



Case Study on Maternal Death Surveillance and Response

COUNTRY: MEXICO



Grupo de Trabajo Regional para la
REDUCCIÓN DE LA MORTALIDAD MATERNA

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ACRONYMS AND ABBREVIATIONS

AEO	Emergency Obstetric Care
AIDEM	Rapid Response Groups for Immediate Care
AMDD	Averting Maternal Death and Disability
APV	Equal Start in Life
CCIAEO	General Inter-Institutional Collaboration Agreement for Obstetric Emergencies
CEPMM	Committee on the Study and Prevention of Maternal and Prenatal Mortality and Morbidity
CIE-10	International Classification of Diseases, 10 th edition
CNPSS	National Commission of Social Health Protection
CNEGSR	National Center of Gender Equity and Reproductive Health
COFEPRIS	General Directorate for Quality and in the Federal Commission for the Protection Against Health Risks
DGCES	General Directorate of Health Quality and Education
DGIS	General Directorate of Health Information
DGPlaDeS	General Directorate of Health Planning and Development
DGPS	General Directorate of Health Promotion
DGE	General Directorate of Epidemiology
IMSS	Mexican Institute of Social Security
INEGI	National Institute of Statistics and Geography
ISSSTE	Institute of Insurance and Social Services for State Workers
MMAS	Highly Severe Maternal Morbidity
MM	Maternal Mortality
ODM	Millennium Development Objectives
RMM	Maternal Mortality Ratio
PEMEX	Mexican Petroleum
SAEH	Administration of Hospital Registries Sub-System
SINAC	Sub-system for Information on Births
SINAVE	National Epidemiologic Surveillance System
SIS	Health Information Sub-System
SEED	Mortality Epidemiology and Statistics Sub-System
SNS	National Health System
SS	Secretariat of Health
SES	State Health System
SPSS	Social and Health Protection System
SEDENA	Secretariat of National Defense
SEMAR	Secretariat of the Navy
SVEEM	Epidemiologic Surveillance System on Maternal Mortality
VEEM	Epidemiological Surveillance on Maternal Mortality

INTRODUCTION

This document begins with a five-page summary that describes Mexico's maternal mortality and morbidity surveillance component, responds to the study's questions, and facilitates a rapid consultation.

The complete document that follows the summary reports on the history of the priority assigned to the prevention of maternal mortality and the first systematic studies that were carried out in that regard. The text presents the epidemiological surveillance component at greater length than the epidemiology of maternal mortality. A file with 5 figures and the required appendix also have been submitted.

Each author represents one of the three institutions involved in the epidemiological surveillance system and response, as described in the corresponding section. To compile this information, officials from the states of Sinaloa Tabasco, Guanajuato, and the State of Mexico were consulted. Officials from other institutions participated in the evaluation of the attributes of the MMES system through a questionnaire.



1. BACKGROUND

Reducing Mexico's maternal and infant mortality has been among the federal government's objectives since the post-revolutionary period. To that end, the maternal and infant health department was created in 1924. However, the focus on reducing maternal mortality (MM) itself only came about in the 1970s, as a result of the work of militant academics, such as María del Carmen Elu de Leñero, who propelled the issue into the public policy arena. The 1987 Safe Motherhood Initiative International Declaration sparked Mexico's mobilization in this regard, and in 1993, the Safe Motherhood Committee was founded in Mexico with the support of Family Care International (1). The woman-centered policy evolved from a paradigm change that came about after the population conferences, family-planning efforts, and the Cairo-Beijing accords framed this issue in terms of human rights (2). Case studies for each maternal death began to be conducted in Mexico in 1975 by Dr. Espinoza de los Reyes at the Avila Camacho maternity (today the National Perinatology Institute). By 1989, these studies were being conducted in every health institution in the country, but the leadership in each institution decided how the studies were to be carried out.

Beginning in 1995, verbal autopsies were introduced as a mechanism to document the care the deceased had received.

The Government of Mexico's commitment to the Millennium Development Goals (MDGs) further boosted the maternal health program. In 2003, the National Center for Gender Equity and Reproductive Health (CNEGRS) was created and, within it, the Directorate of Maternal and Perinatal Health, which is charged with launching strategies for the "Arranque Parejo en la Vida"

("Equal Start in Life") program (3), whose goals include women's welfare during pregnancy, childbirth, and the puerperium; maternal and neonatal survival; the prevention of congenital defects; and the prevention of disability as a consequence of an obstetric event.

In 2002, the General Directorate of Health Information (DGIS) conducted a study to determine the extent of under-registration of maternal deaths in the country by screening 8,000 death certificates that had been classified by the 46 causes of death associated with poor classification, and subjecting them to some of the Reproductive Age Mortality Studies (RAMOS) methodology strategies. Results showed the need for a correction factor for under-registration. Mexico's goal for reducing its maternal mortality ratio by 2015 was established at 75% which, based on global-fertility-rate trends and demographic dynamics, was set at between 19 and 24 maternal deaths per 100,000 live births nationwide, depending on demographic assumptions.

In 2003, the country's 32 states began to systematically apply an active search of maternal death cases. In 2004, this practice was reinforced by the publication in the federal official gazette of the obligatory immediate notification of maternal deaths, the operation of committees to study and prevent maternal deaths, and the establishment of verbal autopsies. It was recommended that each maternal death case be studied using the critical-links methodology in health care systems to prevent maternal deaths (4) and professional rapid-response groups (known as AIDEM) were established for conducting supervisory visits and determining immediate measures that could be implemented to improve preventive programs and medical care. Elsewhere within the Secretariat of Health, strategic actions regarding maternal care were carried out, such as the patient safety strategy that was put in place in the General Directorate for Quality and in the Federal Commission for the Protection against Health Risks (COFEPRIS). Within the Directorate for Maternal and Infant Health, the Community Development Unit was established specifically to prevent maternal mortality by conducting awareness raising workshops for health service personnel and the developing projects involving municipal and community participation. In 2009, the Inter-institutional Collaboration Agreement for handling obstetric emergencies was signed, and it has, over time, begun to eliminate the barrier to access to health institutions by not discriminating in terms of insurance enrollment. This is a particularly important advance in overcoming the health system's fragmentation of health services and it has contributed to significantly progress towards universal access to health care for Mexico's population.

In 2010, the compulsory notification of maternal deaths was implemented through an electronic platform that is part of the Single Epidemiological Surveillance System's maternal mortality module. Within the epidemiological surveillance system, the registration and notification component is triggered at the local level health care unit. The primary information is registered at the medical care unit and is then reported to the health jurisdiction. Units that have access to electronic means may directly notify the maternal mortality module within the General Directorate of Epidemiology. The confidential questionnaire is administered at each hospital unit, and health jurisdictions arrange for the verbal autopsy. At the state level, a medical and technical team is configured, which is integrated by personnel from the following areas: the Directorate for Epidemiological Surveillance (through the immediate notification module for maternal deaths), the General Directorate for Health Information (through the intentional search of maternal deaths) and those responsible for epidemiology, statistics, and reproductive health. The medical and technical team consolidates the information on the case with the death certificate, the medical summary, the confidential questionnaire, the verbal autopsy, the case study through the critical link methodology, and the review of the cause of death classification and coding. In the

hospitals, the case is submitted to the Mortality Study Committee; and in the health jurisdiction, to the Committee for the Study and Prevention of Maternal Mortality and Morbidity Prevention. Both at this level and at the state-level, the case investigation is conducted with inter-institutional participation. At the state level, the study and review of the cause-of-death classification is handled by the state medical and technical team. Notification need not wait for these studies to be concluded, however. If a given hospital has an epidemiologist on staff and can make an immediate notification, this task is performed there through two simultaneous electronic means: by e-mail and by entering the information into the platform, making use of the standardized formats that are available at all public and private health care institutions in the country. If a death did not occur in a medical unit, the health jurisdiction is made aware of it by the Public Ministry, which is required to periodically report on and submit a copy of the death certificate to the health jurisdiction.

In terms of the theoretical framework called for in this study, epidemiological surveillance is defined as “the systematic collection of information on specific health problems in the population and its processing, analysis, and *timely utilization* by those charged with developing interventions designed to prevent and control these health problems’ risks and damage (5). Given this, it also is useful to describe the epidemiological response. This response is triggered by the departments of reproductive health and of quality in the health jurisdictions and by the reproductive health department in the state health systems. The latter, in turn, coordinate their work in this regard with the departments of quality and of health regulation, the blood transfusion center, and medical care. At the federal level, the process begins at the National Center for Gender Equity and Reproductive Health (CNEGSR), specifically at the General Directorate of Maternal and Infant Health, which, in turn, convenes the Directorate of Family Planning and coordinates—in a *horizontal peer relationship*—with the General Directorate for Health Quality and Education, the General Directorate for Health Promotion, and the Federal Commission for the Protection against Health Risks (COFEPRIS).

The strategic thrust of the “Arranque Parejo en la Vida” program is the reduction of social inequities. To that end, health jurisdictions with highly marginalized municipalities in states with a high proportion of indigenous populations were targeted. In 2005, rapid response teams were established, and 105 visits to the states were conducted. In addition, joint supervision teams were added in 2010; made up of federal-level medical and nursing personnel, these teams were deployed to visit hospitals with greater volume or higher rates of maternal deaths. In 2012, these teams were added to the Task Force for the Reduction of Maternal Mortality, a national strategy. This nationwide initiative defined the work to be done along two broad areas—at the leadership level and at the health jurisdiction level. The first tackled structural problems. At the health jurisdiction level, targets included the rapid diagnosis of the functioning of the obstetric-care network; hospital supervision, followed by an analytical meeting and clear commitments with state authorities; and a monthly follow-up, for three months, with authorities and a wider group of hospital, jurisdictional, and program management teams.

Surveillance of cases among women with obstetric emergencies

All personnel in every public health institution were made aware of the importance of providing immediate care for women undergoing obstetric complications. The IMSS has pursued this strategy since 2003, under the leadership of Vitelio Velazco Murillo (6). As of this writing; some 30% of states have put in place telephone alert systems for each woman undergoing an obstetric emergency. These systems operate through inter-institutional cooperation, with the information

moving from the clinic to a team of six OB/GYNs with decision-making authority at the state and federal levels. These telephone communication networks and collective decision making are credited with the decrease in maternal deaths in states such as San Luis Potosí, State of Mexico, Tamaulipas, Chihuahua, Hidalgo, Guanajuato, and, more recently, Chiapas and Guerrero. In states, where such a setup has not been formally put in place, surveillance is handled through personal cellular phones belonging to the professionals involved and, sometimes, to the community health promoters and monitors (Lic. Patricia Veloz Avila and Dr. Alvaro Mazón, Health Secretary of the State of Guerrero, personal communication, 18 July 2012).

