



Case Study on Maternal Death Surveillance and Response

COUNTRY: EL SALVADOR



Grupo de Trabajo Regional para la
REDUCCIÓN DE LA MORTALIDAD MATERNA

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ACRONYMS AND ABBREVIATIONS

ADS	Salvadorian Demographic Association
CDC	Center for Disease Control
CIE	International Classification of Diseases
DIGESTYC	General Directorate of Statistics and Census
CISALUD	Inter-sectorial Health Commission
DTIC	Directorate of Information and Communication Technologies
FESAL	National Survey on Family Health
FOSALUD	Health Solidarity Fund
ISBM	Salvadorian Institute for Teacher's Wellness
ISSS	Salvadorian Social Security Institute
MINSAL	Ministry of Health
MDG	Millennium Development Goal
OPS/WHO	Pan-American Health Organization/ World Health Organization
UNDP	United Nations Development Program
RAMOS	Reproductive Age Mortality Survey
SIBASI	Basic Health System
SIMMOW	Online Morbidity and Mortality Systems
SNS	National Health Service
TIC	Information and Communication Technologies
UCSF	Community Family Health Unit
VIGEPES	Epidemiological Surveillance Information System



1. CONTEXT OF EL SALVADOR'S MATERNAL MORTALITY

El Salvador is a sovereign state located in Central America. It has a population of 5,744,113, according to the 2007 population and housing census. Given its 20,742 km², the country has the highest population density in continental America. Its ethnic breakdown is estimated to be as follows: 90% mixed race, 9% white, and 1% indigenous, with few of them preserving their customs and traditions.

El Salvador's population is basically a young population, with 47% being younger than 19, and this trend is expected to hold for the coming years. The proportion of women (50.88%) slightly exceeds that of men (49.12%); the proportion of older adults is on increasing; and the population is mainly urban (58.98%), most of which lives in marginal areas. Even though life expectancy in the country has increased, the quality of life has not.

One-fifth of births are to mothers under 19 years old. Overall, the fertility rate has decreased, although it continues to be high among low-income, low level of education, and rural mothers, with a rate of 89 per 1,000 women.¹

1.1. HEALTH SERVICE PROVISION

El Salvador's health system encompasses the public and the private sector. The public sector includes the Ministry of Health (MINSAL), the Salvadoran Social Security Institute (ISSS, for its Spanish acronym), the Salvadoran Institute for the Rehabilitation of the Disabled (ISRI, for its Spanish acronym), the Armed Forces Health Care (Sanidad Militar), the Salvadoran Institute for

¹ General Directorate of Statistics and Census, Ministry of Economics, El Salvador, 2007.

Teacher's Welfare (Instituto Salvadoreño de Bienestar Magisterial, ISBM), and the Health Solidarity Fund (FOSALUD, for its Spanish acronym).²

The private sector includes for-profit and nonprofit private bodies.

The ISSS and MINSAL provide coverage for most of El Salvador's population. The ISSS is an autonomous body whose goal is to provide social security for formal-sector workers. MINSAL, in addition to providing health services to the population without social security coverage, functions as the health sector's lead entity.

El Salvador's Constitution states that the health of the country's inhabitants is a public good, and that the State will provide free care to sick individuals who are unable to pay and to the population at large in the prevention of communicable diseases.³

MINSAL formally covers 80% of El Salvador's population. ISSS covers formal-sector workers and their families, which accounts for about 18% of the population. ISBM covers teachers and their families (spouses and children up to 21 years old). The Armed Forces Health Care covers Armed Forces personnel, their families, and pensioners.⁴

The ISBM, the National Association of Telecommunications, the Electricity Company, and the Armed Forces Health Care cover some 2.3% of the population.

1.2. WOMEN'S SEXUAL AND REPRODUCTIVE HEALTH

El Salvador's fertility rate, according to information from the 2008 National Survey on Family Health (FESAL, for its Spanish acronym), is 2.5 per woman. The median age for the first conjugal union is 20 years, and the age at first birth is 20.8 years. 72.5% of women 15–44 years old that use contraceptive methods: 40% use temporary methods and 32.4% permanent methods. The Ministry of Health is the source for most of contraceptives in the country, at 56.6%. Early enrollment in prenatal care is 76.8%, 69.9% of them attend five sessions or more. Post-delivery control prior to the first six weeks is 52.8%.⁵

In 2011, the Ministry of Health reported 84,752 prenatal enrollments, of which 31.4% were among adolescent women. The enrollment in family planning among adolescents was 36%.⁶

In terms of overall mortality, specifically among women, the leading cause of death in adolescent women 15–19 years old in 2011 was self-inflicted death from toxic effects of ingested non-medicinal substances; many of these cases are linked to unwanted pregnancies or

² Republic of El Salvador, Special Law for the Establishment of the Health Solidarity Fund (FOSALUD). San Salvador, 2004.

³ Republic of El Salvador, Political Constitution of El Salvador, San Salvador, 1983.

⁴ Republic of El Salvador, Salvadoran Institute of Teacher's Welfare Legislation. San Salvador, 2007.

⁵ National Survey of Family Health, El Salvador (FESAL – 2008).

⁶ Work Report, Sexual and Reproductive Health Unit, Sexual and Reproductive Health Policy, MINSAL, 2011.

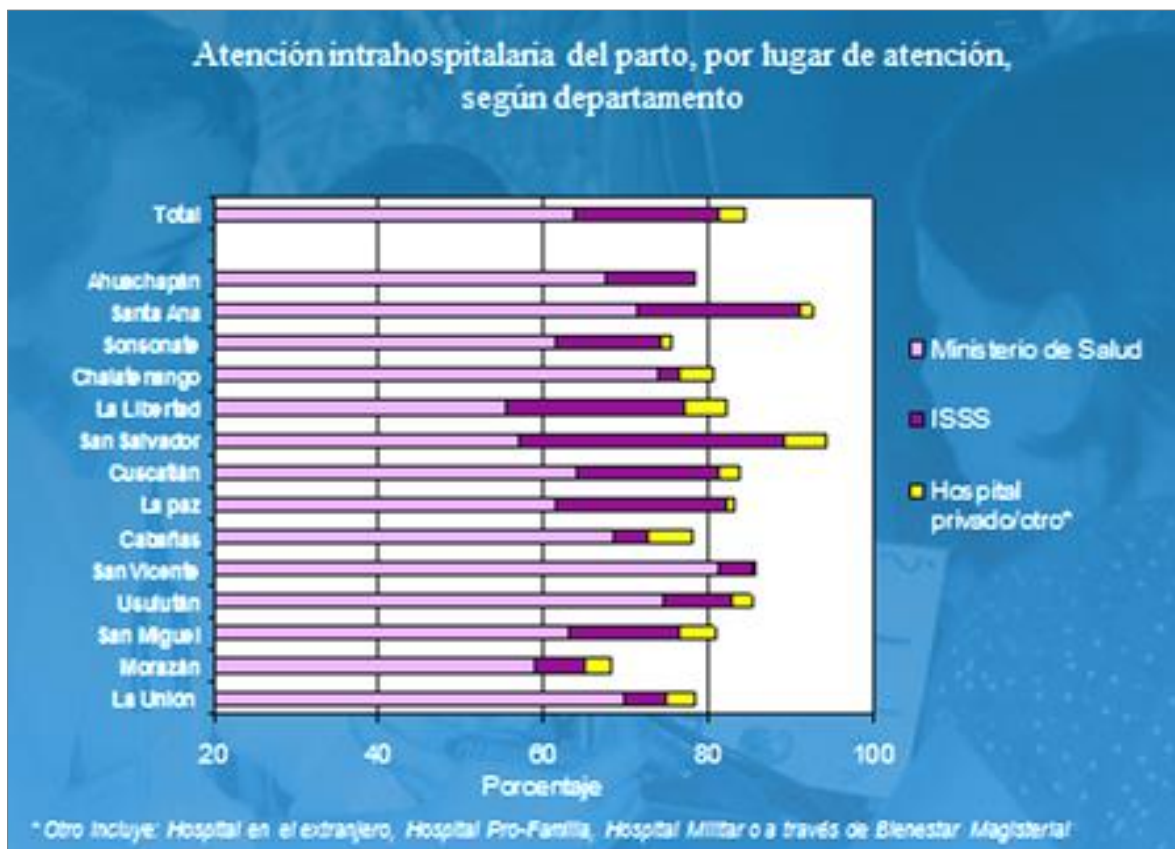
to an inadequate exercise of sexual and reproductive health. For women 20–59 years old, the leading cause is HIV/AIDS.

Of the six leading causes of morbidity, five are related to pregnancy, childbirth, or the puerperium.⁷

1.3. DELIVERY CARE

According to information from the 2008 National Survey on Family Health (FESAL 2008), the hospital delivery rate was 84.6% (MINSAL, ISSS, private hospitals, other hospitals) and the non-institutional delivery rate was 15.4% (of which 10.9% were attended by midwives, 1.8% at home by others, 2.1% at home with no assistance, and 0.7% by others).⁸ Of hospital deliveries, 24.9% were by cesarean section.⁸ See Figure 1 for hospital delivery rates by hospital and department.

Figure 1. Hospital delivery rates, by type of hospital and by department



Source: National Survey on Family Health, El Salvador (FESAL – 2008)

⁷ Work Report, Sexual and Reproductive Health Unit, Sexual and Reproductive Health Policy, MINSAL, 2011.

⁸ National Survey on Family Health, El Salvador (FESAL – 2008).

1.4. INSTITUTIONAL TECHNICAL GUIDELINES

One of the objectives of the health reform that began in 2009 is the development of a National Health System that ensures that the population will receive effective and efficient health services that will be in line with the country's national and international commitments aimed at benefitting the population. Such a system can become a reality provided that objective and timely information is available on the tracer indicators of health events, which results from an effective intra-sectorial and inter-sectorial coordination. This coordination aims at standardizing the registration of mortality throughout all institutions that are part of the National Health System, and facilitates the use of mortality indicators that are representative for the country, and contributes toward the development of strategies to prevent causes of death throughout the life cycle.⁹

Since 2009, the Ministry of Health has based its policies on 25 strategies, “in order to develop a National Health System that, since its inception, and in line with an explicit commitment to recognize health as a public good and a fundamental human right that the State must guarantee, assumes its collective, democratic, and participative construction, based on programmatic foundations that include:

a human rights approach; inter-sectorial work to address social determinants of health; the development of a national health system that is equitable, efficient, supportive, and universal; and the integration, complement, and development of health policies at the sub-regional and regional levels.¹⁰

The following are some of the strategies that are used in the surveillance of maternal mortality:

Strategy 1: National Health System Based on Primary Health Care.

Developing a national health system based on comprehensive primary health care is a key strategy for attaining the Millennium Development Goals and effectively addressing health determinants and inequities.

Strategy 6: Strategic Information System.

Establishing a quality strategic information system is a critical mechanism for making evidence-based decisions, and expediting social oversight, planning, and the control and allocation of resources. Recommendation. 6.6: Compulsory and free registration of vital statistics (births and deaths) in every municipality.

Strategy 15: Sexual and Reproductive Health.

Working with the “Ciudad Mujer” (a program intended to guarantee the rights of Salvadoran women by providing them with specialized services), efforts to prioritize information, sexual education, and sexual and reproductive health targeted to school-aged, preadolescent, and adolescent women and men throughout the life cycle.

⁹ Technical guidelines for mortality surveillance in the life cycle, MINSAL, August 2012.

