



EL SALVADOR

MDG ACCELERATION FRAMEWORK

*CONDITIONS FOR THE SUCCESSFUL ACHIEVEMENT
OF THE MATERNAL AND CHILD MORTALITY GOALS
(MDG 4 AND 5)*



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AND CHILD MORTALITY GOALS (MDG 4 AND 5)

October 2013

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OCTOBER 2013

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FOREWORD

In 2011 the government of the Republic of El Salvador asked the UN Resident Coordinator for help in analysing the achievement of two strategic goals in the government's agenda: reducing child mortality and maternal mortality.

The Ministry of Health (MINSAL) assumed national leadership of this process, with the specific aim of identifying cost-effective interventions to reduce maternal, perinatal and neonatal morbidity and mortality, speeding up accomplishment of the goals established in the Millennium Declaration, and sustaining results in the long term.

This requires not only a sound diagnosis, but also a mature approach to understanding and accepting areas for improvement, whether in access to services or in the quality of the services, as well as a clear appreciation of the need for joint, integrated and intersectoral coordination to reach agreements in the country.

With the help of four UN agencies, MINSAL assessed its information system, the mechanisms of service provision, and its personnel's analytical capacity at all levels. This made it possible to identify a realistic Action Plan that reflects what the country can improve by correcting its means of operation; this requires technical coordination and the injection of resources is needed to maintain service quality and levels required to prevent such sensitive indicators as maternal and child mortality, particularly perinatal and neonatal mortality, from returning to undesired levels in El Salvador.

The Plan, therefore, is completely evidence-based and has been discussed and analysed within both the National Health System and the various sectors that play a role in benefit/risk factors and who are important actors in providing a permanent and integral response.

The document is divided into eight chapters. The first five establish the MAF's historical and conceptual context, institutional setting, methodology, main findings, and supporting evidence. Based on all this, Chapter 6 goes on to focus on identifying and analysing the bottlenecks in order to proceed, in chapter 7, with the drafting of the Action Plan.

The resulting report has enjoyed the valued participation of various technical and administrative teams within the National Health System, the Ministry of Education, the National Council on Food and Nutritional Security, international organisations, and international cooperation agencies, including UN agencies, to whom widespread gratitude is due on account of their help in creating this valuable instrument that will improve conditions in the lives of Salvadoran men and women.



María Isabel Rodríguez
Minister of Health
El Salvador



PREFACE

El Salvador is one of the countries that in 2000 joined the ambitious challenge to eradicate worldwide poverty and its disastrous consequences by 2015 in three five-year periods. The famous Millennium Declaration brings together signatory countries to provide greater impetus to the achievement of the Millennium Goals.

Two years from the Declaration's deadline, the Salvadoran government has prioritised two of the goals: to reduce, by two-thirds, child mortality (MDG 4), and to reduce, by three-quarters, maternal mortality (MDG 5). These goals were chosen not only to accelerate and maintain their achievement, but also establish an intersectoral alliance that will make it possible to address contributing factors of morbidity and mortality and to maintain the achievement and minimise infant and maternal mortality rates.

Since this is a priority for El Salvador and a response to a specific request by the government, the UN has made available the experience it has obtained in other countries and regions, which has enabled it to identify so-called "bottlenecks", or factors that, when addressed, make it easier to achieve the desired results. It is a methodological instrument that enables actions to be recognised and identified within the basic framework of national capacities, which are transformed into a Working Plan that is further developed through intersectoral coordination, making it viable and prioritising it in the context of public policy. It is known as the "MDG Acceleration Framework" (MAF).

As an exceptional experience, the process of technical assistance and cooperation with the Ministry of Health, the national leader of the MAF initiative, was carried out by four UN agencies which, led by the Pan American Health Organization (PAHO), included UNFPA, UNDP, and UNICEF as joint leader. In addition to supporting inter-agency work, the experience also contributed to the Delivering As One (DAO) strategy, which is the object of cooperation within the UN.

Having determined this process with a clearly defined plan that is appropriate for the various sectors that took part in its construction, this report reflects the agreement to reach and maintain MDG results, and motivates our agencies to cooperate closely and as integrally as possible.

These results would not have been possible without the dedicated support of the highest authorities in the public sector and other participants, as well as their capacity for self-analysis that makes it possible to correct and maximise efficiency in due course in order to continue reaching goals beyond the political deadline by increasing opportunities to sustain these results over time.

A handwritten signature in blue ink, appearing to read "Roberto Valent".

Roberto Valent
Resident Coordinator
United Nations System in El Salvador

GLOSSARY

APSI	Integral primary healthcare (Atención Primaria en Salud Integral)
BMI	Body Mass Index
CETEP	Classification, Assessment and Treatment of Paediatric Emergencies (Clasificación, Evaluación y Tratamiento de la Emergencias Pediátricas)
CISALUD	Intersectoral Committee on Health (Comisión Intersectorial por la Salud)
CONAIPD	National Council for the Integral Care of Persons with Disabilities (Consejo Nacional de Atención Integral a las Personas con Discapacidad)
CONASIDA	National Committee on AIDS (Comisión Nacional del Sida)
CONASAN	National Council for Food and Nutritional Security (Consejo Nacional para la Seguridad Alimentaria y Nutricional)
CR	Central region
CUIS	Cuisnahuat health unit (Unidad de Salud Cuisnahuat)
E	Eastern region
ECOS	Community health teams (Equipos comunitarios de salud)
FNS	National Health Forum (Foro Nacional de Salud)
HCP	Perinatal Clinical History from the perinatal information system (Historia Clínica Perinatal del Sistema Informático Perinatal)
HIV	Human Immunodeficiency Virus
INJUVE	National Youth Institute (Instituto Nacional de la Juventud)
ISSS	Salvadoran Social Security Institute (Instituto Salvadoreño del Seguro Social)
M	Metropolitan region
MAF	MDG Acceleration Framework
MATEP	Active Management of the Third Period of Delivery to prevent postpartum haemorrhage (Manejo Activo del Tercer Periodo del Parto para prevenir hemorragia postparto)

MDG	Millennium Development Goal
MINED	Ministry of Education (Ministerio de Educación)
MINSAL	Ministry of Health (Ministerio de Salud)
OME	Obstetric Morbidity Extreme
OR Adj	Odds Ratio Adjusted
PAHO	Pan American Health Organization
PARA-C	Paracentral region
PERMMN	Strategic Plan for the Reduction of Maternal and Neonatal Mortality (Plan Estratégico de Reducción de Mortalidad Materna y Neonatal), 2009-2014
RREE	Ministry of Foreign Affairs
SIS	Secretariat for Social Inclusion (Secretaría de Inclusión Social)
STP	Technical Secretariat of the Presidency (Secretaría Técnica de Presidencia)
SVMM	Active Monitoring System for Maternal Mortality (Sistema de Vigilancia Activa de Mortalidad Materna)
TB	Tuberculosis
TORCHES	Toxoplasmosis, rubella, cytomegalovirus, herpes simplex, syphilis
UN	United Nations
UNDG	United Nations Development Group
UNDP	United Nations Development Programme
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
UN Women	United Nations Entity for Gender Equality and the Empowerment of Women
W	Western region

INTRODUCTION

In 2000 El Salvador, along with 188 other UN member states, agreed within the framework of the Millennium Declaration to achieve eight goals and their corresponding targets by 2015 as part of an effort to improve development in various countries. The goals were called the **Millennium Development Goals (MDGs)**.

Two of these goals are the focus of this study: MDG 4 relating to the reduction of child mortality, and MDG 5 concerning improvements in maternal health. The worldwide agreement is to reduce child mortality by two-thirds (MDG 4) and maternal mortality by 75% (MDG 5).

According to the Millennium Development Goals Report released by the UN in 2011, significant progress has been made towards these goals on a regional scale. Maternal deaths in Latin America and the Caribbean (LAC) have fallen from 130 to 80 per 100,000 live births, and the under-five mortality rate has dropped from 52 to 23 per 100,000 live births¹. However, the same report revealed that the overall reduction for LAC did not mean that all countries had been successful, particularly with regard to MDG 5; it also stated that other countries, despite accomplishing the MDGs, require support to maintain these figures at desired levels.

In order to assist governments in managing and maintaining MDGs, the UNDP has created the MDG Acceleration Framework (MAF) as a tool available to UN teams for helping governments to find solutions to obstacles or bottlenecks that restrict the achievement of MDGs or to maintain current results. This framework makes it possible to focus on disparities and concerns, two of the main causes of irregular progress, and offers a systematic means of identifying bottlenecks as well as priority solutions to them.

During the visit in 2011 of the Executive Director of UN Women, the government authorities sought support to help specifically with accomplishing MDGs 4 and 5. In response to this request, the United Nations, represented by the UNDP, UNICEF, UNFPA and PAHO, formed a working group that was later joined by national representatives from MISMAL to apply the MAF. The working group was led by PAHO, with UNICEF as joint leader.

The interventions analysed under the MAF were listed according their priority, the sole criterion being their relationship to the three most common causes of mortality, which were defined by assessing the process of maternal and neonatal care in selected hospitals that had higher numbers of cases. The causes were validated and the reasons behind them were identified during workshops attended by various levels of care at MIINSAL, ISSS, and the National Health Forum², as well as representatives from UNDP offices in New York and Panama.

This document describes the process and results of applying the MAF, culminating in an Acceleration Plan for MDGs 4 and 5.

1. *Millennium Development Goals Report. United Nations, New York, 2011.*
2. *Foro Nacional de Salud, civil society body representing 27 organisations.*



I. THE MDG ACCELERATION FRAMEWORK INITIATIVE

Photo: PAHO/WHO

The MAF is a methodological guideline approved by the United Nations Development Group (UNDG) that offers governments and their partners a systematic means of identifying and prioritising obstacles that hinder progress towards accomplishing MDG targets that are below the minimum required for them to be reached by 2015; it also helps governments to identify “acceleration” solutions for these obstacles. The MAF is based on knowledge of the country and existing experiences, as well as policy and planning procedures, to help with the formation of national agreements between various players and sectors, sharing responsibility for making the efforts required so that the MDGs can be achieved by 2015.

The characteristics of the MAF are:

- Responding to national/local political determination to address items identified as bottlenecks in order to achieve the MDGs,
- Being based on national experiences and ongoing procedures to identify and prioritise obstacles that interfere with the implementation of key interventions for the MDGs,
- Using lessons learned to determine objective and viable solutions to accelerate progress towards achieving the MDGs,
- Creating a group with identified roles for all interested parties in order to jointly make progress towards achieving the MDGs.

DESCRIPTION OF THE APPLICATION OF THE MAF IN EL SALVADOR

With the endorsement of the Ministry of Health, the inter-agency and ministerial working group drafted a concept note addressed to the UNDP in Panama, asking to be considered a beneficiary

country of the MAF; this concept note put forward the objectives, work plan, critical route, timeline and milestones that the country must meet for it to be approved for help towards implementing the Acceleration Plan for achieving MDGs 4 and 5.

The MAF methodology is applied by considering the following steps:

The starting point was to create an extensive map of all the interventions and policies being implemented to reduce maternal, perinatal and neonatal mortality, particularly those that feature in the Strategic Plan for the Reduction of Maternal, Perinatal and Neonatal Mortality.

1. Identification of interventions considered to have a greater impact in the short term, based on the most common diagnoses for maternal and neonatal deaths, and included in the Strategic Plan for the Reduction of Maternal, Perinatal and Neonatal Mortality or international recommendations.
2. Identification and analysis of bottlenecks in each group of prioritised interventions – this is related to the opportunity of delivering the service during the care process, the availability of supplies and medicines, attitudes characterising the request, and suppliers' skills.
3. Analysis, determination and prioritisation of potential solutions based on their impact and viability in order to overcome underlying causes that produce bottlenecks for the effective implementation of these prioritised interventions.
4. Creation of an agreed proposal for an Action Plan with the various players involved in finding solutions for bottlenecks, which makes it possible to focus on interventions that were prioritised and considered effective in order

for El Salvador to accelerate towards achieving the targets proposed in the Strategic Plan for the Reduction of Maternal, Perinatal and Neonatal Mortality.

The following table explains the phases and milestones in more detail:

Phase	Description	Milestones
1 Identification	<p>Initial identification of the top three causes of maternal and neonatal mortality, followed by identification of the health interventions established in the national standard for the prevention or reduction of these causes. All interventions are included that are recommended in the national policy on sexual and reproductive health in accordance with the criterion concerning the top three causes of maternal and neonatal mortality.</p> <ul style="list-style-type: none"> • Selection of towns with a higher rate of cases of neonatal or maternal deaths. • Revision of documentation on the established framework of standards (policies, specific plans, clinical guidelines). 	Interventions defined in accordance with the main causes, mapping of national players, towns or hospitals to visit.
2 Analysis	<p>Determination of the most important bottlenecks, measuring the risk associated with interventions that should be developed in all patients admitted to hospital with the main diseases that cause neonatal and maternal deaths.</p> <p>For this analysis an <i>additional study</i> was conducted to analyse the underlying causes of the identified bottleneck: forms from cases and controls at hospitals that had experienced neonatal and maternal deaths in 2011 were reviewed. Data on health determinants were also included – i.e. economic, cultural and social determinants to analyse sanitary discrepancies – as well as discharge questionnaires for obstetric patients, in order to determine the level of knowledge of signs and symptoms of the dangers of pregnancy and reasons why and when to consult, from the point of view of users of healthcare services.</p> <p>This type of study made it possible to widen the analysis from a mathematical scale to one that determines the weight of the various risks of neonatal and maternal death, and thus direct recommendations towards factors that of greater significance for maternal death.</p>	<p>Development of a plan to visit selected towns.³ (*)</p> <p>Additional study performed.</p>
3 Validation of bottlenecks and possible solutions	Workshops to present and analyse bottlenecks for selected interventions, and a proposal for short-term solutions to accelerate progress towards achieving the MDGs.	Proposal for short-term solutions analysed according to their impact and feasibility.
4 Planning	Creation of an Action Plan outlining intersectoral coordination between civil society, private business, etc., including control and self-assessment by participating bodies. This phase took place in the form of workshops.	Action Plan Monitoring and Assessment Plan.

3. Data for maternal deaths include all service providers and data for neonatal deaths include MINSAL services. (*) It is important to point out that 85% of the population is covered by the Ministry of Public Health, 13% by the ISSS and the rest by the ISBM, BSM, and private healthcare providers. Cases of maternal death from MINSAL and ISSS were included (in 2011 there were 55 maternal deaths for MINSAL, 8 for ISSS, and 1 at a private hospital); for neonatal deaths only MINSAL was included.

SELECTION OF MDGS TO STUDY:

For MDG 4, MINSAL selected indicator 4a) Reduce by two-thirds the under-one mortality rate by focusing on reducing neonatal deaths; and for MDG 5 it selected indicator 5a) Reduce maternal mortality. El Salvador focused on the indicators of maternal and neonatal death since it was hoped that the Family Health Survey that is to be conducted in 2013-2014 could be used to provide further details for target 5b, universal access to reproductive health.

SELECTION OF PRIORITY INTERVENTIONS:

Given the fact that El Salvador has good data available via the Active Monitoring System for Maternal Mortality (SVMM) and reports of neonatal deaths, the working group decided to prioritise from the very start interventions connected with the main causes of maternal and neonatal deaths: gestational hypertension, obstetric haemorrhage and infections in mothers; and congenital malformations, asphyxia and infections in newborns.

The analysis did not include pregnancy-related deaths that were due to external injury, such as a motor vehicle accident, firearms, or sharp objects; they were categorised as unrelated causes of maternal death.

IDENTIFICATION OF BOTTLENECKS:

Once the priority interventions were identified, the bottlenecks were determined using the

classification suggested by the MAF structure: policy and planning, budget and financing, provision or Service delivery (Supply), and use of services. The theory of three delays was also used to explain the reasons that affect maternal mortality according to official MINSAL documents⁴:

- a) *Delay 1*: time taken to make the decision to seek help, including help from the patient or her family,
- b) *Delay 2*: time taken to arrive at the facility for medical care, including problems of economic access, geographical access (roads, transport), and cultural access (beliefs, taboos, etc.),
- c) *Delay 3*: time taken to receive adequate treatment at the healthcare facility where the case is handled.

According to previous studies in El Salvador⁵ and according to SVMM data⁶, the delay that currently has an impact on 90% of cases is Delay 3. This means that most bottlenecks are related to diagnosis and timely and appropriate treatment within healthcare facilities do not concern access to such facilities⁷.

Factors relating to the economic, cultural and social determinants of health were also analysed, such as the mother's education and employment and the geographic area, since these are environmental factors that are usually closely linked to maternal and neonatal morbidity and mortality. To demonstrate the weight of external and internal factors in the healthcare sector – as well as to determine intersectoral coordination for possible bottlenecks – a Care Process study was conducted for all maternal deaths in 2011

4. *National Strategic Plan for the Reduction of Maternal, Perinatal, and Neonatal Mortality, 2011-2014. Ministry of Health, El Salvador, 2011.*

5. *Study on the baseline of maternal deaths, MINSAL, 2006.*

6. *SVMM report, MINSAL 2011.*

7. *The current government's healthcare reforms aim to improve access; one of the key policies is free access to every type of service, including maternal and infant care, and bringing services into the home via ECOS.*

that were entered into the MINSAL database, including ISSS deaths. A sample of patients with obstetric morbidities with the same diagnosis and cause as maternal deaths was studied, as was a sample of infant deaths, selecting cases from departments with a high rate of cases in 2011 where discharge from hospital occurred on the same day as death. In all cases, maternal deaths were followed up with a verbal autopsy, i.e. an interview with family members carried out at the patient's home, which made it possible to determine the context of the death.

PRIORITISATION OF BOTTLENECKS:

The bottlenecks were first established by reviewing the care procedure⁸. This was done by studying cases and controls in addition to the MAF; the weight of the risk of maternal and neonatal deaths resulting from success or failure of the intervention was also determined statistically as part of the analysis. This study included a review of national and international documentation and an analysis of forms for mothers and newborns in 15 of 28 maternity hospitals in El Salvador, which were selected according to the frequency of cases of death and involved interviews of users and managers of the programmes that were carried out by two national consultants.

More information about the bottlenecks is found in Chapter VI.

VALIDATION OF BOTTLENECKS:

In two workshops⁹ with various MINSAL care levels, the bottlenecks for selected interventions

were analysed, taking as the starting point the results of the additional study. Workshop participants included central-level MINSAL representatives (Division for the Support of Health Management and Programming, Sexual and Reproductive Health Unit, Division for Health Planning, Prevalent Diseases Unit, and the five health regions (country division for this sector), hospital representatives, community healthcare units, and health promoters), the Salvadoran Social Security Institute (SSSI), and representatives of civil society via the National Health Forum.

These workshops included an external moderator and representatives from the UNDP offices in New York and Panama.

The contributing factors for death that were revealed during this analysis were treated in an intersectoral workshop attended by representatives of MINED, RREE, CONASAN, PLAN International, ISSS, UN agencies (UNICEF, UNFPA, UNDAP, and the Resident Coordinator Office), and PAHO.

The analysed bottlenecks and proposed solutions are explained in Chapter VI.

DETERMINATION AND PRIORITISATION OF SOLUTIONS:

After prioritising the bottlenecks for interventions, the next step for those attending the workshops was to identify solutions. A specific group of hospital managers representing first-level and central-level programmes validated these solutions and determined the timeline for implementation. Priority was given

8. This is understood as the route followed by the patient or newborn within the healthcare system and the determination of the level of accomplishment of priority interventions established as standards by MINSAL for such care.

9. The first workshop was held at Santa Ana for the Western region and the second at San Salvador for the other four regions.

to short-term solutions in order to facilitate the implementation of interventions and accelerate progress towards the priority MDG targets, i.e. 4a) reduce the under-one mortality rate by focusing on reducing neonatal deaths, and 5a) reducing maternal mortality. Solutions were prioritised by considering the integrality of interventions, i.e. all interventions that, for example, concerned a reduction in obstetric haemorrhage and not feasibility criteria, since an intervention that was missing from the prevention process would put patients at risk.

In this context a solution is defined as an "accelerating" action in the short term if it resolves the bottleneck of an intervention and has a rapid impact on the ground. The aim of solutions identified in this case is to guarantee effective implementation of the interventions. Short-term solutions for resolving previously identified bottlenecks were therefore identified, prioritised and put in order at the validation workshops.

for Agricultural Technology, the Ministry of Labour, the Institute for Women (ISDEMU), the National Administration of Aqueducts and Sewage Systems (ANDA), the Corporation of Municipalities in El Salvador (COMURES) and Plan International.

