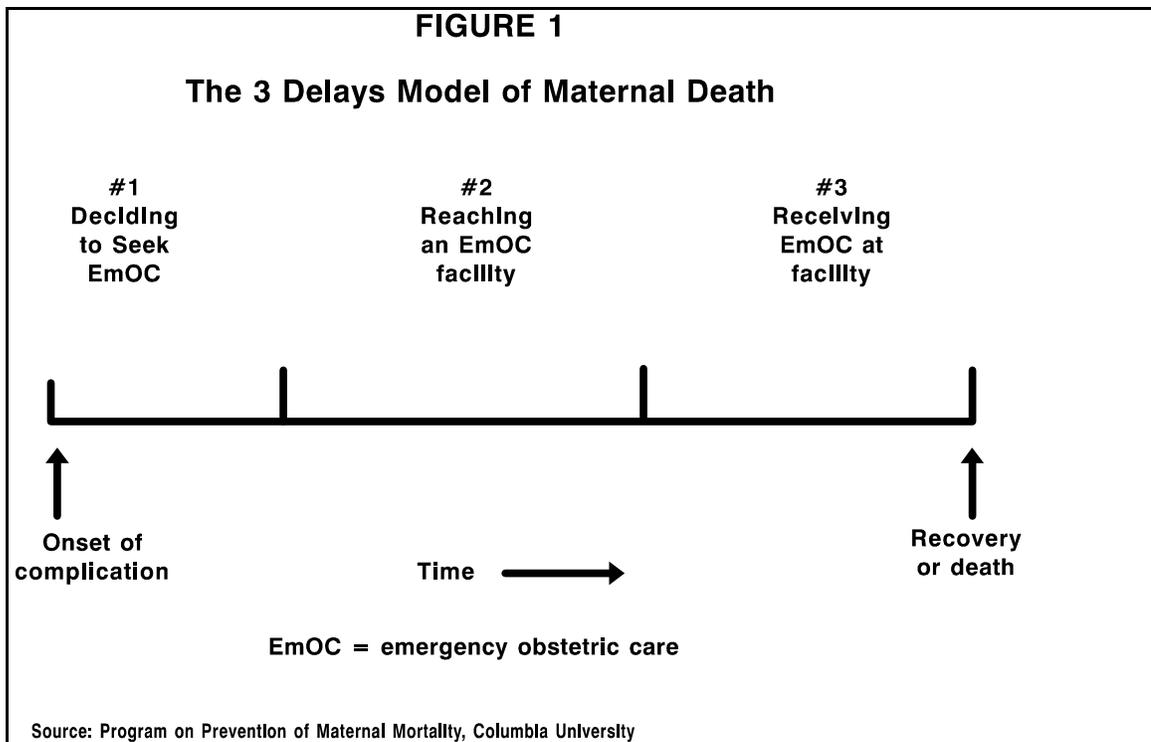
The PMM teams also use the case fatality rate (CFR), which is calculated by dividing the number of deaths from obstetric complications in a facility by the number of cases of

obstetric complications in that facility. The CFR estimates the probability of death among women with complications at the hospital, and is a rough measure of the quality of obstetric care. It can be derived from existing records if information on complications is available.

The two indicators generally agree: that is, hospitals with longer admission-to-treatment intervals tend to have higher CFRs. In Zaria, for example, when the interval was 6.9 hours, the CFR was 3.9 percent; in Kumasi, Ghana, the interval was 2.6 hours, and the CFR was 1.1 percent.

Despite the importance of emergency obstetric care (EmOC) in reducing maternal mortality, we still need to move from a clinical to a public health perspective. The former emphasizes doing your best for every patient in your care; the latter emphasizes doing your best for every person in the population. For decades now, pediatricians have been thinking about all the children in the community, while, for the most part, obstetricians remain focused on women in their hospital. The two perspectives lead to very different programs. The "Three Delays" model represents a public health view of EmOC (see Figure 1). It begins at the facility and works out to the community.