Recently, training has begun to be provided in three states on the use of the study method proposed by the WHO to monitor the quality of care in severe maternal morbidity (SMM); this training is part of the 2012 Task Force for the Reduction of Maternal Mortality effort.

Scope of the recommendations undertaken by the system

The epidemiological analysis of maternal mortality and the review of scientific evidence in Mexico has had a hand in the country's paradigm change—from 2004 to 2008, the country evolved from an approach that centered on delivery by midwives and the provision of prenatal care to an approach that focused on institutional delivery in health units and, especially, on the care of obstetric emergencies (7). As part of this evolution, differential and specific care packages based on epidemiological typology were made available, the three-delays method was adopted (8,9,10) the practice review forum organized by Patricia Uribe and Ana Langer in April 2005 (working document) was carried out, recommendations issued by Family Care International and the Pan American Health Organization regarding the availability of skilled personnel and enabling environments for delivery care were put in place, and the Averting Maternal Death and Disability (AMDD) initiative for monitoring obstetric emergency care that the inter-governmental agencies recommended in 2009 was adopted (11).

The implementation of recommendations and actions of the MMES system

Even though the epidemiological analysis of maternal mortality is periodically reviewed during the meetings of the state committees for the study and prevention of maternal mortality that take place in the health jurisdictions and in the state health systems, not all states take advantage of this analysis for informing actions. The epidemiological analysis, the coverage analysis, and the case studies can be useful monitoring tools that can serve as alerts to guide immediate actions to the population or to improve the system itself. In addition, a critical mass of researchers linked to the National Center for Gender Equity and Reproductive Health (CNEGSR) provide guidance on necessary strategies and vulnerable populations on an ongoing basis. Other factors include: the Committee for Risk-free Motherhood, whose technical secretariat is currently held by Raffaella Schiavon, director of Ipas in the country; the Maternal Mortality Observatory, bolstered by UNFPA and PAHO, which was created in April 2011 with broad institutional participation; UNFPA's reproductive health professionals who have provided ongoing consultation to and information exchange with the Directorate for Maternal Health; and scholars from the National Institute of Public Health, the Center for Research and Higher Education in Social Anthropology (CIESAS), and the Autonomous University of the State of Mexico (UAEMex).

It is clear that the epidemiological analysis impacted policy and strategy guidelines during the nine years that Patricia Uribe led CNEGSR. Yet, while 35% of cases that are notified include a case analysis by critical links, this information is not being systematically used in CNEGSR, although it is

used in the states where it is being applied (State of Mexico, San Luis Potosí, Sonora, Tamaulipas, and Chiapas, among others).

Is there public accountability?

Yes. Information is presented at the forums detailed above, at bi-monthly meetings of the Social Cabinet of the Presidency, and at the chamber of deputies, where the topic airs constantly.

Are priorities set according to potential impact, feasibility, and cost-benefit?

Yes. Priorities are set according to their potential impact; that said, the implementation of measures is incomplete and slow. In terms of cost-benefit, except in very few cases the costing of the mother/baby package (12), the costing of the obstetric-emergency care to determine rates of the CGCIAO previously mentioned and the annual studies that show the proportionally low investment in the family planning program (which has been used to advocate for increased funds)—it cannot be said that the state systems use the information to conduct cost-benefit analyses (13)

Has the comprehensive care of women's health been adopted?

Yes, in terms of the set of reproductive health actions. However, it cannot be said that the country provides comprehensive care for women, given that unmet family planning needs among adolescents is at 13%, and abortion is criminalized in 31 of the country's 32 federal entities.

Is the information used to raise awareness in society?

Yes, but not enough. It is sad to acknowledge that in some states even social security hospitals continue to eject patients, discharging them prematurely just so they "don't die on the premises." An indicator of the growing social awareness about this issue is the fact that the number of claims put forward to the state human rights commissions has increased, for both for maternal death cases and for patient abuse.

What are the best practices and the lessons learned in the study (include system strengths and weaknesses)?

Among the best practices: the immediate notification of severe maternal morbidity; the immediate notification of any maternal death within 24 hours, without waiting for the case study to be concluded; the compilation of documents for each case and their review by a committee to study maternal deaths in each hospital; the quarterly session of the state inter-institutional committee; the adoption of coverage indicators such as coverage of prenatal care and of delivery care within the national accountability system, which displays each state's record to all other state authorities and rewards those with the best results; the establishment of the rapid response teams; and the fact that there is a WHO Collaborating Center for Family of International Classification in the country.

Additional information

Mexico presented documentation to PAHO showing that the country has overcome the under-registration of maternal mortality. It covers 80% of the immediate notification of maternal deaths and that reporting occurs in less than 24 hours. In addition, the intentional search of maternal deaths has been standardized.

It should be mentioned that the National Council for Population (CONAPO) has issued new population and birth projections, based on the 2010 census and checked against fertility

information and the birth registration system. Previous estimates were based on the 2005 census, and the number of projected births for the ending quinquennium was lower than the new estimates. This obviously will have an effect on the maternal mortality ratio. At the time this study was submitted, CONAPO's population projection in force up to November 2012 was used as a denominator for the maternal mortality ratio.

It is useful to report to those that required that this study be conducted that the WHO collaborating centers for family of international classifications in Brazil and Mexico submitted a document to PAHO that constitutes "a response to a need felt for several years to contribute towards the improvement of registration and coding of maternal deaths, difficult processes whose complexity is well-known" (14). If those recommendations were to be applied, under-registration would once again occur, leading to a misleading sense of progress toward achieving the MDG goal.



2. EPIDEMIOLOGICAL SURVEILLANCE ON MATERNAL MORTALITY IN MEXICO

2.1. Background History

Rather than being a recent consequence of Mexico's commitment to the Millennium Development Goals (MDGs), maternal care has been an explicit objective for the country since the third decade of the 20th century, thanks to the democratic governments that have come into power since the Mexican revolution. The decrease in the maternal mortality ratio was preceded by a sustained development in the health service structure—in the last ten years, this improvement came about as a result of an evolution from an approach that focused on prenatal health coverage to an approach that emphasized institutional delivery by skilled personnel, and later, in the past eight years, to an approach that targeted improvements in the quality and timeliness of emergency-obstetric care. In addition, access barriers to public institutions have been broken down, initially by eliminating out-of-pocket costs through the Popular Health Insurance (Seguro Popular de Salud) and by having access to social security hospitals through the General Inter-institutional Collaboration Agreement for Obstetric Emergencies, signed on 28 May 2009 (known as CGCIAEO) (15)

The Health Department was created (in 1922) after the Mexican Revolution, and within it, the Maternal and Infant Health Service (in 1924), which became the Mexican Institute for the Protection of Children after World War II. In 1934, the obstetrics ward was inaugurated in Mexico's General Hospital, and in 1949, the Mexican Social Security Institute's maternity services were founded. In terms of case studies for each maternal death, Dr. Espinoza de los Reyes was

already carrying them out since 1975 in the Avila Camacho maternity services (which today is the National Perinatology Institute), and all national health system institutions also were conducting them. In 1995, IMSS constituted the regional committees for the analysis of maternal mortality (7).

After the Government of Mexico's commitment to the MDGs, the effort was further bolstered. The maternal and infant health program was subsequently renamed the "Arranque Parejo en la Vida" ("Equal Start in Life") program, which handles the strategy to decrease maternal and perinatal morbidity and mortality, and disability. The feasibility of the program's actions is underpinned by an organized system of bodies that regulate care, management, and epidemiological surveillance (see Figure 1).

Health care and epidemiological surveillance are managed by public institutions that include:

- the Secretariat of Health, which provides care to the entire population and whose financing has been regulated since 2003 by the Social Protection and Health System, which is an operational branch of the Popular Health Insurance that covers roughly 50% of the population or some 54 million persons;
- social security institutions that provide health services to workers, such as the Mexican Institute, which covers roughly 40% of the country's population, and six other public institutions that cover an additional 12%.

Total coverage exceeds 100%, because some individuals are covered by more than one system. The private sector reports 19% of the births registered in the country (16).

Public health sector institutions are structured by level of care. Together, they account for more than 18,000 first-level units and more than 1,800 hospitals of various levels of complexity. The Secretariat of Health offers services through health-care networks that include health centers, community hospitals, and reference hospitals. It is at this level that the primary mortality, morbidity, and health care information is recorded. Health centers offer preventive care, ranging from family planning to prenatal care. Even as early as 2003, family planning coverage reached 76%; prenatal coverage, 93%; and institutional delivery coverage, 82% (17). These figures have increased to 78%, 96%, and 92%–95%, respectively (18).

2.2. Stages of Epidemiological Surveillance on Maternal Mortality

Among the permanent mechanisms for maternal mortality surveillance, the Directorate of Epidemiological Surveillance includes the following:

- I. Immediate notification of maternal deaths,
- II. Case studies to confirm maternal causes of death,
- III. Judgments on maternal deaths, and
- IV. Development and implementation of measures to decrease the leading causes of maternal death.

Given that surveillance is defined as, "the systematic collection of information on specific health problems in the population, its processing, analysis, and timely utilization by those charged with developing interventions designed to prevent and control these problems' corresponding risks and damage, warrants the conduct of epidemiological surveillance of maternal morbidity.

In other words, the response component is essential to prevent and control risks, and to address severe obstetric morbidity. The response must be pursued in at least two areas—population-based prevention of risks such as unwanted pregnancies, high parity, and pregnancy at age extremes, and the treatment of underlying conditions.

Within the response component, it is critical to improve the management of obstetric emergencies within the health service system, because each maternal death is preceded by an obstetric emergency, and that death can be prevented provided timely and effective action is undertaken (20). To that end, surveillance should include the immediate notification of obstetric morbidity and the monitoring of access, quality, and timeliness of obstetric care services.

Table 1. Epidemiologic Surveillance Action Responsibilities

Detection and registration of severe obstetric morbidity	<p>Prevention of reproductive risks in the population.</p> <p>Active surveillance of women with complications and obstetric emergencies.</p> <p>Monitoring access, timeliness, and quality of obstetric care in local health systems.</p>
Registration and classification of maternal mortality	Epidemiological analysis of maternal mortality to fine-tune preventive actions targeting specific population groups.

