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Improvement of Quality of Maternal Health Services

*Report of a Regional Consultation
New Delhi, 13-15 January 2003*

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1. INTRODUCTION

A regional consultation on “Improvement of Quality of Maternal Health Services through Implementation of Review on Maternal Death” was held in New Delhi, from 13 to 15 January 2003. This consultation was organized by the WHO Regional Office for South-East Asia with the technical support from WHO Headquarters. A total of forty-five participants from ten countries of the Region, except DPR Korea, attended this consultation along with representatives from partner agencies, nongovernmental and professional organizations (Annex 1). During the consultation, participants were introduced to methods for reviewing maternal death and complications to make pregnancy safer developed by WHO in collaboration with partner agencies. Work plans were developed for implementing these methods in their countries during the consultation.

2. INAUGURATION

Inaugurating the consultation, Dr Uton Muchtar Rafei, Regional Director of WHO Regional Office for South-East Asia (SEARO) stated that notwithstanding the significant progress made in health development in the Region; maternal mortality remains unacceptably high. He reminded the participants that in 1995, approximately half a million maternal deaths occurred globally, of which more than 30% took place in the South–East Asia Region. Following the Nairobi Conference of 1987, when the Safe Motherhood Initiative was launched, WHO, UNICEF, UNFPA and the World Bank have placed the reduction of maternal deaths high on the international health agenda. This led to strong commitment from governments and development partners and although many activities have been achieved, more efforts are required if we want to further reduce maternal and infant deaths.

These efforts are reflected in the Millennium Development Goals which sets “a reduction of MMR by 75% and two-thirds of IMR from the levels in 1990 by the year 2015”. Referring to these goals he added, “We need to ensure that these Millennium Development Goals to reduce MMR and IMR and improve maternal and newborn health are placed at the centre of

national planning". To achieve these goals, a strategic plan for reducing maternal and newborn deaths is required by each Member Country to provide the necessary direction and guidance for action. One of the main strategies adopted by WHO's Making Pregnancy Safer Initiative is increasing access to skilled birth attendants. A global movement for skilled attendance was initiated by WHO in the last year, which identifies crucial partners to help implement the strategy, define their roles and responsibilities, specifies essential actions at various levels, and provides an accountability framework for health care providers, governments, civil society, global international development agencies and WHO.

Dr Uton Muchtar Rafei identified poor quality and limited access to maternal and newborn health services, including essential obstetric and newborn care as a major determinant of maternal/newborn death. In order to assist countries in improving and maintaining good quality of maternal and newborn services, WHO has developed technical standards and guidelines¹ for the first referral care and primary health care levels. These guidelines were recently introduced to Member Countries at the Regional Consultation on Introduction of Evidence-based Norms and Standards for Maternal and Newborn Care, New Delhi, India, 17-20 December 2002.

The Regional Director emphasized that most maternal deaths are avoidable if preventive measures are taken and adequate care provided. In this regard, he particularly pointed out that maternal death review could be a crucial method for assuring that both of these occur in a timely manner. The WHO Regional Office is promoting the monitoring and evaluation of Maternal and Newborn Health Programmes² in Member Countries and this Consultation had been organized to further develop proposals and work-plans to implement maternal death reviews in Member Countries.

He welcomed the participation of consultants from South Africa, the United Kingdom and WHO Headquarters in Geneva and noted the participation of the staff from WHO country offices and WHO partners, such as SIDA, CEDPA, and Engender Health. Dr V P Paily was nominated Chairman and Mr Ajit Singh Pradhan as the Rapporteur (See Annexes 1 and 2 for list of Participants and Programme).

¹ Managing Complications in Pregnancy and Childbirth: A guide for midwives and doctors; and Pregnancy, Childbirth and Newborn Care: A guide for essential practice.

² Monitoring and Evaluation of Maternal and Newborn Health Programme: Report of the Regional Consultation, Bangkok, Thailand, 8-11 July 2002

3. OBJECTIVES

The main objective of the consultation was assist and facilitate Member Countries in improving the quality of maternal and newborn health services through implementing maternal death reviews.

The specific objectives of the consultation were as follows:

- (1) To review different methods of maternal death reviews; and
- (2) To develop country/institution proposals to implement reviewing maternal deaths in all countries of the Region.

The Expected outcomes of the Consultation were :

- (1) Understanding on the different methods of maternal death reviews, and
- (2) Formulation of country proposals and work-plans on implementing maternal death reviews.

4. NEED FOR QUALITY IMPROVEMENT IN MATERNAL AND NEWBORN HEALTH PROGRAMME

Dr Monir Islam, presented the need for quality improvement in maternal and newborn health programme in order to achieve the Millennium Development Goals specific to maternal and infant health. He reminded the participants that the appalling situation in some Member Countries was not only due to death, but often the consequence of pregnancy and childbirth is severe morbidity as well. He cited the example of Bangladesh, where out of nine million women surviving the rigours of pregnancy and childbirth, a high percentage suffers the consequences of fistulae, uterine prolapse and urinary incontinence.

The high maternal mortality ratios in South-East Asian countries could be attributed to the fact that in many Member Countries, more than 70% of births occur at home, births attended by a skilled birth attendant in some countries is below 20%, and access to obstetric care for poor women is still very low. However, he noted that in Thailand and Sri Lanka, the situation is quite different and is reflected by some of the lowest maternal mortality

figures in the Region. These two countries were able to achieve these results due to political commitment, investment in training skilled birth attendants (notably midwives) and establishing a referral link between community and health care facilities. In the light of these achievements, he discouraged the training of traditional birth attendants (TBAs) as service providers and expressed his doubt that they could be effective in reducing maternal mortality. He reminded the participants of the importance of eliminating the “three delays” in improving maternal health and for reducing maternal/perinatal morbidity and mortality: delay in deciding to seek care, delay in reaching the health facility and delay in receiving care at the facility.