The "Three Delays" model reminds us that, in addition to the quality of care in facilities,



it is important to consider the needs of women who never reach a facility. In this regard, we have collaborated with UNICEF to develop a tool for estimating unmet need for EmOC. Met need is calculated by dividing the number of women who receive EmOC in facilities by the estimated number of women who develop serious obstetric

complications (unmet need = 1 - met need). It is generally accepted that serious complications occur in at least 15 percent of deliveries. In a district with 20,000 births per year, for example, an estimated 3,000 women will require EmOC. Preliminary studies, such as those conducted by UNICEF in India and Bangladesh, find that, in many cases, less than 10 percent of the need for EmOC is met.

These indicators help us to take a public health view. In a mountainous province in Morocco, for example, there are 20,000 births per year, but no capacity for surgery. A minimum estimate of the need for cesarean section is 5 percent of the total number of births. From this, we can determine that at least 1,000 women in the area will need this life-saving procedure each year. From January through April of 1995, 28 women were referred from the area to a higher-level facility for obstetric emergencies; seven of these women had cesarean sections, and none of them died. But where are the other women we know needed this care? Currently, only a few of those in need of a cesarean section are receiving one. When we went through this exercise with the obstetricians at the referral facility, they began to look at the problem in a different way—to think about all the women who need their care, but whom they never see.

Finally, it is imperative that we never assume that we know why people are not using health services. It is fairly easy to find out, and the answers are often surprising. Focus groups that concentrate specifically on what happens in an emergency are not difficult to conduct, and can be very effective in determining barriers to use of available care.

Communicating the Results of Evaluation/Research Efforts to Program Managers and Policymakers

Judith Bruce, The Population Council, USA

While I know less about this dimension of reproductive health than about others, I would like to relate my experience in communicating effectively with policymakers and program managers, using the concept of quality of care in family planning as an example. It took a great deal of effort and planning to get quality of care to the top of the agenda. The process involved many steps.

The first was to find the community of common interest. We found that fear of the issue was linked to funding—organizations feared that if they were the first to confirm that there were serious shortfalls in program quality, it might affect their funding. Thus, we tried to foster an "I'll talk about my problems if you talk about yours" attitude. We then held small informal meetings to raise doubts about the status quo, in a similar way that the seminal article by Allan Rosenfield and Deborah Maine, "Where is the M in MCH," did in this field. In the case of quality of care, raising doubts about the status quo required data drawn from observation of client-provider interactions. When we began our work there were no systematic studies; all we had were "eyes only" trip reports. But, through conversation, we gently gained consensus that there were serious problems in the level of care clients typically received. We proceeded to hold formal substantive meetings with the directors of major programs to validate the agenda. It was important that they affirm the existence of a "problem" with respect to quality.

The next step was to clarify and *simplify* the concepts under discussion by developing a framework of quality. The framework ultimately developed, in collaboration with Anrudh Jain, included the following elements: choice of methods, information given to the client, technical competence, interpersonal relations, mechanisms to encourage continuity of care, and appropriate constellation of services. More complicated concepts were distilled down to simple messages that we all agreed on—and could share. For purposes of operational change getting information out on points of agreement is essential and it is fine to acknowledge continuing areas of debate.

