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MONITORING THE REDUCTION OF MATERNAL MORBIDITY AND MORTALITY

Preventing maternal deaths has now become an international priority. This goal was reaffirmed by the United Nations at the Millennium Summit in 2000, and a new regional strategy for maternal mortality and morbidity reduction for the Latin American and Caribbean (LAC) region was approved by the 26th Pan American Sanitary Conference in September 2002. A regional medium-term goal of decreasing maternal mortality ratios to less than 100 maternal deaths per 100,000 live births was recommended both by the Conference and by the Regional Interagency Coordinating Committee Task Force on Maternal Mortality as a way of diminishing the gap at regional and national levels. A host of countries have made significant progress in expanding and improving maternal health services. However, assessing progress towards the goals remains a challenge, particularly due to data quality, including misclassification and underreporting fostered by the lack of national comprehensive vital registration systems to monitor maternal mortality levels. Surveillance systems among countries of the LAC region over the past number of years have improved, and new ways of measuring maternal mortality were developed during the 1990s. However, more progress is still needed, particularly in developing intermediary, process, or proxy indicators to support regular monitoring. This document proposes basic orientations for the formulation of a monitoring system.

Empowering and involving communities in health data collection, analysis, and decision-making are key strategies for assuring progress in maternal mortality reduction. The essential elements in the development of surveillance systems at the local level include a shared conceptual framework, the ability to translate data into information for intervention, and a commitment to build a consensus among the different stakeholders.

The Pan American Health Organization (PAHO) is committed to provide support to countries in strengthening and establishing monitoring and evaluation standards and to work with other agencies and governments in implementing them. PAHO proposes to lead the development of a regional proposal to monitor the progress in reducing maternal mortality and morbidity and to assist countries in developing national and local maternal mortality reduction strategies.

The Subcommittee is requested to consider ways in which appropriate indicators can be identified that are consistent with regional, national, and local needs; how broad stakeholder participation can be achieved; and how Member States can be encouraged to include monitoring in maternal mortality reduction plans.

¹ This document is also being presented to the 20th Session of the Subcommittee on Women, Health, and Development.

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Introduction

1. The reduction of maternal mortality remains a serious health, ethical, and gender equity challenge as women continue to die unnecessarily from pregnancy and childbirth. These preventable and therefore unjust deaths reflect women's unequal status and access to basic health services. In addition, women's limited education, control over resources, and participation in decision-making determine maternal health outcomes. Safe motherhood, however, cannot be achieved by only improving maternal health care services. Women, their families, and communities must also be empowered and be active participants in attaining solutions and in monitoring progress.
2. Preventing maternal deaths is now recognized as an international priority, and many countries have made a commitment to improve and expand maternal health services. The International Conference on Safe Motherhood Conference (1987), the World Summit for Children (1990), the International Conference on Population and Development (1994), and the Fourth World Conference on Women (1995) all identified reducing maternal mortality by 50% by the year 2000 as a primary goal and established the importance of monitoring progress.
3. More recently, the United Nations at the Millennium Summit (2000) committed the international community to reducing the 1990 maternal mortality ratio levels by 75% by the year 2015. Within the Latin American and Caribbean (LAC) region, the 26th Pan American Sanitary Conference adopted a medium-term goal for decreasing maternal mortality ratios to less than 100 maternal deaths per 100,000 live births. The Regional Interagency Coordinating Committee Task Force on Maternal Mortality uses this goal to diminish the gap at regional and national levels.
4. Monitoring progress in achieving these goals requires accurate estimates of maternal mortality and establishing monitoring processes of actions to promote safe motherhood. The current lack of reliable data on maternal deaths jeopardizes monitoring of trends over time. In most developing countries, maternal deaths are underreported or misclassified, and vital registration systems are still inefficient. Underreporting is especially prevalent for women in rural or isolated areas and for those belonging to disadvantaged ethnic and low-income groups. Maternal deaths related to abortion continue to be a critical issue. Moreover, stakeholders are rarely involved in monitoring systems at local, national, and regional levels. During the 1990s, new ways of measuring maternal mortality were developed that consider the needs and data constraints of developing countries. These systems use intermediary, process, or proxy indicators that are closely correlated with maternal mortality, but are simpler to measure, easier and cheaper to collect, more sensitive to change, and therefore useful for regular- and short-term monitoring.