Dr Islam concluded with the poser: why the rich people of a country are always subsidized at the cost of the poor who are in most need of services. Most maternal deaths are preventable, and the process could be begun by improving the quality of care in major hospitals and institutions. He requested the participants to identify how best maternal death reviews could assist in improving the quality of care in their health services. He foresaw that such an initiative would expand eventually to the community where most births occur. Lastly, he asked participants to identify creative thinking to utilize the expertise from one country in the Region for the benefit of others, and to focus efforts by starting out in a few locations with the idea of expanding after gaining experiences.

5. MAKING PREGNANCY SAFER

Dr Gwyneth Lewis, Principal Medical Adviser, Women’s Health, Department of Health, United Kingdom, and Director of the UK Confidential Enquiry of Maternal Death, introduced the draft of the new WHO document entitled *“Beyond the Numbers: Reviewing Maternal Deaths and Complications to Make Pregnancy Safer”*. She presented some background figures on maternal mortality and mentioned that over half a million pregnant women died each year and more than twenty million suffered from pregnancy-related complications. Over five million newborns died each year. She showed that 1 in 11 pregnant women had a life-time risk of dying in some developing countries, whereas this life-time risk was estimated to be between 1 and 5 per 10 000 pregnant women in developed countries.

Dr Lewis explained that maternal mortality ratios do not tell us the real reasons why mothers are dying. They do not identify which particular groups of women in any given country are at higher risks of dying and they provide no insight into which avoidable or remedial factors are associated with these tragic deaths. She also emphasized that in order to develop sustainable strategies to reduce maternal mortality a clear understanding about the factors leading to a woman's death was necessary. Every maternal death provides some clues of why the woman died and lessons may be learnt, which point to practical ways of addressing the problem. She stressed that to start to address the causes of maternal mortality, the right kind of information on which remedial action can be taken is required.

She listed the different methodologies available to help us understand "why" women die in pregnancy and childbirth: (1) verbal autopsy (community based reviews), (2) facility-based death reviews, (3) confidential enquiries into maternal deaths, (4) surveys of severe morbidity and (5) clinical audits. All these approaches help identify maternal deaths to be reviewed in a confidential manner and to identify avoidable factors that will lead to policies to promote and implement changes in local/regional or national practices. An important part of the review process, she said, was the audit of these changes for further policy development.

She described why confidentiality was of utmost importance to maternal death reviews. When a case is reviewed confidentially or anonymously, it is impossible to track back and assign blame, which often leads to litigation and punitive action. Staff are reassured and feel better and able to describe the events surrounding the death without bias.

She noted that some underlying practical issues would need to be addressed before deciding the approach to be used. Identifying how the information will be obtained and which maternal deaths are to be studied is a pre-requisite to any maternal death review. Equal importance should be given to planning and implementing the process, paying particular attention to questionnaire design and interpretation.

She stressed the importance of developing sustainable maternal death reviews which could be done within available resources and of considering the review of clinical outcomes as an integral part of the commitment of health professionals to their patients. Nevertheless, the purpose of any study

must be explained to the staff to engage their help in planning and implementing a maternal death review. Care should be taken to engage people who would be able to promote and make changes to improve the delivery of health or community care. They should be involved in the planning process from the outset, which would bestow a sense of ownership. She stressed the need to be realistic in building a sustainable ongoing process from the start, and recommended that maternal death reviews could start as a small pilot project before being expanded throughout a national health system.

Dr Gwyneth Lewis outlined the five main methodologies for maternal death review as described in "*Beyond the Numbers*".

- (1) **Verbal autopsy** is a method used to review maternal deaths in the community by describing the events leading to a death that occurs outside a health facility. This is the only way to investigate deaths in women who die in this manner. It is of particular importance in settings where the vast majority of maternal deaths occur in the community. It can be used to ascertain the woman's story from family members and others in the community, through interviews and focus group discussion. It attempts to identify specific avoidable factors, which may lead to maternal deaths in these circumstances, such as: sociocultural barriers, harmful traditional practices or problems with transport. Unfortunately, this method does not usually provide the medical cause of death or insight for clinical guidelines or recommendations.
- (2) **Facility-based case reviews** are reviews of the causes and circumstances surrounding maternal deaths occurring in health facilities. They are concerned with identifying avoidable and remediable factors in the facility, occasionally supplemented with information from the community. Even the process of participating in such a review can lead to immediate changes in clinical practice, provide staff with a valuable learning experience, and cost very little to conduct. The results can be made available for improving clinical practices through training efforts and the development of guidelines or protocols. The results may also be used to advocate for a re-allocation of or increase in local resources and can lead to further local advocacy. The results of this type of audit will be strengthened if a group of local hospitals join together to undertake joint reviews.

- (3) **Confidential enquiries** into maternal deaths are used when investigating all maternal deaths in a country, region, district or group of hospitals. Where they have been used in the past the results of these enquiries have been shown to lead to substantial reductions in maternal mortality and can be used as greater levers for change at the regional or national policy levels. The positive aspects of confidential enquiries were underlined, for example, the ability to make national, regional or local recommendations and guidelines of a more general policy or clinical nature than would be the case for enquiries carried out only within local facilities. The results also provide evidence on which to argue for increased maternal health care resources, provide a more complete picture of maternal mortality than generally available from maternal health records, and provide a confidential, non-threatening environment in which to analyze the factors leading to individual women's deaths.
- (4) **Surveys of severe morbidity** can be carried out in conjunction with any of the other methodologies discussed in the book. They are more complicated and time-consuming to conduct, as they involve assessing the management of women who survived severe complications of pregnancy. The results may give a better picture of the general factors that might be contributing to maternal mortality and morbidity in a particular facility or locality, as many more women will survive a life threatening "near-miss" event than die from it. However, case definition is difficult and requires careful local consensus and agreement. Case ascertainment and review often involves more time and resources than do other methods. In addition, permission would be required from the surviving woman which may lead to future distrust in her health care providers. On the other hand, health care providers may benefit by seeing how their actions could have saved a woman's life and lead to further empowerment and improvements.
- (5) **Clinical audit** is a specific technique used to analyze the quality of care provided in health care facilities against pre-set agreed clinical criteria or standards. It can be described as a systematic review of care measured against explicit criteria aimed at improving patient care and outcomes. Aspects of the processes and outcomes of care are selected and systematically evaluated against explicit criteria indicated, changes are implemented at an individual, team or