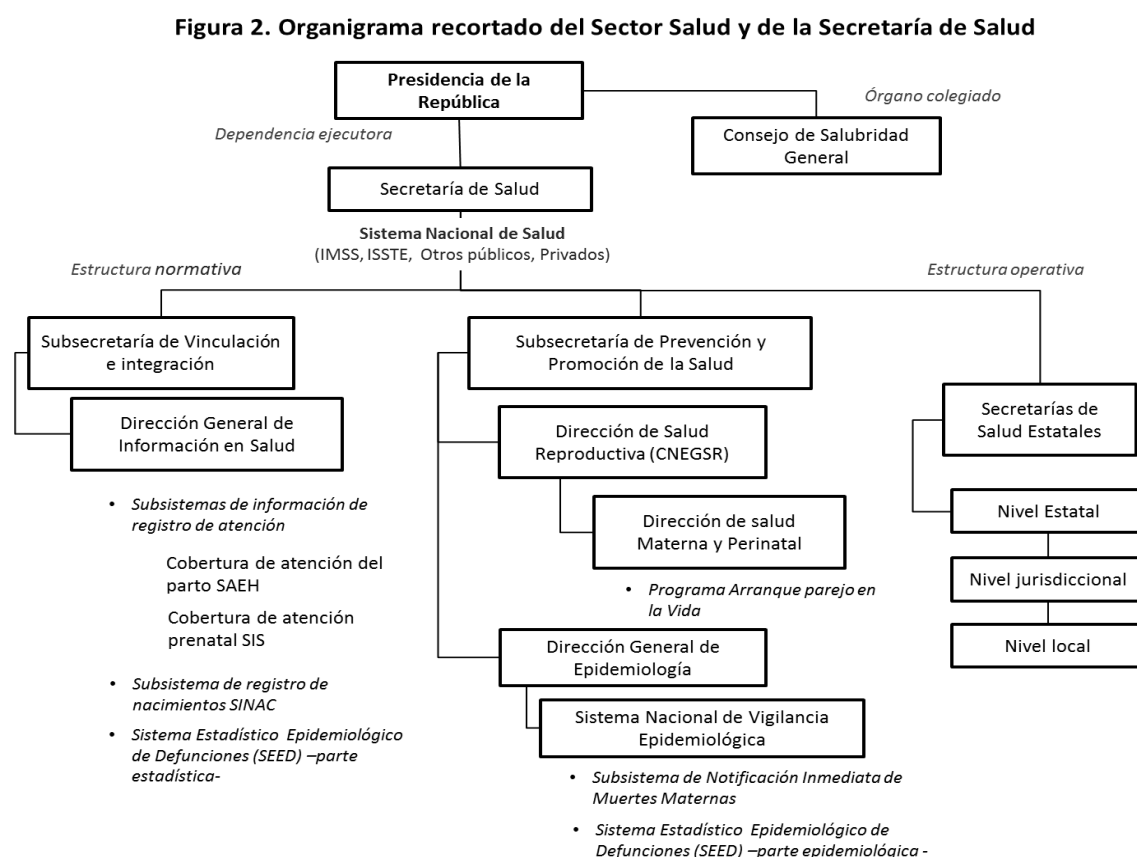
In terms of the response mechanisms, the Directorate of Maternal and Perinatal Health redefined the “Arranque Parejo en la Vida” program in 2007. The control and prevention of severe obstetric morbidity and the management of obstetric emergencies requires that the accessibility to the services be monitored by micro-region and by population group, through family planning coverage, delivery care coverage, emergency care, timeliness and quality. The hospital obstetric case fatality rate and the cause distribution are recommended by the Averting Maternal Death and Disability (AMDD) initiative of New York’s Columbia University (21). Training on these indicators has been provided to state personnel and to personnel in those health jurisdictions that show lower development indices. That said, the analysis of the aforementioned indicators has not been systematically incorporated into efforts to prevent maternal mortality, despite the fact that the General Directorate for Planning within the Secretariat of Health (22) and the National Institute of Public Health have offered ongoing training in this regard (23). More recently, a proposal has been floated to use the perinatal risk matrix, which includes the distribution of fetal and neonatal mortality by weight of the fetus and location of care, as a predictive factor for maternal mortality and, especially, as an analysis that can provide guidance in each micro-region for undertaking preventive actions in the community or measures that can improve hospital quality (Dr. Alfred Brand of the Centers for Disease Prevention and Control, personal communication). Mexico also has begun to provide training for monitoring severe maternal mortality in hospitals, although this measure has not been implemented yet.

2.3. Organizational Structure of the Ministry of Health and the Epidemiological Surveillance System

The national health system (SNS) is made up of all the institutions that offer health services, including the state health secretariats in the 32 federal units and all public and private health care institutions.

The highest health authority is the General Health Council, which presides over all health institutions and is led by the Health Secretary. This body is charged with issuing mandatory health provisions for the country as a whole.

Figure 1. Organizational chart for the health sector and the Secretariat of Health



The Health Secretariat's sub-secretariat for Integration and Development regulates the growth of the health services; through the General Directorate of Health Information, it manages the information systems that deal with care provided by the national health system and generates statistical health information.

The Sub-secretariat for Prevention and Health Promotion, through its General Directorate of Epidemiology, administers the epidemiological surveillance subsystems in order to generate information. Policies for the care of women, as well as actions designed to prevent maternal

mortality, fall under the responsibility of the National Center for Gender Equity and Reproductive Health (CNEGSR), through the Directorate for Maternal and Perinatal Health and the Directorate of Family Planning.

2.4. Legislation, Standards and Guidelines for the Maternal Mortality Epidemiological Surveillance System

Article 4 of the Political Constitution of the United States of Mexico establishes the universal right to health protection. That article gives rise to the General Health Law:

-Official Mexican Standard NOM-007-SSA2-1993, on the care of women during pregnancy, childbirth, and the puerperium and care of the newborn. It makes reference to the manual for the committees to prevent, study, and follow-up on maternal and perinatal morbidity and mortality.

-Official Mexican Standard NOM-017-SSA2-1994, on epidemiological surveillance, establishes the compulsory compliance with procedures established in the Standardized Procedural Manual for the Statistical Epidemiological System of Deaths (SEED) and the Guidelines for the Immediate Notification of Maternal Deaths.

In addition, the Law of the National System of Statistical and Geographic Information sets forth the basis for the application of NOM-040-SSA2-2004 regarding matters of health information. From this legislation arise the Procedural Manual for the Epidemiological and Statistical Subsystem of Deaths, the Procedural Manual for the Intentional Search and Reclassification of Maternal Deaths, and the Inter-institutional Collaboration Agreement for the Incorporation and Operation of the Health System's Sectorial Technical Committee of Statistics and Geographic Information.

The agreement whereby the National Committee for the "Arranque Parejo en la Vida" program was created (November 2004) sets forth that all public and private institutions that are part of the national health system are required to implement the substantive and strategic components of said program and to pursue the active epidemiological surveillance of maternal deaths.

2.5. Organization of the Epidemiological Surveillance System

In November 2004, the General Health Council endorsed the compulsory implementation of the "Arranque Parejo en la Vida" program and the active epidemiological surveillance of maternal deaths in all public and private health institutions. This requirement entails: I. the immediate notification of maternal deaths, II. the case study, III. the issuance of a judgment on the maternal death, and IV. the implementation of measures designed to decrease the causes of such deaths. All concerned entities must work together to implement these requirements. Table 2 shows the distribution of responsibilities in this endeavor.

Table 2. Distribution of responsibilities in the implementation of the “Arranque Parejo en la Vida” program and the pursuit of an active epidemiological surveillance of maternal deaths

Process	State level operational area	Federal level regulatory area
Immediate notification and implementation of measures	Epidemiology	General Directorate of Epidemiology
Investigation, documentation, analysis of confirmed cases, issuance of a judgment on the deaths, and implementation of measures.	Committees for the prevention, study, and follow-up of maternal mortality and morbidity Jurisdictional teams for reproductive health, epidemiology, and statistics	National Center for Gender Equity and Reproductive Health
Intentional search, reclassification, delivery to the National Institute of Statistics and Geography of final annual figures to be published officially, and implementation of measures	Jurisdictional and state-level reproductive health, epidemiology, and statistics units	General Directorate of Health Information

2.5.1. Responsibilities at each Level

At the **local level** responsibilities fall under the units that provide health care to the population and that carry out prevention programs. Here is where primary information is captured for the Epidemiological Surveillance System (SINAVE), the Health Information System (SIS) and the Health Regulation System.

Responsibility: Health centers, health centers with a hospital, and hospital units are charged with identifying the occurrence of a maternal death, immediately notifying it, consolidating the death documentation (confidential questionnaire, verbal autopsy and post-mortem report), coordinating with the health jurisdiction in order to send the information, and notifying the health official in the municipal town hall.

At the **health jurisdiction**, responsibility falls under the micro-regional management and technical coordination unit within the federal units. There are 244 of these across the 32 federal units. This micro-regional structure mirrors the state-level system, administering the budget and personnel, and supervising actions established in the state health programs.

Responsibility: Each jurisdiction captures information dealing with productivity, consultations, and care, as well as morbidity and mortality information.

This level supervises and ensures that the immediate notification is complied with; conducts the verbal autopsy; implements the technical and medical team’s implementation of the intentional search and reclassification of maternal deaths; evaluates the epidemiological information; coordinates the training of operational personnel; provides feedback to health units; establishes formal and functional coordination with health sector institutions (IMSS, ISSSTE, and others), as part of its geo-

reference scope and carries out other responsibilities, such as regulating of private health units.

The **state health system** is the organizational and functional structure responsible for the operation of health services in each federal unit. As a result of the decentralization process each state has structured its health secretariat differently. That said, the health service structure is relatively similar from state to state, functioning through the General Directorate of Health Services, a decentralized public agency that includes epidemiological surveillance.

Each entity has a state directorate of information, a state directorate of epidemiology, and a state directorate of reproductive health.

The **technical and medical team for the surveillance of maternal mortality** includes the participation of the areas of statistics, epidemiology, and reproductive health.

Responsibilities:

- Implement the selection of deaths suspected of masking a maternal death
- Concentrate, verify, and validate information received from the jurisdictions in order to have the necessary components to make a final classification
- Reclassify deaths confirmed as maternal deaths
- Supervise the completion and transmittal of the ratification/correction of deaths format to the General Directorate of Epidemiology and the General Directorate of Health Information, so it can be uploaded into the Statistical Epidemiological System of Deaths (SEED).

Committees for the study and prevention of maternal and perinatal morbidity and mortality (CEPMMyP) (24) are established in each hospital unit, each jurisdiction, and each state. At the federal level, this body corresponds to the Committee for the Surveillance and Evaluation of the “Arranque Parejo en la Vida” program, which convenes every four months.