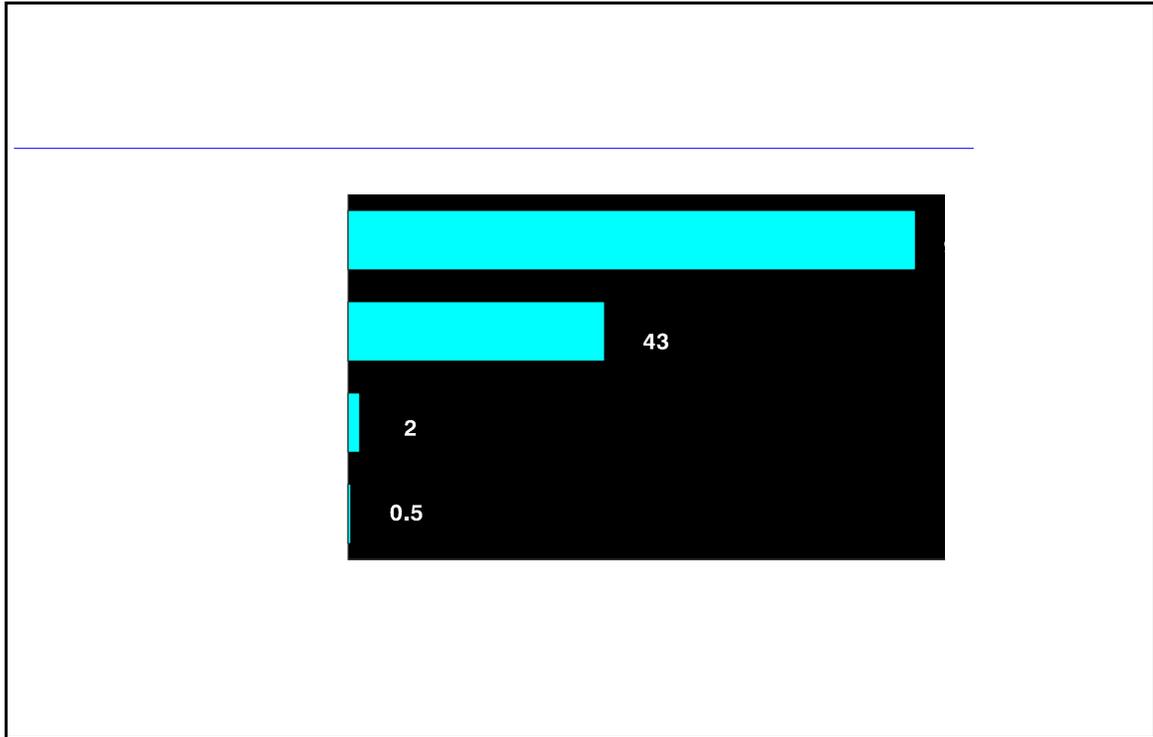
We then put together and published a state-of-the-art paper on the subject. At the same time, country-level meetings were held to identify key "stakeholders" and further elicit local definitions of quality issues and a sense of ownership. In addition, we developed preliminary indicators of service quality. Subsequently, these were evaluated.

Currently, we are trying to reach operational staff and the policymakers who dictate how programs are structured. It is now accepted that family planning services should aim to improve welfare, rather than focus on the achievement of demographic goals, and that improving quality is essential to improving welfare. We have established a publication series—*Qualité, Calidad, Quality (Q/C/Q)*—to document programs that are doing better than average. In all cases, the staff involved in the programs have learned a great deal. As such, we have in fact been working with programs as well as developing publications that will benefit other programs.

Another way we are working to change field-level reality is through situation analyses. One of these was conducted in Senegal in 1994; some serious problems in the quality of care rendered, as well as the weak capacity of family planning programs to deliver reproductive health care in the broadened sense, were identified. Some of these problems are illustrated in Figure 1, which shows that although virtually all family planning service delivery points (SDPs) have condoms on hand, an appallingly small proportion of new clients leave with them.

The Senegal situation analysis also discovered untapped energy, however. Many health and family planning personnel welcome a systematic picture of care rendered as a baseline against which to improve care.

Discussion points following the sessions on evaluating and disseminating information on components of EOC included:



- Ms. Maine noted that the assumption regarding the rate of cesarean sections used in Dr. Cowley's model was low, and that actual rates are significantly higher.
- Dr. Winikoff noted that when cost estimates of the nature presented by Dr. Cowley are presented to governments, they can be misleading. Such estimates must be put in context to ensure that they are not taken literally. Dr. Brown added that this served to highlight the need to present the model as a model—that is, a tool that countries can use with information from their own context to derive estimates based on that context.
- Dr. Cowley noted that in most settings, hospitals exist, but are not very good; doctors exist, but are not working very hard; drugs exist, but not all essential drugs. As such, it is not a question of whether or not these inputs exist, but whether or not they can function to provide, for example, a cesarean section to a woman who needs one. He reiterated his statement that the model is a *tool* for costing and that the next step is to take the methodology and use it with country-specific information. Ms. Tinker added that the World Bank has now tested the methodology in three countries: Mexico, Ghana, and

Tanzania.