DRAFTING OF THE ACCELERATION PLAN:

Once the solutions were determined and prioritised, the Action Plan was validated in a participatory manner via a consultation held in 2013 with other sectors such as the Technical Secretariat of the Presidency, the Secretary for Social Inclusion the National Youth Institute (INJUVE), the Ministry of Education (MINED), the Ministry of Foreign Affairs, which was responsible for health and education, CONASAN, MINSAL, the Ministry of Agriculture, the Ministry of Economics, the Ministry of the Environment and Natural Resources, the National Centre



II. FRAMEWORK OF CURRENT POLICIES AND INTERVENTIONS IN SUPPORT OF MDGS 4 AND 5

Photo: PAHO/WHO

One of the most important advancements by the current government is the healthcare reform process, led by the Ministry of Health (MINSAL) within the framework of policies and regulations. The advancements that have most in common with the achievement of MDGs 4 and 5 are:

1. Law on the Integral Protection of Children and Adolescents (LEPINA)
2. Integral Special Law on Providing a Life Free of Violence for Women
3. Five-Year Development Plan (PQD) 2010-2014, for which the following documents have been drawn up:
 - a. Sexual and Reproductive Health Policy
 - b. Strategic Plan for the Reduction of Maternal Mortality
 - c. National Youth Policy
 - d. National Policy for Food Security and Nutrition
 - e. National Women's Policy
 - f. Law on Breastfeeding
4. National Strategic Plan for Food and Nutritional Security (SAN) 2013-2016, by the National Council for Food and Nutritional Security, CONASAN
5. SAN Operating Plan, 2013-2016. CONASAN

LINK BETWEEN DEVELOPMENT AND HEALTH STRATEGY PLANS AND THE SELECTED INTERVENTIONS:

The government's healthcare strategies and recommendations for the five-year period 2010-2014 contained in the document "Building Hope"¹⁰ recognise health as a human right and a collective goal to which everyone can contribute. Therefore the government, via MINSAL, shall assume full responsibility for monitoring and assessing the consequences that economic, social and environmental issues have on the health of the population. The same document outlines Updated Primary Healthcare (APS-R) as the strategy towards achieving universal coverage, equality, quality, and sustainability; it defines MINSAL's regulatory role as the healthcare authority, and strategy No. 15.8 on sexual and reproductive health establishes care according to the following phases of life¹¹: preconceptual, prenatal, perinatal, postnatal and internatal.

Based on this document and from 2010 onwards, MINSAL began a process of reform in the sector that was characterised by eight points, including: the development of Integral and Integrated Networks of Healthcare Services (RISS), the organisation and development of the National Medical Emergency System, the reinforcement of Intersectoral and Intrasectoral Coordination, the development of Strategic Health Planning and Information, and the development of Human Resources in Healthcare.

10. Health policy: http://asp.salud.gob.sv/regulacion/pdf/politicas/Politica_nacional_de_Salud.pdf

11. Phase of life: This is a conceptual framework that makes it possible to understand how multiple health determinants interact throughout life and between generations to yield health results (NEILS 2010). It integrates a longitudinal view of life and its phases and transforms an evolutionary focus into an interrelational focus, linking one step with another and defining protective factors and risk factors for the future, within the framework of social determinants (DPES 2011).

The reform aims to reinforce family and community healthcare by using the strategy of the Primary Healthcare via Community Family Health Teams and Community Specialised Health Teams (ECOS)¹², to provide greater access to services for communities living in poorer areas, according to the Human Development Index and level of malnutrition.

The ECOS teams represent the first level of care, and their resolute capacity is increased with the help of Specialised ECOS teams. At the time of this report there were 450 teams distributed as follows: 422 Family ECOS and 28 Specialised ECOS in 153 towns, representing 58.4% of towns in the country and covering 345,538 families. This strategy has made it possible for MINSAL, for example, to increase first-level preventive consultations from 1,908,950 in 2008 to 2,257,335 in 2011. The working methodology enables the identification and early management of health risks and conditioning factors, together with local analysis and planning, especially for maternal and neonatal health. 105 analyses of the integral health situation were made based on family sheets and discussions in which the community's most common problems were prioritised. These analyses are brought to the town's intersectoral meetings and formed the basis of an annual intervention plan whose performance is to be assessed by a community assembly. The aim is to facilitate spaces for social participation, with the analysis and planning of intersector actions to address determinants that affect the population's health¹³. El Salvador has

624 Community Family Health Units, classified as basic, intermediary and special; there are 30 hospitals, 1 with paediatric services and 28 with maternity services, and 5 of them have neonatal intensive care facilities.

Another of the basic pillars of the reform is the intersectoral focus, which incorporates social determinants of health via a network that extends from the community to more complex levels, and which aims to improve the quality of a number of services, including sexual and reproductive health. Examples of this focus are the Health Forum¹⁴ that brings together representatives of civil society, the Intersectoral Committee on Health (CISALUD, which began by addressing problems related to dengue fever and is currently a consultation mechanism for the ministerial office)¹⁵, the National Council for the Integral Care of Persons with Disabilities (CONAIPD), and the National Committee on AIDS (CONASIDA).

The government has recently set up a number of decentralised structures that facilitate intersectoral coordination. They include the Departmental Cabinets which have been defined as a space for interinstitutional participatory analysis where decisions are made to promote solutions to problems identified from health determinants at the departmental level and in cooperation with municipal councils. The Departmental Cabinets aim to establish coordination with local governments in handling territorial development and risk management.

12. MINSAL, *National Strategic Plan for the Reduction of Maternal, Perinatal and Neonatal Mortality, 2011-2014*. ECOS: Each Family ECOS is made up of a general physician, a professional nurse, an assistant nurse, and two health promoters, who are responsible for monitoring and caring for the health of an average of 600 families in a particular territory or geographical area. For every 8 to 10 Family ECOS there is a Specialised ECOS that provides extra services including the basic specialities of gynaecology and obstetrics, internal medicine, paediatrics, and surgery, as well as family medicine, psychology, nutrition, and social work. The ECOS work with RISS reference hospitals, including the 28 maternity hospitals: 14 municipal hospitals, 12 departmental hospitals, 2 regional hospitals, and 1 specialised hospital, with another third-level specialised paediatric hospital.

13. MINSAL labour report, 2012

14. The National Health Forum was conceived as a community organisation responsible for developing communities' ability to participate (MINSAL, labour report, 2011)

15. <http://www.salud.gob.sv/ayuda/busqueda.html?searchword=cisalud&ordering=&searchphrase=all>

Other initiatives currently in development by MINSAL range from a methodological focus to the drafting and implementation of care standards and clinical guides. These include: the Focus on the Empowerment of Women, Individuals, Families and Communities to improve maternal and neonatal health (MIFC), implemented in 2006 with advice from PAHO/WHO and supported by Enfants du Monde and UNFPA, in which the participation of women, their families, healthcare personnel, and other community players has been vital. They are currently in place in eight towns with plans for expansion. Other initiatives are the homes for expectant mothers, the updating of prenatal and obstetric guides, quality standards, the creation of obstetric and neonatal skills to strengthen capacities among healthcare personnel for obstetric and neonatal care from 2009; implementation of the strategy to ensure supplies for sexual and reproductive health (AISSR) in 11 maternity hospitals in 2011; immediate care of newborns; implementation of the integral care of prevalent diseases in children (AIEPI) and neonatal resuscitation and transport from 2007.

The sexual and reproductive health policy for 2012-2014, championed by MINSAL, is the first of its kind and its first goal is to strengthen integral and integrated care in sexual and reproductive health within the network of healthcare sector services. The following actions are put forward in relation to MDGs 4 and 5:

- Guarantee the sexual and reproductive health standard for integral, integrated and inclusive life-cycle care.
- Guarantee integral and integrated care for persons throughout the life cycle with an emphasis on adolescents and socially excluded groups.

- Develop actions that enable universal access (geographical, economic, cultural, etc.) and continuous care in the network of sexual and reproductive health services.
- Reinforce the operational and technical capacity of the health system to guarantee sexual and reproductive health services.
- Strengthen human resources skills in the health system to guarantee promotion, prevention, care and rehabilitation in sexual and reproductive health with a focus on gender and rights.
- Improve infrastructure for sexual and reproductive health care by taking into account population needs throughout the life cycle.
- Have the necessary teams and supplies for detection, care, treatment and rehabilitation in sexual and reproductive health throughout the life cycle according to the needs of the population group.

In the summary of prioritised interventions mention is made of the operational application of these guidelines for action, although it should be pointed out that in 2011 this policy was no longer valid, but its strategic guidelines reflected the logic of implementing the entire care programme.

We have found no evidence of policies in other state structures that explicitly support the healthcare sector, despite functional connections, such as the Ministry of Education, the Ministry of Public Works, the Ministry of Communication and New Technologies, and the Sub-Secretariat for Local Development.

INSTITUTIONAL FRAMEWORK

(i) Intersectoral mechanisms

There are currently three intersectoral mechanisms that work towards the implementation of policies in support of MDGs 4 and 5:

- The Intersectoral Committee on Health (CISALUD)¹⁶, an intersectoral space set up more than two years ago involving 37 institutions, including 12 ministries (defence, education, governance, foreign affairs, public safety, tax, employment, agriculture, public works, environment, tourism, and health, the latter providing the leadership role in the Committee), undertakes the interinstitutional analysis of situations and problems that affect collective health and take decision from the perspective of determinants that affect health.
- The National Health Forum (FNS) was created based on the participatory nature of the current government's health policy; it is a space for citizens to participate in health interventions and aims to contribute to dialogue between the government and civil society to influence key government employees who are involved in decision making regarding health; it includes various NGOs that come together to work with about 200 community committees¹⁷. According to the MINSAL labour report for 2011-2012, the links between various social actors within communities have enabled 90% of towns to record no maternal deaths, 90% of births to occur at hospitals, and 100% of pregnancies to have a delivery plan.

- CONASAN, a body created in 2009 that is responsible for integrated strategies and the coherence of interventions in food and nutritional security (SAN), aims to avoid repetition in actions and to promote the optimisation of resources, monitoring, assessment, and implementation of the SAN policy and national plan.

(ii) Sector mechanisms

As part of the sector steering role, which is legally given to the MINSAL, is the Mortality Monitoring System which involves starting from the municipalities, the three levels of municipal: the MINSAL Division for Health Monitoring, the ISSS, and the Directorate-General for Statistics and Censuses at the Ministry of the Economy (DIGESTYC). Since 2006 MINSAL and ISSS have maintained active monitoring of all maternal deaths and audits of a sample of perinatal and neonatal deaths. The monitoring system is an official mandatory standard but must be reinforced technically in order to guarantee an active search that makes it possible to reduce the under-registry and community deaths.

In relation to MINSAL's regulatory role in maternal and neonatal care, the Division for Regulation at MINSAL approved the updated preconceptional, prenatal, delivery, and postnatal care standards in 2011, as well as the care guides for obstetric morbidity and neonatal care, based on the most up-to-date information. The Division for Support in Management and Health Programming, particularly the Sexual and Reproductive Health Unit, is responsible for monitoring and supervision per region, focusing on towns that have higher rates of maternal, perinatal and

16. www.salud.gob.sv. Informe Labores 2011 Y sistematización de la experiencia de la Comisión Intersectorial de salud, CISALUD, MINSAL, 2012

17. www.foronacionalsalud.org.sv

neonatal mortality or extreme morbidity.

The Hospital Division assessed the performance of 28 hospitals with maternity wards by using 21 quality standards. In 2008 it set up a baseline in 12 maternity services and from 2010 the work was extended to all 28 hospitals. Standards included family planning, prenatal, delivery, postnatal, and recent newborn care procedures, as well as discharge conditions for women and newborns, and in future it is hoped that breastfeeding will also be included.

For more than 25 years MINSAL has managed perinatal and maternal data using a Perinatal Information System (SIP-CLAP-OPS), which is currently computerised in the 28 maternity hospitals and has been used for two years as the most accurate form of decision making for women and children.



III. PROGRESS AND CHALLENGES IN ACHIEVING MDGS 4 AND 5

Photo: PAHO/WHO

Three years from the deadline, worldwide progress towards Millennium Development Goal indicators, according to the Inter-Agency and Expert Group 2012¹⁸, has been considerable, reducing by half the number of people in extreme poverty, reducing by half the population with no drinking water, achieving equality in primary teaching with a greater benefit to girls, moving towards reducing the under-five mortality rate, increasing access to HIV treatment, working towards reversing the spread of TB, reducing malaria deaths, and reducing maternal deaths, but pregnancies in adolescents have increased and the use of contraceptives has slowed down in the past decade.

It has also been shown for MDG 4 that between 2000 and the publication of this report in 2012, since the worldwide under-five mortality rate has fallen less rapidly than hoped, children under 5 years from poor families are twice as likely to die. The level of maternal education increases these children's likelihood of survival, and children from rural areas have a higher rate of mortality. It has been seen that despite the reduction in under-five mortality, neonatal mortality is on the rise. As for MDG 5, the reduction in maternal deaths has been slower than expected and there is still a long way to go to reach the goal in developing countries, where almost two-thirds of births are attended by qualified persons; not all regions have seen a rise in prenatal checks.

Diagram 1 shows the progress in seven MDGs in El Salvador according to the latest available report from 2009:

According to this latest report, 8 of the 31 indicators are considered to have been accomplished already, 8 are nearly there, 8 will be difficult to meet, 5 will be likely, and 2 have no data. For MDGs 4 and 5 it is currently thought that the reduction in the under-five mortality rate will be accomplished and it is probable that a decrease in maternal mortality will be achieved.

For these two MDGs the country has agreed to:

- MDG 4: Reduce neonatal deaths by 1.5 points (from 9.0 to 7.5 per 1,000 live births) and perinatal deaths from 19.0 to 17.0 per 1,000 births¹⁹.
- MDG 5: Reduce the maternal mortality rate from 71.2 to 52.0 per 100,000 live births, i.e. a decrease of 19.2 points; even this figure would be far from the goal for the LAC region, which is 45 maternal deaths per 100,000 live births and universal access to reproductive health by 2015.²⁰

Official data on patterns for the MDG 4 and 5 indicators show that the under-five and under-one mortality rates are two points from the 2015 goal.

18. *Millennium Development Goals Report, UNDP, 2012.*

19. *United Nations, Joint Country Analysis, El Salvador, 2010.*

20. *National Strategic Plan for the Reduction of Maternal, Perinatal and Neonatal Mortality, 2011-2014. MINSAL, El Salvador, 2011.*

DIAGRAM 1: MDG PROGRESS IN EL SALVADOR, LATEST REPORT, 2009

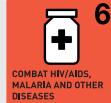
	Target	Indicator	1991	2007	2015 goal	Status/prognosis 2015	
Goal 1 <i>Eradicate extreme poverty and hunger</i>	 ERADICATE EXTREME POVERTY AND HUNGER	<ul style="list-style-type: none"> • Halve the number of people in extreme poverty • Halve the proportion of people who suffer from hunger 	<ul style="list-style-type: none"> • % of households in extreme poverty • % of the population below \$1 per day • % of underweight children under five years of age 	28.2 12.7 11.2	10.8 8.2 8.6	14.8 6.3 5.6	Achieved Nearly achieved Difficult to achieve
Goal 2 <i>Achieve universal primary education</i>	 ACHIEVE UNIVERSAL PRIMARY EDUCATION	<ul style="list-style-type: none"> • Ensure that all children can complete a full course of primary schooling, girls and boys 	<ul style="list-style-type: none"> • % of children who begin 1st grade and finish 6th grade • net enrolment rate in primary education (5) • literacy rate among 15-24-year-olds (%) 	52.6 75.5 85.2	75.4 94.8 95.5	100 100 Increase	Difficult to achieve Nearly achieved Nearly achieved
Goal 3 <i>Promote gender equality and empowering women</i>	 PROMOTE GENDER EQUALITY AND EMPOWER WOMEN	<ul style="list-style-type: none"> • Eliminate gender disparity in education 	<ul style="list-style-type: none"> • radio of boys to girls in primary education (%) • % of women in wage employment in the non-agricultural sector • % of seats held by women in national parliament 	100.7 45.8 9	101.5 45.5 19	100 50 50	Achieved Difficult to achieve Difficult to achieve
Goal 4 <i>Reduce the under-five mortality rate</i>	 REDUCE CHILD MORTALITY	<ul style="list-style-type: none"> • Reduce by two-thirds the under-five mortality rate 	<ul style="list-style-type: none"> • under-five mortality rate (per 1,000 live births) • infant mortality rate (per 1,000 live births) • proportion of 1-year-olds immunised against measles 	52 41 77	19 16 85	17 14 100	Nearly achieved Nearly achieved Nearly achieved
Goal 5 <i>Improve maternal health</i>	 IMPROVE MATERNAL HEALTH	<ul style="list-style-type: none"> • Reduce by three-quarters the maternal mortality rate • Achieve universal access to reproductive health 	<ul style="list-style-type: none"> • maternal mortality rate (per 100,000 live births) • proportion of births attended by skilled health personnel • contraceptive prevalence rate (%) • birth rate among 15-24-year-old women • prenatal coverage (at least 1 check) (%) • prenatal coverage (at least 5 checks) (%) • unmet need for family planning (%) 	- 51 53.3 124 68.7 50 9.2	57.1 83.7 72.5 89 94 78 1	Reduce 100 100 Reduce 100 100 Reduce	- Probably achieved Nearly achieved Probably achieved Probably achieved Difficult to achieve Nearly achieved
Goal 6 <i>Combat HIV/AIDS, malaria, and other diseases</i>	 COMBAT HIV/AIDS, MALARIA AND OTHER DISEASES	<ul style="list-style-type: none"> • Have halted and begun to reverse the spread of HIV/AIDS • Achieve universal access to treatment for HIV/AIDS • Have halted and begun to reduce the incidence of major diseases 	<ul style="list-style-type: none"> • HIV/AIDS prevalence (15-24-year-olds) • % condom use in high-risk sex • proportion of youth with comprehensive knowledge of AIDS • rate of access to antiretroviral drugs • prevalence of malaria (per 100,000 inhabitants) • prevalence of tuberculosis (per 100,000 inhabitants) • % of cases treated and cured with DOTS 	0.007 - - - 190 45.7 -	0.03 8 24.2 79.6 0.4 29 90.2	Stop Increase 100 100 Reduce Reduce Reduce > 90	Difficult to achieve Difficult to achieve Difficult to achieve Probably achieved Achieved Probably achieved Achieved
Goal 7 <i>Ensure environmental sustainability</i>	 ENSURE ENVIRONMENTAL SUSTAINABILITY	<ul style="list-style-type: none"> • Reverse the loss of environmental resources • Halve the proportion of the population without sustainable access to drinking water 	<ul style="list-style-type: none"> • % of land covered by forest • CO₂ emissions per capita • consumption of ozone-depleting substances • % of population with access to improved water sources • % of population with access to improved sanitation 	- 1.6 423 63.3 76.7	26.8 0.7 34.7 86.8 92	Increase Reduce Reduce 80.5 89	Probably achieved Achieved Achieved Achieved Achieved

TABLE 1:**STATUS OF MDG 4 AND TRENDS FOR THE PERIOD 1991-2015**

Indicators	1991	2007	2008	2009	2009
Under-five mortality rate (per thousand live births)	52.0	52.0	19.0	N.D.	17.0
Infant mortality rate (per thousand live births)	41.0	41.0	16.0	N.D.	14.0
% of 1-year-olds vaccinated against measles	77.0	95.0	95.0	92.0 (*)	100

Source: FESAL birth rate survey, 2008. (*) MINSAL information system.

Data for maternal deaths show that in 2009 the rate was 4 points from the national goal, but almost 10 points from the goal for Latin America for this MDG.

TABLE 2:**INDICATORS FOR MONITORING MDG 5: IMPROVING MATERNAL HEALTH**

Indicators	1991	2007	2008	2009	2009
Maternal mortality rate (per 100,000 live births)		57.1 (*)	47.3(*)	56.0(*)	52
% of births with specialised assistance	51	83.7	83.7	N.D.	100
Rate of contraceptive use (%)	53.3	72.5	72.5	N.D.	80
Birth rate of 15-19 year-old women	124	89.0	89.0	N.D.	Reduce
Prenatal coverage (at least 1 consultation) (%)	68.7	94.0	94.0	N.D.	100
Prenatal coverage (at least 4 consultations) (%)	50	78.0 a)	78.0	N.D.	100

Source: FESAL birth rate survey, 2008. MINSAL SVM (*)>

REASONS FOR SELECTING THESE MDGs

At the time of this report, official data on maternal mortality, including from the National Health System, show that the national target for the first indicator of maternal health, i.e. maternal mortality, has been met; the goal for Latin America is still six points away. There are still geographical and age-related disparities, as demonstrated

in official data from 2011. For example, the under-five mortality rate is 30% higher in rural areas than in towns; 28% of maternal deaths in the Central (La Libertad department), Western (Ahuachapan and Santa Ana departments), and Eastern (Usultan and San Miguel departments) regions occur in adolescents, 40.6% of these being due to intoxication associated with suicide in connection with rejected pregnancies. Nationally the maternal mortality rate has fallen.