Responsibilities:

The local level is responsible for gathering the documentation, completing the confidential maternal death questionnaire, and reporting to the state level.

Each health jurisdiction has one of these committees.²³ If a death occurs in the community or at a first-level-of-care unit, the physician responsible for that unit and the person responsible for the reproductive health program, in coordination with the jurisdictional epidemiologist, collect all medical records; request authorization from relatives to conduct a post-mortem examination; obtain a copy of the death certificate in cases where there is no medical record, post-mortem results, or where the information is incomplete; conduct the verbal autopsy; complete the confidential questionnaire; and notify the technical secretary of the jurisdictional committee and the state level.

The areas of epidemiology and statistics are fully cognizant of the documents that have been gathered for the committee sessions; this information is held in by the reproductive health area for safekeeping.

The **Secretariat of Health** (federal level), along with the General Health Council, are the highest authorities that oversee all health services in the country, including private health services.

The agencies described in the epidemiological surveillance structure work in constant coordination with other entities, such as:

The **National Institute for Statistics and Geography (INEGI)** is the body that regulates the publication of official mortality figures. On a yearly basis, it cross-checks the death registry with the General Directorate of Health Information.

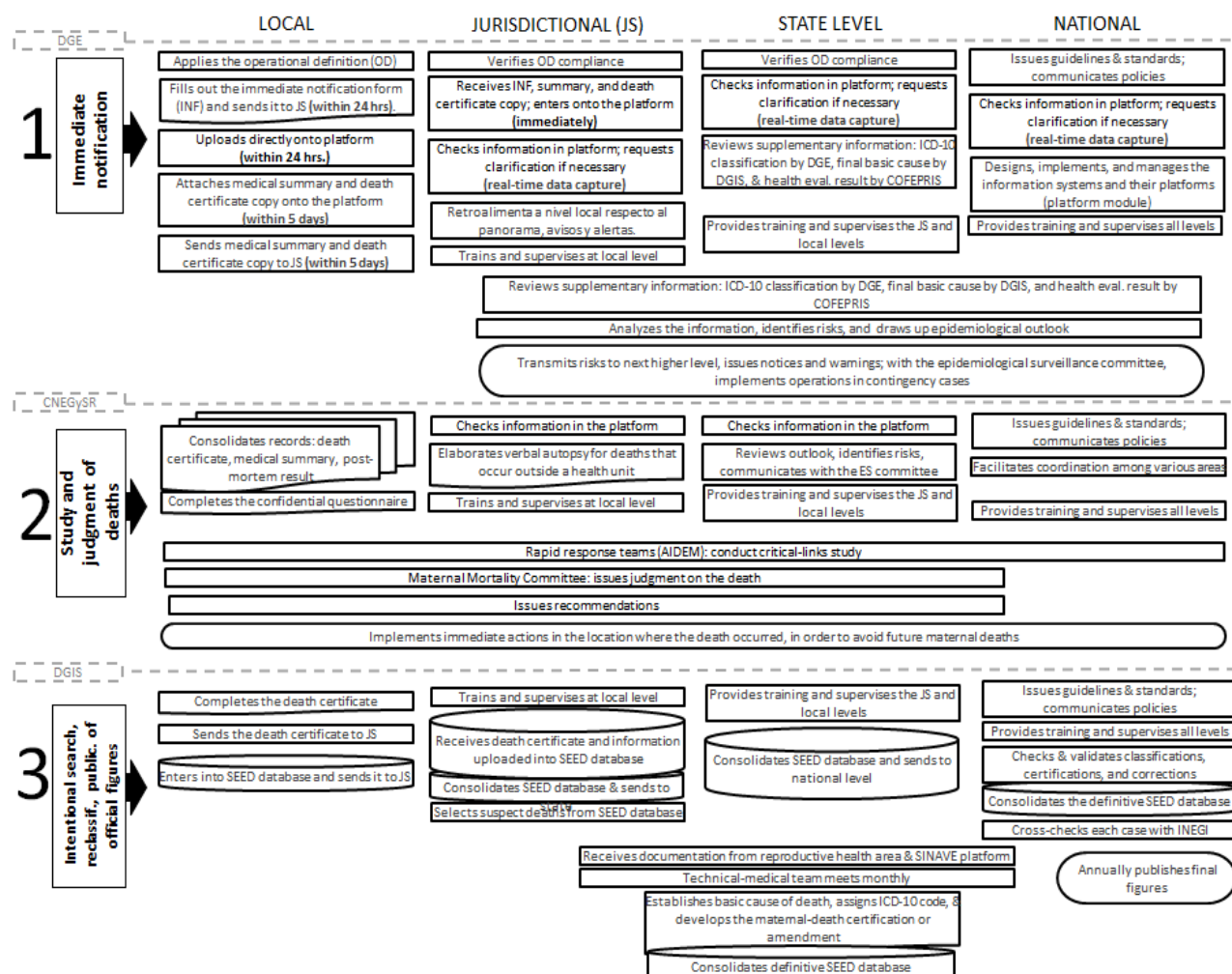
The **National Center for Blood Transfusion** is based on the increase in deaths due to hemorrhage issued guidelines for the disposal of blood and blood products.

The **Federal Commission for the Protection against Health Risks (COFEPRIS)**, which programs its supervisory activities with public and private units based on information generated by the immediate notification process.

2.6. Flow of Activities from Notification to Integration

- I. Immediate notification
- II. Consolidation of the information
- III. Intentional search
- IV. Reclassification and publication of official figures
- V. Response of the maternal mortality epidemiological surveillance system

Figure 2 summarizes the activity flow described below.



2.6.1. Immediate Notification

Since 2005, the General Directorate of Epidemiology manages the Subsystem for the Immediate Notification of Maternal Deaths, whose main role is to receive information on maternal deaths. This function is an essential element for raising early warnings, in that it makes it possible to identify and raise the alarm about maternal health risks, without having to wait until a death has occurred. Its critical feature is the timeliness with which it can produce information.

In 2010, the maternal mortality module was put in place in the National Epidemiological Surveillance System's (SINAVE) single computer platform, which is designed to notify, register, store, and analyze the information. The information in this platform is available in real-time to the epidemiology, reproductive health, and statistical areas at all the operational levels. As a result, the timeliness of the information increased from 64% to 90% of deaths notified in less than 24 hours from the occurrence of the death.

The immediate notification format includes demographic information, ICD-10 causes of death, and information from the notification units. The medical summary and a copy of the death certificate that provided information for the classification also are attached.

2.6.2 Consolidation of the Information: Investigation, Documentation, and Analysis of Confirmed Cases

Case study to confirm maternal-death causes

The maternal mortality confidential questionnaire is the counterpart of the case study for the confirmation of maternal-death causes.

The questionnaire is designed to capture the necessary information to be able to conduct a study of the death, and is used to analyze this information in order to issue the corresponding judgment. This document includes information from the death certificate, the medical record, and the post-mortem.

Judgment on maternal deaths

This is a consensual deliberation conducted within the committees for the study and prevention of maternal and perinatal mortality. The maternal death judgment form is the document used to record the factors that were involved in the death—the cause of death (direct, indirect, or non-obstetric cause); the medical care processes; the user's request for medical care; the time elapsed between when the user sought care and when the actual care was provided; the diagnosis and beginning of treatment; the predictability of the death; and the recommendations to be implemented in order to avoid similar deaths in the future.

Detection of critical links

This methodology transforms the report from a purely physio-pathological account, such as hemorrhage, into information that points to health service and health care failures (25). In order

to comply with the Secretary of Health's directive to count maternal deaths one by one, and his statement that "one maternal death is one death too many," (26) the "Arranque Parejo en la Vida" program engaged the consultancy services of a researcher who, while working at the National Public Health Institute, had developed a methodology to detect the critical links in the health-care processes, in order to establish actions to improve of care (3, 27). This methodology, as well as the analysis of 325 maternal-mortality cases by the committees for the study and prevention of maternal and perinatal mortality, was implemented in 14 state health systems, which subsequently were disseminated electronically and through on-site workshops to all state health systems. Such analysis was used by the rapid response team to evaluate the maternal mortality case and the performance of the health services (28). This methodology is particularly useful in systems such as Mexico's, in which health care is fragmented across health centers and hospitals, and where it is extremely important to analyze whether the health system's organization maintains a woman's continuity of care from one unit to another.

2.6.3 Intentional Search, Reclassification and Official Publication of Figures

The coordination for these activities falls under the responsibility of the General Directorate of Health Information.

Intentional search

In 2002, the Secretariat of Health, through the General Directorate of Health Information, conducted a pilot study to explore the "improper statistical registration of maternal deaths" in deaths that occurred in eight federal units that year. Thanks to this study, 57 maternal deaths that had not been classified as such were correctly reclassified. Since then, an intentional search of maternal deaths is conducted, which has made it possible to correct many of the maternal mortality figures and improve the classification of causes of death (29)

In 2001, the search, documentation, and analysis of cases suspected of masking a maternal death was decentralized. This process now takes place at the jurisdictional level and is ratified at the state level by the medical and technical teams. It includes the following major steps:

- Step 1. Find suspected cases using a modified Reproductive Age Mortality Study (RAMOS) methodology.
- Step 2. Consult and review cases using a modified RAMOS methodology and select the highly probable ones.
- Step 3. Determine which maternal death cases are applicable to the investigation.

The epidemiology, reproductive health, and statistics areas participate in these activities. The main result is the confirmation or ruling out of the case as a maternal death.

2.6.4 Reclassification, Cross-Checking with the National Institute for Statistics and Geography

Coding and reclassification of causes of death

This activity takes place in the federal unit where the death occurred and is verified by the General Directorate of Health Information. This process uses the death certificate, the supplementary information from the medical summary, the verbal autopsy, the case study conducted by the detection of critical links methodology, and any other documents pertinent to each case. Because the coding of maternal death causes is a difficult process, coding is carried out by two coders: if both agree, the case is closed; if they differ, the case is submitted to a third coder for discussion. Final coding must be captured in the “maternal death” application, which includes all the information from the death certificate of the deceased, along with a summary of the complications that led to the death and the final causes, whether confirmed or amended. In addition to the intentional search activities, the documents collected by the Maternal Mortality Committee on every death that was notified as a maternal death by the Statistical Epidemiological System of Deaths and the immediate notification are analyzed, which leads to a confirmation or correction of the basic cause of death and an assignation of the corresponding ICD-10 code. This activity must be conducted at the state level, with the endorsement of the federal level.