- With regard to case fatality rates (CFRs), Dr. Campbell was asked where the debate stands with regard to determining what constitutes a case, given the current state of diagnostics. She indicated that the CFR could be looked at in two ways: first, as a "crude and quick" indicator to demonstrate that various components of care are functioning and, second, pending more rigorous research and resources to refine its definition, as a more sophisticated indicator. It is difficult to determine or define what constitutes a "life-threatening situation"—even physicians disagree among themselves. This is an area that needs much more work.

- Discussion ensued regarding the value of control groups. Some felt they are essential; others questioned their value, unless they are needed to convince people of the merit of study results.

- In response to a question regarding the merits of pooling resources to conduct high quality, large studies rather than a large number of studies of low quality, Dr. Campbell indicated that the former would be extremely worthwhile if the plan was to generalize the intervention in question to the whole world. She noted, however, that there are huge obstacles to evaluating intervention "packages."

- It was noted that randomized controlled trials (RCTs) have been underused for behavioral and other interventions that are nonetheless widely promoted, and that this trend should be reversed. It was also noted that RCTs are very important, and have made significant contributions to the knowledge base; they need, however, to be conducted effectively in order to generate results in which we can have confidence.

- Dr. Sacks noted that while some complications cannot be predicted or prevented, previous presenters had spoken of things that can be done; the extent to which we can predict or prevent complications remains an area of debate. Ms. Maine responded that even if one does see a maternal health problem coming, the woman will still need treatment; services have to be available.

- Dr. Sloan noted that the important question is whether or not we are treating women whose lives need to be saved, and doing so well. The distinctions between, for example, EmOC and EsOC, should not be the focus; we should focus on the concepts, rather than the terminology.

- Dr. Brown noted that even with the growing focus on reproductive health following the International Conference on Population and Development (ICPD) in Cairo, pregnancy-related issues get short shrift. Dr. Nachtigal noted, however, that it has only been since the ICPD that his agency can truly focus on reproductive health and family planning, *including* maternal health—they are, in effect, at "the very beginning of an old discussion." It will, he noted, be a difficult, slow process.

- Dr. Mehta referred to the responsibilities of researchers, which should extend beyond the publication of articles on study findings to working toward acceptance of these

findings. She proposed that district health officers serve as co-investigators, which would improve dialogue with ministries of health and increase prospects for implementation. Others also referred to the importance of involving the government in research efforts from the onset. Dr. Gardiner noted that in Ghana, for example, the Prevention of Maternal Mortality (PMM) team had been incorporated into the national program.

- Ms. Maine noted that EmOC or EsOC are always assumed to be too expensive, while in many settings the basic resources to provide related services already exist.

- Dr. Sacks referred to the World Bank's World Development Report, *Investing in Health*, which indicates that investing in women's health is extremely cost effective, and noted that we had failed to use this information effectively. Dr. Campbell noted, however, that maternal health differs from family planning, HIV, and child survival, for example, given the lack of a community-level solution. The problem cannot be solved vertically: it requires improving the health system as a whole. Indeed, the latter idea can be "sold": efforts to reduce maternal mortality will have an impact on a range of other health problems and, by addressing the whole system, will be sustainable.

FROM RHETORIC TO REALITY: THE ENABLING ENVIRONMENT

Capacity Development for Maternal-Child Health Service Provision

Rwekaza S. Mukandala, University of Dar es Salaam, Tanzania

Capacity refers to the ability to perform tasks effectively, efficiently, and sustainably. *Capacity building* has five key dimensions: the broad context in which tasks are performed; the institutional environment; the task environment, and especially the level of coordination of activities among the many organizations involved in accomplishing the tasks; organizational structures, processes, resources, technologies, and management styles that affect how individual talents and skills are used; and the training and recruitment of managerial, professional, and technical talent.