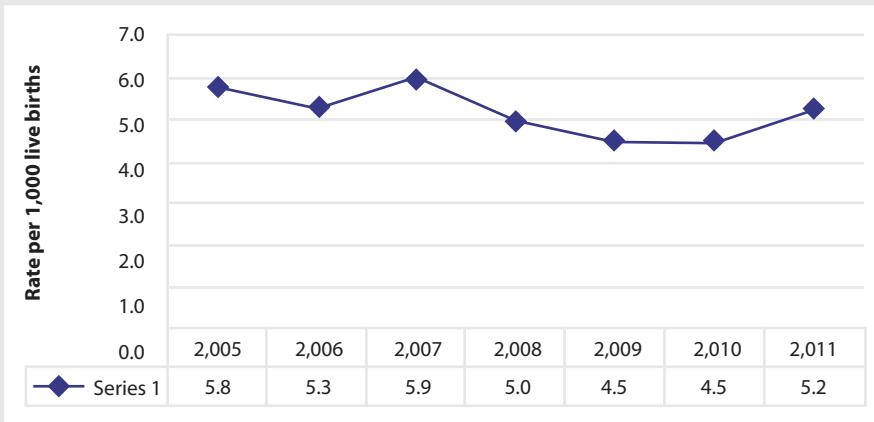
When analyzing the performance of cases by cause we note the following trends:

- in the period 2006-2011 the proportion of direct causes shows a decrease from 2008, but an increase of indirect causes;

- in 2011, both the proportion of direct and indirect deaths was similar to those obtained in 2006.

FIGURE 1:

NEONATAL MORTALITY RATE, MINSAL, 2005-2011.



A tendency towards increasing the neonatal mortality curve has also been observed, according to SIMMOW data from MINSAL in 2011, which may jeopardise the achievement of this MDG. It should also be borne in mind that the trend may be affected by the current economic crisis, land vulnerability in El Salvador, and the food crisis; it is therefore important to increase efforts to reduce and/or maintain levels as well as to further address social determinants and promote intersectoral coordination.

HEALTH CHALLENGES IN EL SALVADOR:

In the recent MINSAL study on social exclusion²¹ with the support of PAHO which compared 2002 data with 2010, it was observed that extreme poverty fell during this period, but there was an increase in relative poverty and a slight reduction in the number of rural poor. Access to social security among the poor fell from 19.1% (2002) to 14.13% (2010). The rate of underemployment varied from 29.8% (2002) to 39.6% (2009) to 28.9% (2010).

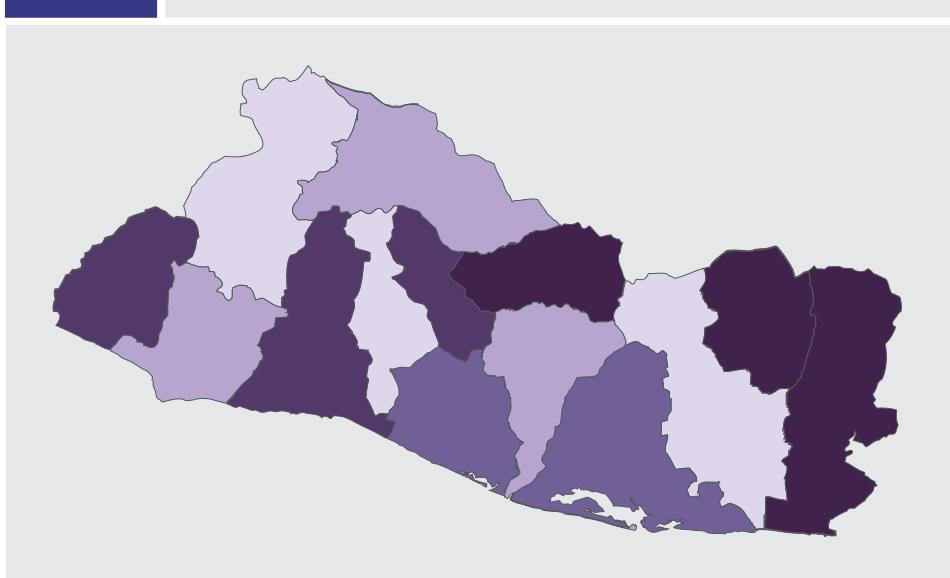
²¹. Social exclusion is defined as a multidimensional phenomenon expressed as a lack of access to various goods, services, and opportunities that improve or maintain the level of health for certain groups or persons but are enjoyed by other groups in society.

Household expenditure on health fell from 53.7% (2002) to 34.0% (2010). This meant a positive change given the regressive nature of this expense, which has a greater impact on the poor, and is a result of free healthcare services. The “internal dimension” of exclusion in terms of actions directly linked to the Health System, such as the proportion of hospital births, shows that for the period 2002-2008 this increased from 71% (urban: 87.3%, rural: 54%) to 85% (urban: 94.3%, rural: 75.9%), especially as a result of coverage in rural areas, which increased by 22%.

Births at MINSAL facilities, broken down by the socio-economic level of women, increased further (17.8%) in populations with low levels compared with the average, which was 6.2%. The proportion of pregnant women who did not have the number of checks recommended by MINSAL (five or more) for the period 2002-2008 fell from 41.8% (urban: 34%, rural: 49.7%) to 21.5% (urban: 17.3%, rural: 25.7%), mainly in the rural sector (24%). Yet the analysis of effective coverage in the years of the study showed minor differences (41.7% for 2002 and 42.69% for 2010), revealing the absence of significant changes in coverage offered by MINSAL.

GRAPHIC 2:

SOCIAL EXCLUSION MAP. MINSAL/PAHO, 2012.



Source: FGT_Foster, Greer, Thorbecke social compound index for social exclusion

Levels:

[Light Purple Box]	23.08 - 27.45
[Medium Purple Box]	27.46 - 27.89
[Dark Purple Box]	27.90 - 30.10
[Very Dark Purple Box]	30.11 - 35.54
[Darkest Purple Box]	35.55 - or higher.

The social compound index for social exclusion from healthcare (FGT: Foster, Greer & Thorbecke, 1984) showed an estimate exclusion rate of 0.28, which is high, with an interval of 0.273-0.282 with a 95% confidence interval. The colour-coded map (Graphic 2) shows the compound exclusion index for each department:

Cabañas, followed by Morazán and then La Unión and Ahuachapán, have the highest levels of exclusion, represented by the purple and lighter purple colours on the map. Some of the more important factors for the compound exclusion index are: the economic component (poverty, income, unemployment), the social and spacial component (travel time, literacy, access to drinking water, sewage), and the healthcare system component (number of doctors and nurses per 10,000 inhabitants, hospital births).



IV. FINDINGS ON THE ACHIEVEMENT OF MDGs 4 AND 5

Photo: PAHO/WHO

A. GEOGRAPHICAL AREA OF THE STUDY AND SOCIAL FACTORS

The following departments were selected because they are priorities in terms of policy, register more maternal and neonatal deaths, and have a suitable structure for implementing the future plan to reinforce the MDGs, not only on account of the higher number of mortality cases but also because they are less accessible and due to reasons related to accessibility.

According to data from this study, delays in reaching hospitals have decreased considerably, with the highest time in 2011 being 1 hour 10 minutes in the Ahuachapán department in the case of a rural patient. In other words, this determinant does not play a considerable role in maternal and neonatal deaths and is therefore not an analysis criterion for this study.

Table 4 shows the departments of El Salvador according by the Human Development Index (HDI) , which according to the study have higher levels of maternal and neonatal death (those with more maternal deaths are shown in bold); Morazán is the department with the lowest HDI. It is important to point out that four of the departments with high maternal and neonatal mortality rates (highlighted in blue: Usulután, Ahuachapán, La Unión and Morazán) also have the lowest gender-related HDI classification. Similarly, it is not surprising that households with higher percentages of extreme poverty are located in departments with more cases of maternal and neonatal mortality (Ahuachapán and Morazán).

The specific findings per intervention are found in Chapter V.

22. HDI: Compound index that measures average progress in three basic dimensions of human development: a) life expectancy at birth; b) knowledge, measured using the adult literacy rate and the gross school enrolment rate for primary, secondary and higher education; and c) the level of life with dignity, measured using per capita GDP (purchasing power parity in USD).

**TABLE 3: REGIONS WITH A HIGHER LEVEL OF MATERNAL AND NEONATAL DEATHS,
AND ACCESS TIMES TO HOSPITALS**

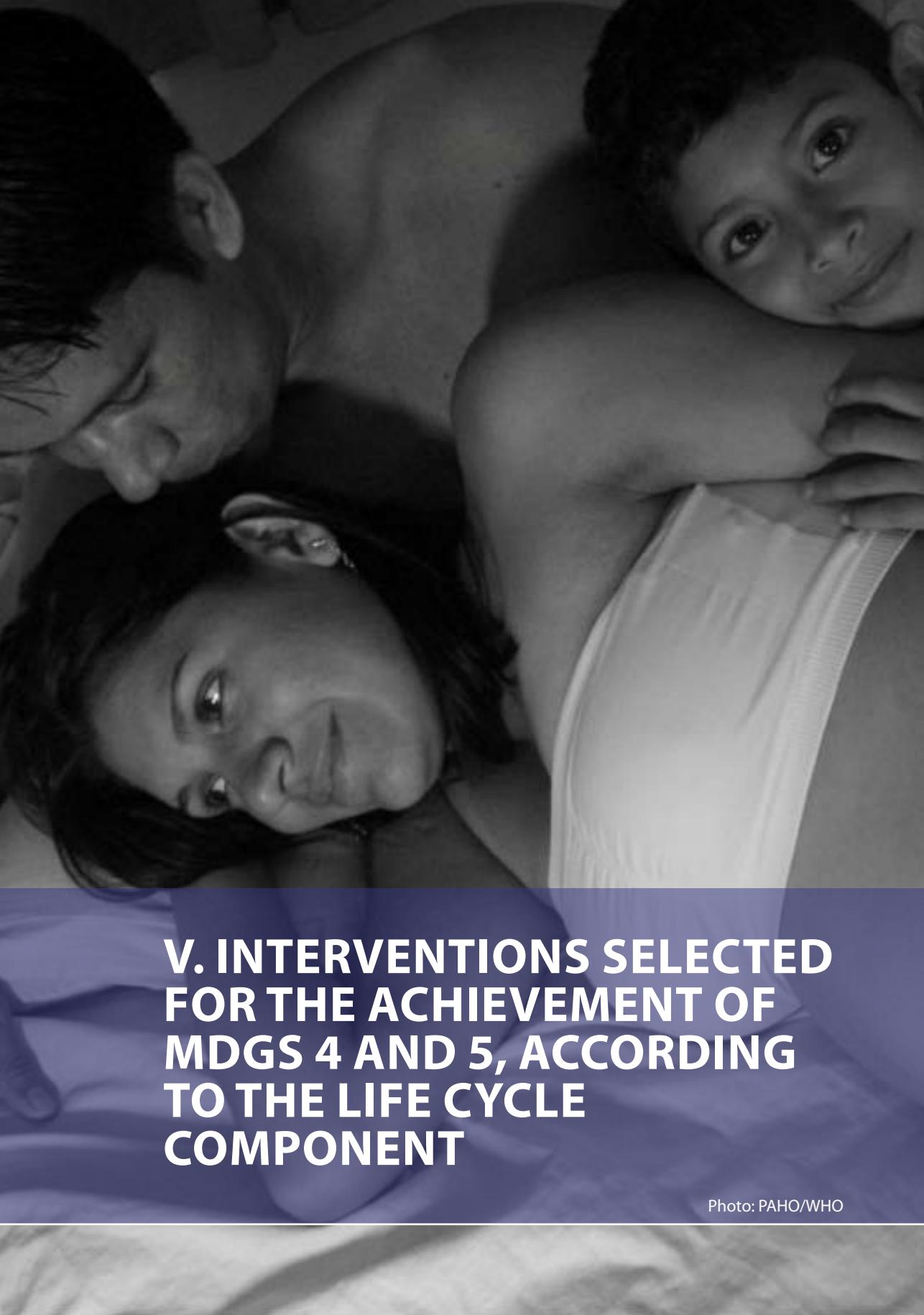
Western region	Access time to healthcare facility		Central region	Access time to healthcare facility		Metropolitan region	Access time to healthcare facility		Paracentral region	Access time to healthcare facility		Eastern region	Access time to healthcare facility	
	U	R		U	R		U	R		U	R		U	R
Hosp. Santa Ana	0.3	0.7	Hosp. San Rafael	0.3	0.6	Hosp. Bloom	0.3	0.7	Hosp. Zacatecoluca	0.3	0.5	Hosp. San Miguel	0.3	0.3
Hosp. Sonsonate	0.3	0.6	Health unit: San Juan Opico	0.3	0.6	Hosp. Maternidad	0.3	0.6	Health unit: San Pedro Masahuat	0.3	0.5	Hosp. Santa Rosa de Lima	0.3	0.3
Hosp. Chalchuapa	0.3	0.6	Puerto de La Libertad	0.3	0.6							Hosp. Usulután	0.4	0.4
Hosp. Ahuachapán	0.3	0.7										Hosp. La Unión	0.3	0.3
Health units: Cuisnahuat and Atiquizaya	0.3	0.7										Health unit: Conchagua	0.3	0.3

Source: Social Exclusion Study. MINSAL/PAHO, 2012.

TABLE 4: SOCIAL INDICATORS IN SALVADORAN DEPARTMENTS, 2012

Department	HDI	Gender-related HDI classification	Literacy rate for women aged 15 years and over	GDP	Extreme poverty (percentage of households)
Morazán	0.695	14	65.4	0.633	21.9
Sonsonate	0.745	8	79.2	0.669	13.3
Ahuachapán	0.723	11	74.9	0.629	22.4
Santa Ana	0.754	4	80.7	0.700	11.8
San Salvador	0.810	1	90	0.758	6.3
La Libertad	0.788	2	83.8	0.748	10.3
La Paz	0.757	3	82.8	0.667	11.4
San Miguel	0.745	6	77.8	0.695	14.2
Usulután	0.723	10	72.4	0.659	15.3
La Unión	0.698	13	69.5	0.636	14.5
National	0.761		81.8	0.708	12
Urban					9.2
Rural					17.5

Source: Joint Country Analysis, UNDP, 2012



V. INTERVENTIONS SELECTED FOR THE ACHIEVEMENT OF MDGS 4 AND 5, ACCORDING TO THE LIFE CYCLE COMPONENT

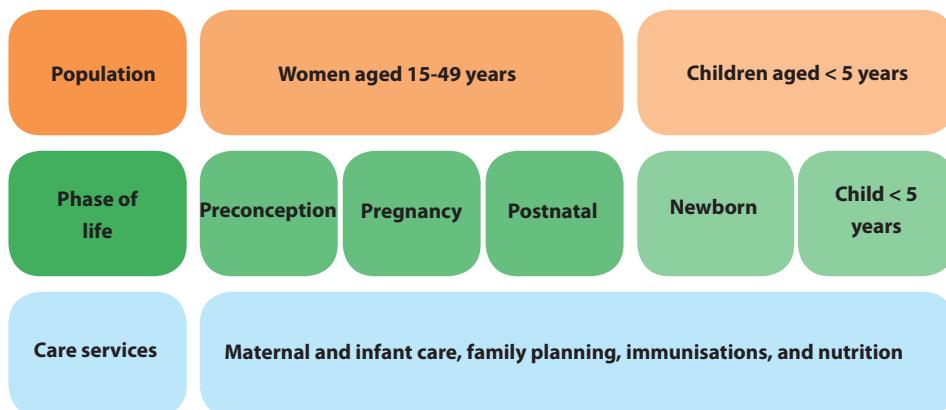
Photo: PAHO/WHO

Interventions were selected in agreement with MINSAL based on the three main causes of maternal and neonatal mortality: gestational hypertension, obstetric haemorrhage and infections in women; and congenital malformations, asphyxia and infections in newborns.

There was a single criterion for prioritising interventions: inclusion of all²³ interventions used to detect, treat and reduce the main causes

of morbidity and mortality for which MINSAL promotes an integral focus. It has also been shown internationally that a problem in one phase of life affects the following phase²⁴.

The interventions were therefore grouped according to the following components in the life cycle approach:



1. Preconceptual care (period with benefits for the future mother and child)
2. Prenatal check (benefits for the mother and in particular for the child)
3. Care during labour
4. Care for the newborn
5. Monitoring of neonatal morbidity and mortality
6. Postnatal care
7. Monitoring of maternal morbidity and mortality
8. Management as a transverse component, including information systems, coordination between networks, amount of supplies, amount of human resources, and community involvement.

23. *The partnership for maternal, newborn and child health, 2011. A global review of the key interventions related to reproductive, maternal, neonatal and child health (RHMNCH).*

24. *Alliance for Nutrition. Presentation on programming for organisations during the perinatal phase.*

Human rights must be guaranteed so that children have integral survival not only in terms of health, as mandated by the Convention on the Rights of the Child, which El Salvador has signed and which has been applied through legislation (LEPINA), and has a direct impact on social services since MINSAL is a member of the System for the Protection of Children and Adolescents. LEPINA has defined other response interventions related to the right to life with dignity, access to environmental sanitation, education, food and nutritional security, etc., involving intersectoral coordination.

These rights are described below for each life cycle component:

Component 1. Preconceptional care: Access to dignified employment for women. Access to food and nutritional security (SAN). Access to a decent home for the family. Free medical care services. Access to quality healthcare services.

Household access to drinking water and environmental sanitation. Prevention and detection of domestic violence.

Access to literacy and education.²⁵

Component 2. Prenatal care: Maintenance of the above as well as the following: Access to quality services based on Integral Primary Healthcare (APSI).

Prevention and control of diseases. Access to emergency services. Access to citizen recognition (preparations for admission of parents). Prevention and detection of domestic violence.

Preparation for breastfeeding. Access to mental health services for women.²⁶

Component 3. Neonatal care: Maintenance of the above as well as the following: Access to quality services based on Integral Primary Healthcare (APSI).

Prevention and control of diseases. Access to emergency services. Access to citizen recognition (national register).

25. Rights covered by LEPINA (<http://escuela.fgr.gob.sv/wp-content/uploads/2012/02/LEPINA-Comentada.pdf>): Protection of persons for birth, Article 17. Measures to safeguard the right to life, Article 18. Prohibition of life-threatening tests and practices, Article 19. Right to a suitable level of dignity in life, Article 20.

26. Continued: Duties of the National Health System, Article 25. Family responsibilities regarding the right to health, Article 26. Society responsibilities regarding the right to health, Article 27. Right to breastfeed, Article 28. Promotion of health for children and adolescents, Article 29. Primary and family health, Article 30. Mental health, Article 31. Sexual and reproductive health, Article 32. Prohibition of the sale or distribution of materials or substances that may harm mental or physical health, Article 33. Right to social security, Article 34. Right to a healthy environment, Article 35. Children and adolescents with disabilities, Article 36.

