

# IMPROVING HEALTH SYSTEM EFFICIENCY

**MEXICO**

## Catastrophic Health Expenditure Fund

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# ABBREVIATIONS

ALL	Acute Lymphoblastic Leukaemia
CAUSES	Universal Health Services Catalogue, <i>Catálogo Universal de Servicios de Salud</i>
CHEF	Catastrophic Health Expenditure Fund, <i>Fondo para la Protección contra Gastos Catastróficos</i>
CNPSS	National Commission for Social Protection in Health, <i>Comisión Nacional de Protección Social en Salud</i>
CSG	General Health Council, <i>Consejo de Salubridad General</i>
DGCES	General Directorate of Quality Health Education, <i>Dirección General de Calidad y Educación en Salud</i>
FPP	Fund for Budget Prvision, <i>Fondo de Previsión Presupuestal</i>
MOH	Ministry (or Secretariat) of Health, <i>Secretaría de Salud</i>
PDO	Public Decentralized Organisms, <i>organismo público descentralizado</i>
REPPS	State Regimes for Social Health Protection, <i>Regímenes Estatales Para la Protección social en Salud</i>
SESA	State Health Services, <i>Servicios Estatales de Salud</i>
SPS	Popular Health Insurance, <i>Seguro Popular de Salud</i>
SPSS	Social Health Protection System, <i>Sistema de Protección Social en Salud</i>

# EXECUTIVE SUMMARY

The health sector in Mexico underwent a major transformation after the creation of the Social Health Protection System in 2003. A significant innovation of this system was the creation of a specific fund – the Catastrophic Health Expenditure Fund – aimed at eliminating a source of inequity in the health system. The Fund was created in line with the Mexican Government’s commitment to assure access to health services for populations with no social security. Thus, services became available for this previously disadvantaged group for any health condition approved by the National Health Council. The Fund also aimed to support states to finance the treatment of illnesses that represent a risk of catastrophic expense from the institutional point of view. Thus, funds will cover and guarantee access for the affiliated population to costly, specialized treatment (1). In summary, the Fund was designed to support not only the universalization strategy called vertical coverage, but also the so-called horizontal population coverage, which broadens the health coverage of population groups through affiliation to the Social Health Protection System.

Ten years after the launch of the Catastrophic Health Expenditure Fund, the results are encouraging. Each year, the lives of more than 150 000 Mexicans of all ages are saved or improved because of assured access to treatment they would not otherwise have been able to afford. Of course, this is far from meeting the needs of such a densely populated country, and there is yet a long way to go. But it does give cause for optimism.

# 1

## INTRODUCTION

The three major aims of this study were to identify: i) the extent to which the Catastrophic Health Expenditure Fund (CHEF) has diminished inequities in access to health services and thus on health status; ii) whether the CHEF has improved the responsiveness of health-care service providers; and iii) how the Fund can contribute to accomplish universal health coverage in Mexico.

In order to assess the impact of the CHEF, the following activities were undertaken:

- a description of the ethical, political, technical and financial criteria used to select health conditions for CHEF coverage;
- an analysis of the strategies used by health units to access CHEF resources;
- a review of the processes used by health-care service providers and the National Commission for Social Protection in Health (CNPSS) to meet the needs of beneficiaries, and to offer timely health care and follow-up;
- identification of the number of patients receiving health care disaggregated by health condition, year, state and amount paid to the service provider;
- a comparison of access to and use of services before and after CHEF implementation for health conditions that generate catastrophic expenditure; and
- an estimate of the impact on health resulting from selected interventions covered by the CHEF to date.

Following a historical review of the health system in Mexico, the objectives and activities are discussed in three sections: the selection criteria for illnesses covered by the Fund; the inclusion of health service providers; and health-care processes and results. A summary of the outcomes of the study along with specific recommendations are provided in the discussion and conclusions sections at the end of the document.

The most important information sources used were the CNPSS outcome reports, and external evaluations performed by the Ministry of Health, the National Council for Social Policies Evaluation and other academic institutions. Significant input also came from scientific articles, statistical data derived from the administrative registers of health surveys, as well as unpublished studies and doctoral theses.

# 2

## CATASTROPHIC HEALTH EXPENDITURE FUND: BACKGROUND

The Mexican Ministry of Health and Assistance was established in 1943 to merge the Department of Public Sanitation and the Ministry of Public Assistance, which had existed since the first State health reform at the turn of the 20th century. In the same year, the Mexican Social Security Institute was created based on the insurance model operating in Europe, with the aim to support the country's industrial development. The new health system distinguished between two population groups: i) formal sector workers and their families, who benefitted from social security and were called the insured population; and ii) farmers, the self-employed, the unemployed and the homeless, who were called the non-insured or open population. The first group had guaranteed, explicit rights to universal health coverage, while individuals in the second group had to fend for themselves or rely on the assistance of the state, with the level of health services subject to unpredictable public finances (2).