5. The Regional Strategy for Maternal Mortality and Morbidity Reduction was approved by the 26th Pan American Sanitary Conference and calls for PAHO support to Member States to strengthen information and surveillance systems for monitoring progress in the reduction of maternal mortality and morbidity levels as set by the Millennium Summit Declaration. The strategy also includes evidence-based interventions, such as the provision of essential obstetric care (EOC), health promotion, skilled attendance at birth, and community action so that women, families, and communities can avoid obstetric complications, identify problems early, and respond adequately.

Situational Analysis

6. The Tenth Revision of the International Classification of Diseases (ICD-10) defines a maternal death as: the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes. Maternal deaths are divided into two groups: direct obstetric deaths and indirect obstetric deaths. The Classification also includes a category for late maternal death and pregnancy-related death.

7. Despite this definition and efforts to improve data collection, accurate data on maternal death remain deficient. In 1990, the “PAHO Regional Plan of Action for the Reduction of Maternal Mortality” proposed several strategies for establishing national epidemiological surveillance systems for maternal deaths: (a) improving data collection and recording systems for all health measures related to pregnancy, the postpartum period, and family planning by expanding the registry, collection, and use of information at all levels; (b) establishing a national epidemiological surveillance system on women of childbearing age with data on causes and social determinants of maternal deaths; (c) establishing maternal mortality reduction committees at the regional, national, and local levels for monitoring progress and promoting participation of stakeholders. In response, countries have gradually set up epidemiological surveillance systems and monitoring committees.

8. To evaluate the implementation of the 1990 Plan of Action, PAHO conducted a regional survey in 2000 to determine how well countries were registering births and maternal deaths. Out of 26 countries that were surveyed, almost half (12) reported registering all maternal deaths; 5 stated that they reported most maternal deaths, and one-third (9) had deficient registration. Results indicated, however, that in reporting maternal deaths, there is little uniformity in data collection, a lack of coordination between the health and vital registration systems, especially in countries and areas with the highest maternal mortality, and there is minimal community participation.

9. Maternal death audit committees at local, provincial, and national levels play a critical role in determining how and why a woman died and whether or not the death could have been prevented. Verbal autopsies and stakeholder participation are also important components of the system. While, these committees are common at the national level, few exist within communities where audits take place. Only 18 countries surveyed reported having a functioning committee at the national level, and 5 countries had functioning committees at the local level, but with minimal community participation including women. Only six countries declared having a representative from the community on the committee. Verbal autopsies are rarely used, and information on maternal mortality is not discussed at the local level or used for decision-making.

10. Other findings showed that despite having the standard ICD definition of maternal death and PAHO guidelines on using this definition, there is little or no uniformity in how maternal mortality information is collected and recorded. Data on maternal mortality are rarely disaggregated by ethnic group, geographic location, or income level. This makes it difficult to develop policies and plans to reduce disparities which target the groups most in need of maternal health care and services.

Regional and Global Efforts to Monitor Maternal Mortality and Morbidity Reduction

11. There are regional and global efforts to improve data collection and analysis. PAHO maintains a mortality database with data for 19 countries;² however, the quality of this data is still deficient. In many countries the proportion of “ill-defined causes” is approximately between 25%-30%, which is considered high, and in some of them the rates of underreporting of deaths is high as well.

12. The PAHO Latin American Center for Perinatology and Human Development (CLAP) has developed the Perinatal Information System (SIP) since 1983, to improve maternal and child health monitoring. Since perinatal and maternal mortality are both related to the quality of and access to obstetric and perinatal care, many LAC countries use SIP for monitoring perinatal care, and maternal and perinatal morbidity and mortality on both the national and local levels. The system, updated in 2000, includes a clinical record, a mother’s card, and special software and training aids, and compares information with comparable health standards for both mother and infants.