TABLE 5A:

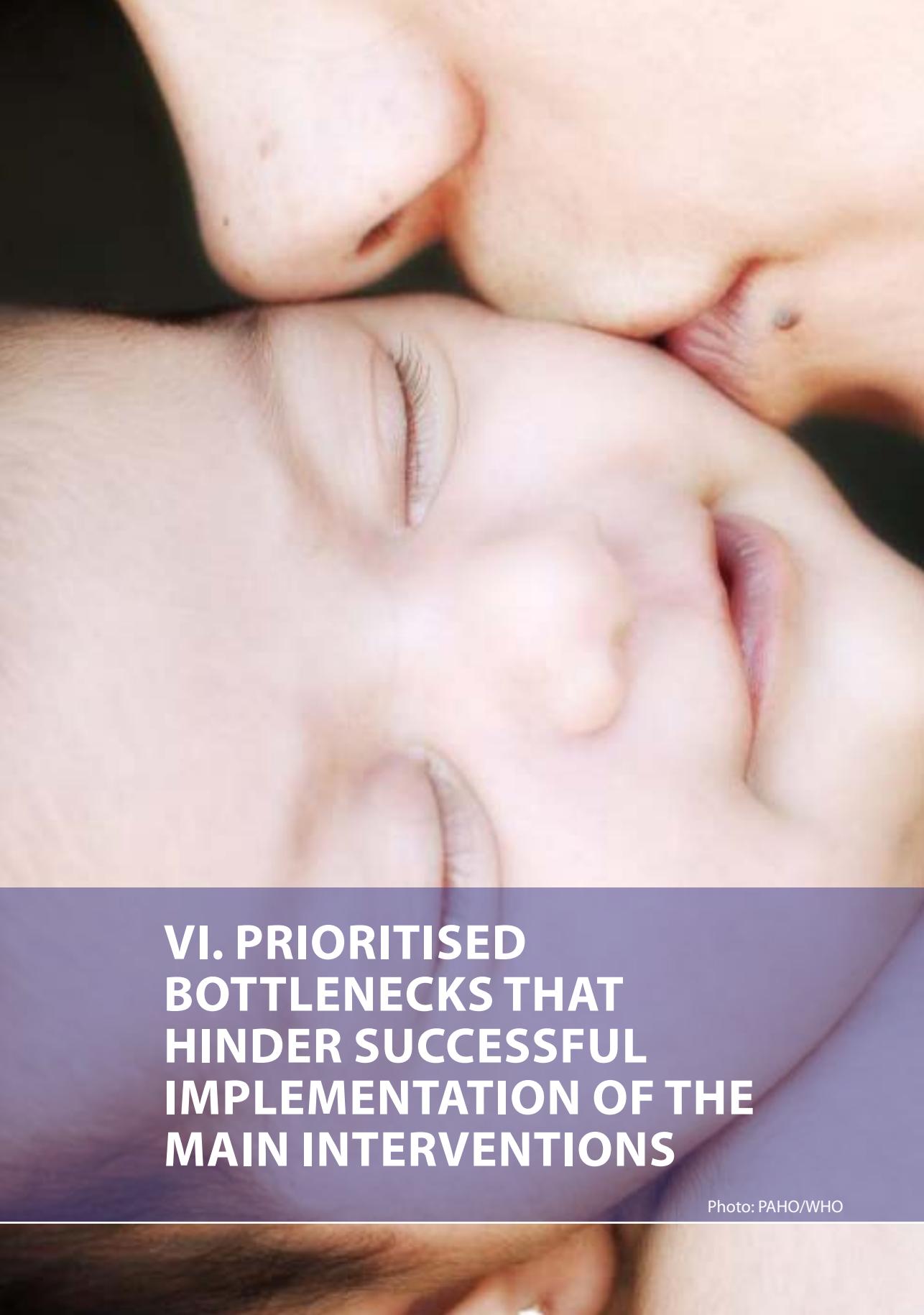
SUMMARY OF INTERVENTIONS PER LIFE CYCLE COMPONENT.
MDG 4: REDUCE BY TWO-THIRDS THE UNDER-FIVE MORTALITY RATE

MDG indicator	Life cycle component related to MDG 4. Neonatal (N)	Prioritised healthcare interventions
Mortality rate per 1,000 births; neonatal deaths accounted for 60% of child deaths in El Salvador	COMPONENT 1-N Preconceptional care	Existence of an environment that facilitates maternal and neonatal health, including policies, standards, provision of supplies, medicines, teams, and funding
	COMPONENT 2-N Prenatal care	Guarantee of prenatal care to detect risks and treat complications, referrals and returns, and appropriate follow-up
	COMPONENT 3-N Neonatal care	Specific interventions for newborns according to health problems
	COMPONENT 4-N Monitoring of neonatal morbidity and mortality	Definition of basic cause of death Audit of specific cases

TABLE 5B: SUMMARY OF INTERVENTIONS PER LIFE CYCLE COMPONENT.
MDG 5: REDUCE MATERNAL MORTALITY BY THREE-QUARTERS

MDG indicator	Life cycle component for MDG 5 (M)	Objectives per component	Health intervention
Mortality rate per 100,000 live births. Percentage of births attended by qualified personnel according to WHO.	COMPONENT 1-M Preconceptual care	To guarantee preconceptual care to address the indirect causes of maternal death	<ul style="list-style-type: none"> • Family planning • Folic acid • Detection of hypertension • Detection of diabetes • Detection of cancer in women • Spacing of births every 2-5 years • Multivitamins • Monitoring and adjustment of malnutrition with BMI • Prevention and control of chronic diseases • Detection of infections (TORCHES) and risk factors
	COMPONENT 2-M Prenatal care	To guarantee prenatal care to detect risks and treat complications, referrals and returns, and appropriate follow-up	<ul style="list-style-type: none"> • Use of HCP • Detection of violence against women • Use of filter sheet • Detection of proteinuria • Detection of syphilis • Detection of bacteriuria • Measurement of BMI • Monitoring of weight gain according to BMI • Td immunisation and 'flu vaccine • Calcium administration in all pregnant women • Aspirin administration in women with risk factors • Detection and treatment of syphilis and HIV • Corticosteroid administration in pre-term births • Treatment of periodontal disease • Detection of cervical or uterine cancer • Detection of anaemia • Ultrasound according to prenatal guide (Appendix 13, p. 71)
	COMPONENT 3-M Care during labour and delivery	To have births attended by qualified personnel	<ul style="list-style-type: none"> • Use of partogram • Induction of birth with specific criteria • Qualified personnel • Use of MATEP • Basic care and cardiopulmonary resuscitation for newborns • Clamping of umbilical cord after it stops pulsing • Exclusive breastfeeding starting within the first hour • Prevention and control of nosocomial diseases • Hospital birth • Clean birth • Detection of abnormal presentations and elective Caesarean sections for this indication

MDG indicator	Life phase component for MDG 5 (M)	Objectives per component	Health intervention
Mortality rate per 100,000 live births. Percentage of births attended by qualified personnel according to WHO.	COMPONENT 4-M Postnatal care. Monitoring of immediate and late postnatal phase		<ul style="list-style-type: none"> • Recording of vital signs according to schedule • Suitable fluid intake • Postpartum control in first week in the event of complications • Family planning to delay high-risk pregnancies and suitable intergenerative period
	COMPONENT 5-M Monitoring of maternal morbidity and mortality	To apply the monitoring system for maternal morbidity and mortality. To define the basic cause.	<ul style="list-style-type: none"> • Definition of case • Notification of case • Audit file • Confirmation of case • Report to monitoring system • Drafting of improvement plan • Monitoring of improvement plan
	COMPONENT Management	To audit specific cases. To use an integrated information system for RIISS decision making	<ul style="list-style-type: none"> • Perinatal information system
		To have a monitoring and supervision system	<ul style="list-style-type: none"> • Quality standards for maternal and neonatal care
		To strengthen social and community mobilisation	<ul style="list-style-type: none"> • Training of leaders • Knowledge of danger signs • Health committees • Health Forum for maternal and neonatal health • Municipal cabinets with activities to promote maternal and neonatal health



VI. PRIORITISED BOTTLENECKS THAT HINDER SUCCESSFUL IMPLEMENTATION OF THE MAIN INTERVENTIONS

Photo: PAHO/WHO

Bottlenecks are categorised as Policy and Planning, Budget and Financing, service utilization (Demand), and Service Delivery (Supply).

POLICY AND PLANNING

It must be stated that MINSAL has a sexual and reproductive health policy that at the time of the study was approved by MINSAL to begin in 2013; however, since the regulatory framework was linked to internationally accepted supporting data and found in the policy documentation, the non-existence of the plan was not a limiting factor, but served specifically to promote subsequent approval and implementation.

During the discussions on findings from the MAF study and planning to accelerate the MDG, it was said that the limited policy implementation and the absence of a policy to promote health had an impact on information, education and communication for the population. It should be stated that MINSAL is working tightly within the Care Model based on Updated Primary Healthcare (APS-R) with intersectoral and community participation models, which are not known by all personnel where the model has not been applied. It is important to resume working on these models for the benefit of maternal and neonatal health.

It was found that not all the supplies required for compliance with the standard are present, such as calcium in the event of gestational hypertension, or strips for detecting bacteriuria and proteinuria. There is no specific strategy for the management of infections associated with care, and guidelines for treating the possibility of premature birth do not include the first choice of nifedipine, which is the internationally accepted medicine. There is no joint maternal-neonatal strategy to detect and manage low weight and prematurity; there is no national

updated AIEPI, which affects its application locally, and only 4% of maternity hospitals have adequate neonatal transport.

HEALTH BUDGET AND FINANCING

The 2012 health budget rose to 2.4% of Gross Domestic Product (GDP) from 2.0% in 2006. Of this total, overall remuneration increased from 60% (2006) to 68% (2012), and medicines and medical and surgical equipment rose from 19% (2007) to 22% (2009).

The increase in medicines and supplies is not in line with the increase in demand or hospital consultations; for example, hospital births in the National Health System accounted for 99.5% in 2012 and there was no budget specifically for maternal and neonatal health. This has an impact on findings due to the lack of certain supplies throughout the year such as reactive strips for early prenatal detection of proteinuria in preeclampsia and eclampsia, one of the main causes of maternal deaths.

SERVICES UTILIZATION (DEMAND)

Characterising the demand is not a routine practice for MINSAL, and more emphasis must be given to ensure the national coverage detecting social risks in women seeking care. This has significant implications for maternal and neonatal deaths, since, as shown by the study, the risk of maternal or neonatal death is four times higher in women from rural areas aged 35-40 years. During the study it was seen in some hospitals that socio-economic data are dictated by the staff rather than by the patients who arrive with birth complications.

SERVICE DELIVERY (SUPPLY)

This is the area with the highest number of identified bottlenecks since Delay 3 is found in both MINSAL data and the reviewed forms. For maternal care they were related with staff abilities in preconceptual, prenatal, delivery, and postnatal care. Examples of these bottlenecks are: undetected clinical risks in some patients; lack of a specific care algorithm for rural women aged over 35 years, who carry a greater risk of maternal and neonatal mortality.

The current standard provides tools to detect risks in the preconceptual, prenatal, delivery, and postnatal phases, but they have not been implemented. One of these tools is the use of the Perinatal Information System, which according to the study of risks led to a high probability of death in mothers and newborns when it was not filled in. Regarding these skills MINSAL has made great efforts to provide tools such as workshops for obstetric and neonatal skills, NALS certification, etc.; however, in planning workshops it was seen that they were not acquired and corrected systematically and not accepted by all providers, whether MINSAL or ISSS.

This bottleneck has a fundamental impact on non-compliance with existing technical standards at hospitals, which points to non-use or ignorance on the part of the personnel and more intensive, focused follow-up on the part of the supervisor and disciplinary decision making by the respective care level, with responsibility always individualised. It must also be noted that MINSAL has added 2,576 human resources for first-level care, up from 7,724 in 2009 to 10,300 in 2011, as well as 1,570 new personnel at hospitals, up from 13,340 in 2009 to 14,910 in 2011. In the study the specific rise in maternal and neonatal care could not be determined due to a lack of data, but the opinion of service providers indicates that the distribution of personnel is inad-

equate during night shifts and on holidays. This increase in resources requires standardisation of knowledge for personal entering the services, and regular refreshing courses of existing knowledge; to date MINSAL is the body that prepares new personnel for their functions. By emphasising social characteristics such as age and equality, for example, in some cases maternal death was associated with uterine haemorrhage and the use of oxytocic drugs for induction, which required the use of different oxytocic drugs. This must be taken into account in this group of patients where there is no specific algorithm for managing these cases.

Concerning the information system for morbidity and mortality in relation to MDGs 4 and 5 we found a sub-set of cases from neonatal problems, particularly from the monitoring system for neonatal mortality, that resulted in death within 28 days of birth. Likewise, given the 19% premature death rate, this condition is over-reported as a cause of death due, for example, to anencephaly, and appears listed as a death due to prematurity. Consequently it produces a sub-set of other diagnoses, such as sepsis, for which we find no specific interventions in MINSAL documents, unlike for asphyxia. Monitoring of maternal mortality has been implemented according to current guidelines, yet we find no evidence in the study of cases resulting from an analysis of deaths in women aged 10-49 years, which is one of the sources of data for active monitoring. Regarding the classification of death, cases with a basic cause of molar pregnancy were found, which according to ICD 10 is not a cause of death. Only one of the 10 maternity hospitals studied had a suitable register for extreme obstetric morbidity. The personnel and municipal registrars had received no training in SVMM.

INTERSECTORAL COORDINATION (CROSS-CUTTING)

According to the findings there are factors that although not direct causes of deaths and morbidities, contributed to their development, including: the presence of nutritional problems in mothers of newborns from the foetal phase such as low birth weight and restricted intrauterine growth; the presence of anaemia in mothers; non-follow-up of growth and development of premature babies with low birth weight and orphans due to maternal death; non-inclusion of a practical form of control for factors associated with improving the home environment with safe water, outdoor kitchens, lavatories, etc.; insufficient education of users, their family and communities in matters of health and particularly sexual and reproductive health which are necessary to reduce the number of initial pregnancies in adolescents; no actions for other sectors to increase the intergenetic interval between children, particularly in adolescents, to ensure a life plan and school reintegration in this population through education and family planning services; no systematic plan to educate families and communities to improve checks for women who survive so that there are greater intergenetic intervals using appropriate family planning methods; no intersectoral coordination (Cross-cutting) to guarantee control of women in whom medical problems have been detected that are incompatible with pregnancy; no coordinated effort to detect depression, nor forms of family and community support for women, leading to suicide in adolescent women in particular; and finally, no systematic detection of violence against women.

The weight of the risk factor could not be determined due to a lack of data, and only 13 reported cases of violence were uncovered in a total of more than 80,000 births attended in MINSAL facilities in 2011, which does not agree with the

2008 FESAL report, that revealed that four in every ten women reported being victims of some type of violence.

During the workshops that were conducted a social factor that was brought up in the discussions, which makes access to healthcare and educational service difficult is to gang violence in the country, an example of this, a healthcare facility located in one gang area cannot be visited by a patient belonging to a rival gang, and as a consequence, the school would have fewer enrolled students. It is known from experience that the Institute for Women's Development (ISDEMU) in San Salvador is developing a programme to reduce violence against women and violence within schools, and to instruct people to persevere in a negative social climate, which would be a model to be replicated as part of the MAF action plan.

In the workshop with other sectors the lack of knowledge among institutions of strategies and interventions being developed to support food and nutritional security, sexual and reproductive health, violence reduction, and child protection was notorious. There was no exchange mechanism for these efforts despite MINSAL having structures in place that rely on intersectoral coordination (Cross-cutting) as explained in intersectoral and sectoral mechanisms.

**TABLE 6. PRIORITISED BOTTLENECKS FOR ACHIEVING MDGS 4 AND 5,
ACCORDING TO THE LIFE PHASE COMPONENT**

Life phase component. MDGs 4 and 5	Priority intervention	Type of bottleneck	Prioritised bottleneck
Preconceptual care: Spacing of births at intervals of 2-5 years. Administration of folic acid and multivitamins. Monitoring and adjustment of malnutrition assessed according to BMI. Prevention and control of chronic diseases that lead to high maternal, perinatal and neonatal mortality rates. Detection of infections (TORCHES) and risk factors (addictions and medication)	Creation of an environment that facilitates maternal and neonatal health	Policy and Planning	1. Lack of a national health promotion policy. (M) (W); poor family and community planning; no accompanying of couples/families during consultations. (CR) (CUIS); lack of gender focus (W); low level of women's empowerment (CUIS)
	Guarantee of preconceptual care with trained personnel to detect and treat social and medical risks	Service delivery (supply)	1. Lack of promotion, education and advice for users of preconceptual consultations (E) (CR); lack of risk identification in women of child-bearing age and those seeking pregnancy to refer them for preconceptual advice (PARA_C) (M) (E); limited promotion and education on family planning methods, in particular for adolescents (high pregnancy rate among adolescents), (PARA_C) (CUIS) (M) (W) (CR)
		Service delivery (supply)	2. Geographical inaccessibility (W)
		Service delivery (supply)	3. Lack of skills and involvement of personnel to cover offers and care for women in the preconceptual, delivery, postnatal, and neonatal phase (ISSS) (W) (CUIS) (M); lack of compliance with standards (W) (CR) (CUIS); lack of detection of TORCHES infections and risk factors (addictions and medication) (CR) (PARA_C); lack of standardisation in clinical reports (W)
		Service delivery (supply)	4. Lack of nutritional assessments (CR) (W)
	Provision of an environment that promotes maternal and neonatal health	Service delivery (supply)	1. Shortage of medicines (M) (PARA_C) (W) (E); limited access to diagnostic tests and information (M)
Prenatal control: Monitoring weight gain according to BMI. Tetanus immunisation. Administration of calcium to all pregnant women and aspirin to women with risk factors (obesity, diabetes, UTI, periodontal disease, etc.) to prevent preeclampsia*. Detection and treatment of asymptomatic bacteriuria. Treatment of periodontal disease. Detection and treatment of syphilis and HIV. Administration of corticosteroids for the threat of early labour. Detection and early referral in risk conditions. Preparation for delivery and breastfeeding. Early detection of cervical and uterine cancer, and anaemia. Early ultrasound.	Guarantee of preconceptual care with trained personnel to detect risks and treat complications	Service delivery (supply)	1. Lack of qualified human resources (CUIS); lack of obstetric skills (CR) (PARA_C).
		Service delivery (supply)	2. Non-compliance with standard (CP quality and delivery plan, APP, PEG) (PARA_C) (CR) (M) (W); low level of cytology during prenatal controls: no active search for asymptomatic bacteriuria, inadequate filling in of growth curves and uterus size (ISSS); no gynaecological physical examination (W); no search for asymptomatic bacteriuria and inadequate clinical management (PARA_C); little search for and record of pregnancy for detection and follow-up of periodontal disease and cases of syphilis (PARA_C); lack of morbidity follow-up (CUIS); no detection of obstetric risk factors or sociodemographic risks (E)(CR)(PARA_C) (CUIS) (ISSS)
		Service delivery (supply)	3. Incomplete filling in of HCP (E) (CR); non-use of (ISSS); lack of compliance in filling in HCP; lack of risk interpretation (W) (W) (CUIS)
	Programme management. Monitoring and supervision system	Service delivery (supply)	1. Lack of monitoring in applying the standard (W) (PARA_C)
	Provide an environment that promotes maternal and neonatal health	Budget and Financing	1. Insufficient budget (PARA_C); lack of infrastructure; insufficient supply of general supplies, medicines, teams and laboratory reactives in the network (CUIS) (PARA_C) (M) (W)
	Management. Referrals and returns system for intersectoral players	Intersectoral Coordination (Cross-cutting) and Service delivery (supply)	1. Lack of mechanisms and positive attitude to coordinating referrals and returns, and communication in the network (W) (CR); lack of user orientation and appropriate referrals and return (PARA_C) (CUIS); lack of communication flow between and within levels (CUIS);
	Provide an environment that promotes maternal and neonatal health. Health promotion policy	Intersectoral Coordination and Service delivery (supply)	1. Lack of promotion and education of the delivery plan, (CUIS); insufficient advice for breastfeeding during prenatal checks for the first level of care (PARA_C) and screening for cervical and uterine cancer (PARA_C); no physical or mental preparation for delivery (W)