In Tanzania, earlier efforts to build capacity concentrated on increasing the technologies and skills used in executing tasks, including personnel training and recruitment and the acquisition of technical assistance, machinery, and equipment. This strategy partly ignored other relevant aspects of capacity building and their dynamic interactions. Consequently, nationals were trained, but were under- or misutilized; technical assistance was acquired at great cost, but little knowledge was imparted; and many buildings were assembled, but never successfully turned into dynamic institutions. The application of this limited model in Tanzania has had significant drawbacks. The 1993 Public Expenditure Review characterizes Tanzania's public health, including maternal-child health (MCH), as being in a state of crisis. Close to one-third of all deaths of women aged 15–44 years are maternal deaths. This is the case despite the development of an extensive infrastructure of basic health facilities and intensive donor support. UNICEF estimates that only 76 percent of the population has access to a health facility. In light of the above factors, why is this the case?

At the policy level, MCH is not highly valued. It is seen as a service rather than as an investment and as a technical matter rather than a sociopolitical issue. In addition, structural adjustment and economic crisis have had an impact on the already low budget for health. Within this budget, MCH is underfunded and MCH funding is increasingly diverted to other areas. Women's low status—socially, economically, and politically—also limits the attention paid to MCH. At the institutional level, low wages, poor management, and unending reform make it difficult for staff to be committed to the services they provide.

The Task Network for MCH Services in Tanzania, comprised of ministries, government agencies, NGOs, and donors, is highly centralized and poorly coordinated. Its activities tend to be vertical and poorly integrated with other development programs. It is also characterized by weak supervision, monitoring, and evaluation at every level, and by nonexistent community links.

Few resources trickle down to the lower levels of the health system, which are overwhelmed by demand for services. Health center and post staff are unwilling to perform tasks in the appropriate quantity and at the desired level of quality. Leadership and resources are sorely lacking at this level.

To solve these problems, the government, individual organizations, and donors all have important roles to play. The government can work to increase community participation and to establish a living wage for health care providers; if the government stops pretending to pay health workers, they will stop pretending to work. Among other reforms, the government should streamline organizations, develop and enforce supervisory and managerial systems, and train and retrain staff. Individual organizations should develop sound personnel and management systems, work towards financial independence, and advocate for a supportive institutional environment. Donors should invest in capacity-building initiatives that are demand driven, and base program design on concrete and systematic assessments of local realities and needs, using methods of intervention that are transparent and neither wasteful nor duplicative.

Work must be done to determine, based on community perspectives, the real causes of problems, and to involve the community in devising solutions. At the national level, both the government and donors should reorient their thinking to achieve a broad, dynamic, and interactive approach to capacity building with a long-term perspective, and with community input. They should also develop specific programs to address problems with current capacity-building models, such as: developing an organizational network at the grassroots level, conducting training and retraining, and developing new managerial and supervisory techniques that are interactive and participatory.

Where Have We Come From, Where Are We Going?

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Thus far, our discussion has focused on essential obstetric care (EOC), but we cannot look at EOC in isolation from other aspects of the health system. We need to consider the broader reality, including factors enabling the improvement of EOC and barriers to reducing maternal mortality.

Advocates for women's health have succeeded in influencing policymakers and planners to include the reduction of maternal mortality among their priorities; more research focusing on maternal mortality has been conducted and more resources are being allocated to related programs. In assessing where we are and where we are going, we need to ascertain whether the increased attention to and awareness of maternal mortality has been translated from rhetoric to reality. Has it resulted in improved access to services dealing with pregnancy-related complications? Statistical reports do not reflect a decrease in maternal mortality rates over the last ten years, suggesting that, despite the Safe Motherhood Initiative's successes, barriers to reducing maternal mortality remain.

Community-level, cultural factors related to traditional practices and beliefs and to health care seeking behavior are often cited as barriers. Less attention is paid to the impact of the culture of health service providers and the structure of health services. The low status of women health workers is a major barrier to improving EOC. These health workers receive the least support and supervision and have restricted access to transportation and supplies, contributing to the low quality of care and to the failure of referral systems. Poor support also results in frustration with their work, which is reflected in negative attitudes towards patients, and, in turn, affects the utilization of services. It can also result in an unwillingness to serve in rural areas, where the need for EOC is greatest.