¹⁰ Building Hope, Health Strategies and Recommendations, 2009-2014.

Recommendations:

15.1: To establish an inter-sectorial program on sexual education and pregnancy prevention among adolescents.

15.2: Guarantee the right to women's sexual and reproductive health, based on free choice and cultural and economic accessibility criteria.

15.6: To technically qualify, accredit, and supervise midwives as support personnel in the women's program and incorporate them into the registration system and the public service network.

15.8: Provide education and services in reproductive health care, including pre-pregnancy, c, and postnatal.

In addition, according to Article 40 of the Health Code and Article 42, numeral 2, of the Internal Regulations of the Executive Branch, the Ministry of Health (MINSAL) is charged with issuing standards that deal with health activities. It also is responsible for collecting, classifying, tabulating, interpreting, analyzing, and publishing bio-demographic information on the population, birth rates, morbidity, and mortality.¹¹

To that end, MINSAL has developed the Standards for the Registration of Vital Events¹² (Norma para el Registro de Hechos Vitales), which sets forth aspects dealing with each person's beginning and end of life. The standard is followed by all technical and administrative personnel in institutions that are part of the national health system, including the Salvadoran Social Security Institute (ISSS), private hospitals that attend deliveries, and medical practitioners in private practice. To begin an investigation on a possible **maternal death**, Article 30 states:

Art. 30.- Every death of a woman where the cause of death is suspected to be related to pregnancy, or is identified with numeral 13 or 14 in the death certificate, must be subjected to an investigation by health personnel, in order to rule out the existence of pregnancy; if the death occurred in a hospital, and there is suspicion of self-inflicted poisoning, the Attorney General's Office must be informed about the case; in addition a blood test must be done to rule out or confirm pregnancy.

¹¹ Health Code, Republic of El Salvador, 1997.

¹² Standards for the Registration of Vital Events, MINSAL, March 2012.



2. BACKGROUND

In 2000, MINSAL established the compulsory reporting of maternal deaths, and since 2001 it has been developing and updating Technical Guidelines for the Perinatal Maternal Mortality Surveillance,¹³ which set forth objectives, strategies, functions, steps in the notification process, those responsible for the investigation, the institutional organization for the surveillance, the analysis and interpretation of results, and the tools for collecting information on maternal deaths.

Even with the existence of the technical standards for reporting maternal deaths, El Salvador had great variability in its numbers, which meant that there were no reliable data available that could show the extent of the problem.

This situation led MINSAL to coordinate a baseline study on the country's maternal mortality from 1 June 2005 to 31 May 2006. The study had a prospective and descriptive design based on a modified Reproductive Age Mortality Survey (RAMOS) methodology. The study covered deaths in women 10-to-54 years old; the age range was expanded because, since there are pregnant women younger than 14 years old and older than 49 years old, this avoided a potential under-registration.¹⁴

¹³ Technical Guidelines for the Surveillance of Perinatal Maternal Mortality, MINSAL, 2001, 2004, 2009.

¹⁴ Maternal Mortality Baseline in El Salvador (study), June 2005–May 2006.

This study uncovered the lack of information on maternal mortality that occurs outside health institutions, the poor classification of deaths, the undercount of maternal deaths, and non-medical (social) causes that may be involved in maternal mortality.¹⁵

The wide variation in maternal mortality figures mentioned in the previous paragraph, occurred because data were obtained from the National Survey on Family Health (FESAL), which meant that figures for 1990 and 2000 were not comparable with those for 2007. The methodological change came about because, in using the “sisterhood method,” FESAL surveys estimated that the maternal mortality ration in the country had decreased from 158 per 100,000 live births to 120 between 1993 and 1998, then increasing to 172 per 100,000 live births in 2002. This apparent setback reflects problems in sampling methodology, as the agency responsible for the survey—the Salvadoran Demographic Association (known as ADS, for its Spanish acronym)—acknowledged, admitting that the sample for calculating this indicator was too small, and there were other methodological measurement problems.

The baseline study made it possible to estimate the country’s maternal mortality at 71.2 per 100,000 live births for the June 2005 to May 2006 period. It also allowed the national team and the CDC and PAHO consultants to include in the “indirect obstetric causes” self-inflicted poisoning, given their gravid condition and confirming them through a verbal autopsy stating that the suicide occurred as a result of the pregnancy.¹⁶

The study’s main results include:

The leading cause of death among women 10–54 years old is tumors (neoplasms), with 537 cases, representing 21.8% of all deaths; among this cause group, the most frequent neoplasm was cancer of the cervix, accounting for 32.8%. The second most frequent cause was “injuries and wounds,” with 17.8%, followed by ill-defined causes, with 17.5%.

- There were 100 deaths identified as related to pregnancy, of which 82 were maternal deaths (direct and indirect) and 18 were unrelated.
- The basic direct causes of maternal death were hypertensive conditions of pregnancy (eclampsia and pre-eclampsia), which was the most frequent diagnosis at 42% of total cases, followed by hemorrhage, at 38%, and infectious problems at 6%. Maternal deaths from indirect causes represented 39%, of which 40.6% were related to suicide.
- Of the 32 maternal deaths from indirect causes, self-inflicted poisoning as a result of pregnancy was the leading cause of death, with 13 cases (40.6%). It should be noted that this cause led to the proposal to incorporate it under the group of maternal deaths from indirect causes (ICD-10).
- Of the total maternal deaths, 52% were women younger than 25 years old, with adolescents accounting for 26.8%.
- The socio-demographic profile of the deceased, in terms of civil status, was 46% in domestic partnerships and 37% were single mothers. In terms of educational attainment, 19.5% were

¹⁵ Maternal Mortality Baseline in El Salvador (study), June 2005–May 2006.

¹⁶ Maternal Mortality Baseline in El Salvador (study), June 2005–May 2006.

illiterate and 34.1% had not completed primary school. In addition, 63.4% were rural residents, 69.5% were of lower socioeconomic levels, and 72% were housewives.

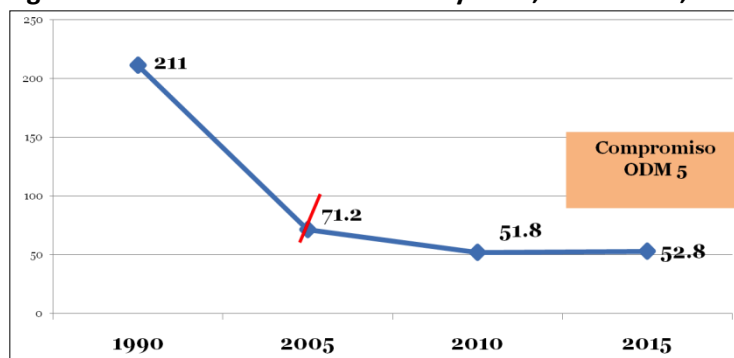
- In terms of prenatal control, 67.1% had access to such services, of which 49% attended five or more sessions. There were 76.4% who enrolled prior to 12 weeks of pregnancy.
- Of the total deaths, 43% had had two-to-four pregnancies and 34% were primigravidae.
- In terms of birth intervals, 45.6% had intervals of 36 months or more.
- Among the 82 deaths (direct and indirect causes), there were 181 orphaned children.
- Only 44% of the deceased had been able to recognize signs and symptoms of alarm, and only 25% had a delivery plan, even though they had an available health service and the opportunity to receive care.
- The delay that most influences direct maternal deaths is related to the services (III); among indirect maternal deaths, the most frequently classified delay (I) was caused by the family or the patient herself.



3. EPIDEMIOLOGY OF MATERNAL MORTALITY IN EL SALVADOR

After the baseline calculations, MINSAL has continued to monitor maternal deaths through the Epidemiologic Surveillance System. According to that registry the maternal mortality ration for 2006–2008 is 57.1 per 100,000 live births.¹⁷

Figure 2. Trends in maternal mortality ratio, El Salvador, 1990–2015.



Source: 1990, maternal mortality analysis in various periods in El Salvador, with the 42% under-registration added on; 2005, Maternal Mortality Baseline study; 2010, Report on the active surveillance of maternal mortality in El Salvador; 2015, MDG 5 target.

¹⁷ Second MDG report, El Salvador, 2009.

Table 1. Classification of maternal deaths and maternal mortality ratio, El Salvador, 2006–2011.

Classification	2006	2007	2008	2009	2010	2011
Sub-total: maternal deaths due to indirect causes	40	43	41	35	40	37
Sub-total: maternal deaths due to direct causes	30	18	12	35	25	27
Total maternal deaths (due to direct and indirect causes)	70	61	53	70	65	64
Births according to DIGESTYC	107,111	106,471	112,049	124,898	125,464	126,052
Maternal mortality ratio per 100,000 live births	65.35	57.29	47.30	56.04	51.8	50.8

Source: SIMMOW, Base de Datos USSR, MINSAL

Table 2. Causes of maternal deaths, El Salvador, January to December, 2010 and 2011.

Maternal death classification	2010	2011
DIRECT	40	37
Hypertensive disorders of pregnancy	10	14
Hemorrhage associated with pregnancy	15	12
Infections associated with pregnancy (puerperal infection, infected abortion)	7	6
Embolisms	5	3
Abortion (gestational trophoblastic disease [GTD], ectopic pregnancy)	0	2
Anesthetic failure	3	0
Other pregnancy complications	0	
INDIRECT	25	27
Self-inflicted poisoning	6	9
Post-partum depression and major depression	1	0
Heart disease	3	4
Hemorrhagic dengue	0	1
AIDS	0	3
Cancer of the cervix and/or ovary (tumors)	1	3
Other indirect causes (hepatorenal syndrome, hepatic failure, fatty liver disease, sickle cell disease, pneumonia, diabetes mellitus, renal failure, Lupus erythematosus, pancreatitis, meningitis, epilepsy)	14	7
TOTAL	65	64
Foreign	6	3
UNRELATED	11	18

Source: Sexual and Reproductive Health Unit database, MINSAL, January–December, 2010 and 2011.

This monitoring determined that the three leading causes of maternal death in El Salvador, in rank order, are: hypertensive disorders, obstetric hemorrhage, and sepsis. The maternal mortality causes have remained the same in the last few years, and continue to do so.¹⁸

In 2011, of the 64 deceased women, 44 lived in urban areas and 20 in rural areas (69% and 31%, respectively). In addition, 52 maternal deaths occurred in hospitals and 12 in the community; 54

¹⁸ Maternal Mortality Baseline in El Salvador (study), June 2005–May 2006.

of the deaths were among women who had MINSAL coverage, 9 among women with social security coverage, and 1 in the private sector. In terms of prenatal-control coverage, 77% of deceased women attended prenatal control sessions, and of them, 50% enrolled late (after the first 12 weeks of gestation). The most important associated risks were: multiple pregnancies, previous cesarean sections, adolescent pregnancies, unwanted pregnancies, and previous pathologies.

Of the 64 deaths that occurred in 2011, 62 were audited by the morbidity and mortality committees, with deaths that occurred in the ISSS pending audit. The review and analysis of the cases found that 58 of the women died due to preventable or potentially preventable causes, with only 6 deaths occurring due to non-preventable causes. Moreover, 49 of the deaths were found to have Delay 3 (directly related with the health services), 14 had Delay 1 (delays seeking consultation by the woman or her family); no deaths having Delay 2 (or access) were found; this type of analysis was not conducted on 1 of the deaths.