Integration of the database and preparation of the annual report on maternal mortality

The General Directorate of Health Information (DGIS) conducts a cross-checking exercise with the National Institute of Statistics and Geography (INEGI) to verify the number of cases and confirm the causes of death. DGIS hands over to INEGI the results of the intentional search of maternal deaths and the Institute is then responsible for the final statistical closure. Before sending the information on to the Secretariat of Health, DGIS takes INEGI’s final maternal death information as a baseline and adds to each case the supplementary information that is not included in the death certificate, in order to be able to analyze the patient’s social factors and obstetric history.

The process ends with the drafting of an annual report and the entering of the data into a DGIS dynamic cube, which is available in the electronic website of the National Health Information System (SINAIS) (22). Results and databases are shown as tables, which are disaggregated by the most important variables of the death certificate and also show the leading causes of maternal mortality grouped according to two modalities.

Publication of official figures

The confirmation or correction of the cause of death is incorporated into the Statistical Epidemiological System of Deaths, which, on an annual basis cross-checks information with the National Institute for Statistics and Geography (INEGI), before final publication. The figures that emerge from this effort are then compared to live birth projections estimated by the National Population Council (CONAPO) to calculate the maternal mortality ratio.



3. EPIDEMIOLOGICAL SURVEILLANCE SYSTEM INDICATORS

3.1. Epidemiology Surveillance System Coverage

The Epidemiology Surveillance Systems covers the percentage, by type of health facility and subsector, of the total number of health facilities that attend deliveries and that are part of the maternal mortality epidemiological surveillance (MMES) system. The Secretariat of Health and the 32 state health systems, which are organized by health jurisdictions (there are 244 jurisdictions distributed throughout the 32 states), have a department of epidemiology and a department of statistics. All have access to a computer platform and to the notification module of the General Directorate of Epidemiology within the federal Secretariat of Health. In addition, of the 668 hospitals that report on delivery care, 255 have an epidemiologist on staff; 55% of the hospitals enter information on maternal mortality directly onto the notification module. In terms of the Mexican Social Security Institute (IMSS), the information is gathered at the 16 delegations within IMSS's organization structure and subsequently at the maternal mortality department, which then notifies the Secretariat of Health.

3.2. Physical Space

The availability of physical space varies widely from jurisdiction to jurisdiction. Some states have an entire building devoted to epidemiological surveillance (such as the State of Mexico, Veracruz,

and Jalisco), while others have limited space available (such as the states of Morelos and Tlapa Guerrero).

3.3. Format

The general death certificate and the fetal death certificate are compulsory for all institutions, as is the immediate notification format. However, even though the manual for the Committee for the Study and Prevention of Maternal and Perinatal Mortality clearly describes the verbal autopsy and the confidential questionnaire, each institution has adapted these documents according to their own needs.

3.4. Inter-Institutional Coordination within the Health Sector

Coordination occurs at the state committees for the study and prevention of maternal mortality. There is ongoing communication regarding the cases, which exceeds the periodicity set for committee meetings, which is quarterly if there are no cases and monthly whenever there is a case.



4. CONCLUSIONS AND FINDINGS

Currently, the challenge involves the deaths that occur outside of a health facility or those that occur after an institutional delivery but during the puerperium (17% in 2011). In other words, these are not necessarily deaths of women who gave birth at home, but include deaths of women who had institutional deliveries and whose deaths occurred in the puerperium and are not notified as maternal deaths in the civil registry officers.

The greatest problem with maternal deaths is improper classification, not absolute under-registration. The registration of causes of death in the death certificate often omits the obstetric causes that unleashed the chain of events that ultimately led to the death; instead, only the final complications are recorded, and the death is then not coded or classified as a maternal death.

Official Mexican Standard NOM-017-SSA2-1994, which deals with epidemiological surveillance, dictates that in any location without a physician, the death certificate must be completed by authorized personnel. Since the percentage of death certificates completed by non-medical personnel is small—under 2% of all deaths nationwide—the main problem really is delay and improper classification, which is attributed to the sub-standard organization and training of physicians in filling out the certificate and in the immediate notification, or in the poor organization of the health units.

With the completion of joint guidelines on the intentional search of deaths suspected of being maternal deaths in 2012, it will be possible to finally address the under-registration of deaths and improve the timeframe of the final classification.

4.1. Response of the Maternal Mortality Epidemiological Surveillance

In 2005, the “Arranque Parejo en la Vida” program created the maternal-death rapid-response groups, which are responsible for conducting a field epidemiological study for each maternal death, using the critical link methodology; (30) identify the critical link in each case; and determine recommendations that are subject to prompt follow-up. The summary at the beginning of this document describes the actions undertaken to improve the response regarding risks to the population, maternal mortality surveillance, and challenges that remain.

Moreover, the following section describes the maternal mortality context, the delivery care coverage, the distribution of births by institution and location of care, the distribution of mortality by location and by cause, and the extent and trends of maternal mortality.

4.2. Maternal Mortality Context

Mexico is a mosaic of deep inequalities and differences—in terms of geography, some states are marked by highlands (Chiapas and Oaxaca), others have population settlements scattered in rural municipalities, and yet others have densely concentrated populations concentrated in urban nuclei, where 79.3% of the country’s population lives. Mexico’s maternal mortality figures reflect these disparities (Mendoza 2006, Freyermuth 2004 (31) and Sesia (32) Lozano 2005(33, 34) (Diaz 2004) (35) Franco-Marina and colleagues 2006) (36). Between 1995 and 2000, the likelihood of dying among women living in rural municipalities with a high degree of marginalization was fourfold that of women in urban, non-marginalized municipalities (Mojarro 2003), (37) although this difference decreased in the subsequent five-year period (38). (See Annex 1 for Mexico’s maternal mortality ratio discrepancies, by state.) Added to these socioeconomic inequalities are gender inequities in the way women are treated at obstetric care services (Castro R and Erviti J 2003 (38) Amaya 2011 (39)), cultural insensitivity (Garcia 2011, Almaguer 2012 (40)) and discrimination in women’s treatment during prenatal care and delivery (Amaya 2011 (41) Villanueva Egan 2010). Moreover, there also is a structural problem; in that most of the health centers that deal with prenatal care lack basic obstetric-diagnosis equipment such as ultrasound and 6.3 of each 10 centers is headed by a medical intern.

It is precisely in situations of social inequality where health interventions can best serve as equalizers. The reduction of the social inequality gap is one of five broad objectives in Mexico’s 2000–2007 National Health Plan. To that end, a policy designed to expand social protection in health was developed, which gave rise to the Social and Health Protection System, whose operational arm is the Popular Health Insurance (42). In October 2012, the Social and Health Protection System was reported to have 54 million enrolled members. These efforts made it possible to eliminate the out-of-pocket payment barrier in the delivery care, and institutional delivery within the Secretariat of Health units doubled rose from 500,000 in 2003 to more than one million in 2010. The increase in institutional delivery coverage contributed to road improvements and increases in the number of medical units, so that 96% of the population is now

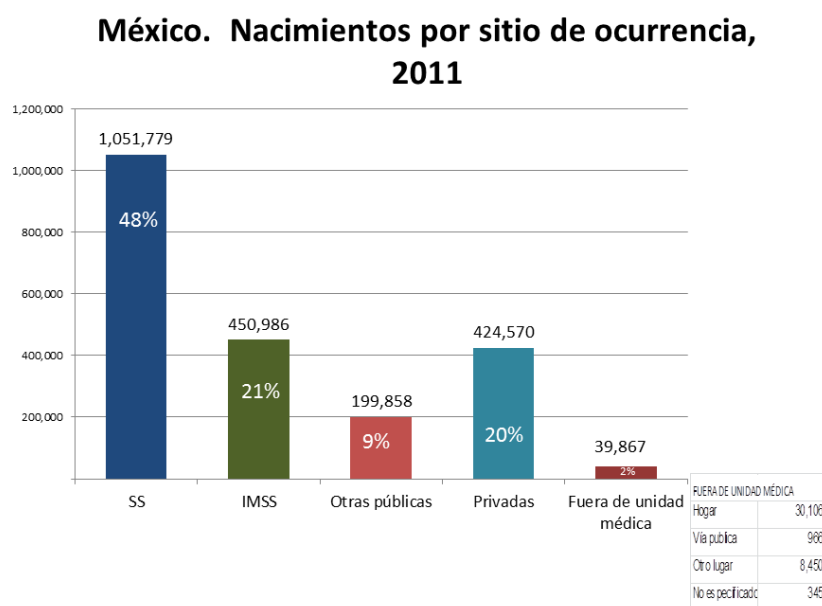
estimated to be able to reach their nearest public hospital in less than two hours travel from their home (43).

4.3. Distributions of Births by Location of Care

The most reliable source for determining the location of a birth is the Sub-system for Information on Births (SINAC), which is based on the capture of each birth certificate. In 2011, it certified 2,167,060 births, of which 98% occurred in a medical unit, 78% of which occurred in a public facility and 20% in a private facility. Even though only 39,867 births were reported as having occurred outside a medical unit, it is possible that some others may have not been certified in the period covered by SINAC. The “other location” category includes the midwife’s home. (See Figure 3 for births by location in Mexico in 2011.)

Figure 3. Distribution of births by occurrence site, Mexico 2011

Figura 3. Distribución de nacimientos por sitio de ocurrencia, México 2011



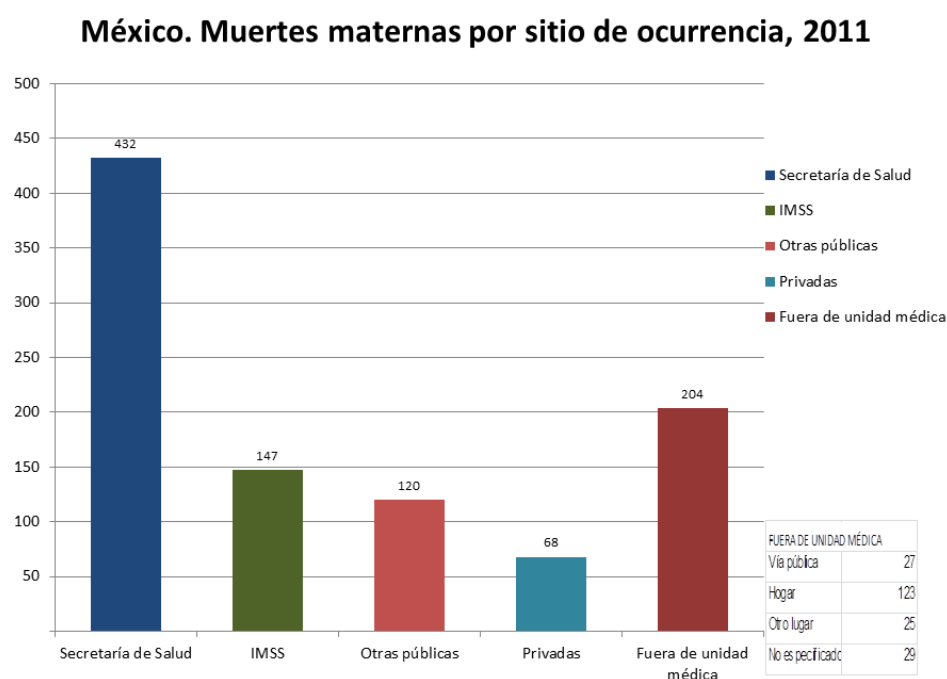
Fuente: Sitio de la Dirección General de Información en Salud (DGIS) en Internet: <http://dgis.salud.gob.mx/> ó <http://www.salud.gob.mx/>

4.4. Location of Maternal Deaths

Despite the fact that the coverage for institutional delivery is higher than 96%, and that 92% of deceased women received medical care during delivery, one in five women die at home or in transit. Among them are women who die as a result of abortions or during the puerperium, but not exclusively. In 2010, 92% of women who died received medical attention for the emergency that led to their death, most of them (80%) in hospitals. (See Figure 6 for maternal deaths by location.)