This segmentation of the population led to the development of two parallel health institutions with sharp differences in infrastructure, human and financial resources, care coverage and capacity to address health needs. Moreover, the fragmented health system in Mexico – still today – is a permanent source of inefficiency both in financial terms and in the provision of health services. The administrative costs alone of running different health subsystems represent about 10% of total health spending, one of the highest among countries of the Organisation for Economic Co-operation and Development (OECD). In addition, the distinct legal footing for differential access of the population to health services prevented an efficient use of infrastructure and resources of social security services and those provided by the Ministry of Health. In many instances, health services could be offered by either provider to the entire population. The pursuit of equal health rights for all Mexicans therefore became a recurrent topic on the health agenda for the next 60 years.

During the following decades, Mexico went through deep demographic, economic and epidemiologic transformations. For example, between 1930 and 1970 the population increased from 16.5 to 48.2 million (3) with growth rates of 1.7–3.1% (4). The industrialization process initiated in the 1940s stimulated an accelerated migration of the rural population to the cities (5). From the early 1950s until 1970, Mexico registered a period of economic boom known as “stabilizing development” with gross development product (GDP) annual growth rates of 6.5% and an expansion of health infrastructure. However, the recurrent financial crises that hit the country during the 1970s contracted the economy, with significant impact on the health and social security systems. The Ministry of Health and Assistance could no longer meet the demand for services from a growing informal workforce in both urban and rural areas.

In addition, medical care at hospital level privileged specialty care over first-level care, which created an imbalance between health needs, health-care services offered and the effectiveness of clinical interventions. The combination of population growth, accelerated urbanization, high health-care costs, the rising burden of noncommunicable diseases and inadequate access to health services by large segments of the population demonstrated that the medical model based on hospital care had reached its limits.

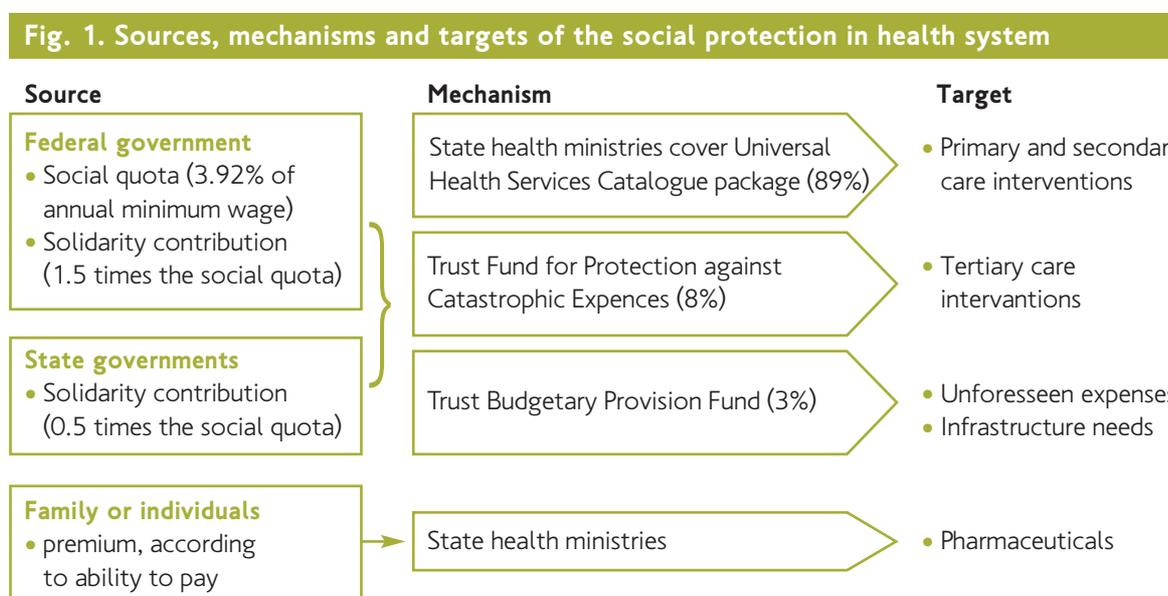
As a result, a second reform of the health system was launched in 1983, which incorporated the right to health protection for all Mexicans into the Constitution. A new General Health Law was promulgated and the current Ministry – or Secretariat – of Health (MOH) was formed. Health services for the uninsured were decentralized to state governments as state health services (SESA) (5). Within a few years, the legal and financial instruments were established to assure genuine social and health protection throughout the country.