Regarding the moment of death, 18 women died while pregnant, 4 died after an abortion, 1 during delivery, and 41 after delivery.¹⁹

In terms of the age of the deceased, 11% of the deaths occurred in adolescent women; 62% of the deaths were in the age groups 20–34 years old.²⁰

Table 3. Maternal deaths, by age group, El Salvador, 2011.

Age group	Number	Percent
10–14 years old	0	
15–19 years old	7	11
20–24 years old	12	19
25–29 years old	15	23
30–34 years old	13	20
35–39 years old	11	17
40–44 years old	6	9
Total	64	100%

Self-inflicted death due to toxic effects of non-medicinal substances was reported as a leading cause of death in adolescent women 15–19 years old; many of these cases were associated with unwanted pregnancies or conflicts arising from the inadequate exercise of sexual and reproductive health.

In 2011, the third leading cause of mortality in women 20–59 years old is HIV/AIDS. Of the first six causes of morbidity, five are associated with pregnancy, delivery, and the puerperium.²¹

¹⁹ Sexual and Reproductive Health Unit database, MINSAL.

²⁰ Sexual and Reproductive Health Unit database, MINSAL.

²¹ Sexual and Reproductive Health Unit database, MINSAL.

3.1. EPIDEMIOLOGICAL SURVEILLANCE OF EL SALVADOR'S MATERNAL MORTALITY

As was discussed earlier, in 2001 El Salvador began developing technical guidelines for the surveillance of maternal mortality, which were updated in 2004 and 2009. These guidelines are mainly designed to give health service providers a tool that enables them to implement actions intended to identify, collect, process, analyze, and systematically and actively disseminate information associated with maternal and perinatal health surveillance, in order to boost the development and implementation of improvement plans and, in so doing, decrease severe maternal morbidity and maternal mortality.

The Maternal Mortality Baseline study made it possible to implement a surveillance system that consists of:

- 1) The identification of maternal deaths through the review of death certificates of women 10–54 years old registered in the municipalities.
- 2) The conduct of a survey with the deceased's family members to either rule out pregnancy or confirm it, in which case a social interview and a verbal autopsy are carried out
- 3) The review of clinical records of all institutions that cared for the deceased
- 4) The review and analysis of each case's information by a team of experts (mortality committee in each health region)
- 5) Gather more precise and realistic information that can improve service performance in the community and the identification of problems; 6) issue recommendations designed to decrease maternal deaths.²²

During the 2009–2014 political and administrative term, MINSAL is fostering the development and implementation of information and communication technologies as a way to bolster the health reform. The Directorate of Information and Communication Technologies (known as DTIC, for its Spanish acronym) is taking the lead in this regard. This entity bases its development strategy on the analysis, design, and implementation of all of MINSAL's and of its institutions' information systems, as well as the gradual migration from private software towards the use and production of free and/or open-access software.

Based on these parameters, an information system has been created—the Epidemiological Surveillance (known as VIGEPES for its Spanish acronym) Online Morbidity and Mortality System (SIMMOW, for its Spanish acronym)—has been created. The system operates in all MINSAL hospitals and in first-level-of-care institutions; it is currently being expanded to other national health system providers and participating institutions, mainly those within the ISSS.

Each consultation and discharge must be recorded in a computer-based module, especially events subject to epidemiological surveillance, such as maternal deaths. Upon occurring, the

²² Work Report, Sexual and Reproductive Health Unit, MINSAL, 2011.

epidemiologist or other person responsible for the information must fill out the registration form and enter it before 72 hours after the event has been recorded in a health institution. This ensures that in cases of institutional deaths, the information is timely.

For deaths that occur in the community or outside the health services, information is gathered from death certificates registered in municipal mayors' offices, case investigations, searches in the media, community surveillance and notification, and key respondents (community leaders). Beginning in 2009, the Health Surveillance Directorate has been charged with the nationwide dissemination of the state of the country's mortality. The Directorate includes the Health Statistics and Information Unit, and the Public Health Surveillance Unit; it falls under the Vice-Ministry of Sectorial Policies and the Office of the Ministry.

To this end, beginning in 2012, the Maternal Mortality Surveillance Guidelines became the Technical Guidelines for the Surveillance of Mortality in the Life Cycle and Severe Maternal and Neonatal Morbidity. These documents are legally based on the Standards for the Registration of Vital Events, which in its Chapter II defines surveillance as:

Surveillance process, Art. 33—Every health institution within MINSAL must implement the mortality surveillance system in order to obtain objective information regarding the deaths that have occurred and to contribute toward the reduction of under-registration of deaths in its area of responsibility. The process must include the following procedures:

- a) Identification of deaths: i) active search and ii) passive search.
- b) Notification, registration, and processing.
- c) Investigation
- d) Monitoring, evaluation, and dissemination.
- e) Quality control.

Active search, Art. 34—Every health-service provider must interview individuals seeking care at the health institution and, in the community, conduct home visits through the network of key community respondents or other means of communication, regarding the deaths that occurred in the previous week, emphasizing maternal, perinatal, and infant deaths.

Passive search, Art. 35—The Director of the Community Family Health Unit (UCSF, for its Spanish acronym), or anyone he or she delegates, must collect, code, and enter into the computer based statistical module, within the first 10 working days of each month, information on deaths recorded in municipal mayors' offices, using the Mortality Registration Book, according to the established format. ANNEX 2.

Notification, Art. 36—Every death must be notified with the statistician or person responsible for that information in the health establishment in the corresponding level of care within 72 hours after the occurrence or identification of the death; for hospital deaths, the death certificate must be used. ANNEX 4.

Every death that occurs outside a hospital should be captured by the community health personnel in the Mortality Registry; they should notify the health establishment in his or her area of responsibility.

Immediate notification, Art. 37—For a maternal death, the statistician or person responsible for this information in the health establishment must be notified, using the notification form for diseases under surveillance in Annex 6, which must have the approval of the chief of service or director in the case of in-hospital deaths, and of the UCSF director in the case of deaths that occurred outside a hospital. ANNEX 3.

Investigation, Art. 42—For every maternal, perinatal, infant, and child death, and other deaths of epidemiological interest, be they in-hospital or out of hospital, health personnel must conduct an investigation to determine the basic cause of death and the factors that contributed to it, in order to develop interventions that prevent future deaths, using the following methodologies: a) autopsies, b) verbal autopsies, c) medical audits, and d) laboratory tests.

Autopsy, Art. 43—Hospital autopsies are one of the procedures for determining the cause of death, especially in those cases that fall under articles 3 and 4 of the Technical Guidelines for Autopsies.

If a maternal death occurs in a hospital that is not equipped to perform this procedure, an autopsy should be requested from a hospital that has a pathology department, following the established technical guidelines for autopsies.

Issuing an opinion, Art. 44—For every death under investigation (autopsy, medical audit, and laboratory tests) an opinion must be issued that establishes the causes of death; this opinion should be vouched for by the director of the corresponding establishment and must be sent to the statistics and medical-documents departments, or the area in charge of the health information in that establishment, to be processed.

Ensuring compliance with the articles and guidelines described above relies on a structure implemented and strengthened by the baseline study—the committees for morbidity and mortality surveillance. These committees are the operational arm of the surveillance system of mortality and morbidity in the life cycle, in particular maternal, perinatal, infant, and childhood mortality, and they require that all providers that are part of the national health system, organized into surveillance committees at the difference levels of care, work together in analyzing the medical and non-medical causes of death, the quality of care, the degree of predictability of the death, and the severe maternal and neonatal morbidity. In addition, this analysis will make it possible for directors of health establishments to design and implement the necessary technical and administrative interventions to prevent similar cases in the future.

These committees in the national health system, which includes the ISSS, are constituted according to their organizational structure.

In MINSAL, the committees should be set up in the three organizational levels: a) local—community family health unit (henceforward referred to as UCSF), hospital, and basic health system (henceforward referred to as SIBASI); b) regional; and c) national.

Depending on the complexity of a given establishment, the committee may be made up by the director, or his or her representative of: management, the service directorates, nursing, statistics or person responsible for information, maternal and infant leader, and any others considered necessary to be included on a temporary or permanent basis, depending on the case. Nomination will be through a determination from the immediate director and the term

will be for one year; the appointment should be made known to all of the establishment's personnel.

Depending on the organizational level, these committees should fulfill the following functions:

- Investigate and analyze cases of mortality in the life cycle, including maternal, perinatal, infant, childhood mortality as priority groups.
- Conduct a verbal autopsy in all cases of maternal, fetal, neonatal, infant, and childhood mortality.
- Generate a summary report for each case investigated and submit it to the director immediately above.
- Ensure that interventions designed to prevent the occurrence of deaths from the same causes are implemented.
- Ensure that there is an updated entry of all deaths in the life cycle in the mortality registry book that follows procedures set forth in the standards for registration of vital events.
- Analyze, on a monthly basis, the information on maternal, perinatal, infant, and childhood morbidity and mortality according to the institutional registry system.
- Keep the minutes of the hospital committee.
- Develop ongoing training for health personnel.
- Monitor improvement plans and the surveillance system.
- Analyze, on a quarterly basis, information on maternal, perinatal, infant, childhood, and adolescent morbidity and mortality, according to the institutional registry and analyze the data.
- Promote and foster inter-institutional and inter-sectorial coordination in support of morbidity and mortality surveillance.
- Ensure the safekeeping of audit reports and case summaries in the director's office.
- Support the management of the necessary inputs for the compliance of committee recommendations and interventions.
- Define the professional profile and propose members for the Expert Consultative Committee for the analysis of maternal or child death cases that are difficult to diagnose.
- Propose strategies, plans, programs, and projects to be implemented at the national level in support of reducing morbidity and mortality, in consideration of existing policies.²³

The Morbidity and Mortality Surveillance Committee is responsible for auditing the case; among its functions are:

- Reviewing all the information pertaining to the case: numbered clinical record, verbal autopsy, case summary from any other facility that was involved.
- Convene anyone involved in the user's care, as part of the analysis.
- Conduct a longitudinal analysis: date and time of the care given to the user in each facility.

²³ Morbidity and mortality in the life cycle surveillance system, MINSAL, 2012.

- Analyze the degree of compliance with existing guidelines and the critical stages in the health care process.
- Determine the basic cause of death, root causes, and final cause of death and then proceed to code the death according to the ICD in effect.
- Conduct an analysis of failure using the critical links model, which makes it possible to establish the continuity of care from the community to the health institutions (coloring in red those that require intervention or immediate correction; in yellow, those links that are areas of concern; and in green, those areas that showed no problems).
- Classify the death by cause and degree of potential prevention.
- Conduct an analysis by delay: for each case the delay that most affected the death must be established, considering that in some cases
 - There could be more than one.
- Draw up an evidence-based final report for the case, that includes conclusions and recommendations for each level and for each of the institutions involved in the case.
- Elaborate an integrated improvement plan that details the interventions to be undertaken at each level of care and establishing those responsible for execution and monitoring; the plan will take into consideration critical and alert points to be addressed, and should answer the following questions: Why? What will be done? How will it be done? When will it be done? How did you evaluate their compliance? Who will do it? How will they do it?²⁴

3.2. FEATURES OF EL SALVADOR'S MATERNAL MORTALITY EPIDEMIOLOGICAL SURVEILLANCE SYSTEM: STRENGTHS AND WEAKNESSES

This section details El Salvador's experience in notifying and reporting maternal deaths based on the 2005–2006 baseline study.

*Note from the editor: from this point forward, the document incorporates opinions from the people who were interviewed for this work. These opinions will be in quotes and italics.