service level and further monitored to confirm improvements in health care delivery. Dr Lewis said that this method enables cases to be evaluated against good practice criteria and can be used for all maternity care, and not just near misses and deaths.

Dr Lewis presented results of these different methodologies performed in different countries. The results of a verbal autopsy study in Mexico, where it was found that the women or her relatives did not know what symptoms were abnormal and the non availability of transport at hand led to better antenatal education and improved access to transport. A study of facility-based death reviews in Indonesia found that half the deaths were due to haemorrhage, among which two thirds were due to retained placenta. This study led to improved midwifery training and guideline development. The use of local confidential enquiries into maternal deaths in a town in England in 1928 reduced the maternal death rate significantly over a three-year period without the need for any extra resource. Better public education and changes in birthing techniques reduced the rate. She then said that the WHO manual "*Managing Complications in Pregnancy and Childbirth*" contained guidelines for local adaptation and use.

In conclusion, Dr Lewis stressed that even a simple study or a single case review could help save a mother's life. Every health care worker can be self - reflective about the cause of death of a mother. They can also participate in larger studies, which provide more information on which to act at facility, district, regional or national levels.

It is possible to prevent maternal deaths even in resource poor countries, but this requires the right kind of information on which to base health care programmes. The underlying causes and determinants of maternal deaths, need to be understood but the most important thing is the commitment to act upon the findings of these reviews.

6. MATERNAL AND PERINATAL DEATH REVIEW

In his presentation, Dr Bob Pattinson from the Kalafong Hospital, Pretoria, South Africa, said that there are two models of the review process, the nationwide "Confidential Enquiries of Maternal Deaths" and the sentinel site model, which employs a national representative sample. South Africa uses two

models, one for maternal deaths and the other for perinatal deaths, which share similarities in their review process.

He explained the process of confidential enquiries on maternal deaths and listed the terms of reference concerning recommendations issued from the Steering Committee on Confidential Enquiries of Maternal Deaths.

- (1) The implementation of recommendations which are based on maternal death reviews should result in a reduction in the MMR;
- (2) The recommendations must be phrased in such a manner that their implementation can be measured and reported in subsequent reports;
- (3) The recommendations must take into account the health care resources of the country.

He noted that province officials appointed provincial assessors, which was considered an honour. Together a doctor and midwife usually assessed each maternal death and were directly involved in the feedback workshops, held to discuss their findings. Assessors did not receive additional pay for these services.

He listed the primary obstetric causes of maternal deaths during the 1998-2001 period as hypertension, postpartum haemorrhage, ante-partum haemorrhage and other diseases. He referred to several administrative avoidable factors, such as transport problems from home to institution, referral delays between institutions, lack of appropriately trained staff and communication problems, which contributed to maternal mortality. Other factors included health care provider-related avoidable factors; missed opportunities and substandard care; not assessing patient adequately; not following accepted management protocols, and poor monitoring of patients. These factors were prevalent generally in level-one institutions.

In conclusion he said that the major reason for an increase in maternal deaths in South Africa was AIDS and not necessarily pregnancy-related causes. Hypertension in pregnancy was the most common direct cause of maternal death; however, there was an increasing trend of obstetric deaths due to haemorrhage. Transport remained an important problem and was a major factor for maternal deaths. He stated that more than half of the maternal deaths were associated with avoidable factors and substandard care from

health care providers. In addition, more than 70% of maternal deaths occurred at the primary health care level.

The maternal death reviews in South Africa led to the following key recommendations:

- (1) Emergency transport facilities must be available for all pregnant women with complications.
- (2) Distribution of the public sector termination of pregnancy services must be expanded and advertised.
- (3) Blood must be available at every institution where Caesarean sections are performed.
- (4) Correct use of the partograph should become the norm in each maternity.
- (5) A quality assurance programme should be implemented in each institution.
- (6) Guidelines on the management of common causes of maternal deaths must be displayed and used in all institutions where women deliver.
- (7) Voluntary counselling and HIV testing should be made available for all pregnant women.

Describing "Perinatal Care Survey" of South Africa, he mentioned that the process was similar to that described for maternal death reviews. The avoidable factors identified were also similar, such as missed opportunities and substandard care, which resulted in perinatal deaths. Thus the major challenges for reducing perinatal mortality were the same as those identified for maternal mortality. The major challenges of perinatal care in South Africa were unexplained intra-uterine deaths; intrapartum management; management of hypertension in pregnancy, and management of premature neonates.

Following are some specific recommendations to reduce perinatal mortality:

- (1) The correct use of the partograph for all women in labour, including foetal monitoring should be ensured.

- (2) Adequate resuscitation of asphyxiated neonates and introduction of Kangaroo mother care for premature infants must be ensured.
- (3) Referral protocols should be present at all antenatal clinics and a policy of initiating antenatal care when pregnancy is first confirmed should be introduced.

Thus, in South Africa, the major challenges of maternal care are HIV/AIDS; hypertension in pregnancy; obstetric haemorrhage, and pregnancy-related sepsis.