Utilization of hospital-based obstetric care begins with referrals by community-based health workers, and its ultimate effectiveness depends on the trust developed over time between the community, these front-line workers, and the referral centers. My own observation is that the most important ingredient for improving the referral system is the provision of ongoing supervision to all levels of health workers, and particularly to women health workers, yet I see little evidence of change in this area. In India, for example, improvements are being made in maternal care services, and key aspects of these improvements are dependent on assistant nurse midwives (ANMs). The ANMs, however, remain in a very weak position. Without addressing the factors that prevent them from carrying out their responsibilities, are we not designing yet another well-intentioned program with little possibility of improving women's access to EOC?

Gender is also a factor in the hierarchical structure of medical professionals and the delegation of responsibilities. Doctors, who are predominantly male, have been unwilling to delegate responsibility to midwives, who are predominantly female, yet experience has demonstrated the role that well-trained and supported midwives can play in providing EOC. Thus, it is essential that we recognize the many ways in which gender issues present barriers to improving EOC.

In general, countries with low maternal mortality have an integrated network of health services. In Sri Lanka, this includes a cadre of well-educated and trained female health workers. In Sri Lanka and the Indian State of Kerala, where women encounter fewer barriers to education, they also have greater access to employment and higher status in the health system. Gender is a factor that cannot be ignored in efforts to reduce maternal mortality and morbidity.

While we have recognized the necessity of including the perspectives of women and providers in planning for EOC improvements, government perspectives must also be included. My own research has focused on factors influencing decisionmaking within health bureaucracies and how to get information about beneficiary needs into the policy process. These studies document the repeated failure of health programs that are developed in isolation from the realities of government. Policymakers and planners need to assess problems and resources to determine priority needs and the most pragmatic and effective approaches to meeting those needs. It is extremely important that we assess how to improve existing EOC in this manner.

The current focus on strengthening the district level coincides conveniently with the recommendation to upgrade district hospitals to provide EOC. In spite of the rhetoric, however, I am cautious in my optimism about the actual reallocation of decisionmaking and resources. Very little resulted from earlier decentralization efforts, but perhaps this will improve.

While we have discussed the impact of structural adjustment and health care financing, we have not discussed the potential role of the private sector. Medical doctors with upgraded training have increasing opportunities to transfer to the private sector. In the future, there may in fact be fewer doctors willing to staff the proposed upgraded district hospitals. What impact will such changes have on the provision and quality of EOC and the uneven distribution of medical services between urban and rural areas? The quality of facilities themselves is only one factor influencing the willingness of doctors to live in district towns. Educational and residential facilities, and other amenities, factor into their decision.

As reflected in our discussion, there are differing views about the type of approach that is most appropriate to reduce maternal mortality, with the continuum extending from hospital-based emergency care to broader approaches. We should not allow ourselves to become polarized and thus waste time and resources debating the extremes; rather, we should find ways to work together to understand the contribution of each approach. In doing so, we need to be more sensitive to how our debates appear to governments. Let us ensure that they result in improved obstetric care and do not lead to increased confusion among governments about priorities.

We have not addressed maternal morbidity during this meeting. We need to recognize its tremendous impact on women and be cautious about excluding it from approaches to improving EOC. Neither have we discussed EOC in relation to perinatal survival and infant health, although in many countries maternal and child health care are closely linked. We are influenced by the success of children's advocates in focusing attention on high infant mortality rates and mobilizing resources to support related programs. Low-cost technological interventions, such as immunization, met the needs of policymakers and donors, who wish to support programs with defined targets and measurable inputs and outcomes. The attempt to draw lessons from the political success of this initiative and develop a single-focused approach to EOC is understandable. We must be cautious, however, because, as discussed, lowering maternal mortality is not amenable to a simple package of preventive services, but requires an interrelated network of services, including EOC, that will not produce rapid results.