3.2.1 SENSITIVITY—the system's capacity to detect maternal deaths:

1. The epidemiological surveillance system was strengthened, in that now all health personnel is aware of the importance of the compulsory and timely notification of maternal deaths?; in addition, specific forms for collecting information are now available.
2. At every administrative level in MINSAL and the ISSS there is a leader in sexual and reproductive health and maternal mortality surveillance. This person coordinates, to some degree or another, with epidemiology, to monitor the maternal death information and notification system officially and unofficially (deaths that occur in health establishments and notification of cases through community respondents and key respondents such as the

²⁴ Morbidity and mortality in the life cycle surveillance system, MINSAL, 2012.

media, community leaders, etc.), "... a clear flow chart of the surveillance system's activation"

3. The online morbidity and mortality surveillance system that has been put in place and is now functioning facilitates the timely (within the first 72 hours after the occurrence of the event) notification by all hospitals in the national network. The system operates throughout the public network, but not in the private sector.
4. The capture of general mortality from the death registries in the municipal mayors' offices concentrates on the deaths in women of childbearing age, and makes it possible to document maternal deaths that occur in the community, *"Active search of maternal deaths."*
5. During the baseline study, a form ("Filter Sheet") was used to document the whether a woman had been pregnant or not up to one year prior to her death in all deceased women 10–54 years old whose deaths were registered in the municipal mayors' offices.
6. This survey, administered to the family of the deceased, made it possible to determine whether this death was a maternal death or not, especially among those deceased women whose death certificates had not been filled out completely by the health institutions where she had received care or if her death occurred in the community. This effort uncovered 42% of undercount and under-registration of maternal deaths. Even though it is part of the standards, today this activity is not being carried out in 100% of the cases where question 14 in the death certificate, related to pregnancy at the time of death, has not been filled out. *"...requires staff, and logistical, material, and other support in order to be sustained"*
7. Defining the basic cause of death continues to be an issue, which leads to problems in the identification of cases, particularly in departmental health institutions or in deaths that occur in the community, *"Ill-defined basic cause of death"*
8. The effort to improve public health service coverage continues, even though MINSAL has community health personnel in most of the country's territory, especially after the 2009 reform and the new health care model it ushered in.

3.2.2. TIMELINESS OF THE INFORMATION—the speed of capture and transmittal of information among various levels of operation is intimately linked with the time required to conduct interventions.

1. The notification of maternal-death cases that occur in MINSAL's institutions is immediate. Once documented, entered, and sent to a computer-based platform for internal use, the information is disseminated instantly to the various directorates and decision-making authorities.
2. ISSS is working on its incorporation into the single health information system; to date, notification, in conventional format, is handled via telephone, fax, or email. *"Social security and MINSAL participation"*

3. The maternal deaths that occur in the private sector are very few (0.3%–0.5%); when they do occur, notification is immediate, in an informal basis.
4. Formal notification must be done through MINSAL—the Ministry requests that the established forms for a maternal death case investigation be filled out and a case summary be prepared within a period not to exceed four weeks **“there is no participation by other providers, such as the private sector, particularly in the analysis of cases”**
5. The notification of deaths that occur in the community in areas where there are community health promoters is done as soon as these promoters become aware of the death.
6. In urban areas, especially in larger cities, the detection and reporting of maternal deaths from suicide as a result of unwanted pregnancy is slower, in that the information is collected from municipal mayors’ offices in the first 10 working days of the following month. Upon identifying a case of suicide or a suspected maternal death, the case is investigated; it is then reported if it is determined to be a maternal death.
7. The country’s laws require that the Forensic Medicine Institute conduct body identification and autopsy in all violent deaths and self-inflicted deaths, such as suicides.
8. When such deaths occur as a result of pregnancy, the information from forensic medicine is not always timely: often, the autopsy is not performed, and when it is, it is based on criminalistics, rather than to determine the basic cause of death: *“negative attitude of operational personnel”*
9. Collecting information specific to a maternal-death case. The case summary, documentation in specified forms, is carried out in the timeframe prescribed in the Maternal Morbidity and Mortality Surveillance Guidelines. In very few cases is this information delayed.
10. However, the application of administrative sanctions on personnel that did not comply with the technical guidelines is slow and sometimes non-existent: *“follow-up to improvement plans, hospital monitoring, and deficient UCSF,” “...negative attitude of the operational personnel”*

3.2.3. ACCEPTABILITY: this quality refers to the willingness of persons and institutions to participate in the surveillance system.

1. During the baseline study great effort was expended in advocacy, consciousness raising, and training with all personnel responsible for the registration of deaths (health personnel in 100% of MINSAL and ISSS institutions, as well as 100% of registrars from the 262 municipal mayors’ offices). This effort was designed to elicit the participation of personnel in the process of improving the quality of improving the filling out of the death certificate and the capture of information regarding deceased women whose deaths are registered in mayors’ offices; this widespread understanding of the importance of notifying maternal-death cases subsists today thanks to the empowerment of sexual and reproductive health leaders, *“the monitoring visits from the Prevalent Diseases Unit to the Family Health Community Units,*

which are designed to review whether the registration book for mortality in the life cycle is being kept properly and updated”

2. The health personnel are empowered to conduct surveillance, investigation, and follow-up of pregnant women, as well as of those in whom risks associated to pregnancy or not have been detected. This surveillance is manifested in the follow-up done at the community level of women that fail to attend their prenatal control sessions, which makes it possible to develop strategies to ensure prenatal-control attendance and institutional deliveries, *“despite setbacks, those of us who have participated in this strategy since its inception continue on as if these obstacles did not exist, and I know that none of us, despite the problems, will stop working so that each day women going through pregnancy, delivery, and the puerperium will have a happy and safe maternity”*
3. The fact that there is national strategic plan for the reduction of maternal perinatal mortality, 2011–2014 that has been adapted to MINSAL’s various care levels—regional, SIBASI, hospitals and community family health units, and the ISSS—attests to the institutional and individual commitment.
4. Attaining MDGs 4 and 4 has required that the Ministry of Health use its authority to position this issue as a multi-dimensional problem for the country: to tackle it through a social determinants approach, and to bolster the configuration of an inter-sectorial response in support of the maternal deaths surveillance and prevention system.
5. The participation of other institutions, such as the General Directorate of Statistics and Census (DIGESTYC, for its Spanish acronym), an arm of the Ministry of the Economy, provides figures on births, information that is necessary for rendering statistical calculations and estimates.
6. The health personnel’s identification with how maternal deaths affect the family and society as a whole has been a factor in the acceptance of the maternal mortality surveillance system.
7. Once a maternal death has occurred, the surveillance system is activated and triggers an investigation specific to the case. The case is analyzed and discussed, which results in an improvement plan to avoid the occurrence of another death in the same circumstances. The follow-up of these improvement plans and the monitoring of the health establishments is deficient, however; leadership at the guidelines level is needed for these plans to have expected results, *“...there has been little support in the follow-up of recommendations at the various levels”*
8. As part of the surveillance system, the analysis and review of maternal mortality cases have made it possible for the health system itself to improve: there has been a solid and sustained increase in institutional deliveries, obstetricians have been hired in the country’s 28 maternal health facilities, essential medicines for treating obstetric emergencies have been acquired, the active management of the third stage of labor is being followed, the direct causes of maternal deaths are managed based on evidence, guidelines for the management of pre-conception, prenatal, delivery, and the newborn are being updated, and guidelines for handling the leading obstetric morbidities are being developed.

3.2.4. ADAPTABILITY is the system's ability to adapt itself to new requirements, according to the objective to be met.

1. The maternal mortality surveillance system is flexible and can respond depending on need: it makes it possible to estimate statistical figures; establish leading causes of death; classify deaths by degree of prevention, delays, social determinants, critical links, bio-demographic aspects, and others. *"At this time, I am not aware of how accountability is being handled within the maternal deaths surveillance system, or whether there is an analysis of results"*
2. The guidelines for the surveillance of maternal morbidity and mortality have been reviewed, adapted, and modified. The 2009 revision led to the expansion of mortality surveillance throughout the life cycle, emphasizing maternal and infant mortality, and aiming at the consolidation of the process for registering mortality in national-health-system institutions and facilitate the availability of representative mortality indicators for the country and contribute to the development of strategies to prevent the causes of death in the life cycle: *"have current regulations for care and surveillance"*
3. The surveillance system also was adapted and updated, evolving from a poorly accessible notification system relying on hand-written forms sent by fax into a computer-based system that is timely, easily used and consulted by decision makers: *"...it is an active system, and it has been demonstrated that it can be implemented and it works; there already is a structure in place that can be properly re-activated on a moment's notice..."*
4. The health services are improving and their capability to solve health problems is growing throughout the health service network, using the referral, return, and consultation framework, which also is applicable to the maternal and perinatal morbidity and mortality surveillance system.
5. While it is true that the notification system is timely, it is not available in 100% of the institutions that are part of the health service network; computer equipment is lacking, which limits the information, analysis, and decision-making that arise from the community level, *"...Lack of computer equipment and internet access in many health establishments"*

3.2.5. REPRESENTATIVENESS is the capability to represent what occurs in time, person, and space.

1. The maternal mortality surveillance system is representative of the many efforts that the Ministry of Health and the Social Security, in the main, are carrying out:
2. Promotion of integrated public policy and institutional standards: the national strategic plan for the reduction of maternal-perinatal mortality, the technical guidelines for caring for women in their pre-conception, prenatal, delivery, the puerperium, and newborn periods. The management of the leading obstetric and gynecological morbidities, family planning guidelines.

3. Launching of the new model of care based on the primary health care, reaching the population through family and specialized community teams (ECOSF-E).
4. Ensuring the provision of essential obstetric and neonatal care in the 28 maternities under MINSAL and the Social Security.
5. Community work related to the Delivery Plan strategy; initiation of operations for the maternity “waiting homes;” empowering of women, families, and communities; coordinated efforts with NGOs and international organizations.
6. The upgrade and ongoing education of health personnel has strengthened obstetric skills and competency, the immediate care of newborns, and the identification of risks among women who are pregnant or in the puerperium, and newborns, “... continually train the resources involved throughout the surveillance chain”

3.2.6. SIMPLICITY (in structure and operations)—the ease with which a surveillance system functions.

1. Today, health personnel is fully aware of the importance and relevance of the timely notification of maternal death cases; case notification is carried out easily and simply, and consists in notifying through the on-duty manager or service when the event occurs, “...attitude and availability of regional and local technicians”
2. The information is transferred to the epidemiologist or his or her delegate, who enters the information in the epidemiological surveillance compulsory-notification module; the information is then immediately transferred to the various managerial levels, which launches the investigation, analysis, discussion, and follow-up of cases, “An available and functioning computer program that keeps personnel updated.”

3.2.7. SPECIFICITY OR POSITIVE PREDICTIVE VALUE is the capability to know that the percentage of cases that have been identified as such, indeed are cases.

1. As was detailed earlier, the identification and notification of institutional cases is immediate, in the first 24 hours after the event has occurred.
2. In terms of cases that occurred in the community or in indirect maternal deaths, notification hinges on the correct identification of the basic cause of death and of associated or pre-existent causes; efforts are under way to improve both of these issues, “Ill-defined basic cause of death”
3. In documenting the reasons for the death and analyzing its causes it becomes possible to anticipate, and even prevent, the recurrence of cases due to the same causes. This diagnosis should enable putting in place ongoing improvements to address the identified weaknesses and to improve processes, “Implementation of improvement plans designed to avoid another maternal death in the same circumstances”

4. Case identification also allows for joint and coordinate work to be carried out in the health establishment and in the community, which should make it possible to pool resources and efforts to save lives, maximizing the efficiency and efficacy of the intervention *“...using several analysis mechanisms to study a single maternal death”*

3.2.8. STABILITY, reliability in terms of the consistency in the gathering of information and the availability of the collected information when it is needed.