If these maternal factors were combined with the major problems of perinatal care, one may conclude that the management of hypertension in pregnancy together with the proper management of labour would bring about the most important benefits to the population. Hypertension, the most common cause of maternal deaths together with antepartum haemorrhage, the most common cause of perinatal deaths require appropriate interventions, if maternal and perinatal deaths are to be reduced in South Africa.

In conclusion, Dr Pattinson said that the greatest challenge in saving the lives of mothers and babies in South Africa is finding effective methods for changing health systems and health workers, in order "that the right things can be done".

7. SUMMARY OF METHODS

Dr Richard J Guidotti, Short-term Consultant, WHO/HQ, stated that after the Nairobi Conference in 1987, WHO prioritized several methods to reduce maternal deaths throughout the developing world. Early efforts included the risk approach in maternal and child health, which attempted to base the health systems response on the identification of risk factors in pregnancy, and the Safe Motherhood Needs Assessment, which was used as a situation analysis for identifying the gaps in the health care system. More recently, WHO has recommended clinical guidelines on best practices together with surveillance of maternal deaths. This meeting would address the latter and present different methodologies in the "surveillance cycle" which are contained in *"Beyond the Numbers: Reviewing maternal deaths and complications to make pregnancy safer"*. Health professionals have recognized that calculating maternal mortality ratios *alone* will not suffice in providing

health managers with information needed to reduce maternal deaths in their communities. 'Beyond the numbers', means going beyond collecting data on how many women died to reviewing why women died.

Next, he suggested that the participants read Chapters 1 through 3 in "Beyond the Numbers" in preparation for the group work. These chapters provide the overview and general principles of reviewing maternal deaths. He stressed that the objective was not to estimate the level of maternal mortality, but rather to identify contributory factors and solutions. A key message stated clearly in the introduction of the guidelines is: "Each maternal death matters and each has something to tell in terms of understanding why deaths are happening and how they could have been avoided". The maternal mortality surveillance cycle for monitoring health services was described, which included identification of a death, collecting all data concerning the death, analyzing and interpreting the data to identify the causes and factors leading to death, and taking appropriate action to reduce avoidable deaths in the future.

It should be remembered that in addition to medical factors, educational, transport, economic, and sociocultural factors also contributed to maternal deaths. Reducing maternal death needs a multisectoral approach. Transportation, and economic and social empowerment are also needed. He hoped that the participants would find the present guidelines useful in establishing an ongoing process for reviewing the causes of maternal deaths in their countries and helpful in improving the quality of maternal and newborn care for reducing both maternal and perinatal deaths.

Dr Ardi Kaptiningsih, mentioned some aspects in reviewing the causes of maternal death, such as (1) improving the quality of maternal health services; (2) good linkages with first referral unit; referral centre and the community; (3) establishing methods into the system and (4) can assist how hospitals can do maternal death review. She also mentioned that institutions should have a strategic plan to address maternal death reviews. She made it clear that WHO encourages those countries to achieve better understanding on how to improve maternal health services.

Dr Lewis briefly explained the guidelines for proposal/work plan development. Three worksheets and a matrix were introduced to help countries in developing a proposed work plan. Participants were grouped

according to the methods they choose. There were two groups: Facility-based Maternal Death Review Group of seven countries, and Confidential Enquiry into Maternal Deaths Reviews Group that included Sri Lanka, Thailand, Kerala and Vellore/Tamil Nadu States of India.

8. COUNTRY REPORTS ON EXPERIENCES IN INVESTIGATING MATERNAL DEATH REVIEWS AND THE PROPOSED WORK PLANS

Participants were provided with the opportunity of presenting their own experiences with investigating maternal deaths in their own countries. Summary of country reports are provided below, followed by preliminary proposed work plans, which were developed by each country group after country presentation.

8.1 Bangladesh

Dr Sultana Jahan presented the Bangladesh experience. A total of approximately 3.6 million births take place per year and 19 000 deaths during the same time period (more than two maternal deaths per hour). The maternal mortality ratio is approximately 300 per 100 000 live births. Maternal deaths occur in three major categories: 70% direct obstetric causes, 14% injury and violence and 16% others. Direct obstetric deaths can be subdivided into the expected pattern (i.e., haemorrhage, abortion, sepsis, obstructed labour, eclampsia and others).

Data from the Dhaka Medical College revealed for 2001: 9 706 maternity cases, maternal deaths were 144. In the year 2002, total obstetric cases were 8 240, maternal deaths were 148 and case fatality rate was 1 in 56. The college conducts monthly maternal death reviews in the presence of all doctors in order to identify all avoidable factors and sub-standard treatment. Self-criticism is done, and action is taken according to the lessons learned.

Verbal autopsy of 205 maternal deaths was conducted in a district supported by UNICEF. Maternal deaths in hospitals are traced in the community to develop linkages between the hospital and the community.

Near miss review is also done to identify the contributing factors of maternal deaths. Improvements for eclampsia management are (1) extension of eclampsia ward; (2) separate trained manpower for eclampsia patients; (3) good and proper recording of all death reviews to formulate a quarterly action plan; (4) updated MIS to have detailed information, findings of the patient and the treatment given; (5) a standard protocol to be filled after each death; and (6) tracing of the death in the community for highlighting the contributing factors.

Proposed Work Plan

Participants from Bangladesh described different steps to introduce facility-based maternal death review in the Obstetric/Gynaecology Department of Dhaka Medical College Hospital (DMCH). They will begin discussions with stakeholders to establish a Maternal Mortality National Steering Committee consisting of the directors of hospitals and clinics, Director (PHC) and Director (MCH services) of DGHS-MOHFW and the Director of Dhaka Medical College Hospital, Head Ob/Gyn Department and Registrar of DGFP-MOHFW. The committee will review maternal deaths and their causes initially in DMCH and then extend to other hospitals, review quality of data regarding avoidable factors of death, agree on corrective actions and set target for implementation and plan of scaling up to other institutions.