13. The SIP system is also capable of monitoring quality assurance by providing health workers and supervisors with immediate feedback on care. It also provides health

² Argentina, Barbados, Brazil, Canada, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Jamaica, Mexico, Panama, Paraguay, Puerto Rico, Trinidad and Tobago, United States, and Venezuela.

workers with immediate feedback on the best type of care to provide in a given situation and facilitates quality assurance and supervision.³

14. The multiple Demographic and Health Surveys (DHS) carried out in some LAC countries are also considered a valuable source of information on the health and nutrition of women and infants. However, these surveys are very expensive and should not substitute for efforts to improve national vital statistics and health information systems. In many LAC countries, they are still considered the primary source of information, and have contributed to the first estimates of maternal mortality and base-line information.

15. In response to the International Conference on Population and Development (ICPD) conventions, the United Nations Children's Fund (UNICEF), the World Health Organization (WHO), and the United Nations Population Fund (UNFPA) formed a task force that developed a series of process indicators on access, use, and availability of obstetric services, using data collected and analyzed at the health facility level. The table below provides examples of these indicators:

³ SIP is widely used in Argentina, Bolivia, Brazil, Chile, Ecuador, El Salvador, Honduras, Nicaragua, Paraguay, Peru, Uruguay, and the Caribbean.

Maternal Health	
Indicator	Purpose
Maternal mortality ratio	Measures progress in providing maternal health care
Coverage and Access	
No. of Service Delivery Points (SDPs) per 500,000 population providing basic EOC	Measures access to basic EOC
% of SDPs able to provide basic EOC	Measures availability of basic EOC
% of first-level referral hospitals that have provided caesarean sections in the past 6 months	Measures availability of comprehensive obstetric services
% of pregnant women attended at least once during pregnancy for reasons related to pregnancy	Measures coverage of antenatal care
% of deliveries in health institutions	Measures coverage of safe delivery
% of births attended by health personnel trained in midwifery (excluding TBAs)	Measures access to and utilization of skilled delivery care
Quality of Care	
% of pregnant women attending antenatal clinics screened for syphilis	Measures quality of maternal health care
% of institutional deliveries that are by caesarean section	Measures coverage and quality of comprehensive EOC
% of pregnant women attending antenatal services who took iron and/or folate	Measures quality of antenatal care
% of pregnant women attending antenatal services who were immunized against tetanus (TT2 or booster)	Measures quality of antenatal care

16. Although these indicators are widely accepted, the sources of data and the data themselves are not always available at the local level.

17. In May 1996, WHO convened an informal meeting of experts in reproductive health indicators and monitoring to develop a short guide on safe motherhood indicators

for program managers and health planners. These indicators cover five categories of care: general, prenatal, intrapartum, essential obstetric, and post-natal care (WHO1997).

Implementing Maternal Mortality and Morbidity Monitoring Systems at Regional, National, and Local Levels

18. Promoters of these efforts agreed that to most effectively monitor safe motherhood, processes should be integrated and established at different levels.

Monitoring at the Regional Level

19. Efforts for improving regional surveillance should build upon existing systems as described above. The systems could share regional expertise and data collection tools, such as CLAP's SIP system among and within countries in order to facilitate comparison of data and interventions.

20. Best practices and lessons learned from safe motherhood interventions should be shared and sustain advocacy efforts to improve national commitment and capacity to reduce maternal mortality. An effective regional maternal mortality monitoring system could reinforce institutional alliances, set standards for national monitoring systems, and optimize technical and financial resources.

Monitoring at the National Level

21. At the national level, policies and plans concerning maternal mortality outcomes should be monitored, including legislation and reforms, policies, and programs that promote healthy pregnancy, contraceptive services, and gender-based violence prevention. Equally important are indicators of stakeholder participation in determining and monitoring progress, which includes their role in communication, organization, training, supervision, planning, local and social management, emergency networks and referral systems, and budget appropriations.