Figure 6. Distribution of mortality by location of the death

Figura 4. Distribución de muertes maternas por sitio de ocurrencia, México 2011



Fuente: Sitio de la Dirección General de Información en Salud (DGIS) en Internet: <http://dgis.salud.gob.mx/> ó <http://www.salud.gob.mx/>

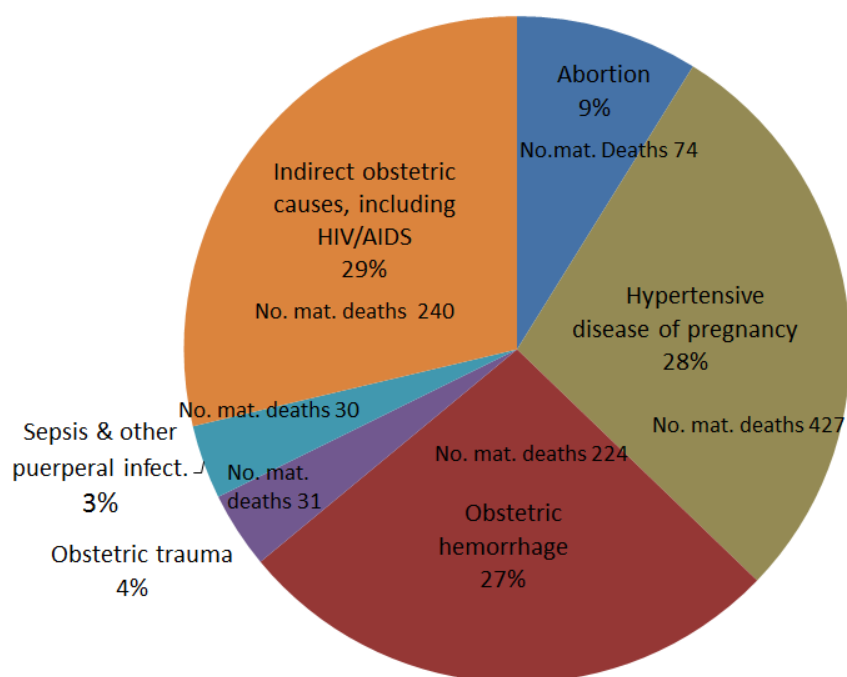
4.5. Distribution of Maternal Mortality by Cause

Figure 7 show the distribution of causes of maternal mortality in Mexico in 2011. In this regard, it is important to understand that puerperal sepsis decreased in the country in the second half of the 20th century, which was preceded by an increase in the number of health care units. In the 1990s, the increase of community-level hospitals decreased mortality due to post-partum hemorrhage. As a result, by century's end, the percentage of deaths due to preeclampsia and eclampsia became more apparent, as did the percentage of deaths by indirect causes. In 2011, 29% of maternal deaths were due to indirect causes, 28% due to preeclampsia and eclampsia, 27% due to obstetric hemorrhage, 9% due to abortion, 4% due to obstetric trauma, and 3% due to puerperal sepsis.

This figure does not include late maternal deaths (44).

Figure 7. Distribution of maternal deaths by maternal death causes, 2011

Figure 7. Distribution of maternal deaths (excluding late deaths), by cause, Mexico, 2011.



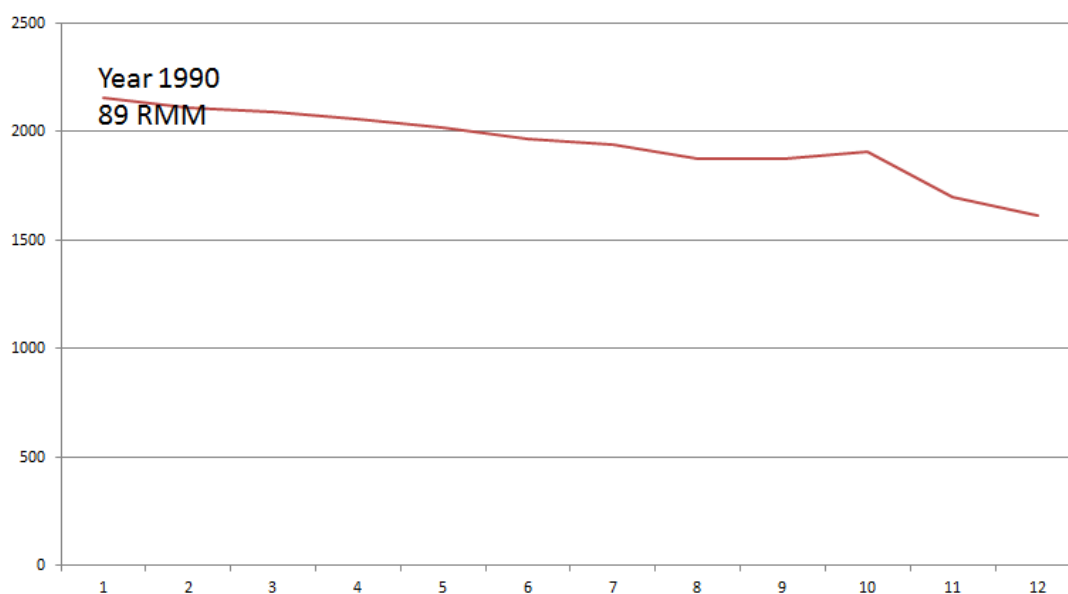
Source: General Directorate of Health Information, Secretariat of Health. Births estimated by CONAPO, 2005 count version.

4.6. Extent and Trends in Maternal Mortality between 1990 and 2011

Between 1935 and 1990, the maternal mortality ratio decreased by 65%, a drop that is attributed to the increase in the number of health institutions seen in the 1940s and the expansion of rural health programs (IMSS 1978, SS 1980). Between 1980 and 2000, the number of health centers (through the expanded health services program) and community hospitals increased. That said, after the 1990s, the maternal mortality ratio reduction slowed.

In 2002, the amended maternal mortality ratio was 62 per 100,000 live births and nearly 10 years later, by the end of 2011, it was 50.7. Preliminary figures for 2012 show that the maternal mortality ratio decreased by one percentage point. In any case, this level is still too high for a country where 96% of the population lives under two hours from access to a hospital (Hernandez A, op cit) and where nearly 100% has access to a delivery and obstetric-emergency care without any out-of-pocket cost. In Mexico, maternal mortality is linked to poverty in roughly 10% of deaths, but it is linked to 90% of deaths among those women who have had poor quality and a lack of timeliness in their obstetric-care emergency.

Figure 8. Retroactive Correction Movement



4.7. Strengthens and Weaknesses to the Maternal Mortality Surveillance System in Mexico

Strengths	Weaknesses
<ul style="list-style-type: none"> • Scientific evidence of the importance of the MMES • Obligatory regulatory documents • Institutional and individual technical capability to carry out the MMES • Civic oversight to promote transparency and accountability • International commitments 	<p>Insufficient inter-institutional coordination</p> <ul style="list-style-type: none"> • Frequent turnover among management staff • Limited institutional mechanisms for assigning responsibilities

5. SOURCES

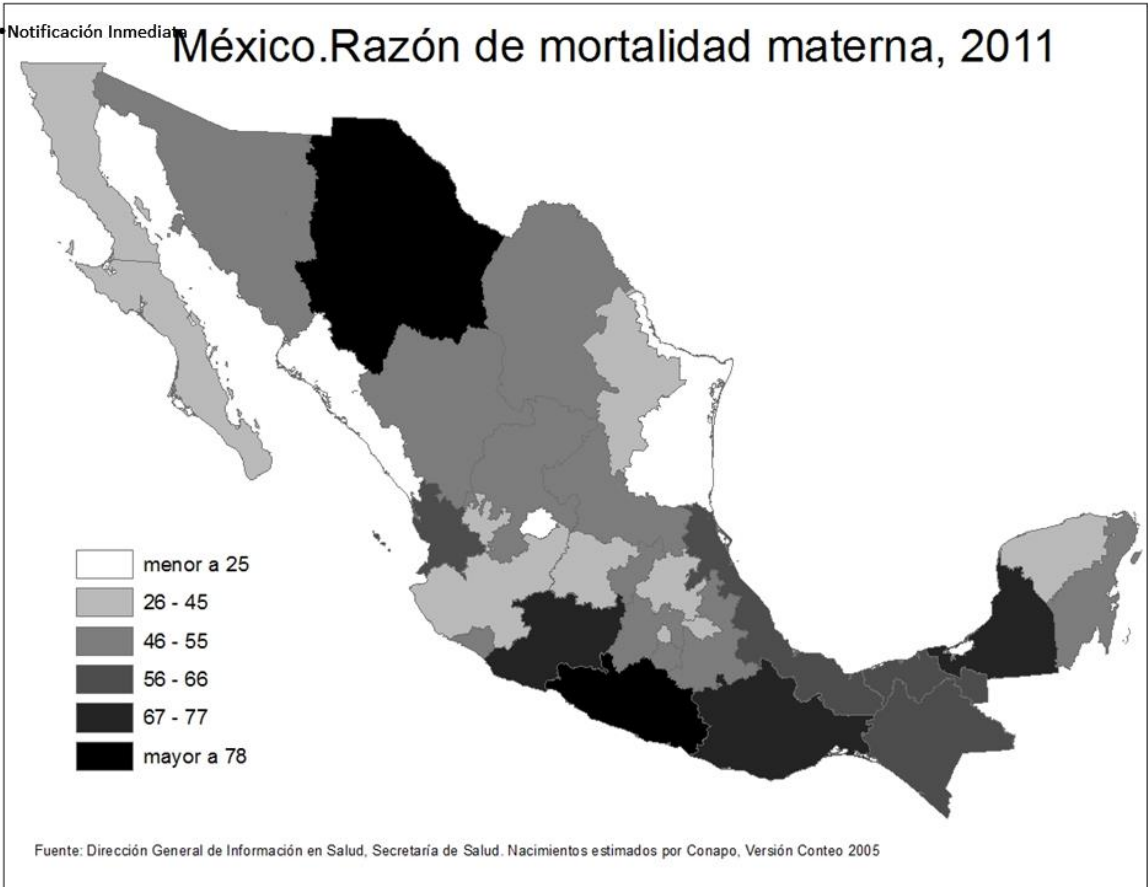
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- ⁴¹ Amaya-Castellanos C, Shamah-Levy R, Nuñez-Urquiza RM, Escalante Izeta I (2011) MORTALIDAD MATERNAI y empoderamiento de las mujeres en una comunidad indígena mexicana (En prensa.
- ⁴² Frenk J, Gómez-Dantés O. Para entender el sistema de salud de México. Mexico City: Nostra Ediciones, 2008
- ⁴³ Hernández Avial JE Santos-Luna, R. L. Sofía Palacio; AL Salgado-Salgado; VH Ríos-Salgado; MHenry Rodríguez-López;; J Sepúlveda-Amor (2010) Modelo geo espacial automatizado para la regionalización operativa en planeación de redes de servicio de salud SPM 52 (5): 432-446
- ⁴⁴ Dirección General de Epidemiología (2011) Lineamientos para la Notificación Inmediata de las Defunciones Maternas http://207.248.177.30/mir/uploadtests/26681.177.59.1.Manual_MORTALIDAD_MATERNA_2011.pdf