1. The country and the institutions are committed to support the reduction of maternal mortality; in addition, there is political will to construct a national health system and a single health information system that can be sustained over time.
2. For El Salvador, which is a signatory to the United Nations Millennium Declaration, this effort signifies that the country's efforts aim at attaining the Millennium Development Goals.
3. This is an information system that has prevailed and been strengthened over time, generating reliable, and timely information on the maternal mortality profile in the country, *“...couple such an important initiative for the country with political aspects”*



4. RECOMMENDATIONS AND ACTIONS OF THE MATERNAL MORTALITY EPIDEMIOLOGICAL SURVEILLANCE (MMES) SYSTEM: IMPLEMENTATION AND ACCOUNTABILITY

4.1. SCOPE OF THE SYSTEM'S RECOMMENDATIONS

- Maternal mortality surveillance, and the system's ongoing evaluation and monitoring, has risen to the political arena, and the issue is not positioned in the country's agenda and in the Inter-sectorial Health Commission (known as CISALUD, for its Spanish acronym) as a matter for inter-sectorial discussion and support.
- The participation of additional institutions and sectors has been made possible thanks to the government's current plan, based on maternal mortality surveillance, which allows for inter-institutional and inter-sectorial work to be done; this still needs to be improved and strengthened.
- Even though the law states that MINSAL is the leader of the National Health System, its role needs to be strengthened through the formalization of public and private institutions that provide health services, in order for them to fully comply with the standards for reducing maternal mortality and morbidity; to date, they participate only on a voluntary basis.
- The efforts to consolidate the operations of a single, permanent maternal mortality surveillance system in El Salvador that makes it possible to evaluate the evolution of the

impact indicator (the maternal mortality ratio) through the reporting of maternal mortality cases, and the institutional and national level needs to be improved.

- Each SIBASI has a maternal mortality surveillance committee, which meets each month to analyze cases of maternal morbidity and mortality, review maternal care statistics, and develop plans to improve the quality of care. They need to be consolidated through supervision and monitoring.

4.2. SETTING OF PRIORITIES ACCORDING TO IMPACT, FEASIBILITY, AND COST-BENEFIT

- Sexual and reproductive health must be addressed in consideration of various aspects, including social determinants, and through an inter-sectorial and inter-institutional approach that encompasses human rights, gender issues, and social inclusion.
- To that end, it is necessary to improve the classification of the basic cause of death and the review of 100% of the general mortality data recorded in mayors' offices, emphasizing the deaths of women of childbearing age, so that they can be analyzed and maternal deaths can be identified.
- All maternal deaths must be subject to verbal autopsies, a review of clinical records, an analysis by maternal mortality surveillance committees in each SIBASI or region.
- The maternal mortality surveillance committees in each SIBASI or region must hold at least 12 meetings each year, in order to develop improvement plans for each health institution and level that was involved in the cases, generating an equal number of SIBASI, regional, and sexual-and-reproductive-health-unit reports .
- The maternal mortality ratio and profile for the country must be established, with the ministry's and central-government commitment.

4.3. SHORT- MEDIUM- AND LONG-TERM ACTIVITIES

- Pursue advocacy at the inter-sectorial, civil-society, and international-cooperation-agency levels, in order to keep the reduction of maternal morbidity and mortality in the strategic plan's agenda.
- Elicit the firm and committed participation of additional institutions in the development of actions and interventions designed to improve sexual and reproductive health.
- On an ongoing basis, review and provide training on how to correctly classify the basic cause of death in all National Health System establishments.
- Monitor the progress of each intervention proposal and improvement plan for each maternal death at the hospital, SIBASI, regional, and central levels.
- Develop quarterly reports for each SIBASI and health region on the maternal morbidity and mortality of women at childbearing age, maternal mortality, and follow-up and compliance results of improvement plans.
- Elaborate a quarterly report on the maternal mortality surveillance for ministry authorities.

4.4. BASIS FOR THE (EVIDENCE-BASED) RECOMMENDATIONS

- The regional and national maternal mortality surveillance committees should actively request monitoring, follow-up and compliance of interventions proposed by the local and SIBASI surveillance committees; if there is no response to the expressed needs for reducing delays and addressing critical links, among others, the process may lose credibility and efforts will have been in vain.
- The central government and the Ministry of Health have goals and objectives that align with the reduction of maternal mortality in El Salvador, so that the support requested from cooperation agencies, friendly countries, and governmental and nongovernmental bodies aims at attaining the Millennium Development Goals.

4.5. INCORPORATION OF COMPREHENSIVE HEALTH CARE FOR WOMEN

- El Salvador has entered into a commitment that entails significant cultural change, in that ideas about family planning and contraceptive decisions must change, and these conceptions are deeply entrenched in the collective consciousness. That said, women must have full access to reproductive health in terms of sexual education and reproductive decisions that impinge on the attainment of MDG 5.
- The reduction in the maternal mortality ratio is tied to an increase in hospital coverage, because it has made it possible to have more women properly cared for before and during pregnancy and during delivery. The percentage of deliveries outside of hospitals could be progressively reduced if the delivery-plan strategy were followed.
- The timely supply of inputs for the management of obstetric emergencies has improved.
- Hiring of specialists at the first level of care has increased.
- Clinical care guidelines based on scientific evidence have been updated.
- The expansion of health service coverage through the deployment of family health community teams offers specialty care in the field, thus widening access for women.

4.6. DISSEMINATION AND CONTRIBUTION TOWARDS SOCIAL AWARENESS

- MINSAL is coordinating an inter-sectorial and inter-institutional effort to develop a comprehensive and integrated approach to sexual and reproductive health by forming alliances with nongovernmental, civil-society, and external-cooperation organizations. The promotion of sexual and reproductive rights and their determinants, the promotion and detection of gender-based violence, and the management and sustainability of the sexual

and reproductive health policy prevail in this effort, as a way to envision the specific and differentiated needs in the care of women across the life cycle.

- These alliances are a manifestation of the participatory, consultative, and proposal process in sexual and reproductive health, particularly in issues of sexuality, maternal health, perinatal and neonatal health, and malignancies of the female and male reproductive systems (emphasis on cervical and breast cancer).
- MINSAL is pursuing advocacy and management activities to work on the health budget, with a gender approach.

4.7. OBSTACLES AND FACILITATORS OF THE MMES SYSTEM'S PERFORMANCE

1. The consideration of maternal mortality as a development indicator has been taken up in the national policy within the Government Plan. Strategic plans for the reduction of maternal mortality have also been in place during the past two consecutive governmental terms. ... *"A–Political Decision: this includes international pressures through the MDGs, B–Inter-institutional commitment, C–Ministerial commitment, D–Clear research protocols, including mechanisms, E–National policies"*
2. The health sector reform has improved access to specialized maternal health services in the community, free services, and the treatment of the population, which, in turn, has improved maternal health.
3. In parallel to the strengthening of maternal mortality surveillance, other strategies designed to reduce maternal mortality have been incorporated. Among these efforts are the Delivery Plan, maternity waiting homes, the women, individuals, families and community strategy, the expansion of the health service network (ECOS F and E), the updating of clinical standards and guidelines, incorporation of institutions from outside the sector (education, churches), greater budgetary allocation earmarked to the sexual and reproductive health policy. All of these are appropriate and efficacious interventions aimed at a safe motherhood, which contribute to improve women's health and quality of life.
4. The epidemiological surveillance system (VIGEPES), a notification system that tracks cases of epidemiological interest, and is compulsory in the public health service network, has some reports from the private health services, who participate on a voluntary basis only, and lacks information on cases in the community (especially births and deaths), which has made it difficult to consolidate the maternal deaths epidemiological surveillance system. The system falls under the Directorate of Health Surveillance: Health Statistics and Information Unit and Public Health Surveillance Unit, as set forth beginning in 2009 in the new government's administration.
5. This gap can be overcome by conducting a parallel and simultaneous surveillance from the Sexual and Reproductive Health Unit (which falls under the Health Provision Area)

that covers all maternal mortality information sources: public, private, and community-level and works in close coordination with the epidemiology area. This surveillance activity has been strengthened, and is reliable and timely. It should be continued until such time as the overlap and transition between the directorates of Health Surveillance and of Support to Health Management and Programming has been guaranteed, *“...From my point of view, this is not an integrated system; despite great efforts being made, to date, expected results are not there yet. Each level does not coordinate its actions with other levels, so the continuity of care cannot be ensured”*

6. Upon the identification of a maternal death, the case investigation is triggered in every institution where the woman received care; according to the maternal mortality surveillance guidelines, each institution must issue a technical report and a case summary within established timeframes, in order for the surveillance committee to review them and so that during the monthly meeting, the case may be analyzed and improvement actions can be proposed; in most cases, these reports and summary are not turned in a timely manner, which limits the development of recommendations and improvement plans.
7. The construction of the indicator for measuring maternal mortality—the maternal mortality ratio—requires the participation of other central government bodies, such as the Ministry of Economy, in that this Ministry is responsible for providing the real count of registered births in the country. Today, this figure is a projection, in that the country is not used to following the practice of a timely registration of vital events, which curtails the updating of this important information.
8. The technical and administrative support has been critical for facilitating all the improvement actions implemented by MINSAL. For example, there has been transportation made available to move operational and administrative technicians who support the research, the follow-up of cases and implemented strategies, all of them designed to improve maternal health.
9. It should be highlighted that this support has come from various ministerial officeholders and authorities, most especially from the Government Secretariat and the central level; regional and local authorities have provided much less support, *“Often, recommendations remain at the technical level and are not implemented, because local authorities do not opt to implement them”*
10. Efforts are under way to enlist civil society and nongovernmental organizations, as well as external cooperation agencies, in the promotion, prevention, and detection of maternal deaths; these entities have had very good results and have facilitated bringing women’s health to the forefront, an issue that has still not been fully realized in terms of citizen participation.



5. CONCLUSION: STRENGTHS AND LESSONS LEARNED

The spark that led to the current maternal mortality surveillance system was the information gathered in the 1998, 2002-2003, and 2008 Family Health National Surveys (FESALs), which were based on the sisterhood methodology. *“...Mainly, the fact that there was not reliable source for the notification of maternal deaths, in that the sisterhood method was not applicable to populations that small; in other words, there was under-registration,” “Lack of information about real statistics at the country level to attain the MDGs”*

Despite MINSAL’s efforts, the information shown in the surveys was discouraging, and so in 2000 the foundation for the baseline study of maternal mortality in El Salvador began to be constructed. This effort reached fruition between June 2005 and May 2006, with the technical analysis that set the real maternal mortality ratio at 71.25 per 100,000 live births, with an under-registration degree of 42%.

After that study, various proposals have been put forward to facilitate and improve the maternal mortality surveillance cycle:

1 – Case identification:

Strengthening the notification of maternal death that occur in institutions, especially throughout MINSAL and the ISSS; the development and operation of an online immediate notification

system; the understanding by 100% of health personnel at the community level of the importance and binding nature of the identification and notification of maternal deaths; the participation, to a lesser degree, of those responsible for vital events registries, the involvement of the mass media in identifying and disseminating cases in the community, “...The pregnancy in women of childbearing age (10–49 years old) who have died by various causes, according to the mayors’ offices or notification at the community level, is monitored and confirmed or ruled out, *“... The regulatory framework within the health system is that, upon the occurrence of a maternal death or suspected maternal death, it is investigated at the community or hospital level; hospitals are required to immediately report it and activate the system”*”

2 – Data collection:

As soon as there is knowledge of a maternal death, the woman’s clinical records are secured, filed, and held for safekeeping; further, a summary is prepared of the main care the woman received at each of the institutions she consulted (generating a summary for the basic or community level and a summary or summaries for the intermediate and specialized hospitals).