22. National monitoring systems should, therefore, include:

- Advocating with national and local authorities the importance of having systems for regular maternal mortality monitoring;
- Selection of indicators and procedures, by consensus;
- Design and implementation of local and national maternal mortality monitoring plans; and
- Performance audits and maternal mortality monitoring processes.

Monitoring at the Local Level

23. Monitoring at the local level provides information for planning and improving interventions, and for building consensus among stakeholders: service providers, policy-makers, women, community leaders, and local authorities. Local monitoring should include indicators of access to quality obstetric care, as well as socioeconomic determinants of risk of maternal deaths, such as health infrastructure, institutional and social responsibilities, levels of local government commitment, and community participation.

24. The monitoring of maternal death is the responsibility of health workers and community members who should represent different sectors and groups (age, sex, and ethnicity) to ensure the participation of the populations most affected by maternal deaths.

25. These stakeholders should organize committees that provide immediate information and actions for interventions to local authorities and program managers at the local, district, and health center levels. Monitoring committees play an important role in:

- Strengthening the information systems by involving community organizations;
- Selecting priority areas for intervention;
- Strengthening administrative structures and resources for intervention implementation; and
- Introducing complementary methods of analysis such as qualitative research.

26. In LAC there are successful experiences with intersectoral safe motherhood committees in Bolivia, Dominican Republic, Mexico, and Nicaragua that monitor maternal mortality. For example, in Bolivia, the Ministry of Health has organized Committees for the Analysis of Information (CAI), at both the community and facility levels.

27. CAI *comunal* involves health personnel, community leaders and authorities, representatives of community-based organizations, and community health workers (CHWs) who meet periodically to analyse health information and make decisions. These experiences have been found to: (a) sustain the development of community action plans; (b) promote family and community care; and (c) strengthen linkages and communications between the health center, CHWs, and the community.

Key Components of a Maternal Mortality and Morbidity Monitoring System

28. The section describes components of the Regional Strategy for maternal mortality and morbidity reduction approved by the 26th Pan American Sanitary Conference in September 2002, as well as related monitoring indicators and questions. It is important to assure that for all indicators, data be disaggregated by gender, social, ethnic, or geographic categories, to identify disparities accurately and target interventions.

Formulation and Implementation of Policies, Plans, and Programs

29. It is important to measure the commitment of governments to reduce maternal mortality through the type and nature of policies implemented; resources assigned; access to quality maternal and neonatal health services and supplies; investments in infrastructure, equipment and emergency systems; training and deployment of human resources; institutional capacity building; and the monitoring and evaluation of its plans.

Relevant Questions for Monitoring

30. Policy and political will: Who determined and who determines policy orientations and legislation in the public sector? Is there public participation? Do these policies respond adequately to the needs of the population? To what extent are policies enforced/monitored? Are there social or economic policies that affect access to services (education, employment, and social security), or health policies (insurance, coverage for low income women)?

Allocation of Public Investment Resources

31. The allocation of public resources is a critical indicator of the government's commitment to reduce maternal mortality.

Relevant Questions for Monitoring

32. Allocation of resources: What is the magnitude and the allocation of financial and technical resources? Are equipment and supplies available? Are resources allocated to support cost-effective interventions to reduce maternal mortality and morbidity ?

Provision and Use of Essential Obstetric Services (Basic and Comprehensive) and Skilled Attendance at Birth

33. One of the most important interventions for reducing maternal mortality is the provision of basic and comprehensive obstetric care services and the ability to respond to emergency situations. These services must be of adequate quality, be provided by skilled

attendants, and be accessible to all pregnant women. If effective, there should be an increased demand for those services.

34. It is now widely recognized that the single most important way to reduce maternal deaths is to ensure skilled attendance at birth. Thus, a key indicator in assessing the reduction of maternal mortality is the proportion of births attended by a skilled attendant. This indicator has been established as an international development target. Monitoring indicators therefore should include the accessibility for all women to a skilled attendant and the necessary supplies for basic and EOC facilities, and emergency transportation in case of complications.