These problems continue to undermine our attempts to reduce maternal mortality and, therefore, must be addressed as we chart our future course. I would like, however, to close on a positive note. Nepal has one of the highest rates of maternal mortality in the world and, not surprisingly, some of the most difficult obstacles to providing EOC. Improvement is possible, however, even in such difficult conditions. Since my last visit to Hinguwapati Village six years earlier, a dirt road had been constructed and a telephone had been installed by a community-supported health post. The health post

was staffed by an ANM from the area who had been well trained at the nearby Swiss-supported technical training center. This was the first time I had seen a telephone in a Nepali village and I was impressed when it rang with a call from a farmer's son living in Kathmandu, who wanted to tell his father not to send the potatoes to market because the price was down. Health workers explained that villagers frequently use the phone for similar business and are charged for each call; the profits are used to support the health post. The phone is also used for medical emergencies: in the two months since its installation it had been used twice to call an ambulance to transport obstetric emergencies. Such unfortunately rare developments confirm that EOC can be made available even in locations with what appear to be insurmountable barriers.

Discussion points following the session on the enabling environment included:

- Dr. Brown noted that at the International Conference on Population and Development, a goal was set to reduce maternal mortality levels recorded for 1990 by 50 percent by the year 2000, and by a further 50 percent by 2015. In the early 1960s, there was a call for success stories in the family planning field, and we were able to provide them. In the area of maternal mortality, success stories are important, but problematic, given the difficulties inherent in measuring maternal mortality levels, and thus in illustrating progress. Dr. Sacks also discussed having worked in the family planning field when there was opposition to this work, and noted that programming hinged on success stories. In the area of maternal mortality, we need to be able to show that we are taking much more vigorous action, that our efforts are more coordinated, and that, in fact, there are many places where action is being taken and the situation is improving. We need to improve our public information efforts to convey this progress.
- Dr. Nachtigal noted that one of the primary problems is that decisionmakers do not yet consider maternal mortality to be a high priority issue. He referenced Tanzania, where work on this issue has very low status, partly because it is not seen as an investment by government personnel.
- Dr. Aitken emphasized the importance of perceiving employees as clients. In India, for example, as illustrated by Dr. Justice, very little will be accomplished unless the issues surrounding the status of ANMs are addressed.
- Ms. Maine noted that much less has been done than should have been done, and that part of the problem is that the Safe Motherhood Initiative has been promoted and perceived as an "all-purpose women's initiative." In China, for example, maternal mortality is low although women's status is very low, because there are health services in place. We have not focused on the fieldwork to the extent that we need to. Pregnancy-related complications may be only one issue—but one can die from them. She cautioned against broadening the Initiative again, as this would cause increasing loss of focus, and indicated that maternal mortality is a technical problem. Dr. Senanayake cautioned that it has become too much of a technical issue and that it cannot be divorced from the many other factors that impinge on women's realities. It was also noted that to individuals, the way we approach health and ill-health—by

breaking it down into specific problems—makes no sense.

- Dr. Mehta added that the field of family planning should give us cause for further caution in terms of regarding maternal mortality as a solely technical problem. In the late 1950s, the approach in the family planning field was to build clinics, assume that people would come and use related services, and that fertility would fall as a result. This did not work. Addressing an issue from a purely technical standpoint does not work—there is no point in providing services if women are not going to use them. She illustrated her point by noting that EOC is at the center of services women need. About 15 percent of pregnant women will need these services, but all pregnant women will need basic maternity care, all sexually active women will need family planning, and all women will need reproductive health care and efforts to improve their status. Each of these areas influences the others. Even if EOC and mortality reduction are the focus, the other areas cannot be ignored.

- It was noted that it makes no sense to look at the value of EOC compared to other interventions, because it is not an either-or situation. Dr. Rosenfield noted that for the purpose of reducing maternal mortality, facilities need to be there, and that one has to make efforts to ensure women can reach them and use them. Ms. Maine went on to discuss the Three Delays model, which is based on community views of obstetrics. She also noted that governments around the world are very confused about the Safe Motherhood Initiative, because it is so broad. Dr. Nachtigal noted that if we had the types of interventions available for child survival we might be more successful, but that, in this field, broader work is needed if our efforts are to be sustainable. Dr. Donnay added that within countries the approach needs to be narrowed and oriented toward maternal care and obstetrics more specifically. Dr. Brown added that we can look at this issue in two ways—one that applies to the political level, and the other to the operational level. Both are important and each reinforces the other.