8.2 Bhutan

Dr Tenzin Penjor presented the demographic background of the country. The maternal death review is perceived as one means to fulfil the goal of reducing maternal mortality in the country. The objective of Maternal and Child Death Review (MCDR) was to identify causes, and avoidable factors and take action to prevent maternal death. Dr Penjor described the review process. The committee reviewed 20 maternal deaths. Postpartum haemorrhage was the first direct cause of maternal death. Dr Penjor also pointed out that the challenge in continuing the Maternal and Child Death Review (MCDR) was to institutionalize it.

Proposed Work Plan

Participants from Bhutan discussed the facility-based maternal death review. They aimed at institutionalizing and strengthening the existing system by organizing a maternal mortality review committee meeting on a regular basis to identify the avoidable factors of maternal deaths and to undertake timely interventions. They proposed to establish two regional level maternal mortality review committees to assist in dissemination of policy/guidelines, capacity building, and monitoring supervisory activities focused on maternal health services. They planned to conduct a national level maternal mortality review seminar to advocate and coordinate among all the stakeholders/agencies in strengthening the focus on the maternal mortality services to prevent and reduce avoidable deaths. They also proposed a sensitization tour to share experiences/stories on maternal deaths among the service providers, people affected, and those interested to better understand how to prevent and reduce avoidable maternal deaths.

8.3 India

New Delhi

Dr Bulbul Sood explained how verbal autopsy was conducted by the Community Aid Sponsorship Programme (CASP), an NGO working in an urban slum of New Delhi. Their mission was to improve the quality of life of children, their families and communities by establishing sustainable development processes. They conducted interviews with the bereaved family members to determine the probable causes of death of children under-five year of age and mothers. Six years back, at the CASP clinic level, doctors and nurses were conducting interviews to know the causes of death and disseminate the findings with the community health workers for preventing the premature death of children and maternal deaths in the community.

Two years back, it was decided to conduct verbal autopsy with the assistance of the Community Health Guides. For this purpose, a specific and standardized format for in-depth interviews in local dialect was developed and the Community Health Guides were given one-day training each in all the three units of Sangam Vihar (a colony in Delhi). They were taught to

understand the probable diseases, what lead to complications and probable cause of death.

A Community Health Guide visits the house of deceased person as soon as death occurs to console the family. She informs the medical team about the death. If it is a contagious disease, immediately Community Health Guides call for a meeting and necessary action is taken for saving the life of others. After 15 days, the Community Health Guides collect the detailed history of illness, which includes time and date of death. They fill the format and discuss with the medical team to know the actual cause of death. In the monthly meeting, an action plan is prepared with the help of the Community Health Guides and programme staff to avert future deaths in the community.

Kerala

Dr V P Paily presented the situation in Kerala State. He provided the following basic statistics: a hospital-based delivery rate of 95%; female literacy of 85%, 70% of deliveries in private hospitals; a maternal mortality ratio of 87 per 100 000 live births and an infant mortality rate of 17 per 1 000 live births.

He stated that the number of maternal deaths is considered too high and likewise, it is perceived that perinatal mortality is high, although there are no available statistics at this point. The present situation is that confidential enquiries are conducted by public health doctors, and all maternal deaths are reported to the district medical officers as it is obligatory. Recently, all death reporting requires information on whether the woman was recently pregnant.

Although this system is in place, there is a need to improve it. He stated that the cause of maternal death is not always clearly known, and maternal deaths are underreported, since some are missed if the death occurs under the care of a general practitioner. Furthermore, he noted that corporations, medical colleges and private hospitals are not under the control of the public health staff.

He said that in the event of a maternal or perinatal death, hospital staff might be subject to personal attacks from relatives. There were 27 attacks last year and there are court cases pending against obstetricians.

In a review of 105 cases of maternal deaths occurring in 2002, in addition to obstetric causes, the investigators found the following factors to be of concern:

- Women arriving dead at health facilities or dying soon afterwards;
- Seven out of nine cases of eclampsia not receiving magnesium sulphate;
- Heart disease claiming six out of 10 women dying undelivered;
- Absence of blood banks in one district;
- Lack of running water discovered in a medical college labour room, and
- Loss of public trust.

He opined expressed that the objectives of a maternal death review would be to improve maternal health services in Kerala. But in order to achieve it, he recommended that voluntary agencies under government support should be involved, and that political will is essential in supporting the reviews.

Furthermore, he noted the importance of **confidentiality** in the review process, that obstetricians further training and updating on emergency obstetrics and the need to establish obstetric critical care units. He suggested that voluntary agencies such as the Rotary Club could be persuaded to take up the cause and provide free transport for emergency care. He said that newspaper articles and television programmes could be used to sensitize the public about maternal mortality reviews and that politicians could be persuaded to bring legislation to legitimize the process. He stated that Kerala could learn from both the UK and South Africa in introducing maternal death reviews.

In closing, Dr Paily stated that improving the care of mothers should also include the newborn with the close collaboration of obstetricians, paediatricians and anaesthesiologists. Medical college teachers and postgraduate students should be trained in the process of doing maternal death reviews. Funds will have to be identified for workshops, learning materials and other expenses.

Vellore District, Tamil Nadu

The district has a population of 3.5 million with 66 000 births per annum, a 70% institution delivery and a MMR of approximately 300. There are between 180 and 200 maternal deaths per annum and the leading causes of death are haemorrhage and hypertensive disorders of pregnancy. It is estimated that more than 90% of maternal deaths are avoidable.