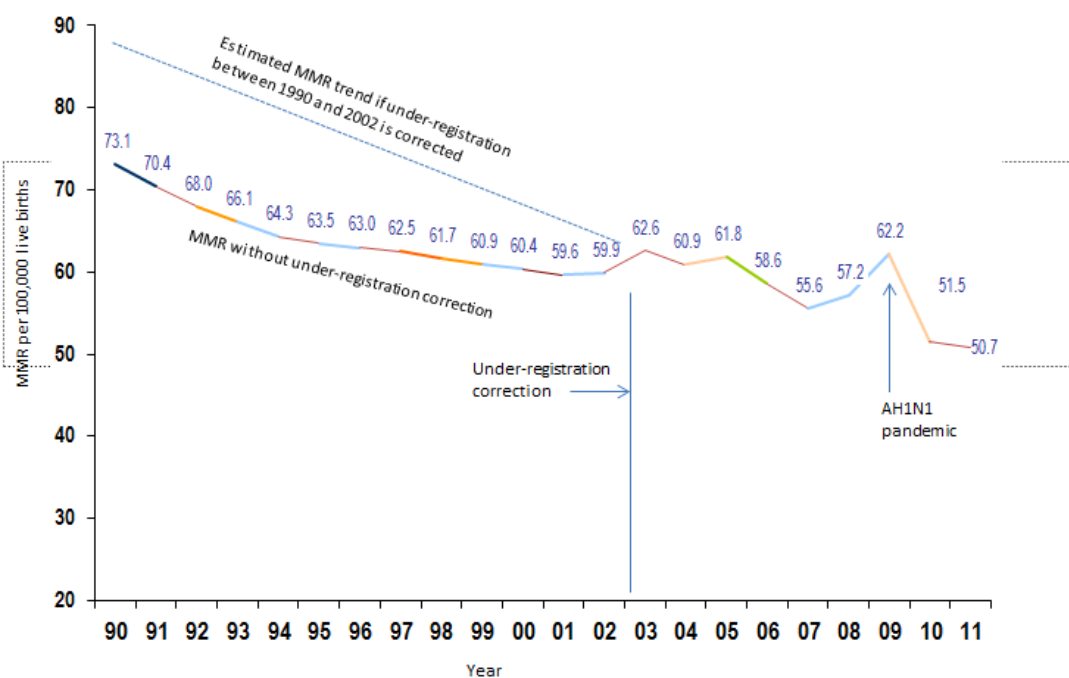
6. ANNEXES

Annex 1. Mexico – Maternal Mortality Ratio 2011.



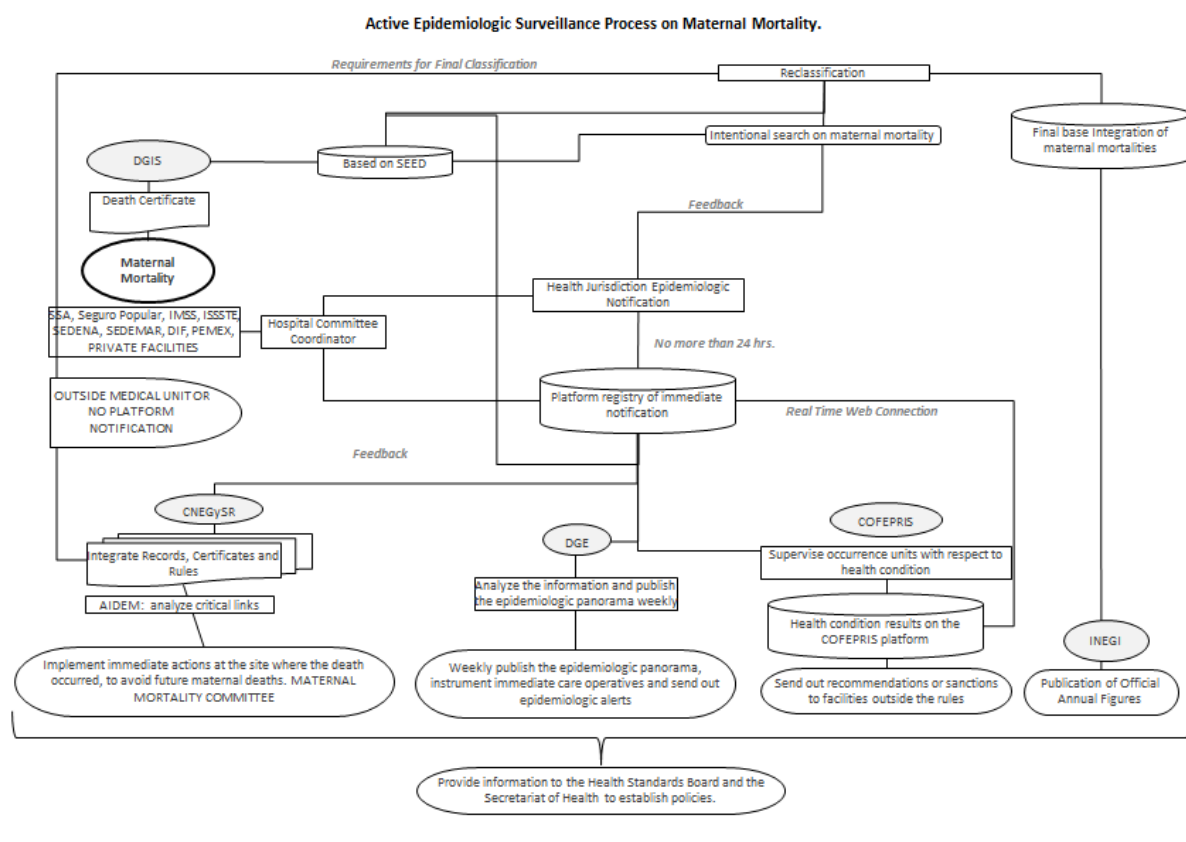
Annex 2. Mexico – Maternal Mortality Ratio 1999-2011.

Figure 7. Trends in maternal mortality ratio, Mexico, 1990-2011.

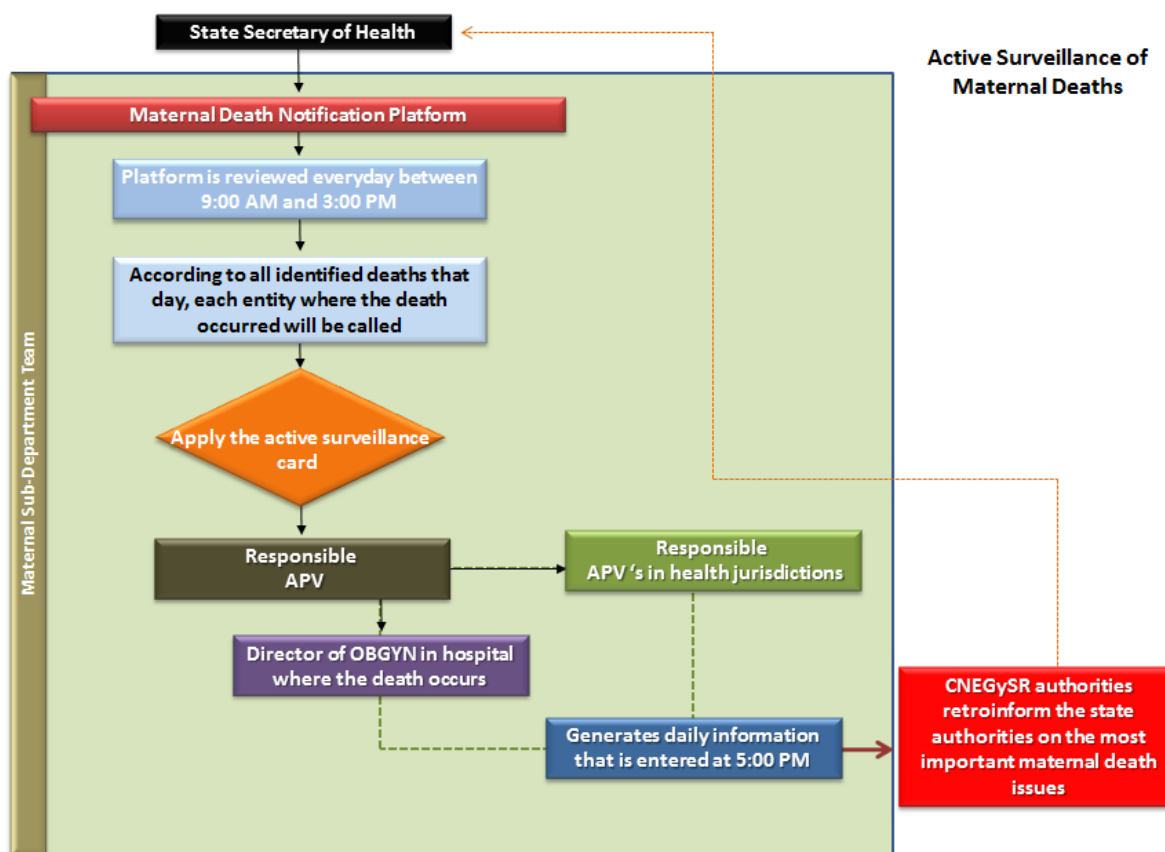


Sources: Between 1990 and 2009, INEGI/DGIS. The corrected rate was calculated based on births estimated by CONAPO (2005-2050).