Life phase component. MDGs 4 and 5	Priority intervention	Type of bottleneck	Prioritised bottleneck
Care during labour and delivery: Care for obstetric complications. Basic care and cardiopulmonary resuscitation for newborns*. Clamping of umbilical cord when it stops pulsing*. Breastfeeding only starting in the first hour*. Prevention and control of nosocomial infections*. Trained personnel. Hospital birth. Clean birth. Detection of breech position and Caesarean section. Appropriate management of birth	Guarantee of care before and during delivery with trained personnel to detect risks and treat complications	Service delivery (Supply)	1. High risks during night shifts and public holidays; no 24-hour care by qualified personnel for complications (oversaturation) (CUIS) (PARA_C) (M) (CR) (E) (ISSS)
		Service delivery (Supply)	2. Healthcare personnel with a lack of practice in perinatal emergencies (CUIS); lack of a positive attitude (ISSS); poor obstetric skills (CR); diagnostic failures; lack of appropriate detection of warning signs for obstetric risks (W) (PARA_C); Lack of appropriate reporting of laboratory tests at hospitals (W); inadequate management of volaemia (E) (CR) (ISSS) (M)
		Service delivery (Supply)	3. Non-application of guidelines and standards for care of obstetric morbidity and appropriate third-level management (PARA_C) (CUIS) (ISSS) (CR) (M) (CUIS); high frequency of death by preventable causes (E) (CR) (M) (CUIS); lack of appropriate postnatal and neonatal follow-up (W); clamping of cord after pulsing stops not performed in 100% of cases at the hospital (ISSS); early bonding not achieved in 100% of cases at the hospital (ISSS)
	Provision of an environment that promotes maternal and neonatal health.	Budget and Financing	1. Insufficient budget (PARA_C); lack of infrastructure; insufficient supply of general supplies, medicines, teams and laboratory reactives in the network (CUIS) (PARA_C) (M) (W); lack of equipment (monitors) (CR); lack of second-line ATB reinforcements, supplies and medical teams and third-level for NICU and infection controls (W) (W); increase in demand for delivery care and insufficient resources (rooms, specialised equipment) (PARA_C)
		Demand for and Service delivery (Supply)	
		Policy and Planning	
	Programme management. Communication between levels. Intersectoral coordination (Cross-cutting)	Service delivery (Supply)	1. Lack of knowledge and communication to users regarding first-, second- and third-level hospital service offers among networks (W)
		Intersectoral Coordination (Cross-cutting)	2. Lack of strengthening of advice for management encouraging intersectoral coordination (Cross-cutting) in the RIIS management cabinet (W)
Care for newborns: Assessment, classification, and determination of immediate newborn care. Assessment of risk at birth. Newborn care. Reception and resuscitation of newborn. Prevention of hypothermia and hypoglycaemia, immediate breastfeeding (early bonding). Ocular prophylaxis. Administration of vitamin K. Umbilical cord care. Management of pneumonia and sepsis. Vaccination. Early check-up for newborn (day 7)	Guarantee of care for newborns with personnel trained to assess, classify and determine the type of care	Service delivery (Supply)	1. No specific care for women at greater risk of dying aged 35-44 years in rural areas with no education when they have 4 or more children (E) (CR) (ISSS) (W) (M)
		Service delivery (Supply)	2. Insufficient and poorly qualified human resources. (CUIS) (PARA_C); (CR) (M) (W) (ISSS) (E)
		Budget and Financing	
		Service delivery (Supply)	3. Poor early postnatal and neonatal care and lack of immediate postpartum follow-up (PARA_C). (ISSS) (CUIS)
		Service delivery (Supply)	4. Incorrect diagnosis upon discharge of newborns (CR)
	Provide an environment that promotes maternal and neonatal health.	Budget and Financing Policy and Planning	1. Lack of supplies, medicines and hospital teams (ventilators, transport for critical newborns, heated cots, vitamin K). (OCCI (CUIS))
		Programme management	

Life phase component. MDGs 4 and 5	Priority intervention	Type of bottleneck	Prioritised bottleneck
Monitoring of neonatal morbidity and mortality	Apply the monitoring system for neonatal morbidity and mortality	Service delivery (Supply)	1. Data registration problems for mothers on newborn forms (E) RC M OCC1 PARA-C (CUI5) (ISS5); second- and third-level gaps in filling in data on care for delivery in the perinatal clinical history (HCP) for returning patients (W)
		Service delivery (Supply)	2. Incorrect diagnosis upon discharge of newborn, in the classification of neonatal death and correctly filling in the AIEPI sheet for child registration (E) (ISS5) (CR) (M) (W) (PARA_C) (CUI5)
		Intersectoral coordination (Cross-cutting)	3. Poor workings of the Committee for Monitoring Child Mortality (CUI5); lack of a formal institutional monitoring system (ISS5); incorrect analysis of information (E)
Postnatal care: Monitoring of immediate and late postnatal phase. Spacing of pregnancies	Provide personnel trained for postnatal care	Service delivery (Supply)	1. Incorrect filling in of the return and follow-up sheet (CR); incorrect filling in of the care sheet for hospital discharge up to level 1 (W); incorrect filling in of the level 1-2 postnatal information registration (CR) and in applying the filter sheet for all deceased mothers of child-bearing age (W)
		Service delivery (Supply)	2. Non-compliance and failures in applying the standard (E); failures in the follow-up of women in postpartum and of premature newborns at the community level (W); (CR); and in immediate postnatal follow-up (PARA_C); poor coverage of late postnatal checks and non-implementation of early postnatal checks (at seven days) as scheduled in the ISS5; late detection of warning signs and symptoms in the mother and child (CUI5)
		Service delivery (Supply)	3. Failures in promotion and postpartum advice and family planning (W) (PARA_C). lack of implementation of postpartum application of intrauterine device and vasectomy (W)
Monitoring of maternal morbidity and mortality	Implement the monitoring system for neonatal morbidity and mortality	Service delivery (Supply)	1. Lack of audits and analysis of MOE I and II cases at the departmental level (E) and of the total number of obstetric morbidities (CUI5); failures in acquiring personnel (M); failures in notification and registration in obstetric morbidity by the hospital (PARA_C) (CUI5); in the application of risk detection instruments (M); registration failures at town halls (maternal deaths registered for various reasons) (PARA_C)
	Provide an environment that promotes maternal and neonatal health. Health promotion policy	Service delivery (Supply)	1. Failures in user education (M)
	Intersectoral coordination (Cross-cutting) and community mobilisation	Intersectoral coordination (Cross-cutting)	1. No national reference for the National Committee for Monitoring Maternal and Neonatal Mortality; Committee of Vital Facts; Sexual and Reproductive Health Alliance; Perinatal Alliance (ISS5); follow-up failures (CR)



VII. SOLUTIONS TO ACCELERATE THE ACHIEVEMENT OF MDGS 4 AND 5

Photo: PAHO/WHO

Below is a summary of the potential solutions in accordance with the findings:

MDG 4:

The data in this report show the importance of standardising procedures in all hospitals in the Monitoring System, particularly in detecting the basic cause of death in newborns. They also show the proportion of deaths due to congenital abnormalities and the need for preventive measures for these diseases in all women of child-bearing age, as well as post-partum advice in such cases in order to avoid the problem in subsequent pregnancies. There is also an increase in cases of neonatal sepsis, particularly in relation to healthcare with no specific strategy.

The risks analysed in the previous chapter are likely to influence the reduction of neonatal deaths if we focus on caring for women admitted to prenatal and delivery services as a priority when they have the following risks: rural origin, four or more children, 33 weeks of pregnancy, signs of low birth weight, detection of violence against the women. Furthermore, if a woman, regardless of other risks, is liable to have a premature birth, the use of nifedipine (which is not considered the medicine of choice by the current standard, even finding cases managed with magnesium sulphate) must be guaranteed in 100% of cases, and the full cycle of antenatal steroids must be administered. Caesarean sections must be avoided without proper scheduling of the pregnancy, and inductions must be avoided without adequate criteria.

It has been confirmed that to reduce MDG 4 it will be more effective to work by promoting intersectoral coordination to reduce problems related to birth weight, by increasing food availability, improving physical and economic

access to adequate food, ensuring suitable consumption of food, and improving conditions of access to water and sanitation to provide adequate food for women of child-bearing age, those who are pregnant, or those with families. Increasing the intergenerational interval through education and family planning services; in the healthcare sector, strengthening consultations in the preconceptional period with measures to reduce foetal abnormalities, and during delivery and neonatal care for the prevention, diagnosis and adequate and appropriate treatment for neonatal sepsis, including when associated with healthcare provision.

It is necessary to eradicate the inappropriate use of intrapartum misoprostol since it increases acute foetal distress, as well as vaginal births when the birth weight is calculated to be more than 3,000 grams; to avoid action to force delivery and investigate every case involving neonatal injury; to carry out a specific programme aiming to reduce premature births, based on reducing induced births and Caesarean sections at gestational ages of less than 39 weeks. The existence of neonatal care in unclassified hospitals such as the extended CONE must be revised, and in maternity hospitals the number of bassinets must be adjusted according to demand. Reinstalling the transport programme for critical newborns to ensure appropriate arrival at the referral level is required. As there is no budget line for neonatal care, this restriction is probably affecting supplies and medicines as observed in maternity hospitals with the objective of preventing sepsis, as the number of gloves does not coincide with the number of patients, since the calculation was based on the number of rooms even though there are three patients per room (x 3).

MDG 5:

The data explained in the previous chapter show the proportion of mortality and morbidity that leads to Delay 3. Examples include cases with a risk of atony where in addition to MATEP there is no benefit of administering large doses or double doses of oxytocic drugs and to minimise the risk, as well as a lack of checks for vital signs in delivery and postnatally which is the mechanism to detect whether the patient is entering a phase of complications. By deducing that if the number of rooms is not assigned in accordance with the workload, or if there are not enough human resources, this deficit may lead to a lack of nurses which does not ensure suitable postnatal control. Non-compliance with detecting proteinuria and bacteriuria according to standards is related with a lack of detection strips. To improve follow-up of women with syphilis and therefore newborns, close coordination is required between the laboratory, nurses, treating physician and ECOS, where they exist, and healthcare promoters must ensure that the transmission cycle has ended. There are data for contributing factors such as anaemia and nutrition problems, especially obesity.

The risks for mothers show that maternal deaths can be reduced if we focus on identifying and caring as a priority for women who arrive at prenatal and delivery services between the ages of 35-45 years from rural locations, with 6 or more children, with an undesired pregnancy. The intersectoral measures would be the same as those mentioned in MDG 4 related to guaranteeing SAN, reducing maternal nutritional problems, especially obesity and anaemia, as well some congenital abnormalities, and education in sexual and reproductive health and family planning services. The most effective measures to reduce maternal deaths

at the healthcare sector level, according to this study, would be: mandatory guarantees of prenatal checks and risk detection using all instruments such as HCP and the filter sheet to refer the patient to the basic or specialised prenatal care level accordingly and avoid care by a nurse or sponsor because the latter is not authorised to undertake prenatal care, measuring the Body Mass Index (BMI) of every patient and detecting obesity, and mandatorily referring her to the more complex intermediate level; it also involves defining the appropriate gestational age for referral in the case of diabetic patients or to be in strict compliance. To all patients in whom risks for the development of morbidity are detected or occur, it is essential to locate a vein appropriately and immediately at the level where the problem was detected and to monitor management of intravenous fluids, alerting doctors and nurses to the correct fluid balance in such cases; to guarantee that the selection of family planning methods is suitable for the risk level of the patient in her subsequent pregnancies. All patients with a detected risk of morbidity must be referred to a gynaecologist or in the absence of a gynaecologist by a physician with greater experience. All postpartum care must include controls of vital signs by nurses and include any necessary adjustments; they must also include changes in the application of the standard in maternity hospitals by managing molar pregnancies and avoiding sepsis in such cases. Any morbidity must have mandatory preconceptional controls and guarantee adequate intergenerational intervals. To review the level of hospital decisions by reducing management of complex cases where more deaths occur until the criteria are met, including at least the existence of nursing personnel to adequately manage the postpartum phase.

The need to reinforce consultations in the preconceptional period with measures to reduce foetal abnormalities is evident, as well as during delivery and neonatal care in the prevention, diagnosis and suitable and appropriate treatment of neonatal sepsis, including cases associated with healthcare provision. In the Referrals and Returns section, it is important to ensure transfer from the community, follow-up of cases, and community support groups, etc.

In terms of intersectoral coordination we must focus on ensuring food and nutritional security by reinforcing the availability of food, improving physical and economic access to adequate food, consuming adequate food, and improving access to water and sanitation to provide adequate food for women of child-bearing age, those who are pregnant, and those with families.

The bottlenecks are described in more detail in the following table.

**TABLE 7. SOLUTIONS WITH THE POTENTIAL FOR ACCELERATING THE PRIORITISED BOTTLENECKS,
MDGs 4 AND 5**

Life phase components for MDGs 4 and 5	Priority intervention	Prioritised bottlenecks	Solutions with the potential for acceleration in 2013-2015 per health region
Preconceptual care: Spacing of births at intervals of 2-5 years. Administration of folic acid and multivitamins. Monitoring and adjustment of malnutrition assessed according to BMI. Prevention and control of chronic diseases that lead to high maternal, perinatal and neonatal mortality rates. Detection of infections (TORCHES) and risk factors (addictions and medication)	Creation of an environment that facilitates maternal and neonatal health	1. Lack of a national health promotion policy. (M) (W); poor family and community planning; no accompanying of couples/families during consultations. (CR) (CUIS); lack of gender focus (W); low level of women's empowerment (CUIS)	1. Strengthening of intersectoral coordination and establishing of strategic intersectoral guidelines for the operationalisation of actions (M) (W) 2. Involvement of areas such as education, NGOs, towns (M) (M) (W). 3. Increase in political will (W) 4. Improvement in the level of education and information (CUIS) 5. Efforts to empower women, families and couples and cultural patterns (machism, religion, taboos) (CUIS) (CR)
	Guarantee of preconceptual care with trained personnel to detect and treat social and medical risks	1. Lack of promotion, education and advice for users of preconceptual consultations (E) (CR); lack of risk identification in women of child-bearing age and those seeking pregnancy to refer them for preconceptual advice (PARA_C) (M) (E); limited promotion and education on family planning methods, in particular for adolescents (high pregnancy rate among adolescents), (PARA_C) (CUIS) (M) (W) (CR)	1. Strengthening of the sexual and reproductive health component in healthcare personnel and the population (PARA_C) 2. Improvement of knowledge of sexual and reproductive rights in adolescents (PARA_C) 3. Increase in preconceptual consultations (W) 4. Improvement in education and the promotion of healthy habits in preconceptual consultations (M). 5. Promotion of family planning methods (M)
		2. Geographical inaccessibility (W)	1. Follow-up of cases (CR)
		3. Lack of skills and involvement of personnel to cover offers and care for women in the preconceptual, delivery, postnatal, and neonatal phase (ISSS) (W) (CUIS) (M); lack of compliance with standards (W) (CR) (CUIS); lack of detection of TORCHES infections and risk factors (addictions and medication) (CR) (PARA_C); lack of standardisation in clinical reports (W)	1. Reproduction, socialisation, acquisition and application of standards and technical guidelines for the care of women in the preconceptual, delivery and postnatal phases and for newborns (ISSS) (CR) (E)(PARA_C) (CUIS) 2. Supervision of compliance with standards and protocols for care (PARA_C) 3. Suitable management of resources and re-allocation according to needs (M) 4. Development of TORCHES tests to quantify the rate of infections and their impact (PARA_C) 5. Monitoring of filling in of clinical forms
		4. Lack of nutritional assessments (CR) (W)	1. Reinforcement of the acquisition of medical resources for nutritional care (M) 2. Institutionalisation of strategies to promote nutritional health (M) 3. Improvement in the quality of nutritional advice (CR)
	Provision of an environment that promotes maternal and neonatal health	1. Shortage of medicines (M) (PARA_C) (W) (E); limited access to diagnostic tests and information (M)	1. Suitable management of resources and re-allocation according to needs (M) 2. Allocation of budget to support the Integral Care Programme for Women (ISSS) (E) 3. Purchase of (supplies) medicines, micronutrients, folic acid, multivitamins and laboratory tests that require the application of standards (PARA_C) (ISSS) (E) (CR) (M)

Life phase components for MDGs 4 and 5	Priority intervention	Prioritised bottlenecks	Solutions with the potential for acceleration in 2013-2015 per health region
Prenatal control: Monitoring weight gain according to BMI. Tetanus immunisation. Administration of calcium to all pregnant women and aspirin to women with risk factors (obesity, diabetes, UTI, periodontal disease, etc.) to prevent preeclampsia*. Detection and treatment of asymptomatic bacteriuria. Treatment of periodontal disease. Detection and treatment of syphilis and HIV. Administration of corticosteroids for the threat of early labour. Detection and early referral in risk conditions. Preparation for delivery and breastfeeding. Early detection of cervical and uterine cancer, and anaemia. Early ultrasound.	Guarantee of preconceptual care with trained personnel to detect risks and treat complications	<p>1. Lack of qualified human resources (CUIS); lack of obstetric skills (CR) (PARA_C).</p> <p>2. Non-compliance with standard (CP quality and delivery plan, APP, PEG) (PARA_C) (CR) (M) (W); low level of cytology during prenatal controls: no active search for asymptomatic bacteriuria, inadequate filling in of growth curves and uterus size (ISSS); no gynaecological physical examination (W); no search for asymptomatic bacteriuria and inadequate clinical management (PARA_C); little search for and record of pregnancy for detection and follow-up of periodontal disease and cases of syphilis (PARA_C); lack of morbidity follow-up (CUIS); no detection of obstetric risk factors or sociodemographic risks (E)(CR)(PARA_C) (CUIS) (ISSS). Incomplete filling in of HCP (E) (CR); non-use of (ISSS); lack of compliance in filling in HCP; lack of risk interpretation (W) (W) (CUIS)</p>	<p>1. Improvement the agreement of healthcare personnel to apply current established protocols (CUIS). 2. Improvement in the attitudes of personnel (E)</p> <p>1. Establishment of quality standards at various levels PARA_C) 2. Continuous education of personnel on technical guidelines (E) (M) (CR) 3. Reinforcement of habits and skills in prenatal and newborn care among doctors, nurses and health promoters (PARA_C) 4. Reinforcement of the use of prenatal checks in pregnancy clubs and internships in rural areas (CR) 5. Improvement in humanism, dynamism (CR) 6. Improvement in team work (CR) 7. Solutions for attitude problems among personnel (CR) 8. Standardisation of urine culture tests (ISSS) 9. Consideration of the social risk for conduct according to the condition and user's family (PARA_C)</p>
	Programme management. Monitoring and supervision system	1. Lack of monitoring in applying the standard (W) (PARA_C)	<p>1. Monitoring of compliance with care standards (e.g., use of filter sheet) (E). 2. Supervision and monitoring in the application of the care standard for preconception, pregnancy, delivery, postnatal phase and for newborns (PARA_C) 3. Monitoring of ensuring compliance through higher care levels (M) 4. Agreement of personnel to implement the standard (CUIS) 5. Application of established guidelines (CR)</p>
	Provide an environment that promotes maternal and neonatal health	1. Insufficient budget (PARA_C); lack of infrastructure; insufficient supply of general supplies, medicines, teams and laboratory reactives in the network (CUIS) (PARA_C) (M) (W)	<p>1. Allocation of sufficient budget, suitable distribution of resources and budget re-allocation to hospitals (CUIS) (W) 2. Increase in human resources (W) 3. Improvement of human resources each year (E) 4. Improvement of infrastructure, teams and supplies (W) 5. Applications of guidelines of the LEPINA law</p>
	Management. Referrals and returns system for intersectoral players	1. Lack of mechanisms and positive attitude to coordinating referrals and returns, and communication in the network (W) (CR); lack of user orientation and appropriate referrals and return (PARA_C) (CUIS); lack of communication between levels (CUIS);	<p>1. Awareness of personnel on the importance of using the filter sheet, 100% follow-up, referrals and pregnancies (E) 2. Referral with one copy to UCSF and another to the patient, with the agreement of healthcare personnel to provide adequate follow-up (CUIS) (E) 3. Improvement in the functioning of the RIIS (CR) 4. Improvement in the use of returns and referrals to hospitals (CUIS) 5. 100% rate of expected deliveries, appropriate and monthly (E)</p>
	Provide an environment that promotes maternal and neonatal health. Health promotion policy	1. Lack of promotion and education of the delivery plan, (CUIS); insufficient advice for breastfeeding during prenatal checks for the first level of care (PARA_C) and screening for cervical and uterine cancer (PARA_C); no physical or mental preparation for delivery (W)	<p>1. Promotion of the use of instruments to fill in curves (ISSS) (PARA_C) 2. Promotion of cytology during pregnancy (ISSS) 3. Suitable agreement from other sectors to contribution with the population to generate health (CUIS) 4. Increase in the use of maternal expectancy households (CUIS) 5. Implementation of political strategies (W)</p>