The available health facilities in Vellore District are:

- (1) Government-owned facilities
 - (a) District headquarters hospital: Vellore Government Medical College Hospital, with approximately 6 000 births per year.
 - (b) First referral units: seven facilities.
 - (c) Primary health centres, sub-centres, municipal health centres
- (2) Private facilities
 - (a) **Christian Medical College**
 - Approximately 7 500-8 000 births per annum in main hospital.
 - Approximately 4 000 births per annum in two community units.
 - (b) **Private nursing homes and hospitals.**
- (3) Blood bank
 - (a) Government-owned: two facilities.
 - (b) Private: Christian Medical College

Most deaths occur at home/PHC level or at medical college hospitals. First referral units (FRU) provide only limited emergency obstetric care. The reasons for this situation are lack of training, qualified personnel and supporting facilities.

The present scenario of the district maternal death review in Vellore is as follows.

- (1) Data collection
 - All deaths are registered.

- Death certificate includes question related to pregnancy status.
- All health facilities report deaths to municipal health authorities and district health authorities.
- All community health workers report on maternal deaths to district public health authorities.
- Information on MMR collated at state level.

(2) Review process

- District public health nurse and senior medical officer visit home and health facility and review case notes.
- Summary report and case notes presented at monthly district maternal death review meeting.
- Monthly review meeting chaired by Joint Director of Health Services and attended by Deputy Directors, few government doctors and nurses. An expert is invited to the meetings for comments and advice.
- Discussion on fault-finding and possible solutions.
- Minutes of meeting sent to medical officers in charge of health facilities.
- Periodic regional review meetings (including a few adjacent districts) at 6-12 month intervals called by the Commissioner for Reproductive and Child Health.

Proposed Work Plan

Participants from New Delhi, i.e. Safdarjung Hospital (Delhi State Government Hospital) and Apollo Hospital discussed facility-based maternal death review process to be implemented in three hospitals. They planned to have a stakeholders meeting to ensure participation and cooperation as early as possible, and will develop a guideline on how to organize a maternal death review. Hospital staff will be oriented on the process, using examples from other countries. The next step is to identify assessors who will take all available information, collected and analyzed by a coordinator. A steering committee will review all forms and make recommendations. Then they will

disseminate the findings, make a report of the findings and a decision will be taken for expansion to other hospitals in New Delhi.

Participants from Uttar Pradesh also planned to begin with facility-based maternal death reviews. They will start by reviewing maternal and perinatal mortality review at selected facility level as a pilot, followed by an effort to institutionalize regular reviews. Confidential enquiry will be introduced in some districts as well, in collaboration with the Government of Uttar Pradesh. Other district hospital staff will be oriented to conduct similar reviews. Finally, they will prepare a report to evaluate the effectiveness of the intervention.

Dr Paily from Kerala plans to implement a confidential enquiry on maternal deaths. The steps are: (1) publishing results on available data in order to sensitize both the public and politicians; (2) opening a dialogue on the benefit of confidential enquiries with the Health Secretary and the Director of Health Services; (3) getting legislation passed to ensure all maternal deaths are reported to the steering committee and to assure legal immunity to all collected information on maternal deaths, and (4) recruiting and training the necessary assessors and data collectors required for the confidential enquiry.

Dr Mathews Mathai from Vellore, Tamil Nadu, proposed to introduce the confidential enquiries of maternal deaths. He will request consent and support from key district health authorities, identify local coordinators, develop questionnaire, and give training to local coordinators and assessors, in order to pilot test the forms. All health personnel be informed, data collection started, review meetings of local coordinators and assessors arranged. He would ultimately disseminate the results and try to institutionalize the process throughout the State.

Indonesia

Dr Bambang Guntur presented Indonesia's experience on death review. The maternal mortality ratio is 334 per 100 000 live births and infant mortality rate is 25 per 1 000 live births. He described the health system and services relating to maternal and neonatal health. Indonesia was in the process of standardization and accreditation of structure, process and output. The Indonesian team distributed a manual on *Maternal and Perinatal Death Audit*, which had been implemented at the district level in some provinces. The

method used was a combination of facility-based maternal and perinatal death review and verbal autopsy.

Proposed Work Plan

Participants from Indonesia described different steps to introduce facility-based maternal death review based on the above manual for the Cipto Mangunkusumo Hospital, a top referral hospital located in Jakarta. They will start with a meeting of stakeholders to present the manual and discuss the detailed work plan. A steering committee will be established to discuss the technical aspects of the maternal death review and its administrative elements. They will meet with all those involved to get advice and recommendations and also to get final commitment. A commitment will be sought from the Ministry of Health to assist with the report and to hold a workshop to discuss the results of the review and to decide whether to expand the method in other hospitals and institutions.

Maldives

Ms Nahida Ismail presented the country's situation and experience. The total population is 270 101 spread in many islands. The health status of the country improved significantly during the last decade. Crude death rate decreased from 14 in 1978 to 4 per 1 000 live births in 2000. High maternal mortality ratio continued to be a serious concern in Maldives.

Although access to services had improved throughout the country by providing more places with quality obstetric care; in the rural areas, health care facilities were not properly equipped to provide essential obstetric care services. Essential obstetric care services were made available in closer proximity, but transfer and transport and unavailability of routine transportation among islands and high cost of emergency transportation was the major problem in referring the cases in emergency situation.

Maldives started review of maternal deaths since 1997 with UNFPA support. The number of maternal deaths identified was 16 cases in 1997 and seven cases in 2001. The hospital delivery rate was 75-80%. Postpartum haemorrhage, septic abortion, ectopic pregnancy, antepartum haemorrhage, amniotic fluid embolism and eclampsia were the important causes of deaths.

Infant mortality rate decreased from 120 in 1977 to 21 per 1000 live births in 2000. All the three delays in seeking, reaching and receiving care took place. Delays in seeking care were: (1) identification of cases at island level; (2) lack of adequate and appropriate antenatal care and maternity care services at island level; (3) lack of routine transportation from island level, and (4) high cost of emergency transportation.