In general, all medical records are available; only in rare occasions are these records not available.

Standards dictate that every direct or indirect maternal death should be subject to a verbal autopsy, which consists of visiting the family of the deceased, upon previous coordination with the community personnel, in order to interview the person or persons who were in contact with the deceased in the days prior to the death. This activity is to be carried out during the 10 working days following the death, in order not to interfere with religious funeral rituals.

The verbal autopsy is designed to collect additional information not included in the clinical summaries, such as onset of symptoms or complications, time it took to transfer the woman from the community and the family’s perception of the quality of care the woman received. *“Upon identifying a maternal death, whether in an institution or in the community, the death must be immediately reported. Subsequently, the process moves to an investigation of the death—first, with a document review in the first few days in those cases that have records from a health institution responsible for the geographic coverage area; after 10 days, a verbal autopsy is conducted, which supplements the document review.”*

Socio-demographic information also is collected—marital status, level of education, housing, and contraceptive use, among others. *“... Upon identifying them, they are notified at the regional and central MINSAL levels. Subsequently, the records of all care levels and health care institutions (if there is more than one) are reviewed, and the verbal autopsy is carried out”*

3 – Analysis of findings:

Almost all the cases that have occurred are reviewed; discussed, and analyzed, save for a few exceptions, such as deaths in private hospitals and some deaths in social security.

For the purpose of these discussions, there is a national plan that assigns one day each month to each health region, in order to allow central-level officeholders and the surveillance committee from the area where the death occurred to participate.

A group of experts participates in the case reviews, issuing technical opinions as part of the review of medical summaries and the verbal autopsy. Finally, the diagnosis, treatment, and definition of basic cause of death are detailed; in addition, the degree of preventability, the delays, the critical links, and the compliance with standards are detailed.

This process has been strengthened and consolidated over time, despite the fact that there have been political and administrative changes. *“...Once the information has been collected, the local surveillance committees analyze the case with the participation of regional- and central-level personnel. Coverage is complete, including all levels. Although the quality of the analysis should be optimal, it may be skewed if local levels “defend” their position and refuse to accept any mistakes that may have been made in the case,” “...100% of deaths in each SIBASI are analyzed; the quality of the analysis is good, in that experts participate in the case discussion”*

4 – Recommendations and actions:

During the case analysis, an improvement plan is drawn up and activities that will help avoid a future death due to the same circumstances are specified.

Many of these suggestions are followed through, leading to improvements in administrative and technical processes; sometimes, however, recommendations are carried out, and the monitoring of improvement plans tends to be deficient in most cases. *“... The analyses are good, but administrative actions pursued as a result of the analyses are not carried out as expected,” “Each level of care prepares its own plan of action and conducts its own follow-up to ensure that another similar maternal death does not occur. At this point, there is no administrative follow-up to address the failures that have been identified in the analysis.” “Often, recommendations remain at the technical level and are not implemented, because local authorities do not opt to implement them”*

5 – Evaluation and improvement:

“ [improvements will be possible] if and when the quality of analysis is kept at an optimal level. If it is skewed, the recommendations will not be effective. [To maintain this quality] it is essential for decision makers at all levels to work in concert, aware that the case analysis and their recommendations are the foundation for avoiding future maternal deaths under the same circumstances and reducing their incidence”

El Salvador has undertaken enormous efforts to improve its health system, and its maternal mortality surveillance process has been strengthened. Based on evidence and on the ongoing monitoring of cases and their causes, various actions have been pursued, among them: a strategic plan for the reduction of maternal mortality that includes clearly defined objectives and lines of action has been in operation during two administrative and political periods, the technical standards and clinical guidelines for the management of the leading obstetric morbidities and the management of the pre-conception, pregnancy, delivery, puerperium, and newborn periods have been updated, the skills and competency of medical and nursing personnel in hospitals and in the community have been strengthened, and support has come from other ministries, such as the ministries of education and governance.

Having maternal or sexual and reproductive health leaders in each one of the regional directorates and in the central level is extremely important not only because they are highly committed to the sustainability and operations of the surveillance system, but also because they

are the ones who carry out the various processes of identification, analysis, follow-up, and evaluation processes of maternal and perinatal morbidity and mortality.

In terms of the evaluation and accountability mechanisms, biannual evaluations are currently carried out on the regional plans for the reduction of maternal deaths. To this end, the coordination of each comprehensive and integrated network must present its achievements and difficulties. While some networks do comply, this is not a standardized activity.

The central level conducts a biannual evaluation in which national-level hospital directorates, ministry-of-health and social-security officeholders, and representatives of external cooperation agencies and nongovernmental organizations participate. At this meeting, information that has led to various activities is presented, including: a national budgetary allocation to sustain a basic package of family planning methods, especially methods for use among adolescents; the incorporation of pre-conception care as a way to affect indirect maternal mortality through the identification and decrease of reproductive risks, the improvement and equipping of maternities so as to better manage emergency obstetric conditions; the incorporation and training of volunteer leaders who can identify maternal risks and can make a timely referrals; the shift in the role of traditional midwives; and the strengthening of partnerships designed to support women in seeking institutional delivery care. *“One of the greatest problems in the current surveillance system is coping with the paradigm change that broadens the scope of the system from a mere formulation of indicators into the formulation of plans and moving forward into action; in other words, the implementation of the plans. The basis for this is the monitoring of plans, in which the local directorates play a critical role, as do the consolidated committees.”*

6. SOURCES

6.1. INTERVIEWED PERSONNEL:

NAME	POSITION	LEVEL
Dr. R.Z	- Researcher, baseline study on maternal mortality - Regional technical-medical collaborator	Eastern Health Region
Dr. I.M	- Researcher, baseline study on maternal mortality -Working in the administrative are, departmental hospital	Central Health Region
Dr. J.M	- Sexual and reproductive health leader: childhood and adolescence - Regional physician, technical collaborator	Metropolitan Health Region
Dr. D. C	- Researcher, baseline study on maternal mortality - SIBASI technical–medical collaborator: Service Provision	Para-central Health Region/SIBASI
Dr. J. C	- SIBASI technical–medical collaborator: Service provision	Metropolitan Health Region/SIBASI
Dr. N. M	- Researcher, baseline study on maternal mortality - Medical technical collaborator at the central level: Service provision	MINSAL central level
Dr. R.A	- Researcher, baseline study on maternal mortality; ISSS	Salvadoran Institute of Social Security

6.2. SUMMARY OF INTERVIEWS

RESPONDENT	QUESTION 1: What was (were) the trigger(s) that made it possible to move from an acknowledgment of the importance of maternal deaths into action to reduce them through active surveillance?
Dr. R.Z	“Regardless of whether a woman brings in income to the household or not, she is the basic support for the family, the person who watches over her children’s activities and schooling. Each time a woman dies, leaving her children orphaned, these children’s future changes and they have greater difficulty incorporating themselves into society. Once the active search of this process is launched, it becomes clear to many what a woman’s true value to society is .”
Dr. I.M	Mainly, the fact that there was no reliable source for notifying maternal deaths in the country, given that the sisterhood methodology was not applicable in populations that small; in other words, there was under-registration.
Dr. J.M	A-Political decision, including international pressure through the MDGs B-Inter-institutional commitment C-Ministerial commitment D- Clear research protocols that include tools E- National policies
Dr. D. C	The full awareness among all personnel at every level of care of the importance of notifying maternal deaths.
Dr. J. C	Increase in mortality. Investigation of causes.

	Maternal mortality baseline.
Dr. N. M	High number of preventable maternal deaths. Under-registration and undercount of maternal deaths in mayors' offices, in Ministry of Health public hospital network hospitals, and in the community. The political commitment to attain MDG 5.
Dr. R.A	A lack of information about real statistics in the country; attaining MDGs.

RESPONDENT	QUESTION 2: What is the regulatory or programmatic framework for maternal death surveillance?
Dr. R.Z	N/A
Dr. I.M	MINSAL's guidelines for maternal-perinatal surveillance.
Dr. J.M	Currently there are technical guidelines for the surveillance of maternal-perinatal mortality.
Dr. D. C	The health system regulatory framework requires that, on the occurrence or a maternal death or a suspected maternal death, it should be investigated at the community and hospital levels; hospitals are required to immediately report it and activate the system.
Dr. J. C	Guidelines for the surveillance of maternal-perinatal morbidity and mortality.
Dr. N. M	Technical guidelines for the maternal-perinatal health surveillance system. MINSAL, 2009
Dr. R.A	MINSAL's the guidelines for the maternal-perinatal morbidity and mortality surveillance system.

RESPONDENT	QUESTION 3: How is the surveillance system organized?
Dr. R.Z	According to the established standards, it is clear that there must be problem-free coordination among all levels. In reality, however, one can only truly understand this by living it, and each region has its own peculiarities; in the eastern part of the country, for example, things are more difficult, the distances are greater and our women have lower schooling levels.
Dr. I.M	Deaths in women of childbearing age that are reported by the first level health units are monitored, which is one entry point into the system, and a second entry point is the direct notification of a maternal death by any level of care; this triggers the surveillance system's determination of the cause of and the delays involving the maternal death.
Dr. J.M	The foundation for the surveillance system are the surveillance committees in the three levels of care, especially at the local level, in that local committees are the ones to conduct a passive investigation of all maternal deaths in women of childbearing age using the "filter sheet" and to conduct an active search through key respondents or health promoters.
Dr. D. C	At this moment there is no framework, as such.
Dr. J. C	Community surveillance. Surveillance of pre-conception risk. Surveillance of risks in the pregnant woman. Surveillance of the care provided during delivery and the puerperium.
Dr. N. M	Maternal mortality-perinatal surveillance committee at the hospital/SIBASI level; maternal mortality-perinatal surveillance committee at the regional level; and National Maternal-Perinatal Health Surveillance Committee.
Dr. R.A	At the national level there is a national committee made up of the leadership of institutions that provide health care; a technical committee supports the national committee. In addition there are regional, hospital, SIBASI, and health-unit committees, reflecting MINSAL's structure.

RESPONDENT	QUESTION 4: Is this a system that is integrated among all the levels (national, provincial, local)?
Dr. R.Z	That would be ideal, but we still have issues with San Salvador's hospitals, which often put up obstacles, and this makes it difficult for us to conduct the evaluation or the timely referral of the user in our region; coordination is excellent, and when there are difficulties they are handled through the regional maternal leader. This is where the role of the metropolitan maternal leader was critical, in that it was with her that coordination was reached, without having so many difficulties, and always considering the health of our women as the most important issue.
Dr. I.M	Yes.
Dr. J.M	Yes.
Dr. D. C	Yes, national, departmental, and local.
Dr. J. C	From my point of view, this is not an integrated system; despite enormous efforts being expended, expected results are not a reality yet. Individual levels have yet to integrate their actions with those of other levels, which is necessary to ensure continuity in the care of users.
Dr. N. M	In some regions, the committee is made up precisely as laid out in the technical guidelines for the surveillance of maternal-perinatal health—in other words, the committee for the surveillance of maternal-perinatal mortality at the hospital/SIBASI level. In most instances, however, each committee functions independently—in other words, a SIBASI committee and a hospital committee—with joint work between the regional, hospital, and SIBASI levels being carried out only when auditing the cases to be analyzed.
Dr. R.A	Yes, it includes the national, regional, and local (hospitals and health units).