Life phase components for MDGs 4 and 5	Priority intervention	Prioritised bottlenecks	Solutions with the potential for acceleration in 2013-2015 per health region
Care during labour and delivery: Care for obstetric complications. Basic care and cardiopulmonary resuscitation for newborns*. Clamping of umbilical cord when it stops pulsing*. Breastfeeding only starting in the first hour*. Prevention and control of nosocomial infections*. Trained personnel. Hospital birth. Clean birth. Detection of breech position and Caesarean section. Appropriate management of birth	Guarantee of care before and during delivery with trained personnel to detect risks and treat complications	<p>1. High risks during night shifts and public holidays; no 24-hour care by qualified personnel for complications (oversaturation) (CUIS) (PARA_C) (M) (CR) (E) (ISSS)</p> <p>2. Healthcare personnel with a lack of practice in perinatal emergencies (CUIS); lack of a positive attitude (ISSS); poor obstetric skills (CR); diagnostic failures; lack of appropriate detection of warning signs for obstetric risks (W) (PARA_C); Lack of appropriate reporting of laboratory tests at hospitals (W); inadequate management of volaemia (E) (CR) (ISSS) (M)</p> <p>3. Non-application of guidelines and standards for care of obstetric morbidity and appropriate third-level management (PARA_C) (CUIS) (ISSS) (CR) (M); high frequency of death by preventable causes (E) (CR) (M) (CUIS); lack of appropriate postnatal and neonatal follow-up (W); clamping of cord after pulsing stops not performed in 100% of cases at the hospital (ISSS); early bonding not achieved in 100% of cases at the hospital (ISSS)</p>	<p>1. Regulatory change to shift times (12 hours) (CUIS) 2. Rationalisation of the distribution of specialists during night shifts (CUIS) 3. Sufficiency of hospital budget for hiring of 24-hour specialised personnel (PARA_C) 4. Increase in qualified nurses and doctors (ISSS) (CUIS) 5. Improvement in the use of services (demand) (W)</p> <p>1. Regular acquisition of operating resources (M) 2. Feedback on forms (CUIS) 3. Awareness of medical and paramedic staff on the importance of correct application of technical guides (ISSS) 4. Improvement in likelihood of applying technical guides and compliance with them (ISSS) 5. Development of workshops for skills and abilities for immediate newborn care (CUIS)</p> <p>1. Compliance with the obstetric standard (M) 2. Creation of standards for the application of instruments (M) 3. Monitoring and follow-up for partograms by the department head (CUIS) 4. Organisation of blood banks, especially in peripheral units (ISSS)</p>
	Provision of an environment that promotes maternal and neonatal health.	1. Insufficient budget (PARA_C); lack of infrastructure; insufficient supply of general supplies, medicines, teams and laboratory reactives in the network (CUIS) (PARA_C) (M) (W); lack of equipment (monitors) (CR); lack of second-line ATB reinforcements, supplies and medical teams and third-level for NICU and infection controls (W) (W); increase in demand for delivery care and insufficient resources (rooms, specialised equipment) (PARA_C)	<p>1. Increase in installed capacity for the care level (M) 2. Monitoring of ensuring compliance through higher levels (M) 3. Increase in budget (CR) 4. Improvement in allocation of resources (W) 5. Financing of the purchase of teams and supplies (PARA_C) 6. Increase in the administration of services (offer) (W)</p>
	Programme management. Communication between levels. Intersectoral coordination	<p>1. Lack of knowledge and communication to users regarding first-, second- and third-level hospital service offers among networks (W)</p> <p>2. Lack of strengthening of advice for management encouraging intersectoral coordination in the RIISS management cabinet (W)</p>	<p>1. Increase in the administration of services (offer) (W) 2. Improvement in the use of services (demand for self-efficiency and knowledge of meetings) (W)</p> <p>1. Promotion of intersectoral coordination in the RIISS management cabinet</p>

Life phase components for MDGs 4 and 5	Priority intervention	Prioritised bottlenecks	Solutions with the potential for acceleration in 2013-2015 per health region
Care for newborns: Assessment, classification, and determination of immediate newborn care. Assessment of risk at birth.	Guarantee of care for newborns with personnel trained to assess, classify and determine the type of care	1. No specific care for women at greater risk of dying aged 35-44 years in rural areas with no education when they have 4 or more children (E) (CR) (ISSS) (W) (M)	1. Monitoring of maternal care guidelines (E) 2. Improvement of the referral and return system (PARA_C) 3. Organisation of preconceptional advice in patients aged over 35 years, adolescents and those with chronic diseases (E) 4. Compliance with technical guidelines for women's care (E) 5. Improvement in compliance with standards (M)
Newborn care. Reception and resuscitation of newborn.		2. Insufficient and poorly qualified human resources. (CUIS) (PARA_C); (CR) (M) (W) (ISSS) (E)	1. 100% certification of personnel in NRP, STABLE and obstetric skills (E) 2. Widespread distribution of courses related to neonatal care (M) 3. Adaptation to the national level of foreign courses to improve the distribution of skills by resolving limited distribution due to author copyright problems (M) 4. Accreditation linked with hospital practice (M) 5. Interinstitutional acquisition to strengthen skills (M) 6. Continuation in the continuous acquisition of resources involved in neonatal care (M) 7. Improvement in compliance with standards (M)
Prevention of hypothermia and hypoglycaemia, immediate breastfeeding (early bonding). Ocular prophylaxis. Administration of vitamin K. Umbilical cord care.		3. Poor early postnatal and neonatal care and lack of immediate postpartum follow-up (PARA_C). (ISSS) (CUIS)	1. Improvement in the referrals and returns system (PARA_C) 2. Improvement in the follow-up of newborns at a community level (PARA_C)
Management of pneumonia and sepsis. Vaccination. Early check-up for newborn (day 7)	Provide an environment that promotes maternal and neonatal health. Programme management	4. Incorrect diagnosis upon discharge of newborns (CR)	1. Filling in of admission and discharge forms (RC)
Monitoring of neonatal morbidity and mortality	Apply the monitoring system for neonatal morbidity and mortality	1. Lack of supplies, medicines and hospital teams (ventilators, transport for critical newborns, heated cots, vitamin K). (OCCI (CUIS))	1. Accreditation linked with hospital practice (M) 2. Improvement in the quality of supplies (M)
		1. Data registration problems for mothers on newborn forms (E) RC M OCCI PARA-C (CUIS) (ISSS); second- and third-level gaps in filling in data on care for delivery in the perinatal clinical history (HCP) for returning patients (W)	1. Feedback to healthcare personnel in filling in maternal and neonatal forms (E) 2. Online HCP to improve the quality of information and integrate first- and second-level information (PARA_C) 3. Control of complete filling in of forms by medical personnel (E) 4. Analysis of information systems (E) 5. Admission and care system for users in the hospital network (PARA_C)
		2. Incorrect diagnosis upon discharge of newborn, in the classification of neonatal death and correctly filling in the AIEPI sheet for child registration (E) (ISSS) (CR) (M) (W) (PARA_C) (CUIS)	1. Filling in of the basic cause of death as per ICD 10 (E) 2. Monitoring of serious child morbidity by telephone to UCSF or by internet (E) 3. Review and reclassification by department heads and senior doctors of diagnoses upon discharge from hospital (M) 4. A single clinical form for women with morbidities, and assessment of care for newborns with morbidities (PARA_C) 5. Application of statistical standard in filling in the decease sheet and determining the basic cause (PARA_C)
		3. Poor workings of the Committee for Monitoring Child Mortality (CUIS); lack of a formal institutional monitoring system (ISSS); incorrect analysis of information (E)	1. Monitoring of serious child morbidity by telephone to UCSF or by internet (E) 2. Integrating the National Committee for Monitoring Maternal and Neonatal Mortality with the ISSS (ISSS) 3. Monitoring of ensuring compliance of standards via higher levels (M)

Life phase components for MDGs 4 and 5	Priority intervention	Prioritised bottlenecks	Solutions with the potential for acceleration in 2013-2015 per health region
Postnatal care: Monitoring of immediate and late postnatal phase. Spacing of pregnancies	Provide personnel trained for postnatal care	1. Incorrect filling in of the return and follow-up sheet (CR); incorrect filling in of the care sheet for hospital discharge up to level 1 (W); incorrect filling in of the level 1-2 postnatal information registration (CR) and in applying the filter sheet for all deceased mothers of child-bearing age (W)	1- Reinforcement of communication between care levels (M) 2- Improvement in user education (M)
		2. Non-compliance and failures in applying the standard (E); failures in the follow-up of women in postpartum and of premature newborns at the community level (W); (CR); and in immediate postnatal follow-up (PARA_C); poor coverage of late postnatal checks and non-implementation of early postnatal checks (at seven days) as scheduled in the ISSS. (ISSS); late detection of warning signs and symptoms in the mother and child (CUIS)	1- Drafting of the standard for the control of early postnatal period (ISSS) 2- Improvement in promotion for patients to help with control and increase in demand of late postnatal checks (ISSS) 3- Reinforcement of communication between care levels (M) 4- Reinforcement of human resources (M) 5- Increase in service supplies (offer) (W) 6- Reduction in waiting times for gynaecological consultation and promoting compliance with checks at 40 days (ISSS)
		3. Failures in promotion and postpartum advice and family planning (W) (PARA_C). lack of implementation of postpartum application of intrauterine device and vasectomy (W)	1- Highlighting of the importance of family planning in hospitals (PARA_C)
Monitoring of maternal morbidity and mortality	Implement the monitoring system for neonatal morbidity and mortality	1. Lack of audits and analysis of MOE I and II cases at the departmental level (E) and of the total number of obstetric morbidities (CUIS); failures in acquiring personnel (M); failures in notification and registration in obstetric morbidity by the hospital (PARA_C) (CUIS); in the application of risk detection instruments (M); registration failures at town halls (maternal deaths registered for various reasons) (PARA_C)	1. Development and reinforcement of the monitoring system for maternal morbidity and mortality (PARA_C) (ISSS) 2. Audits, improvement plans and follow-up audits of women (CUIS) 3. Use of flowchart to notify cases of obstetric morbidity (PARA_C) 4. Monitoring and supervision in data registration (PARA_C) 5. Acquisition and monitoring of the use of instruments for risk detection (M)
	Provide an environment that promotes maternal and neonatal health. Health promotion policy	1. Failures in user education (M)	1. Reinforcement of user education (M) 2. Improvement in education for patients with risk factors (M)
	Intersectoral coordination and community mobilisation	1. No national reference for the National Committee for Monitoring Maternal and Neonatal Mortality; Committee of Vital Facts; Sexual and Reproductive Health Alliance; Perinatal Alliance (ISSS); follow-up failures (CR)	1. Establishment and reinforcement of alliances to develop, follow up and implement improvement plans resulting from audits and monitoring of maternal and perinatal morbidity and mortality (CUIS)

A close-up photograph of two young boys with dark hair, smiling at the camera. They appear to be of Hispanic descent. The boy on the left is wearing a purple shirt, and the boy on the right is wearing a grey t-shirt with the word "JACARÉ" printed on it in red. They are outdoors, with trees and foliage visible in the background.

VIII. ACTION PLAN FOR THE ACHIEVEMENT OF MDGs 4 AND 5

Photo: PAHO/WHO

ACCELERATION PLAN FOR ACTIONS TO MAINTAIN OR REDUCE THE RESULTS OF MDGS 4 AND 5

COMPONENT 1: Intersectoral coordination to:
A) guarantee food and nutritional security;
B) provide access to services (cultural, geographical, and violence-related); C) counter the lack of sexual and reproductive health education; D) prevent adolescent pregnancies and suicides E) inform and coordinate with other sectors on pregnancy, postnatal and neonatal phases.

COMPONENT 2: To guarantee preconceptional, pregnancy, labour, delivery, postnatal and newborn care with qualified personnel to detect and treat social and medical risks, medical and obstetric risks, complications and obstetric, perinatal and neonatal emergencies.

COMPONENT 3: Referrals and returns system and stakeholder coordination.

COMPONENT 4: Guaranteeing postnatal and neonatal care according to standards.

COMPONENT 5: Management and investigation.

COMPONENT 6: Monitoring system for maternal and neonatal mortality.

INTERSECTORAL ACTIONS

Main strategy: Intersectoral coordination and alliances

COMPONENT 1: Intersectoral coordination to: A) guarantee food and nutritional security; B) provide access to services (cultural, geographical, and violence-related); C) counter the lack of sexual and reproductive health education; D) prevent adolescent pregnancies and suicides E) inform and coordinate with other sectors on pregnancy, postnatal and neonatal phases.

Bottleneck	Action for improvement	Partners	Year of implementation	Quantity	Unit cost	Total cost in USD (\$)
A. Inadequate food and nutritional safety (SAN) in preconceptual, pregnancy, postnatal, and neonatal phases	Improve sanitary conditions directly related to the use of foods (safe water, management of sewage and waste, control of vectors), education in health and nutrition; outdoor kitchens in homes of pregnant women , especially in rural areas	CONASAN, Ministry of the Environment, ANDA; towns; NGOs (Save the Children, Plan Internacional, Intervida, World Vision), MINSAL.	2015	20	\$2,500	\$500,000
	Strengthen formal and information education in health and nutrition, especially for parents, carers and school caterers	Local actors, NGOs (Save the Children, Plan Internacional, Intervida, World Vision), MINED, CONASAN	2015	500	\$45	\$22,500
	Increase the educational level of women in health and nutrition through SAN education, especially in rural areas, to prevent obesity, malnutrition, and anaemia	MINED, towns, NGOs (Save the Children, Plan Internacional, Intervida, World Vision), CONASAN	2015	3000	100	\$300,000
	Integral health and nutritional care (deficit, obesity, anaemia) for women in the preconceptual, pregnancy, postnatal and neonatal phases and up to 2 years after birth	MINSAL, MINED, towns, NGOs (Save the Children, Plan Internacional, Intervida, World Vision), CONASAN	2014-2015	100000	13	\$1,300,000
	Strengthen monitoring, supervision and assessment of SAN conditions in the preconceptual, pregnancy, neonatal and infant phases	CONASAN, ANDA, MINED, MINSAL/ NGOs (Save the Children, Plan Internacional, Intervida, World Vision)	2014	0	0	\$0
	Promote the responsibility of parents or family guardians in terms of nutrition	CONASAN, MINED, local players, towns	2014	funds under family activity		
	Follow up to guarantee integral care and food security for populations at risk: pregnancy, postnatal and neonatal phases, with an emphasis on premature births in order to improve their nutritional and health condition: breastfeeding, micronutrients, nutritional and health education for carers	MINSAL, NGOs (Save the Children, Plan Internacional, Intervida, World Vision), towns, CONASAN, INCAP	2014	2500	120	\$300,000.00
B. Restricted access to healthcare services for cultural, geographical and violence-related reasons	Detect, record and prioritise an obstetric map to locate and provide follow-up to pregnant women or those in postnatal and neonatal phases	MINSAL, towns, NGOs (Save the Children, Plan Internacional, Intervida, World Vision), communities	2013-2014	654	\$50.00	\$32,700.00
	Support the implementation of the Delivery Plan strategy, a study to improve functioning in support of the coordination and transport of pregnant women and newborns with other actors, including towns	Towns, PNC, emergency teams, communities, families	2013-2014	1000	\$25,000	\$20,000.00
	Consider the social risk for pregnant and postnatal women for behaviour during pregnancy and their family	Towns, MINSAL, security, PNC, emergency teams, SNU	2013	1104	\$12	\$13,248.00

Bottleneck	Action for improvement	Partners	Year of implementation	Quantity	Unit cost	Total cost in USD (\$)
C. Lack of education in sexual and reproductive health	Work to empower women, families and couples. Include masculine aspects and other cultural patterns (sexism, religion, taboos)	MINSAL, MINED, NGOs (Save the Children, Plan Internacional, Intervida, World Vision), municipalities, communities, SNU	2013	1500	\$5	\$7,500.00
	Strengthen the sexual and reproductive health component of the population, with an emphasis on adolescents and knowledge of sexual and reproductive rights among them	MINED, MINSAL, NGOs (Save the Children, Plan Internacional, Intervida, World Vision), municipalities	2014-2015	5	\$5,000	\$25,000.00
	Improve the education and promotion of healthy habits in preconceptional visits	MINED, MINSAL, NGOs, municipalities	2013-2014	1	\$20,000	\$20,000.00
	Provide integral education on sexuality, and for use in preconceptional checks, including the school curriculum	MINED, MINSAL, NGOs (Save the Children, Plan Internacional, Intervida, World Vision)	2014	1	\$10,000	\$10,000
D. Prevention of (first and subsequent) pregnancy in adolescents	Provide information to adolescents to prevent early pregnancies	MINSAL, MINED, INJUVE, PNC, public security teams, SNU	2014	20	\$1,000	\$20,000
	Work with adolescents' parents with tools such as Strong Families to prevent violence and pregnancy among adolescents	MINSAL, MINED, NGOs (Save the Children, Plan Internacional, Intervida, World Vision), municipalities, SNU	2014	60	14000	84000
	Prevent second pregnancies in adolescents, draw up a life plan and ensure resumption of school in towns with a high rate of adolescent pregnancies	MINED, NGOs (Save the Children, Plan Internacional, Intervida, World Vision, municipalities, MINSAL	2014	500	30	15000
	Detect social or mental health problems, with an emphasis on depression and family and social support to detect risks of suicide in adolescents, especially in those who are pregnant	MINSAL, MINED, municipalities, communities, families, SNU	2013-2014	500	\$20	\$10,000
	Reinforcing recording of newborns who died at home and stillborns	Municipalities, communities, Ministry of Governance, National Registration Centre, DIGESTYC	2014	20	650	13000
	Promote family planning methods	MINSAL, NGOs (Save the Children, Plan Internacional, Intervida, World Vision), municipalities, community organisations	2013	4000	\$15	\$60,000
E. Information and coordination with other sectors about pregnancy, postpartum and newborns	Use the intersectoral coordination mechanism created ad hoc for this initiative with representatives from institutions and social organisations. Specific alliances may be used as a basis that support MINSAL, increasing to other players	MINSAL, MINED, municipalities, NGOs (Save the Children, Plan Internacional, Intervida, World Vision), CONASAN , SNU	2014	1	\$75,000	\$75,000
						3,583,948

SECTORAL HEALTHCARE ACTIONS Main strategy: Focus on sites with greater problems to treat the contingency

COMPONENT 2: To guarantee preconceptional, pregnancy, labour, delivery, postnatal and newborn care with qualified personnel to detect and treat social and medical risks, medical and obstetric risks, complications and obstetric, perinatal and neonatal emergencies.						
Bottleneck	Action for improvement	Partners	Year of implementation	Quantity	Unit cost	Total cost in USD (\$)
A. 20 of the 28 maternity hospitals partially comply with essential obstetric and neonatal care (CONE): attendance at births, attendance for immediate newborns, detection, stabilisation and referral of maternal and neonatal complications; placenta removal, manual curettage and aspiration. 6 comply fully with essential obstetric and neonatal care (management of Caesarean births, complications, anaesthesia, blood and blood derivatives 24 hours a day, 365 days a year)	Increase the capacity per care level to have 28 maternity hospitals with CONE (human resources and equipment)	MINSAI, Ministry of Finance, NGOs (Save the Children, Plan Internacional, Intervida, World Vision), SNU	2014-2015	28	\$25,000	\$700,000.00
	Purchase of supplies, medicines and hospital teams: basic: misoprostol, oxytocin, magnesium sulphate, calcium gluconate, reactive strips, neonatal pulse oximeters, flowmeters to measure neonatal respiration, due date calculator, obstetric belts, belts to measure head circumference, tables with alarm curves for partogram	MINSAI, Ministry of Finance, NGOs (Save the Children, Plan Internacional, Intervida, World Vision), SNU	2013-2014	1104	10,000	\$11,040,000.00
B. No-compliance with standards (quality prenatal checks, delivery plan, threat of premature pregnancy, serious preeclampsia). Low rate of cytology during prenatal checks. Inadequate filling in of growth curves and uterus size. No physical gynaecological examinations. No active search for asymptomatic bacteruria and inadequate clinical management. Scant search and recording of pregnancy to detect and follow up periodontal disease and syphilis. Lack of follow-up of morbidities. No detection of obstetric risk factors or sociodemographic risks	Strengthen and enhance the role of key informer and contact for community promoters and nurses with RIIS, with updated lists of pregnant, postnatal and neonatal cases and their control calendars.	MINSAI, NGOs (Save the Children, Plan Internacional, Intervida, World Vision)	2013-2014	2000	\$25	\$50,000.00
	Reinforce the vaccination programme for pregnant women with H1N1 and Td	MINSAI, SNU	2014-2015			\$0.00
	Standardise urine cultures in prenatal checks. Ensure adequate filling in of pregnancy follow-up instruments and information (weight growth curves and uterus size), immediate referral upon suspicion of low birth weight, lack of weight gain, follow-up of periodontal disease. Rapid tests for syphilis for all pregnant women, and guarantee of suitable treatment for pregnant women and partners, follow-up of newborn	MINSAI, first-level hospital directors	2013-2014	0		\$0.00
	Emphasise the importance of family planning in hospitals	MINSAI, hospital directors, division of support for health management and planning	2014	28	\$500	\$14,000.00
C. Lack of an algorithm to classify risks for all patients admitted to emergency wards and labour rooms, and for newborns in neonatology wards	Conduct specific triage upon admission of pregnant women and newborns for emergency treatment or services: department heads and senior doctors review and reclassify hospital discharge diagnoses, specifying the risk condition	Head of services and hospital directors	2013-2014	28	\$10	\$280.00
D. Lack of local and regional monitoring, incentives and disciplinary measures for applying the standards	Ensure local monitoring by Heads of Service, and heads of nurses managers. Bimonthly meetings with local director	Local HQ	2013-2014			\$20,000.00
	Use disciplinary measures for recurrence of obstetric or neonatal morbidity or mortality	Local HQ, first-level hospital directors	2013	0		\$0.00
						\$11,824,280.00