The following activities were undertaken to improve maternal health services.

- Maternal death review;
- Home-based mothers record card;
- Provision antenatal care and postnatal care;
- Family planning;
- In-service training for health care providers, and
- Health awareness programmes in public regarding maternal health issues.

Proposed Work Plan

Participants from Maldives described different steps to introduce facility-based maternal death review. The steps proposed to establish the review process were: establishment of maternal health committee, reformation of maternal death review committee with perinatal death, visit to other countries in the Region with proper review system to improve monitoring and evaluation system. They also emphasized the importance of improving antenatal and postnatal care throughout the country, including timely referral at regional/island level to prevent avoidable deaths and create health awareness in the community related to maternal and child health.

Myanmar

Dr Khin Myint Than shared the Myanmar experiences by presenting the maternal mortality death review. The reporting of maternal death was compulsory, and all maternal deaths were reviewed every month.

Dr Saw Lwin presented the review of maternal deaths occurring in the Mandalay community. The study was a case-control study using questionnaire and qualitative methodology. The sociodemographic and service factors were ascertained. The service provider, husband and relatives were interviewed. During the study period, the total number of maternal deaths were 61, and out of that, 15 deaths were found to be associated with home deliveries. There were additional seven cases who, having failed to deliver at home, were eventually referred to hospital and died there. Most of those 15 women were illiterate or educated only upto the primary level. The outcomes of those deliveries were three stillbirths, three early neonatal deaths and one late neonatal death. Most of the direct causes of deaths were due to postpartum haemorrhage (73%) and sepsis (18%). Indirect causes were heart disease and malaria. Most of the cases had economic and transport problems, and their husband or relatives often could not recognize the seriousness of the condition.

She proposed the following recommendations: (1) improvement of educational status of women; (2) upgradation and updating of the training of midwives on providing care during antenatal, intranatal and postnatal period; (3) increased cooperation between auxiliary midwife (AMW) and traditional birth attendant (TBA); (4) solving transportation problem with easily available vehicles; (5) availability and accessibility of a well-equipped first referral hospital to the majority of women living in the rural areas; (6) transportation to this referral centre should be organized during the antenatal period, if the woman is going to deliver at home; (7) home delivery for mothers without any obstetric or medical complications is still to be accepted with limitations, but an effective referral system is mandatory.

Proposed Work Plan

Participants from Myanmar described different steps to introduce facility-based maternal death review: (1) meeting with Director, Medical Care to explain the different review processes, (2) arranging meeting to build consensus and to specify activities, (3) developing a proposal to submit to higher authorities, (4) doing a pilot study, (5) starting data collection and analysis. Then they will identify problems to clarify future proposals and develop proposal and start the process. Interim data analysis to detect common causes of death from the selected facilities will be carried out, report and recommendations prepared.

Nepal

Dr Kasturi Malla presented the maternal death review of Thapathali Maternity Hospital, the largest maternity hospital of Nepal. The hospital review committee consisted of five members who reviewed all the maternal deaths. The review, started in 1992, identified the cause of death and the avoidable factors. The attending doctors, and nurses participated in the review committee meetings to provide information and consulted the case notes. The philosophy was “no name no blame” and only to find avoidable factors. She described the action taken based on the findings of the maternal death case review.

Proposed Work Plan

Participants from Nepal described different steps to introduce facility-based maternal death review as follows: (1) development of terms of reference for National Maternal Death Review Committee (NMDRC); (2) review and revision of maternal and perinatal death review tools; (3) development of instruction manual on maternal and perinatal death review, and (4) identification of institutions for implementation of maternal/perinatal death review. Selected hospitals where the review is to be instituted, will be oriented, the review process initiated/continued in selected hospitals, compilation and finally preparation of a report will be undertaken.

Sri Lanka

Dr C Anoma Jayathilaka presented Sri Lanka's experience. Maternal death investigation is integrated with maternal care. All maternal deaths are notifiable events since 1985. ICD 10 classification is used for notification and investigation procedure. All confirmed maternal deaths, pregnancy related deaths and late maternal deaths are included as notification criteria.

The objectives of the maternal deaths reviews are:

- (1) Confirmation of the probable cause of death.
- (2) Analysis of the circumstances leading to death.
- (3) Identification of attributed factors, not for attributing blame.

- (4) Review of service provision at sub national and national levels.
- (5) Review of policies and their implementation at national and sub national level.
- (6) Linking of different sources of reporting of maternal deaths.

The investigation consists of the following steps :

- (1) Identification of the death;
- (2) Notification of death as the event occurs;
- (3) Hospital investigation and field investigation;
- (4) District maternal mortality review, and
- (5) National maternal mortality review.

At the district level, the review is conducted every three months by the Regional Review Team. The aims are to identify responsible factors and to take corrective actions, and follow-up with administrative decisions by using different format.

At the national level, the Family Health Bureau, Ministry of Health is the responsible authority. Annually, they visit provinces or districts and collaborate with the Sri Lanka College of Obstetricians and Gynaecologists, the College of Anaesthetists and the provincial authority. They discuss each death on three-delay model with an expert panel. Deficiencies are identified and categorized as technical, managerial, and sociocultural. The findings are presented to the policy-makers to facilitate establishment of corrective actions and policy decisions. They use hospital investigation format, field investigation format and the district and national maternal mortality review as data collection tools. The collected data include routine data, progress of implementation of corrective measures and administrative decisions. Factors leading to death, such as resources, policies, quality of care and family and community factors are analyzed. Actions at institutional and field levels are taken to prevent deaths. The role of the Family Health Bureau is to:

- Ensure that the investigation procedure is carried out in the country;
- Provide technical guidance on procedures of maternal death review;
- Develop and revise all data collecting tools;

- Train relevant staff on the procedure;
- Link different sources of data;
- Conduct national maternal mortality reviews through out the country;
- Alert the policy-makers and develop favourable policies, and
- Follow-up on the implementation of the activities.