RESPONDENT	QUESTION 5: How are cases notified and identified, how is information collected, and what is the analysis process for maternal deaths? What is the coverage and quality of this analysis?
Dr. R.Z	Notification, which occurs immediately upon the death of the user, is done by a phonecall to the regional maternal leader; a request to have the user's records secured and filed is sent to every level where the woman went, an internal analysis is conducted to determine whether urgent interventions are needed, and after 10 days, there is a visit to the family to conduct a complete investigation and subsequently an audit is conducted on everyone involved, with each of these persons presenting their improvement plan already under way, and additional agreements are entered into, as necessary.
Dr. I.M	Cases are notified in a sheet specifically developed for the notification of maternal deaths, and an investigation is also carried out on the deaths of women of childbearing age reported to the mayors' offices, with the key questions being: was the woman pregnant or had she been pregnant one year prior to her death;; if there is any doubt, a filter sheet is used to rule out pregnancy. Information is collected by the SIBASI and regional maternal leader and the analysis is conducted through the hospital maternal and perinatal death committee (made up of the first level of care and the corresponding hospital). The analysis is conducted based on DELAYS, CRITICAL LINKS, AND BASIC CAUSE OF DEATH.
Dr. J.M	A passive search results from an external consultation and/or the information collected by UCSF personnel from mayors' offices, whether of actual maternal deaths or of deaths in women of childbearing age that has had the filter sheet applied; active search results from the information of key respondents in the communities and/or health promoters.

	<p>Upon identifying the maternal death, whether institutional or occurring in the community, it must be immediately reported. Then the process moves to an investigation of the death, which in the first days involves a document review of records from the health establishment responsible for the pertinent geographic area, provided such documents are available; after 10 days, a verbal autopsy is done, which supplements the document review. Subsequent to these steps, the local maternal and peri-neonatal morbidity and mortality committee conducts an analysis, identifying not only causes, but also problems in the care the woman received from the health services, and issuing a series of recommendations for improvements to be implemented in the short-term, in order to avoid having another death that presents with the same characteristics. This process is known as the maternal death audit, and it involves a technical review of the information contained in the clinical records from all health institutions the woman sought care from (including first- and second-level of care), including the institution where the death occurred, as well as information from verbal autopsies (investigations that collect information on how the family perceives the quality of the care the woman received); this is conducted at the local level, as well as in the comprehensive health service networks all the way to the regional level.</p> <p>The method used is the critical links methodology, which makes it possible to identify the weakest link in the system for that particular maternal death case, and so issue an improvement plan that addresses those weaknesses.</p>
Dr. D. C	<p>Each UCSF reports any maternal death that occurs in its geographic area to the pertinent SIBASI, the SIBASI then notifies the regional level, and ultimately the central level, where all information is collected in the forms designed for this purpose. Subsequently, the regional level sets the date for the analysis so all those involved in the woman's death can participate.</p> <p>Coverage: each SIBASI analyzes 100% of maternal deaths; the quality of the analysis is very good, given that experts participate in the case discussions.</p>
Dr. J. C	<p>Severe maternal morbidity is analyzed.</p> <p>Death in women of childbearing age (10–49 years old) who have died due to various causes, according to the mayors' offices, is monitored in order to rule out pregnancy.</p> <p>A quality analysis is conducted; however, the administrative actions to be undertaken as a result are not conducted as expected.</p>
Dr. N. M	<p>Whenever a death occurs in the community or in a hospital, it is entered into a Ministry of Health database that is part of the Web-based Morbidity and Mortality System (SIMMOW, for its Spanish acronym). If the death occurred in the community, this information is obtained from the death-certificate registry kept in the mayors' offices, and then it is entered into the SIMMOWE.</p>
Dr. R.A	<p>Deaths may be identified by the report issued by personnel in the health center where the death occurred (hospital level) or by community health personnel. Deaths also can be identified from death registries in mayors' offices. Upon identification, they are notified to the regional level and then to the central MINSAL level. Subsequently, records from all care levels and all institutions (if there is more than one) are reviewed, and a verbal autopsy is carried out. Once the information is gathered, the case is analyzed by the local surveillance committees, with the participation of regional- and central-level staff. Coverage is complete at every level. Quality should be optimal, but could be skewed if local levels "defend" their position to the extent that they do not accept responsibility for mistakes made in the case.</p>

RESPONDENT	QUESTION 6: What is the pathway that the recommendations follow; what is the decision making process?
Dr. R.Z	The region is made up of four SIBASI, and they are the first ones to monitor compliance with the improvement plan; the regional level monitors its compliance if the SIBASI does not take the initiative; it is the region that takes it upon itself to ensure that agreements are followed through.
Dr. I.M	Recommendations become improvement plans that are developed and implemented for every link identified in the chain; their implementation is monitored by the central level.
Dr. J.M	Recommendations emerge, in the main, from the analyses of local morbidity and mortality committees; higher levels, which must monitor each of the improvement plans, must be aware of them.
Dr. D. C	Each care level develops its own plan of action and conducts its own follow-up, to ensure that no other maternal death due to the same cause will occur. As of now, there is no administrative follow-up that deals with those resources that have had identified failures.
Dr. J. C	Often, recommendations remain stagnant at the technical level and are not implemented, because local authorities do not opt to implement them.
Dr. N. M	Considering that recommendations are the equivalent of the improvement plan that hospitals and the SIBASI conduct jointly after the audit analysis, these recommendations need to be brought to the attention of the various directorates and headquarters of the various levels of care, in order to support and guarantee the compliance with said plan.
Dr. R.A	The recommendations that result from this analysis may be directed to local, regional, or central levels, depending on the case.

RESPONDENT	QUESTION 7: How are findings translated into recommendations that are incorporated into improvement plans designed to enhance the health system's response? What is the structure/process/advocacy/leadership required for this to occur? (Please provide concrete methodologies and examples.)
Dr. R.Z	Each plan is tailored to each community, and aims at having an impact on the case at hand, so that the same mistakes can be avoided, even though these mistakes may be committed at the community level; moreover, given that there is a critical link for each case, the idea is to improve this link, provided that solutions are possible at each level.
Dr. I.M	Findings must be incorporated into the improvement plan, with the understanding that the intention is to avoid another case due to the same causes. In this way, the health system will be gradually improved, progressing from the specific to the general. The maternal mortality-perinatal surveillance system is the structure that encompasses the action pathway for a maternal death case; it encompasses the different care levels and describes the functions at each level, which makes it possible to know that advocacy efforts are at a high level, with the National Maternal Mortality Committee (I am not sure if it is still active) being able to request an audience with the president of the country, if necessary.
Dr. J.M	One of the most serious problems affecting the current surveillance system is the paradigm shift from a surveillance system that simply formulates indicators, to one that develops plans and translates them into action. The foundation for this is the monitoring of plans, in which the local directorates play a critical role, as do the committees that have been formed.
Dr. D. C	No answer.
Dr. J. C	Improvement plans have been developed and changes have been made thanks to the

	leadership of technicians; that said, leadership is still lacking in terms of the guidelines before these plans have the expected effect. For example, directors must undertake administrative actions against personnel that do not comply with existing regulations.
Dr. N. M	When the maternal, perinatal, or infant death audit is carried out, warning findings, as well as critical points, set the standards for decision making and making improvements in those areas.
Dr. R.A	Maintaining the quality of the analysis at an optimal level is ideal. If the analysis is skewed, the recommendations that emerge from it will not be effective. In order to uphold the quality of the analysis, all decision makers from all levels must work in concert, aware that the case analysis and their recommendations are the foundation for avoiding future maternal deaths under the same circumstances and for reducing their incidence. Here is a concrete example: a woman died who was sterilized during her second trimester of pregnancy. Guidelines clearly state that before referring a woman for sterilization, she must have a pelvic exam, during which her pregnancy would be detected, and the sterilization postponed. Clearly, it is imperative to enforce this standard at the local level, so that nobody refers patients for sterilization without performing a pelvic exam. This requires that all SIBASI and regional directors, as well as the central level, be aware that this was a grave mistake and that it is critical to provide strict supervision so that this regulation is complied with, or similar cases will continue to occur. When this particular case was audited, the health unit that referred the pregnant woman in her second trimester for sterilization did not receive any admonishment or recommendation. The recommendation, in fact, was addressed to the hospital where the woman underwent the sterilization, stating that any women coming for sterilization procedures should be given a pregnancy test. In other words, expending far more resources and time in a developing country, instead of intervening at the level that made the mistake. This recommendation was approved by the local, regional, and central levels.

RESPONDENT	QUESTION 8: Are there any monitoring and accountability mechanisms in the maternal death surveillance system?
Dr. R.Z	Previously, we developed a six-month evaluation for the highest authority; today we only evaluate the plan and continue to pursue active surveillance, promoting the interest in each resource that what we must avoid is a maternal death.
Dr. I.M	Yes, there are monitoring mechanisms that are part of the very maternal mortality surveillance system. As I understand it, it is not being implemented any longer; there is no active search of maternal deaths, rather, we are only pursuing a passive search. Accountability is carried out during the meetings of the maternal-perinatal committees at the time the maternal death is analyzed.
Dr. J.M	Yes, there are mechanisms, but there is a need to make them operational and there is a lack of follow-through on actions and any administrative interventions that issue from them.
Dr. D. C	Not at this moment.
Dr. J. C	Yes, each month there are audits of maternal deaths and severe maternal morbidities, and each month there is surveillance of at-risk pregnancies and a review of clinical records.
Dr. N. M	Constitute a surveillance committee that includes key disciplines and that is made up of the various care levels. Currently, the critical links methodology and the classification according to delays 1, 2, and 3 are being used, as well as the degree of preventability.
Dr. R.A	Yes, there are mechanisms, but they do not function adequately.

6.3. STRENGTHS AND WEAKNESSES OF THE MATERNAL MORTALITY SURVEILLANCE SYSTEM, ACCORDING TO INTERVIEWS WITH KEY RESPONDENTS:

STRENGTHS	WEAKNESSES
“...despite setbacks, those of us who have participated in this strategy since its inception continue on as if these obstacles did not exist, and I know that none of us, despite the problems, will stop working so that each day women going through pregnancy, delivery, and the puerperium will have a happy and safe maternity”	There has been little support for the follow-up of recommendation from the various levels.
Active search of maternal deaths,	“... linking such an important initiative for the country with political aspects”
Clear flowchart of the triggering of the surveillance system	Increased training of resources involved throughout the surveillance chain
Use of various analysis mechanisms to study a maternal death	“... requires personnel and logistical, material and other support in order to be sustained”
Implementation of improvement plans that aim at avoiding another death due to the same circumstances	Follow-up of improvement plans, monitoring in hospitals and UCSR is deficient
“... it is an active system, in that it has been demonstrated that it functions and can be implemented; there already is a structure in place that can be properly activated at a moment’s notice ...”	“...At this point I am not aware about how the accountability of the maternal death surveillance system is being carried out, or if there is an analysis of results”
Monthly follow-up.	Scanty budget.
The attitude and availability of regional and local technicians	Negative attitude of the operational personnel.
There are existing regulations for care and surveillance.	Other providers, such as the private sector, do not participate, especially in the analysis of cases.
Participation from social security and MINSAL	Lack of computer equipment and Internet access in many health institutions
Monitoring visits conducted by the Prevalent Diseases Unit to the Family Health Community Units to review whether the registration book for mortality in the life cycle is being kept properly and updated	Ill-defined basic cause of death
Also through the Health Situation Room for diseases of epidemiological interest	Little involvement from middle management levels
Available and functioning computer system that keeps personnel who have access to it up to date.	