COMPONENT 3: Referrals and returns system and stakeholders coordination

Bottleneck	Action for improvement	Partners	Year of implementation	Quantity	Unit cost	Total cost in USD (\$)
A. Lack of mechanisms and a favourable attitude to coordinating referrals and returns and network communication. Lack of user orientation for adequate use of referrals and returns. Lack of communication between levels	Adequately manage resources and reallocate them according to needs, including nursing staff in other clinical departments in the hospital	Head of services, hospital directors and national hospital management	2013-2014	3312	\$50	\$165,600.00
	Follow up 100% of referrals and pregnancies	SIBASI coordinators, ECOS, heads of services, hospital directors	2013	0	\$0.00	\$0.00
	Send a list of all expected births from the first level of hospital care, appropriately and on a monthly basis	SIBASI coordinator, hospital obstetrics directors	2013-2014	336	\$2	\$672.00
	Make referrals with one copy to UCSF and another to the patient, with the agreement of healthcare staff to provide adequate follow-up	Hospital obstetrics directors, SIBASI and network coordinator	2013	225000	\$2.50	\$562,500.00
B. Personnel without skills to manage obstetric and perinatal emergencies: diagnostic failures. Lack of appropriate detection of obstetric warning signs. No reporting or suitable interpretation of laboratory tests at hospitals. Inadequate management of volaemia. Umbilical cord not clamped when it stops pulsing in indicated cases. Early bonding not applied in indicated cases. Non-application of care guides and standards for obstetric morbidities and appropriate referral to third level of care. High rate of death due to preventable causes. Lack of availability for work	Strict compliance with at least five consultations, assessment by a specialist, respecting the due date. Send for specialist check at 38 weeks; admit to hospital at 40 weeks; DO NOT SEND HOME at 41 weeks	Network coordinator, SIBASI coordinator, ECOS and UCSF	2013	225000	\$90.00	\$20,250,000.00
	Review and update the risk condition of each admitted patient. In the event of risk, the first consultation is with a senior doctor	Head of services, hospital directors	2013		\$0	\$0.00
	Monitor strict compliance with this priority standards by the head of services, ECO-E and SIBASI coordinator	Head of services, hospital director, SIBASI coordinator, regional director	2013		\$0	\$0.00
	Promote walking by women and oral hydration during labour	Hospital nursing head and service head	2013-2014	75000	\$1.50	\$112,500.00
	Provide hospitals with algorithms to manage the main obstetric and neonatal complications and to manage volaemia	MINSAL central-level	2013-2014	448	\$3.00	\$1,344.00
	Eliminate the use of unnecessary Caesarean sections, particularly in pregnancies under 39 weeks, promoting the adequate use of a partogram, strict compliance with the criteria for indicating a Caesarean birth	Heads of service, heads of nursing, hospital director	2013-2014	336	\$70	\$23,520.00
	Limit inductions according to the method and timeframe and strict criteria, especially under 39 weeks. DO NOT INDUCE AT NIGHT	Heads of services, heads of residents, heads of shifts, heads of nursing, hospital director	2013-2014		\$0	\$0.00
	Use misoprostol during labour under supervision for cervical maturity, management of abortion syndrome and postpartum haemorrhage	Heads of services, heads of residents, heads of shifts, heads of nursing, hospital director	2013		\$0	\$0.00
	Monitor and follow up partograms	Head of department, head of services, head of residents	2013		\$0	\$0.00
	Ensure clean/aseptic birth. Use episiotomy rationally	Head of department, head of services, head of residents, head of nursing	2013			\$0.00
	Strengthen obstetric skills centres with teams and instruments in the 5 regions	Central-level, NGOs (Save the Children, Plan Internacional, Intervida, World Vision), SNU	2014-2015	10	\$30,000	\$300,000.00
	Clamp the umbilical cord late according to standards. Provide early bonding and relaxation together, including after Caesarean section (NOT IN RECOVERY)	Head of department, head of services, head of residents, head of nursing	2013	0	0	\$0.00

Bottleneck	Action for improvement	Partners	Year of implementation	Quantity	Unit cost	Total cost in USD (\$)
	Monitor serious child morbidities via telephone communication to UCSF or via internet	UCSF director, SIBASI and network coordinator	2013-2014	0	0	\$0.00
	Comply strictly with MATEP, including for Caesarean births. Use oxytocic drugs in cases of haemorrhage due to postpartum atony as per standards	Head of department, head of services, head of residents, head of nursing	2013	0	0	\$0.00
						\$21,416,136.00
COMPONENT 4: Guaranteeing postnatal and neonatal care according to standards						
A. Lack of appropriate postnatal and neonatal follow-up. Lack of follow-up for neonatal growth and development, especially of premature and orphan babies due to maternal deaths up to the age of 2 years	Organise obstetric recovery rooms, including personnel required for close monitoring of vital signs in the 2 hours after birth, as per standards	Head of service, hospital director, national hospital director	2014-2015	50	\$30,000	\$1,500,000
	Closely follow up postnatal and mothers and newborns to 48 hours after birth, or immediately upon notification in cases of community birth	ECOS coordinator or promoter	2013-2014	0	0	\$0
	Follow up newborns, especially premature babies for at least 2 years	ECOS coordinator or promoter	2014-2015	Costs estimated under intersectoral coordination		\$0
	Gradually apply AIEPI for newborns and infants to reduce infant mortality	Regional director, regional programme manager, SIBASI coordinator	2013-2014	2000	\$75	\$150,000.0
	Provide medical follow-up and education in reproductive health for girls, adolescents and women who have medical or mental problems who should not be pregnant due to these conditions and ensure access to suitable family planning methods	Head of internal medicine, paediatric, surgery, and medicine service, hospital director	2014-2015	20000	240	\$4,800,000.00
	Provide tensiometers and aesthesiometers to ECOS teams, health promoters and establishments and postnatal rooms	National first-level director, national hospital director	2014-2015	3164	\$50	\$158,200.00
						\$6,608,200.00
COMPONENT 5: Management and investigation						
A. Lack of monitoring, local assessment and information on compliance with standards and protocols, use and existence of supplies, existing personnel, and skills	Supervise compliance with care standards and protocols	MINSAL, ISSS, UNS	2013	0		0
	Strengthen information about use and specific supply lists for maternal and neonatal health similar to family planning	MINSAL, ISSS, UNS	2013-2014	0		0
	Reinforce the local and hospital monitoring system by service and department heads, resident heads and nursing heads	MINSAL, ISSS, UNS	2014	100	10,000	1,000,000.00
B. Ignorance of rate of infections and other maternal and neonatal health matters	Develop studies to quantify the rate of TORCHES infections and their impact	MINSAL, ISSS, MINEC, UNS	2014-2015	3	\$12,000	36,000.00
	Study the impact of violence on maternal and neonatal health	MINSAL, ISSS, PNC, universities, INS, UNS	2014			
	Update the study on obstetric and neonatal care	MINSAL, ISSS, UNS	2014-2015			

Bottleneck	Action for improvement	Partners	Year of implementation	Quantity	Unit cost	Total cost in USD (\$)
C. Higher risks during night shifts and public holidays; no 24-hour care by personnel qualified to deal with complications (oversaturation)	Gradually apply AIEPI for newborns and infants to reduce infant mortality	MINSAL, ISSS, SNU	2014	10	\$1,500	\$15,000
	Standardise the distribution of specialists during night shifts, weekends and public holidays. Plan absences	MINSAL, ISSS, SNU	2013-2014	0	\$0	\$0
	Increase the number of human resources qualified in nursing and medicine on public holidays	MINSAL, ISSS, SNU	2013-2014	0	\$0	\$0
	Organise blood banks, especially in peripheral ISSS units	ISSS, SNU	2014-2015	0	\$0	\$0
	Training on the 3 main causes of death and 5 causes of infant death	MINSAL, ISSS, scientific societies, SNU	2013, 2014, 2015	Costs included in other sections	\$0	\$0
	Annual training plan of residents to detect risk and obstetric emergencies	MINSAL, ISSS, HR training institutions, SNU	2013, 2014, 2015	1		\$15,000.00
	Tarin the operational resources continuously with regular simulations for neonatal emergencies. Include resuscitation with paper bags (applied differently to premature babies and full-term babies)	MINSAL, ISSS, HR training institutions, scientific societies, SNU	2013, 2014, 2015	3204	\$75	\$240,300.00
	Regularly certify human resources in obstetric and neonatal skills	MINSAL, ISSS, HR training institutions, scientific societies, SNU	2013, 2014, 2015	3204	\$75	\$240,300.00
	Manage regional skills, installed skills, list facilitators and obstetric skills and the regional needs; address problems that will arise	MINSAL, ISSS, HR training institutions, scientific societies	2013, 2014, 2015	3312	\$1	\$3,312.00
	Gather information included in the physicians' training curriculum so that they arrive in social services knowing the regulatory framework of the main obstetric and neonatal emergencies	HR training institutions, scientific societies	2013, 2014, 2015	500	\$3	\$1,500.00
D. Lack of notification and classification of maternal deaths, and especially neonatal and child deaths	Certify 100% of human resources onNRP, STABLE and obstetric skills	HR training institutions, scientific societies, ISSS, MINSAL	2013, 2014, 2015	3312	\$1	\$3,312.00
	Train labour teams in RIIS and at hospitals, i.e. gynaecologists-obstetricians, residents, anaesthesiologists, nurses, network coordinators, and first-level nurses, to diagnose and initially manage obstetric haemorrhage, gestational hypertension and other obstetric and neonatal emergencies	MINSAL, ISSS, HR training institutions, scientific societies	2013, 2014, 2015		\$0	\$0.00
	Develop and enhance the monitoring system for maternal morbidity and mortality	HR training institutions, scientific societies	2013-2014	1000	\$3	\$3,000.00
						1,542,724.00

COMPONENT 6: Monitoring system for maternal and neonatal mortality

Bottleneck	Action for improvement	Partners	Year of implementation	Quantity	Unit cost	Total cost in USD (\$)
A. Lack of notification and classification of the basic cause of death in newborns and stillborns. No continuity in search for maternal deaths in the database of women who died aged 10-49 years. Changes in registration staff when a new mayor is elected	Carry out audits, improvement plans, and maternal follow-up audits	MIN SAL, ISSS, SNU	2013, 2014, 2015	0	\$0.00	
	Fill in the flowchart to notify cases of obstetric morbidity	MIN SAL, ISSS, SNU	2013, 2014, 2015	\$0	\$0.00	
	Monitor and supervise the registration of data for deceased persons, the Perinatal Information System, and the notification of cases	MIN SAL, ISSS, SNU	2014-2015	879	\$40	\$35,160.00
	Regular obtain a list health registrars at town halls	MIN SAL, ISSS, SNU	2014-2015	530	\$25	13,250.00
	Educate the population to reduce infant deaths in communities through the monitoring system for neonatal mortality	MIN SAL, ISSS, SNU	2014-2015	1	\$10,000	\$10,000.00
						\$58,410.00

**COST OF THE ACCELERATION PLAN TO MAINTAIN OR REDUCE THE RESULTS
OF MDGS 4 AND 5**

#	Components	Total cost in USD (\$)
1.	Intersectoral coordination	3,583,948.00
2.	Preconceptional, prenatal, delivery, and postnatal care	11,824,280.00
3.	System of referrals and returns	21,416,136.00
4.	Postnatal and newborn follow-up (extreme morbidity, prematurity and low weight)	6,608,200.00
5.	Management and investigation	1,542,410.00
6.	Monitoring system for mortality and information	58,410.00
	Total	45,033,384.00

A close-up, slightly grainy photograph of a young child's face. The child has dark, wavy hair and is looking directly at the camera with a neutral expression. Their eyes are a deep brown color. The lighting is somewhat dim, creating shadows on the child's forehead and around their eyes.

IX. ANNEXES

Photo: PAHO/WHO

DESCRIPTION OF STATISTICAL FINDINGS AND STUDY OF CASES AND CONTROLS OF DEATHS AND SURVIVALS – MDG 4, 2011, MINSAL.

A. STATISTICAL ANALYSIS:

For this MDG only MINSAL data were analysed because the information system did not include data from other institutions.

- Between 1994 and 2009 we observed a sustained trend in the reduction of three indicators: early neonatal death (fewer than 7 days after birth), late neonatal death (8-28 days), and deaths under 1 year. However, newborns under-7 days deaths has been sustained, representing two-thirds of neonatal deaths, and the number of deaths in those aged under 1 year remained stable between 2007 and 2009, although late neonatal deaths decreased.
- The number of cases of neonatal deaths in 2010 compared with 2011 showed an increase in cases in the departments of Cabañas (92%), Sonsonate (87%), and La Unión (57%), which is an exception to what was indicated in the previous paragraph.
- When we observe the effect of the reform providing access to hospital births and its effects on neonatal death in the period 2006-2011, we find that in 2006-2007 there was a negative correlation in both indicators, at least in terms of there being more neonatal deaths; this equates to a stable trend for the period 2008-2010, with a slight rise in births, but from 2011, despite a greater increase in the number of births, the neonatal mortality rate also increased, but the reason for this needs to be addressed by another study.
- Sepsis, congenital malformations and asphyxia, in this order, are the three main

causes of neonatal mortality, apart from prematurity, which is not a diagnosis but a condition according to the International Classification of Diseases (ICD-10).

- The causes of death in babies weighing under 1,500 grams are primarily diagnosed as congenital malformations and secondarily as infectious processes.
- Prematurity, extreme immaturity and small size for the gestational age were reported in 244 of the 660 cases of death (40.7%).
- Throughout the database causes of neonatal death have been diagnosed incorrectly, namely: cyanotic attack in the newborn (1), other causes related to the social environment (1), and diagnoses that demonstrate a traumatic birth such as pneumothorax or pulmonary rupture in 13 cases and cranial lesions in 5 cases.
- 17 of the 28 maternity hospitals in El Salvador had neonatology beds, the total number being 255. The neonatology workload represented 7.37% of all specialities, with a maximum amount in a single maternity hospital of 23.52%. Upon reviewing criteria for basic obstetric and neonatal care, we found various hospitals that did not comply with neonatal care, and it is necessary to study this situation more profoundly in order to redirect these services.
- The neonatology budget was not analysed as it was not reported according to specialisation.
- We found that the prenatal use of steroids was helpful in improving pulmonary maturity, but was not an indicator included in the plan to reduce maternal and neonatal mortality, even though it forms part of the standards for hospital care. Similarly, there is no specific strategy in this plan to reduce infections associated with care, only infections in mothers.

B. RISK FACTORS FOR NEONATAL DEATH:

These factors were obtained by reviewing 202 neonatal forms, of which there were 92 deaths (cases) and 110 discharges (controls) on the same day and with the same diagnosis for the deaths, and also by reviewing data obtained from the Perinatal Information System in ten of the hospitals where there were more neonatal deaths in 2011. Statistically we worked with the hypothesis that the group with a higher probability of neonatal survival was the group where the mothers were aged 25-34 years in urban areas, with a certain level of education, who had normal VDRL, general and urine tests, and where the baby weighed more than 2,500 grams and was born at 37-40 weeks of pregnancy. The data signifying a higher risk and bottlenecks for care are presented here.

PRENATAL COMPONENT:

- Origin of mother: 51.5% of cases occurred in rural areas (104), i.e. 56.6% (52) of deaths and 47.3% (52) of controls. The risk of death if the mother lived in rural areas in this study was 1.45 times higher (CI: 0.831-2.53), with ORadj of 1.46 (95% CI: 0.7-2.7). 34.8% (32) of deaths occurred in the Eastern region while 27.3% of controls (30) were in the Paracentral region.
- Mother's age 35-44 years: although 32% (64) of all cases were women aged 20-34 years (deaths (27) and controls (37)), the higher risk of death was in women aged 35-44 years with OR of 2.58 (95% CI: 1.0-6.87), and the risk increased 3.95 times (95% CI: 1.2-12.4) when combined with rural origin, mother's education and low birth weight. With a mother aged 40 years or older, the baby is 4.6 times more likely to die than with a mother aged 20-34 years.
- Mother's education: most deaths and controls were women with secondary education: 45.5% (35) and 47.5% (47). However, we found that an illiterate, rural mother was 3.09 times (95% CI: 0.98-9.7, ORadj) more likely to have a deceased child than one from an urban area.
- Multiple births: only 18.6% (37) of all cases were mothers with 4 or more children, i.e. deceased (22) and morbidities (15); but we found that a mother with 4 or more births was twice as likely (CI: 95%: 0.98-4.1, OR) to have a deceased child as one with only two births.
- Non-performance of bacteriuria detection: the test for bacteria in the urine, a condition associated with premature death, which must be taken twice, once before 20 weeks of pregnancy, was not performed in 52% (90) of all cases, i.e. 51.4% (38) of deaths and 52.5% of controls. If it was performed and was abnormal, it was seen in 14.5% (25) of all cases (18.9% (14) of deaths and 11.1% (11) of controls). If the bacteriuria test was abnormal and pregnancy was less than 20 weeks along, the risk of death increased 2.08 times (CI: 0.8-5.39).
- Bacteriuria after 20 weeks: the test for bacteriuria after 20 weeks of pregnancy was not performed in 72.5% (124) of cases, i.e. 74.0% (54) of deaths and 71.4% (70) of controls. In cases where it was performed, the result was abnormal in 10.5% (18) of all cases, i.e. 12.3% (9) of deaths and 9.2% (9) of controls.
- Serology was not performed to detect syphilis in mothers prior to 20 weeks in 44.1% (89) of cases, i.e. 46.7% (43) of deaths and 41.8% (46) of controls. After 20 weeks it was not performed in 64.9% (131) of cases (63% (58) of deaths and 66.4% (73) of controls). No case was positive.

- In newborns there was no syphilis serology in 66% of cases and 63.0% of deaths, which was associated with the presence of congenital malformations that were among the top three causes of mortality in this age group.
- Insufficient programme for antenatal steroids: they were used in only 42.7% (32) of cases, i.e. 28.3% (13) of deaths and 65.5% (19) of controls. They were not performed in 42.7% (32) of cases, i.e. 52.0% (24) of deaths and 27.6% (8) of controls. Incomplete administration of steroids increases the risk of death OR Adj 7.8 times (95% CI: 3.3-18.1) more than when complete, and when it is incomplete the OR is 4.38 (95% CI: 1.5-12.7).

DELIVERY COMPONENT:

- Regarding birth weight, 47.7% of deaths occurred between 400 and 1,499 grams. 55.1% of controls weighed more than 2,500 grams. The risk of death increased 6.7 times (95% CI: 3.1-18.1, OR) and was the greatest risk since there was no change in the multivariate analysis when combined with origin and education, and the risk was OR Adj 6.64 times higher (95% CI: 2.64-16.69), indicating the considerable importance of this risk.
- Of the 80,757 births registered in the MINSAL SIP database in 2011, we found that 5.1% (4,046) were small for their gestational age, 1.3% (1,043) were large for their age, and 1.1% (902) showed restricted growth, implying that 7.5% (5,991) of children were born with weight problems.
- Gestational age at birth: 48.5% (98) of all cases were born at 37 weeks or more, but 48.9% (45) of those who died had a gestational age of 20-33 weeks. As was expected, we found that a baby born at 20-33 weeks was OR Adj 1.14 times (95% CI: 0.65- 2.0, OR) more likely to die

than a baby born at term, rising to OR Adj 7.8 times (95% CI: 3.3-18.1) when at 33 weeks and weighing less than 1,500 grams.