Annex 3. Mexico – Active Epidemiologic Surveillance Process on Maternal Mortality



Annex 4. Mexico – Active Surveillance of Maternal Deaths



Annex 5. Informant Interviews

The listed officials contributed information by means of personal interviews and other questionnaires sent out via internet and once responded, conversed by phone.

Participated in personal interviews:

General Director of Epidemiology

Dr. Sonia Fernandez is an expert in epidemiologic surveillance systems and is ex Director of Epidemiologic Surveillance Systems, which she was in charge of until June 2012.

STATES:

During the development of Taller de Vigilancia Epidemiológica de la Morbi Mortalidad Materna en el DF, in the first week of December, there was an opportunity to interview Medical-Technical teams from three states:

Medical-Technical Team for the state of Tabasco: Representing doctor for the maternal health program: Ing. María Juana Martínez Vazquez; Statistics Department and Dr. Alejandra Gomez Olmedo; Epidemiology.

Medical-Technical Team for the state of Sinaloa: Lic. Sonia García Melgar, Dr. José Humberto Valle Guerrero, Dr. Alejandra Gomez Olmedo; Epidemiology and Dr. Juan Carlos Favela Palazuelos.

Technical-Medical Team for Morelos: Statistician Patricia Antunez Uribe, Dr. Karina Lilian Pedraza Flores and Dr. María Adriana Díaz Canela.

QUESTIONNAIRE:

Dr. Silvia Roldan Fernández. Doctor, postgraduate in Public Health, Currently: Sub-secretariat of Health in Tabasco. Consultant for the “Programa Arranque Parejo en la Vida” between 2002 and 2005.

Dr. Javier Domínguez del Olmo. Doctor. UNFPA-Mexico Representative in the area of Reproductive Health for the last 12 years.

Dr. Jorge Alberto Mora Tapia. OBGYN Doctor. Current consultant for CNEGSR. Previously worked for 30 years with the State Health System in Guanajuato. Ex General Director of León Hospital. Focused on clinic strategies and public health, to prevent maternal mortalities since 2003.

Annex 6. Questionnaire Examples

DEAR PARTICIPANT

1. I will first share the invitation message and study introduction, that I myself, Dr. Mariana Romero, am responsible for

“My name is Mariana Romero. I am a doctor of epidemiology and work in Buenos Aires, Argentina. At this moment I am completing a consultancy with the Regional Task Force for Maternal Mortality Reduction.

The objective of this consultancy is to update the Maternal Mortality Surveillance Guide that was published by OPS in 1996. This update will not only include the support of key publications like ***Beyond the Numbers***, but also proposes to incorporate the experiences and lessons learned from a few places in the region. Six countries have been selected, where proposed case studies will be carried out to support this publication and Mexico is one of them.

... The studies will have a common methodology; we share the brevity, where there will be an emphasis on the importance of secondary information collection. The primary information that will be provided from interviews of some key informants will be selected according to the particular situation in each country. Each person responsible for the case study will have one month to carry it out.” I, Dr. Mariana Romero, am in charge of the introductory text:

“The definition of surveillance is the “systematic collection of information over specific population health problems, the processing, analysis and *timely utilization* for those who should make intervention decisions on the prevention and control of corresponding risks and damages”¹ is one of the recommended strategies to recognize and understand the precise magnitude of the problem and orient actions to reduce maternal mortality. Strengthening the system is included in the regional plans to drive the fifth Millennium Development Goal.

The Regional Task Force for Maternal Mortality Reduction is commanding six country studies in Latin America and the Caribbean with the purpose of illustrating the profound advances obtained in the region in terms of maternal mortality epidemiologic surveillance (VEMM) and identifying examples of good practices like persistent obstacles at different levels. These case studies will be a key consumable for the updated “Epidemiologic Surveillance Guide on Maternal Mortality” (OPS, 1996). The selected countries are: Brazil, Colombia, El Salvador, Jamaica, Mexico and Peru.

Methodology

It is important to point out that there should not be confusion between the surveillance system and the information system. All surveillance systems develop multiple information systems to support the decision process, but surveillance systems have components and attributed characteristics. The two elements that differentiate a surveillance system with an information system are: The timeliness of the information and the interventions that it derives. According to Según Martínez Navarro, the essential components of surveillance are:

1. *The Information System properly states:* constructing the detection and notification of cases and an analysis and interpretation.

2. *The Intervention* involves monitor and response actions, for example, making program adjustments, reorienting the planning and policies and finally, feedback, evaluation and motorization of the system.

3. *The Resources* for surveillance go from setting standards to training and supervising physical and human resources until they are adequate.

A frequent error consists of supposing that only the implementation of an information system defines a surveillance system... a surveillance system requires more than the configuration of the analysis committees, the execution of designated actions to correct the errors in the system related to the appearance of the undesired event.

1. JavDO	<p>In Mexico: ¿What is/was/were the trigger that recognized the relevant actions to reduce maternal mortality by using an active surveillance system?</p> <p>The temporary reference mark in my response corresponds with the last 12 years. The principle triggers in this period were:</p> <p>INTERNATIONAL LEVEL.</p> <ul style="list-style-type: none"> a) Following international agreements to those that align with the government of Mexico (CIPD, ODM, CEDAW) b) Regional strategies inspired by international organizations and agencies in the United Nations (SNU) c) International scientific evidence available on the value of active surveillance <p>NATIONAL LEVEL.</p> <ul style="list-style-type: none"> a) Designed and launched the National Strategy on Maternal Mortality Reduction (Program APV) b) Acceptance of the insufficient knowledge over the maternal mortality phenomena and sectorial agreement to work on improving documentation of maternal mortality c) Social surveillance and political push on accountability d) Participation of academic institutions to generate evidence and encourage its use to make decisions.
NA	¿What is the policy or programmatic framework for maternal mortality surveillance?
NA	<p>How is the surveillance system organized?</p> <p>How are cases notified and identified, and how is data collected?</p> <p>What is the analysis process on maternal mortality? What is the coverage and quality of this analysis?</p>
NA	What about the intergraded system between different levels (national, provincial and local)?
2. JavDO	<p>What do you think, Javier: What route does the MM analysis follow? And?</p> <p>At the present and based on accumulated experiences throughout 12 years of instrumenting the APV program (and its various strategies to accelerate the reduction of MM), the track that follows the MM analysis in Mexico fully agrees with the Surveillance Cycle described in figure 1 of this document:</p> <ul style="list-style-type: none"> 1) <u>Case Identification</u>, in the passive form- by obligatory reports on maternal mortality-, like active and reactive- intentional search and immediate response groups. 2) <u>Review of information</u>, though active search, immediate response groups, verbal autopsies, etc. 3) <u>Analysis of information</u>, through diverse mechanisms (committees) in the national, state, jurisdiction and local spheres. 4) <u>Recommendations</u>, generate as a result of analyses from the different

	<p>committees</p> <p>5) <u>Actions</u>, include agreements derived from analyses and recommendations</p> <p>6) <u>Evaluation</u>, accomplished at different levels- national, state, jurisdiction and local</p> <p>Now, in terms of the specific analysis process, in the Mexican context, despite the existence of solid methodology proposals (like critical links), are there important existing holes in the following aspects:</p> <ul style="list-style-type: none"> - Institutional actors included in the analysis mechanism (committees) do not always represent all involved areas in the maternal mortality phenomena (community workers, primary care, administrators, unit directors, officers, jurisdictional, etc.) - The technical training of those participating in the analysis not always are the most accurate, not only on medical-technical issues, but also in intercultural aspects, gender and human rights. - The analysis procedure is not always adequately systemized and therefore, the eventually recommendations do not generate a necessary strategic response.
3. JavDO	<p>To what extent have findings transformed recommendations?</p> <p>RESPOND TO QUESTIONS 3 and 4.1 - 4.6 HERE:</p> <p>It is difficult to note the extent of <u>findings that have transformed recommendations</u>. In theory, considering the APV Program guidelines, the necessity of analyzing maternal deaths and making recommendations, one can say all analyzed case findings have transformed recommendations.</p> <p>However, the incorporation of recommendations to improve the plans to respond to the health system, consider that this occurs in a variable form and limited manner. When the analysis is carried out on an additional level, it is said through national analysis mechanisms (and some state); the recommendations tend to include improvement plans with better strategies. But in agreement with the mechanism of analysis under the local level (jurisdiction committee and hospital committee) the recommendations ended up being tended to through prompt interventions and not with a strategic vision</p> <p>As soon as recommendations are incorporated into improvement plans, I find it hard to give a precise response due to there not being or not having access to improvement plans. If I can mention that some public policy instruments, like The Strategy to Accelerate the Reduction of MM published in 2008 (or 2009?) made a very complete strategic plan that is based, among other elements, on maternal mortality analysis discoveries and respective recommendations. That said, it can affirm that some strategic recommendations have formed in part from the improvement plants. However, like mentioned in the above paragraph, many general recommendations on local maternal mortality analyses, are not reflective of improvement plans.</p>

	Finally, in relation to if the included recommendations actions to improve plans prioritized different periods and if it was based on evidence, one can conclude yes, but not in every case. Without a doubt it has strengthened evidence based decision making, but the instruments vary considerably, as much institutional as geographical.
	The following two questions are related, you can answer them on your own if you prefer.
4.1 JavDO	To what extent are improvement plans incorporated to improve the health system recovery?
4.2 JavDO	How are recommendations incorporated into improvement plans to recover the health system?
4.3 JavDO	As you see it, are prioritized activities carried out in accordance to impact, feasibility and cost-benefit?
4.4 JavDO	That the prioritized activity is for activities in the short, medium and large term
4.5 JavDO	That the prioritized activity was done on the basis of recommendations (evidence based)
4.6 JavDO	That the prioritized activity was carried out to achieve the inclusion of a comprehensive women's health care plan