Relevant Questions for Monitoring

35. Adequacy of care: What is the scope of the regular interventions and specific actions related to the services and networks of services regarding contraception, pregnancy care, childbirth, and postpartum care, as well as regarding the newborn? What are the knowledge and performance levels of the health personnel? What are the referral mechanisms for pregnant women with complications? What is the proportion of caesarean sections in a given EOC facility? What is the case fatality rate in a given facility that provides comprehensive EOC?

36. The table below presents a useful example of information on maternal health services.

Indicator Dimension	Question	Example of Indicators
Provision	Are the services available and accessible?	Number and distribution of EOC facilities. EOC functions performed at facilities. Cost of services.
Quality	Is the quality of the services adequate?	Case fatality rate. Proportion of cases fulfilling predefined criteria of quality.
Utilization	Are the services being used?	Proportion of births attended by skilled health personnel. Proportion of births in EOC facilities. Caesarean sections as a proportion of all births.
Utilization by those in need	Are the services being used by the sub-group with specific needs?	Proportion of all women with complications who are treated in EOC facilities. Major obstetrical interventions for specific maternal indications, as a proportion of all births. Observed versus expected obstetric complications.
Impact	Are there improvements in morbidity or mortality?	Proportion of births with severe morbidity. Maternal mortality ratio.

Source: Ronsmans, Carine (2001). How can we monitor progress towards improved maternal health? *Studies in Health Services Organization & Policy* 17, 317-340.

Vital Registration and Surveillance Systems

37. The vital registration system should be the best continuous source for birth and death data to determine infant mortality rates and maternal mortality ratios. However, as mentioned before, vital registration systems are often deficient and unable to track the incidence of maternal deaths and live births, thereby encouraging parallel information systems, like DHS, to fill the gap.

38. Setting up vital registration for monitoring and surveillance is important and requires easy to use methodologies and trained staff to carry out monitoring and surveillance activities, which includes auditing of all maternal deaths, analysis, and decision-making.

Relevant Questions for Monitoring

39. Sources of information: Which are the continuous information systems, such as censuses, vital registries, service information systems, etc.? To what extent do they function? Which are the principal household surveys and to what extent do they contribute substantive knowledge for the measurement of the health of women and on maternal mortality? How many and what is the scope of the studies and recent research on the health situation of women? Is information disaggregated by ethnicity, age, and poor-rich disparities?

40. Access and use of data and information for planning and policy-making: Who has access to maternal mortality information? Do local authorities use this information to make decisions, establish public policies and priorities, and distribute resources?

41. Auditing maternal deaths: Are maternal death audits being carried out? Are all maternal deaths being audited? Are decisions being made upon the results of the audits? Are verbal autopsies being done and if so do they examine nonmedical causes? Are criterion-based audits being carried out in order to improve the quality of care at the service delivery level? Are severe morbidity cases (sepsis, eclampsia, among others) being audited?

Strategies to Empower Women, Families, and Communities (WFC)

42. Working with WFC is considered to be the critical link in ensuring the recommended continuum of care throughout pregnancy, childbirth, and postpartum periods by the regional strategy (PAHO, 2002) and the Making Pregnancy Safer Initiative (WHO/MPR). Under the MPR/WFC concept, the community is perceived as a partner and participant in the collection, analysis, and use of information, such as reviews of maternal and perinatal death audits, verbal autopsies, and other research on maternal and newborn health issues.

43. WFC strategies strengthen communities' abilities to access information and knowledge, in order to acquire the capacity to recognize danger signs and potential risks in the household (such as violence against pregnant and postpartum women and infants), to obtain medical and social support, and to benefit from health education programs. This relates to the community's capacity to request timely and quality care with the family's participation in the care of pregnant women and newborns.