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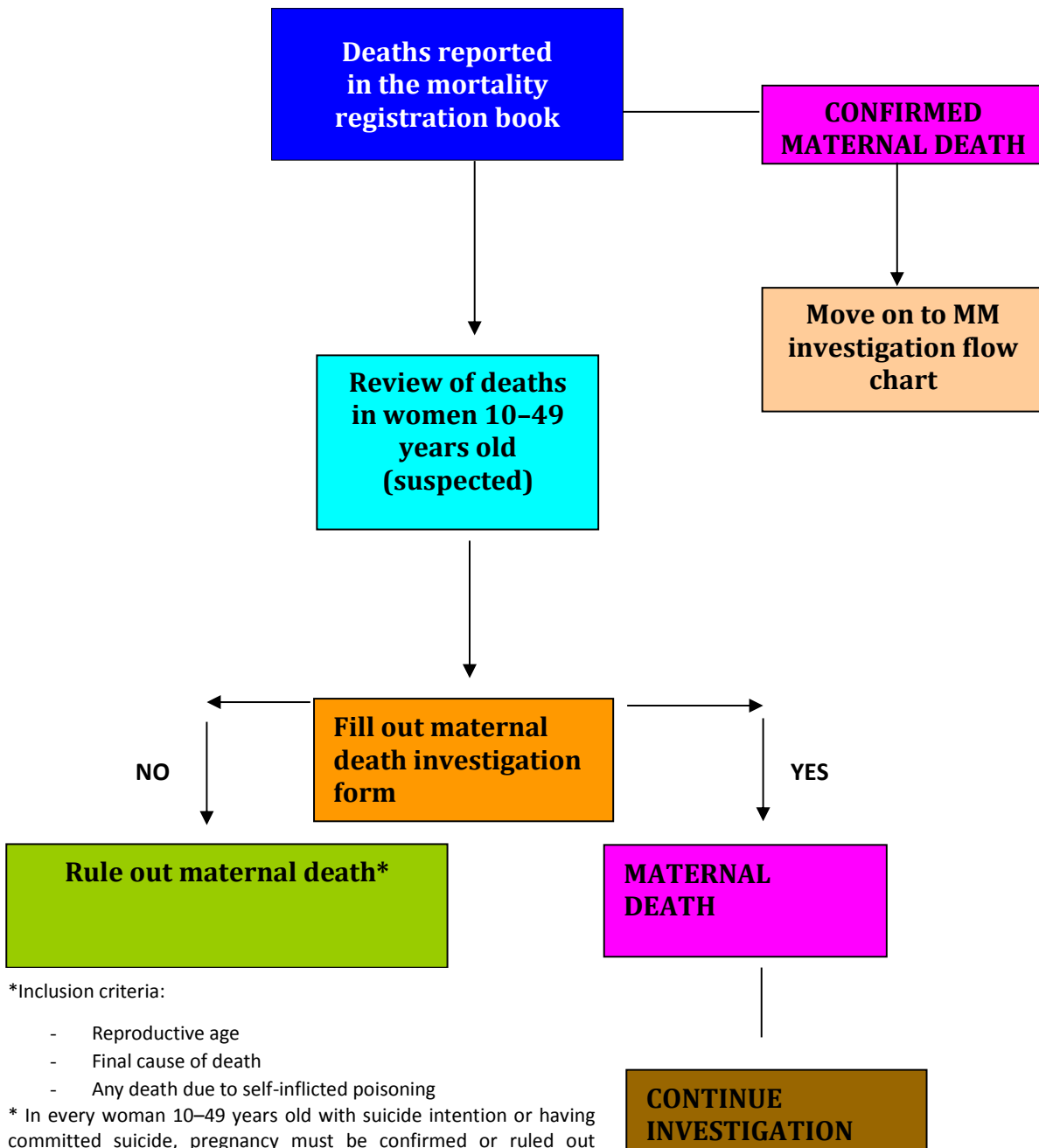
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7. ANNEXES

ANNEX 1. ALGORITHM FOR MATERNAL DEATH SEARCH



Source: Morbidity and mortality in the life cycle surveillance system, MINSAL, 2012.

ANNEX 2. MORTALITY REGISTRY

[illegible]

ANNEX 3. DEATH CERTIFICATE

Libro No. _____		CERTIFICADO DE DEFUNCION		Partida No. _____	
1. Nombre y apellido del difunto : _____ 2. Número de D.U.I del difunto : _____ 3. Fecha de la defunción : Minutos: _____ Horas: _____ Día: _____ Mes: _____ Año: _____			9. Ocupación última del fallecido/a: _____ <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 10. Jubilado o pensionado: Si: 1 <input type="checkbox"/> No: 2 <input type="checkbox"/> Ignorado: 3 <input type="checkbox"/>		
4. Lugar de la defunción: Departamento: _____ <input type="checkbox"/> <input type="checkbox"/> Municipio: _____ <input type="checkbox"/> <input type="checkbox"/> Cantón: _____ <input type="checkbox"/> <input type="checkbox"/>			11. Lugar de residencia actual de la persona fallecida. Departamento: _____ <input type="checkbox"/> <input type="checkbox"/> Municipio: _____ <input type="checkbox"/> <input type="checkbox"/> Cantón: _____ <input type="checkbox"/> <input type="checkbox"/> <div style="text-align: right;"> Área Urbana: 1 <input type="checkbox"/> Rural: 2 <input type="checkbox"/> </div>		
5. Local de la defunción: Hospital nacional: 1 <input type="checkbox"/> _____ Unidad de Salud: 2 <input type="checkbox"/> _____ Hospital o clínica de salud: 3 <input type="checkbox"/> _____ Casa de habitación: 4 <input type="checkbox"/> _____ Calle: 5 <input type="checkbox"/> Otro: 6 <input type="checkbox"/> Especifique _____			12. Nombre y apellido de la madre: _____ Nombre y apellido del padre : _____		
6. Sexo: Masculino: 1 <input type="checkbox"/> Femenino: 2 <input type="checkbox"/> Indeterminado: 3 <input type="checkbox"/>			13. CAUSA DE DEFUNCION Anote sólo una causa en cada una de las líneas (a), (b), (c) y (d). a) _____ debido a (o como consecuencia de) _____ b) _____ debido a (o como consecuencia de) _____ c) _____ debido a (o como consecuencia de) _____ d) _____ CAUSA BÁSICA		
7. Estado conyugal: Soltero/a: 1 <input type="checkbox"/> Acompañado/a: 2 <input type="checkbox"/> Casado/a: 3 <input type="checkbox"/> Viudo/a: 4 <input type="checkbox"/> Separado/a: 5 <input type="checkbox"/> Divorciado/a: 6 <input type="checkbox"/> Ignorado/a: 7 <input type="checkbox"/> Impúber: 8 <input type="checkbox"/>			14- Si la persona fallecida es una mujer entre 10 – 54 años investigar si estaba embarazada: Si: 1 <input type="checkbox"/> No: 2 <input type="checkbox"/> Ignorado: 3 <input type="checkbox"/>		
8. Edad: Para mayores de 1 año y más (años cumplidos): _____ Para menores de 1 año : Hora: _____ Minutos: _____ Días: _____ Meses: _____ Complete: Madre casada: Si: 1 <input type="checkbox"/> No: 2 <input type="checkbox"/> Ignorado: 3 <input type="checkbox"/> Tipo de parto: Vaginal: 1 <input type="checkbox"/> Cesárea: 2 <input type="checkbox"/> No sabe: 3 <input type="checkbox"/> Edad de la madre: _____ Duración del embarazo: _____ semanas gestación Si en días esta entre 1 a 28 complete la siguiente información: Peso al nacer _____ gramos Talla al nacer _____ centímetros Cuantos ha tenido la madre: _____ Embarazos _____ Abortos _____ Nacidos muertos _____			MUERTE ACCIDENTAL O VIOLENTA 15- Accidente: 1 <input type="checkbox"/> Suicidio: 2 <input type="checkbox"/> Homicidio: 3 <input type="checkbox"/> Ignorado: 4 <input type="checkbox"/> 16- Causas de muerte: Arma de fuego: 1 <input type="checkbox"/> Arma blanca: 2 <input type="checkbox"/> Caída: 3 <input type="checkbox"/> Ahogamiento: 4 <input type="checkbox"/> Acc. de tránsito: 5 <input type="checkbox"/> Envenenamiento: 6 <input type="checkbox"/> Artefacto explosivo: 7 <input type="checkbox"/> Ahorcamiento o estrangulamiento: 8 <input type="checkbox"/> Por objeto contundente: 9 <input type="checkbox"/> Otro: 10 <input type="checkbox"/> Especifique _____		
18. Fecha de registro: _____			19- Firma y sello del médico responsable: _____		
20- Nombre, firma y sello jefe/a del estado familiar			ASISTENCIA Y CERTIFICACIÓN MÉDICA 17- Tuvo asistencia médica durante su enfermedad : Si: 1 <input type="checkbox"/> No: 2 <input type="checkbox"/> Ignorado: 3 <input type="checkbox"/> Defunción Certificada por Médico: Si: 1 <input type="checkbox"/> No: 2 <input type="checkbox"/> Ignorado: 3 <input type="checkbox"/>		

ANNEX 4. FORM FOR NOTIFYING DISEASES SUBJECT TO SURVEILLANCE: MATERNAL MORTALITY REPORT

	República de El Salvador Comisión Intersectorial de Salud (CISALUD) Formulario para Notificación de Enfermedades Objeto de Vigilancia	
1. Nombre del Establecimiento: _____ 2. Fecha de consulta : ____ / ____ / ____		
3. No. Expediente/ No. de Afiliación: _____		4. Categoría de Afiliación <input type="checkbox"/> Cotizante <input type="checkbox"/> Pensionado <input type="checkbox"/> Beneficiario <input type="checkbox"/> Hijo
5. No. DUI: _____ 6. Fecha de nacimiento: ____ / ____ / ____ 7. Edad: Años ____ Mes ____ Días ____		
8. Apellidos: _____ Nombres: _____		10. Sexo: <input type="checkbox"/> Mas. <input type="checkbox"/> Fem.
9. Si es menor de edad, nombre completo de la persona responsable _____		
11. Dirección Completa: _____ _____		14. Área <input type="checkbox"/> Urbana <input type="checkbox"/> Rural
12. Departamento: _____ 13. Municipio: _____		15. Nacionalidad: _____ 16. Teléfono: _____
17. Estudiante: <input type="checkbox"/> Sí <input type="checkbox"/> No 18. Embarazada: <input type="checkbox"/> Sí <input type="checkbox"/> No 19. Semanas de Amenorrea: _____		
20. Nombre del Centro Educativo: _____ <small>completar esta información únicamente si es un estudiante</small>		
21. Diagnóstico: _____		22. Fecha de inicio de síntomas ____ / ____ / ____ 23. Fecha de Defunción ____ / ____ / ____
24. Nombre del médico que notifica: _____ 25. No J.V.P.: _____		
<small>© Ministerio de Salud</small>		<small>1/1</small> <small>DVS/2010</small>