- It was noted that alliances are extremely important to improving maternal health; each agency should focus on its area of strength.

- Dr. Aitken noted the need for public health obstetricians. Public health pediatricians have existed for 30 years. In many ways, the public health perspective is even more important in obstetrics.

SUMMARY AND CONCLUSION

Getting from Here to There: Where We Want to Go, the Way Ahead

Margaret Catley-Carlson, The Population Council, USA

It has been the Population Council's privilege to take on the chair of the Inter-Agency Group for Safe Motherhood (IAG). A great deal has been accomplished. The IAG itself—seven individual organizations—continues to learn how to work collaboratively, reconciling different mandates and working styles. I was present when the Task Force for Child Survival was created: there were preliminary disagreements on the fundamental elements of child survival. In particular, there was disagreement regarding whether we should focus our energies on the entire health system, or on specific causes of child mortality and their solutions—some of the same issues the IAG faces regarding maternal mortality. The Task Force drew its strength from recognizing the value of all perspectives. Work in the area of AIDS provides another example: all potential approaches must be considered and reconciled into a coherent global strategy. Disagreement should be seen as good: it is part of the process of reconciling differences towards improving maternal health, a goal to which we are all committed.

The IAG is also learning to sharpen its focus, which is essential to developing a valid research agenda and to raising funds for research and programs. The latter is more difficult when we cannot say definitively that an intervention will have an impact on women's survival. A great deal remains to be done in this area. In many respects we are still defining the problem. In child survival, we began to progress more rapidly when we were able to provide estimates of the number of child deaths that had been prevented and to state definitively that Oral Rehydration Therapy could reduce child mortality from diarrheal disease. The same will be the case with maternal mortality.

A great deal has been learned regarding key obstetric services although we have not reached full agreement on the who, the how, and the how much. The concept, however, is evolving—the book is being written.

It is essential to keep the poverty linkage in view. WHO's annual report this year ranks poverty as the worst disease on earth. Maternal mortality shares a link with poverty; mortality rates are highest among the poorest women. Women in developing countries suffer doubly: they live in countries with limited resources and they have least access to those resources.

The links between maternal health and women's status should also be kept in view. The International Conference on Population and Development gave a tremendous boost to the idea that women's low status, in terms of education, decisionmaking capacity, and many other factors, is strongly linked to fertility. Where women are regarded as property or replaceable, maternal mortality will be of less concern than where they have status and value.

WHO's work has demonstrated that this is a global issue. We find the same causes of

death, the same high risk groups, the same substandard care, and the same avoidable factors in the high Arctic as we do in the tropics.

There is still a great deal to do: maternal mortality rates remain staggeringly high and, in many settings, are not declining, a fact I recently drew to the attention of the Population Council's Board of Trustees. We need to move forward with a united front, while taking full advantage of our diversity.

There are numerous steps we must take. We must step up global advocacy efforts to ensure women, women's health, and women's health care services are placed higher on the agenda. In this regard, it is essential that we make a joint commitment to getting these concepts on the table at the Women's Conference in Beijing. We should enable the world's women to become advocates for their own health and their own cause. We need to help women realize that their needs are important and that they are worthy of care. Until this is accomplished, it will be difficult if not impossible to reduce maternal mortality rates.

We need to figure out how to translate our new wisdom into the vernacular: "key obstetric services" does not roll easily off the tongue. Sometimes it is necessary to sacrifice fidelity to the concept to develop it into one that all can understand and discuss.

We have learned at the Population Council that programmers must support research for what it brings to their work and that researchers must pledge to make their work as relevant and rapid as possible, and to disseminate it in an easily accessible form. Again, we should cherish our diversity, which is sometimes difficult to remember when the struggle for resources seems ever more acute. We must reconcile our differences to enable us to move forward toward the achievement of a common goal.

Finally, we must communicate, communicate, communicate: great ideas are not great ideas unless they are communicated to those who can use them to better the status quo.

**Inter-Agency Group for Safe Motherhood
Technical Meeting
Issues in Essential Obstetric Care**

**UNICEF – New York
May 31–June 2, 1995
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