44. Community knowledge and awareness also foster dialogue between health providers and the community, and facilitate the development of comprehensive strategies by stakeholders and their use of the data to advocate for changes at the health policy or provider level.

Relevant Questions for Monitoring

45. Education and citizen training: Are there systems of education and communication to raise awareness and develop skills to empower the population, particularly women's groups to care for their health?

46. Community participation and social control: What is the role of the various community actors, especially women's groups in the design, implementation, and monitoring of health services. What is the level of involvement of women and communities in the design and evaluation of laws and policies? What initiatives are taken by these stakeholders to ensure appropriate response from the government and the health sector?

Building Partnership

47. Reducing maternal mortality requires a long-term commitment by a range of partners who should share their diverse strengths and work together to promote safe motherhood within countries and communities: government, nongovernmental organizations, including women's groups, international assistance agencies, donors, and others. It is therefore important to establish coalitions focused to reduce maternal mortality that includes monitoring systems.

Relevant Questions for Monitoring

48. Coalitions: Are safe motherhood committees functioning at the national and community levels? Are women participating in these committees?

PAHO's Role in Monitoring Maternal Mortality Reduction

49. PAHO's role is to support Member States in formulating policies to promote safe motherhood and to work with other agencies in their implementation. PAHO will collaborate with ministries of health to coordinate national and local working groups of policy-makers and representatives from national maternal mortality committees, universities, professional associations, and women's organizations to plan and implement maternal mortality and morbidity monitoring systems, build consensus, and establish timetables, resources, sources of financing, and responsibilities. Monitoring experiences and results will be shared with other partners, as will other experiences in programs to reduce maternal mortality.

50. To strengthen the capacities of Member States to monitor maternal morbidity and mortality, PAHO proposes implementing a monitoring process with 11 priority countries over a four-year period. During the four years, PAHO will convene regional expert working groups to discuss with countries their monitoring progress, define regional monitoring of maternal mortality based on the experience of the 11 countries, and monitor progress in the implementation of these systems in the LAC, while incorporating existing regional systems.

51. PAHO country offices will support the development of the maternal mortality and morbidity monitoring systems at national and local levels. The process should involve a number of participants and partners and be institutionalized into the monitoring systems within the ministries of health. Country monitoring plans should include:

- Background on previous or existing monitoring systems;
- Objectives, in accordance with the objectives of the national maternal mortality reduction plans;
- Strategies for monitoring selected indicators for data collection and analysis, and for applying results;
- Timetables for the development of the monitoring system;
- Institutional and financial resources for implementation and evaluation, and mechanisms for information dissemination;
- Training of health personnel in analysis of results; and
- Establishment of follow-up monitoring committees coordinated by the ministries of health, with community participation.

Key Issues for Deliberation

52. To strengthen PAHO's capacity to support countries in monitoring progress in reducing maternal mortality and morbidity, PAHO invites Member States to discuss:

- The relevance of the components and strategies for implementing monitoring systems introduced in the document.
- The importance of developing national and local maternal mortality reduction monitoring plans, if they do not already exist. For those countries that have

already established plans, these should be revised to ensure that they endorse the latest recommendations made by the 26th Pan American Sanitary Conference.

- The commitment of governments to invest resources in monitoring maternal mortality reduction plans.
- The role of PAHO in providing the necessary technical cooperation in implementing national and regional monitoring plans.
- Expanding the use of the perinatal information system (SIP) at the local level and providing the necessary training so that the information collected can be used in the local and national decision-making process.

Action by the Subcommittee on Planning and Programming

53. Based on the information presented in this document, the Subcommittee is requested to:

- (a) Advise the Secretariat on the appropriate types of technical cooperation for implementing regional and national monitoring systems for maternal mortality;
- (b) Consider ways in which Member States can be encouraged to include monitoring as a component of maternal mortality reduction plans;
- (c) Recommend how to achieve active stakeholder participation in national, local, and community efforts, with special attention to women's groups; and
- (d) Discuss how to identify indicators that are consistent with international mandates, national and local plans, and stakeholder objectives.