- Delivery route: in particular if the newborn weighed more than 3,000 grams and was delivered vaginally, the risk of death was OR Adj 1.14 times higher (95% CI: 0.65- 2.0), equal to the risk if intrapartum meconium fluid was detected. Of all the cases of Caesarean section, the most common was acute foetal distress with 21.2% (21) for controls and 28.9% (12) for deaths; for controls the main cause was prior Caesarean section in 22.8% (13) of cases.

NEONATAL COMPONENT:

- The average stay in hospital for newborns was 15.06 days, with a maximum of 158 days. Internationally the cost per day of admission to neonatal care units is 1,200 USD, amounting to 189,600 USD for the longest stay.
- Prematurity: this was the main cause of death in 19.1% (26) of cases and the secondary diagnosis in 11.1% (8); for controls it was 15.7% and 6.0%. Congenital malformations occurred in 26 cases, multiple malformations in 13, gastrointestinal tract defects in 6, and neural tube defects in 3.
- Infections: 35 cases in total. 3.7% of deaths and 11.8% of controls recorded this as the primary diagnosis and 6.8% of deaths and 18% of controls as the secondary diagnosis.
- 17 cases of diagnosed injury at death from bleeding and organ rupture were recorded as the secondary diagnosis.

DESCRIPTION OF STATISTICAL FINDINGS AND RESULTS OF THE STUDY OF CASES AND CONTROLS – MDG 5

A. STATISTICAL DATA:

ACCORDING TO STATISTICAL DATA ON CAUSES FROM THE NATIONAL DATABASE WE FOUND THE FOLLOWING INFORMATION:

- According to the trend from 2006-2011, self-inflicted intoxication and gestational hypertension fell on two percentage points, from 13% to 11% and 17% to 15%, respectively; haemorrhage decreased by 3 points from 20% to 17% and infections rose by 4 points.
- In 2010 and 2011, for mothers aged 10-14 years, the only cause of death was gestational hypertension, and in this group no self-inflicted intoxication or infection was seen; the 15-19 year age group had the same rate (4.8%) of chronic diseases and homicide followed by intoxication and haemorrhage (3.6%) and fewer infections and cases of gestational hypertension (1.2%). In the 20-24 year age group chronic diseases were predominant (6.1%) followed by infections, homicide and gestational hypertension with 2.4%. Gestational hypertension (11%) and haemorrhage (9.7%) were most common for 30-39 year olds, followed by infections (3.9%) and intoxication and homicide, each with 2.4%. In women aged over 40 years, haemorrhage (3.6%) and gestational hypertension (2.4%) were most common.
- The adolescent group represented 15.6% of the total number of deaths in 2010 and 15.9% in 2011. The increase in cases in the 15-19 year age group was due to homicide and self-inflicted intoxication in 75% of cases and in those aged over 40 years it was hypertension and haemorrhage.

• In both years the same departments had the highest rate of maternal deaths, i.e. San Salvador (9.4%), where most of the population lives, La Libertad (5.6), La Paz (5%), Usulután (5%), Ahuachapán (5%), Santa Ana (4.4%), San Miguel (3.7%), Sonsonate (3.7%), and Chalatenango (3.7%).

- The maternal death rate in the 2006-2011 period fell from 66.3 in 2006 to 47.8 in 2008 and rose slightly to 50.7 in 2011. It is important to point out that according to MINSAL, the data for live births up to 2009 were DIGESTYC projections, from 2009 to 2011 were from the Technical Secretariat of the Presidency, and from 2006 onwards included all sector providers.
- 23.4% of women of child-bearing age were classed as active users of family planning, the goal being 80%.
- MINSAL coverage of pregnant women was 85.92%, the goal being 90%, and early registration was 62.3% compared with the goal of 65%.

B. RISK FACTORS FOR MATERNAL DEATH

Data for 136 women were obtained from the analysis of the care process by reviewing deceased forms (65) and cases of obstetric morbidity due to diagnoses that were similar to those of death (72), as well as the registers of the Perinatal Information System in 12 hospitals where more deaths occurred. For the statistical analysis of the risks of maternal death the hypothesis was that there would be a greater likelihood of survival for a woman aged 24-28 years at 38-40 weeks of pregnancy who had had 5 prenatal checks and in whom a risk had been detected correctly and managed in compliance with clinical guidelines, and therefore no probability of death; such a woman would be assigned to this group (1).

It should be remembered that a level higher than 1 is considered a risk and is statistically significant if the 95% confidence interval (CI) is 1. A risk lower than 1 is considered a protective factor. It has been shown that the newborn receives a greater benefit from prenatal checks.

PRECONCEPTIONAL COMPONENT:

- There was no preconceptional consultation: 31.4% (43) of all patients, of which 21.5% (14) were maternal deaths and 40.3% (29) obstetric morbidities.
- Unplanned pregnancy: 70.1% of all cases were unplanned, 72.3% being deaths and 68.1% morbidities.
- Scant use of family planning methods: the highest percentage of cases (26.5%) and controls (31.9%) were observed in women who used no family planning method and had not planned their pregnancy. Only 8.1% used any method compared to 91.9% who used none. Of the first group, who used family planning methods and had a planned pregnancy, there was only one maternal death and no cases of obstetric morbidity. In the second group that did not use family planning, 29.4% (40) had a planned pregnancy and 62.5% (85) had not planned it. In the latter group, 64.0% (41) were maternal deaths and 61% (44) obstetric morbidities.

PREGNANT COMPONENT:

- Prenatal checks: these occurred mainly in the first and second levels of care, in 67.2% and 10.2% of cases respectively. Only in high-risk conditions was the third level of care provided, in 5.8% of cases. 16.8% of all cases had no prenatal checks.

- 48.9% (67) of patients did not undergo the full course of prenatal checks (i.e. 5 checks). Only 32.8% (45) had more than five checks and only 29.2% of those who died and 36.1% of morbidities, considering that they had risks and complications. Morbidity cases had more prenatal checks than those who died. 43% of rural women who died had fewer than 5 checks or none at all. We found that the risk of maternal death increased up to 3.5 times (CI: 1.22-10) when women had no prenatal checks and by 3.03 (CI: 1.15-7.07) prenatal care provided by unqualified personnel (nurses, promoters).
- Inadequate prevention of anaemia: only 51% of all women of child-bearing age received iron and folates in prenatal checks, compared with the 68.8% prevalence of anaemia during pregnancy.
- Gestational age: 54% (74 cases) between 37 and 42 weeks and 29.2% between 20 and 36 weeks. Obstetric morbidity was predominant in the group aged 37-42 weeks. For those under 20 weeks, 29.2% corresponded to deaths in which intoxications were the main cause and 5.6% survived. There were no data on septic abortions nor mention of induced abortions.
- Effect of obesity: the risk of death is 1.146 times (CI: 0.46-2.85) more likely when the Body Mass Index is between 25 and 29.9 and 2.58 times (CI: 1.05-6.37) when it is between 30 and 39.9 ($p=0.04$). In accordance with FESAL data from 2008, 59% of overweight women aged 15-49 years had above-normal weight problems, 36.5% being overweight and 23.1% obese.
- Lack of obstetric and perinatal risk detection: 21.2% of all cases detected a prior obstetric risk, in only 12.3% of deaths and 29.2% of morbidities, and we found that the risk of death increased 2.9 times when the risk was not detected (CI: 1.19-7.19).

- Use of Perinatal Clinical Sheet (HCP) to detect risks: this was filled in for 69.3% of all patients. The highest level of filling in (81.9%) was observed in cases of morbidity and only 55.4% in deaths. The risk of dying rose 3.65 times (CI: 1.68-7.93) when the HCP was not filled in. A history of risk meant being 2.93 times more likely to die (CI: 1.19-7.19), and a combination of a history of risk and incomplete HCP meant being 3.65 (CI: 1.68-7.93) times more likely.
 - Non-use of the filter sheet in prenatal care. This was used in 83.6% of all cases, i.e. 42.2% of those that died and 57.5% of morbidities. An incomplete filter sheet increased the possibility of death by up to 1.91 (CI: 0.672-5.46) times.
- a large dose of oxytocin. Non-use of MATEP increased the risk of death 2.94 times (95% CI: 1.17-7.37).
- Gestational age at birth: 54% (74) of cases were between 37 and 42 weeks of pregnancy; 40% (26) were deaths and 66.7% (48) were morbidities. Fewer than 20 weeks accounted for 16.8% (23) of all cases, but 29.2% (19) of deaths compared with 5.6% (4) of morbidities died at this gestational age.
 - Place of death: community: 13 women died in the community and were managed by the following people: partner (3), family (3), resident doctor (4), gynaecologist-obstetrician (2). In the last two cases the patients were cared for in hospital and discharged.

DELIVERY COMPONENT:

- Delivery care for the family or partner: 5 patients in the deaths group were attended at a community/household level, by a partner (3) and family (2), with faecal retention and postpartum haemorrhage (3), thrombosis (1), and the patient age of 24-37 years being the causes.
- Care by a gynaecologist: despite 93.5% (128) of births being attended by medical personnel, only 35.4% (23) of deaths and 45.8% (33) of morbidity cases were attended by a gynaecologist.
- Cases that did not comply with MATEP: despite 77.4% (86) of patients receiving oxytocin, there were still 22.5% needing it that were not given it; of these 34.0% (15) were deaths and 14.9% (10) were morbidities. Of the 27 patients with haemorrhage, 5 did not receive it and of the 15 recorded cases of uterine atony, 2 did not receive it; however, these 15 patients had risk factors for uterine atony and were entitled to

POSTPARTUM COMPONENT:

- Inadequate monitoring of vital signs: this was recorded as inadequate in 45.5% (62) of all cases, of which 53.8% (35) were deaths and 37.5% (27) morbidities. They were 1.9 times (CI: 0.97-3.8) more likely to die.
- Inadequate use of medicines according to the diagnosis upon discharge: 46.2% (30) of maternal deaths and 40.3% (29) of controls received inadequate medicines. The risk of death was 1.27 times (CI: 0.64-2.5) higher than in patients who used medicine appropriately.
- Inadequate use of intravenous fluids: even though 77.4% (106) of patients received adequate fluids, attention should be paid to the 22.6% (31) of cases that did not, of which 40% (26) corresponded to deaths and 6.9% (5) to morbidities. The risk of death was 8.93 times (CI: 3.17-25.1) higher than if there was adequate intravenous fluid support.
- No reference to specialised postpartum checks: 61.4% of complications.

- Postpartum advice: 91.6%; however, 18% did not decide on a family planning method, 33% used a natural method and 6.9% the barrier method.
- 6.9% of morbidities were emergency hysterectomies.

MANAGEMENT FAILURES:

- Reported in 43.1% (59) of all cases, 46.2% (30) being for deaths and 40.3% (29) for morbidity. Failure was the most common for all.
- Failures in prevention: these were reported in 31.4% (43) of all cases, of which 21.5% (14) were deaths and 40.3% (29) morbidities.
- Failures in diagnosis: observed in 16.8% (23) of all cases, of which 26.2% (17) were deaths and 8.3% (6) morbidities.
- Late referrals: 5.1% (7) of all cases were categorised thus, i.e. 6.2% (4) for deaths and 4.2% (3) for morbidities.
- Inadequate implementation of clinical guidelines: In 52.6% (72) of all cases the complication was managed in accordance with clinical guides; 58.5% (38) were deaths and 62.5% (45) were morbidities. Non-implementation of guides increased the probability of maternal death 1.8 times (CI: 0.16-20.38).

CLASSIFICATION ACCORDING TO THE LEVEL OF PREVENTION AND DELAYS

- Preventable complications were predominant: these occurred due to inadequate management, with 50.4% (69), 55.4% (36) corresponding to maternal deaths and 45.8% (33) to obstetric morbidities. 44.5% (60) were potentially preventable complications, in other words suitable diagnosis and treatment were provided, but were late, with obstetric morbidity predominating in 51.4% (37) and maternal deaths in 36.9% (23). Only 5.1% (7) were classified as non-preventable, occurring even with adequate diagnosis and treatment, i.e. 7.7% for maternal deaths and 2.8% for obstetric morbidities.
- Only 7.3% (10) of all cases corresponded to Delay 1, which is the delay attributed to the patient or family, mainly cases of maternal death with 7.7% (5). There were no cases of Delay 2. 65.7% (90) corresponded to Delay 3, which was a delay in receiving suitable treatment in cases of maternal death, i.e. 78.5%. More than one delay occurred in 6.6% (10) of patients, mainly deaths in 13.8% (9) and morbidities in 1.4% (4).

MANAGEMENT COMPONENT:

According to the data uncovered, taken from personnel at 10 maternity hospitals and from the MINSAL production system, the bottlenecks in this area were as follows:

- No evidence of adequate offer to meet demand characteristics: women with a higher risk of mortality throughout the care process: aged 34 years or more, with 4 or more children, BMI between 30 and 39, of rural origin, and with no prenatal checks. Some women with chronic diseases are not referred for specialist prenatal checks, i.e. 3 of the 7 women with

heart disease and 2 of the 7 cases of diabetes using first-level prenatal checks. For example, a woman with 6 or more pregnancies is 2.1 times (CI: 0.628-7.58) more likely to die; the group aged 35-45 years is 2.04 (0.77-5.36) times more likely to die than the other age groups; rural origin equates to a higher risk of death than urban origin, increasing the possibility of death 1.53 times (CI: 0.75-3.11), or OR Adj 2.5 times (CI: 0.80-8.51, ORadj) if in addition to the rural origin the mother's age is between 35 and 45 years; unplanned pregnancy increases the risk of maternal death 1.22 times (CI: 0.57-2.50) higher than for a planned pregnancy. It is worth adding that according to the procedure in the Eastern region there was a higher percentage in all cases of 32.8%, corresponding to 30.8% for deaths and 34.0% for complications.

- Regions have not acquired obstetric and neonatal skills uniformly for their personnel; according to reports for each region in 2012, the Western region is at 100%, Central at 27%, Metropolitan at 22%, Paracentral at 46%, and Eastern at 32%.
- The number of beds listed for women in the 28 maternity hospitals in El Salvador is 803; in 2009 there were 1,027 according to that year's COEm study.
- According to admission numbers, the obstetric specialisation is the main workload, with an average of 23.20%, with the highest at the maternity hospital, as expected, corresponding to 62.18%. Four maternity hospitals were below average (San Miguel, Zacatecoluca, San Vicente, and Soyapango). The hospitals at Cojutepeque, Ciudad Barrios, Gotera, and La Unión had a workload between 30.95% and 44.55%. It should be mentioned that in regional hospitals the load was higher than expected: Santa Ana (26.31%), San Rafael (27.80%), San Vicente (22.14%), and San

Miguel (20.67%), and departmental hospitals such as Usulután, Sensuntepeque, Ilobasco, Chalatenango, Nueva Concepción, Sonsonate, and Ahuachapán have loads between 33.29% and 39.30%.

- Hospitals with a higher maternal mortality rate had the following obstetric workloads: San Rafael (27.28), Ahuachapán (35.02), La Paz (22.60), Santa Ana (26.31), Chalatenango (34.20), Sonsonate (34.70), Morazán (47.44), and Usulután (33.29). In some of them the assigned beds are lower than for other specialisations, such as medicine and other types of surgery.
- Of the 28 existing maternity hospitals in the 2009 CONE study²⁷, 10 had complete emergency obstetric care 24 hours a day, 365 days a year, 12 had it for under 24 hours, and for 6 it was incomplete, especially due to the lack of a blood bank, continuous supply of antibiotics, at least oxytocic drugs, and personnel who are qualified for placenta removal. According to the 2012 PRMMN evaluation report, there are 8 hospitals without 24-hour emergency obstetric care: Metapán, Chalchuapa, Ahuachapán, Chalatenango, Cojutepeque, Sensuntepeque, Gotera, and La Unión.
- Specific budget: There were no data because there was no itemisation per specialisation. The standard unit did not include the list of medical and nursing personnel per hospital for maternal care.

RESULTS IN NEWBORNS OF DECEASED MOTHERS OR THOSE WITH COMPLICATIONS:

We found that for newborns of mothers who died compared to those of mothers who survived, those weighing more than 4,000 grams were 1.03 times more at risk of death; if their weight was below 1,500 grams, the risk was 5.86 times greater; the risk increased 6.08 times if the baby was born between weeks 21 and 28. It must be considered that the diagnosis of low birth weight has not improved, since it was 8.53% in 2010 and 9.0% in 2011. With such data the same risk factors are confirmed as for the study of neonatal cases and controls.

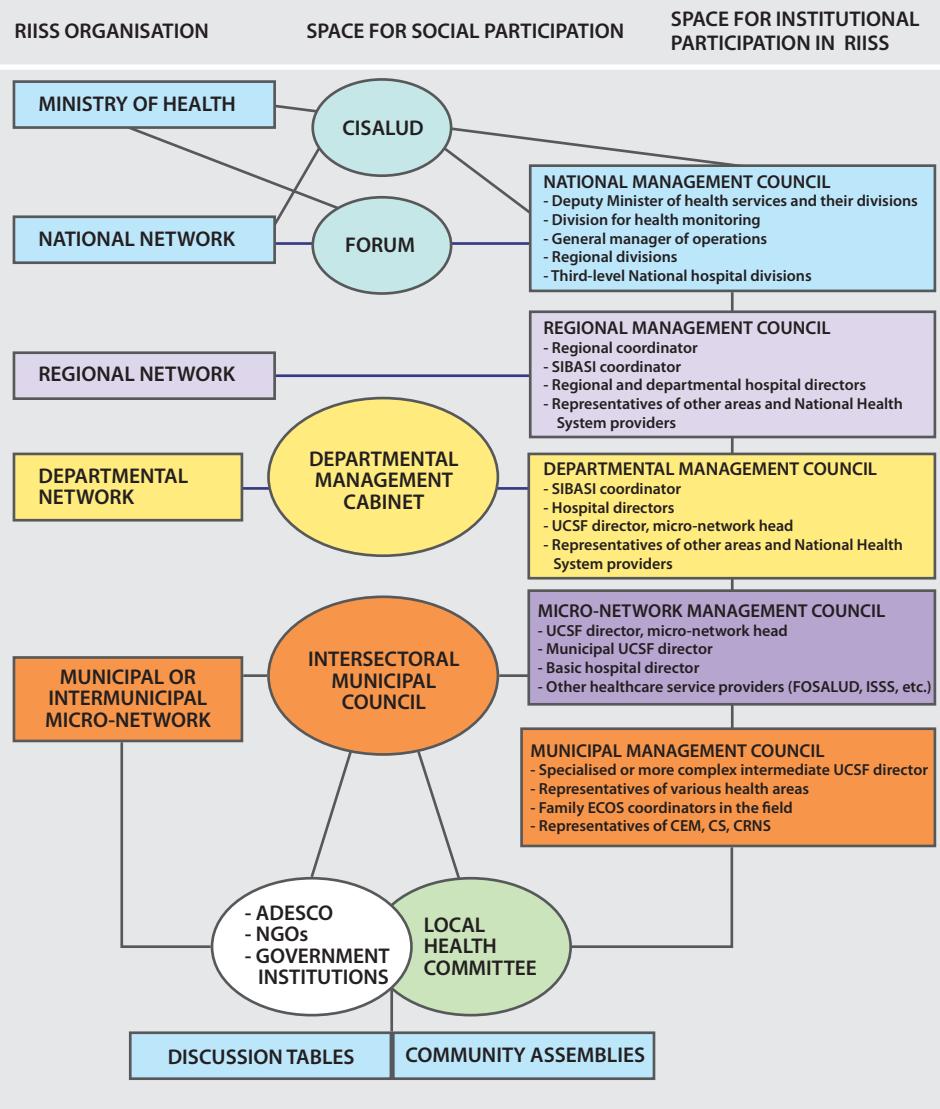
RESULTS OF MONITORING SYSTEM:

- Hospital epidemiologists up till 2012 systematically checked the register of deaths with the town records, a procedure that is part of the monitoring system set up in 2007 for any type of death, including that of mothers.
- There were no data specifically showing that maternal deaths were detected via an active monitoring system for deceased women aged 10-54 years at both MINSAL and ISSS. This means that there is a sub-set in the number of maternal deaths.

RESULTS OF THE INFORMATION SYSTEM:

In reviewing 12 maternity hospitals and the national database of the perinatal information system the use of the system was shown; however, an analysis of the data it generates is not performed locally, regionally or nationally in a consistent way that makes it possible to recognise the characteristics of demand and the analysis of risk, and thus to adjust the Service delivery (Supply) to needs.

SPACES FOR SOCIAL PARTICIPATION IN INTEGRAL AND INTEGRATED HEALTH NETWORKS (RIISS)



Source: Labour report, MINSAL, 2011-2012