The sources of maternal mortality data are the vital registration, routine reporting and maternal death investigation systems. Both the strengths and weaknesses of the review process were described as follows:

Strengths

- Review of maternal death not a fault finding exercise.
- Good cooperation from professionals and other staff.
- High quality of data.
- Identification of the factors related to the three-delay model.
- Identification of the shortcomings in case management as well as health care system.
- Act as a preventive tool to prevent future deaths.

Weaknesses

- Under reporting of some deaths, as a result of omission/misclassification.
- Late deaths are ignored.
- Lack of continuous update of knowledge of staff members.
- Timeliness of reporting and investigation.

Proposed Work Plan

Participants from Sri Lanka proposed to perform confidential enquiries of maternal death. They plan now to include pregnancy tick box in the death certificate. They identified some steps, which included briefing of the policy-makers on the proposal, orientation of relevant partners, and discussing the

proposal with National Steering Committee. The final proposal would be submitted to the Secretary and Director-General of Health Services for approval. Development of data collection tool and pre-testing of tool in selected institutions and community as well as a short observation of the UK system by a team from Sri Lanka were planned. Finally, the findings would be analyzed the findings and the confidential enquiries of maternal death implemented in Sri Lanka.

Thailand

Dr. Borworn Ngamsiriudom presented "Investigating Maternal Deaths" in Thailand. The maternal mortality ratio (MMR) was calculated from vital registration and from the Health Information Section, Ministry of Health. The MMR obtained from the Safe Motherhood Project was 36 per 100 000 live births in 1990. Important causes of deaths were haemorrhage, hypertension, and sepsis. Other causes were amniotic fluid embolism, heart disease and other causes.

Proposed Work Plan

Participants from Thailand proposed to perform confidential enquiries of maternal deaths. They identified some steps, including formation of a steering committee to verify causes of maternal death and publication of a report, preparation of a questionnaire to get primary sources of data, identification of pilot province to test the question on feasibility study, preparation of proposal to set the plan and budget, holding a meeting and implementing the pilot. They planned to organize a conference to give feedback and finally prepare a report and clinical practice guidelines to improve maternal health services.

Timor-Leste

As a new emerging country, Timor-Leste faces many health system problems, such as lack of human resources; poor infrastructure and problems with health financing, as well as health problems, including maternal and newborn health problems. There are only a few medical doctors, and approximately only a third of the available midwives are employed. For obstetric care, the country relies on expatriate obstetricians coming from different countries for a short period.

The participant from Timor-Leste described different steps to introduce facility- based maternal death review as follows: (1) arranging an orientation meeting with MOH and different stakeholders; (2) organizing a workshop with MOH and hospital managers to have consensus and commitment; (3) establish a steering committee; (4) initiating maternal and perinatal death review in selected hospitals; (5) reaching an agreement about the implementation process, and finally, (6) analysis and preparation of report.

9. CONCLUSIONS

The Chairman concluded that it was up to the country participants to take the initiative to introduce the concept of routine maternal mortality reviews in their countries. He said that although the participants represented diverse country situations, the problems and solutions for reducing maternal deaths were similar. He exhorted them to resolve to start the process that will eventually lead to better health for women in the Region.

Dr Ardi Kaptiningsih thanked the participants for their hard work in submitting a draft work-plan on time. She requested the participants to send the final proposal within the next two weeks. The proposal should specify what assistance they required from the Regional Office in order to realize their proposals. She explained that each proposal should also be sent to the respective WHO country offices. It was suggested that each country should arrange a workshop to introduce/strengthen the maternal death reviews activities with interested parties and partners. It was also necessary to review the progress of implementation and record it for the purpose of monitoring and expansion of the activities. She said that the Regional office would be in routine and continuous communication with the participants of the meeting, in order to assist them to implement the maternal mortality review and related activities.

Annex 1

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Annex 2

PROGRAMME

Monday, 13 January 2003

- | | |
|-----------------|---|
| 09.00-10.00 hrs | Inaugural session |
| 10.00-10.30 hrs | The Need for Quality Improvement in Maternal and Newborn Health Programme in Achieving the MDGs, Dr. Monir Islam, Director, FCH |
| 10.30-12.00 hrs | Review Maternal Death and Complications to Make Pregnancy Safer – Dr. Gwyneth Lewis (UKCEMD, London) |
| 12.00-12.30 hrs | Discussion |
| 13.30-15.00 hrs | Experience in Implementing Maternal and Perinatal Death Reviews, Prof RC Pattinson, Kalafong Hospital, Pretoria, South Africa |
| 15.30-16.30 hrs | Review of Chapter 1, 2 and 3 of Beyond the Number. Dr. Richard J Guidotti, WHO/HQ Short-term Consultant |
| 16.30-16.45 hrs | Introduction on Worksheet |

Tuesday, 14 January 2003

- | | |
|-----------------|---|
| 08.30-09.15 hrs | Guideline for proposal development, Dr. Gwyneth Lewis, UKCEMD |
| 09.15-10.30 hrs | Sharing country experiences (Plenary session) |
| 10.30-12.30 hrs | Proposal development (continued) |
| 13.30-16.00 hrs | Proposal development (continued) |
| 16.00-16.30 hrs | Presentation on the progress of proposal development and clarification of critical issues |

Wednesday, 15 January 2003

- | | |
|-----------------|---|
| 08.30-10.00 hrs | Feedback on progress of proposal development |
| 10.30-12.30 hrs | Presentation of proposal |
| 12.30-13.00 hrs | Next step, conclusions and recommendations Closing |