In 2003, the Government revised the General Health Law to create the System for Social Health Protection (SPSS) (6). This public policy uses a financial instrument to provide Popular Health Insurance based on the voluntary enrolment of any Mexican national who has no access to any kind of social security.

SPSS is coordinated by the Federal Government through the National Commission for Social Protection in Health (CNPSS) (7).<sup>1</sup> At state level, the system is operated by state regimes for social health protection (REPS) with support from the corresponding state health services. The SPSS is funded through the following mechanisms to pay for the health needs of its members:

- The Universal Health Services Catalogue (CAUSES);
- The Catastrophic Health Expenditure Fund (CHEF); and
- The Fund for Budget Provision (FPP).<sup>2</sup>

Financing of the SPSS is based on tripartite contributions from the Federal Government, the government of each state and from affiliates or beneficiaries. The Federal Government contributes 3.92% of the annual minimum wage in the federal district (adjusted for inflation) as well as a solidarity contribution of 1.5 times this amount. The states contribute at least 50% of the federal social fee. The beneficiaries contribute according to their ability to pay (Fig. 1).



Source: Ministry of Health/National Commission for Social Protection in Health Results Report 2012.

SPSS is responsible for coordinating the Programme for health security in the 21st century<sup>3</sup> as well as the health component of the Human Development Programme called “Opportunities”, both of which receive federal support.

CAUSES and CHEF share a common source of financing but differ in their administration, target populations, supplier payment schemes and interventions covered (Table 1).

<sup>1</sup> The Social Health Protection System will have a National Commission as an independent body of the MOH with structure and functions assigned by its internal regulations. The National Commissioner shall be designated by the President of the Republic proposed by the Minister of Health.

<sup>2</sup> The 2% of this Fund is intended to strengthen health infrastructure; 1% covers compensation for services provided in a state other than the original residence.

<sup>3</sup> This programme targets children with no social security who were born as of December 2006 until they reach 5 years of age. It includes all secondary and tertiary level interventions of care not included in CAUSES, the CHEF or the respective interventions of these funds.

**Table 1. Comparison of the Universal Health Services Catalogue and the Catastrophic Health Expenditure Fund**

Fund	Administration	Target population	Payment to service providers	Number of interventions covered
Universal Health Services Catalogue	State regimes for social health protection	State	Capitation	284
Catastrophic Health Expenditure Fund	National Commission for Social Protection in Health/Social Health Protection System Trust	Entire population with no social security	Per medical case	59

CAUSES covers common and generally low-cost illnesses. The number of interventions included in the Catalogue has grown from 91 in 2004 to 284 in 2012.<sup>4</sup> The National Commission for Social Protection in Health considered that this number of interventions would cover 100% of demand for primary health care and 85% of hospital care (8).

The CHEF was set up to cover the cost of illnesses that would otherwise endanger the patrimony of the beneficiary families and, in turn, could also financially affect the health-care provider if the patient is unable to pay for the services. It is a reserve fund with no annual budgetary limitations, based on operational rules defined by the MOH. CHEF resources correspond to 8% of the Popular Health Insurance budget which are obtained from the social fee plus the state and federal contributions. The CHEF is administrated and operated by the National Commission for the Social Protection in Health through the FPSS trust.<sup>5</sup>

The General Health Law also stipulates that any surplus from the Budgetary Provision Fund at the end of the fiscal exercise shall be affected by the MOH to the CHEF.

The number of interventions covered by the Fund increased progressively from 4 in 2004 to 59 in 2013 (Annex). The first selected interventions were cervical/uterine cancer; acute lymphoblastic leukaemia; prematurity, neonatal sepsis, respiratory distress syndrome; and ambulatory antiretroviral treatment. The most recent health conditions to be covered by the Fund (2012) are kidney transplants for children under 18 years, hepatitis C, ovarian malignant tumour, and colon and rectal cancer. Regarding the latter, December 2013 records show no validated cases by health service providers.

In 2012, the General Health Council agreed to remove cataracts from the list of illnesses that cause catastrophic expenditures. At the same time, the CNPSS approved the incorporation of congenital cataract surgery under CAUSES, as an intervention to be covered by the Programme for health security in the 21st century (9). It should be noted that this programme covers cochlear implants and other interventions that are not included in CAUSES or CHEF, the costs of which may be classified as catastrophic.

<sup>4</sup> The first catalogue of services created in 2003 had 79 interventions. Unlike other catalogues, (including CAUSES) it was the only one that selected interventions based on technical criteria of cost-effectiveness and health needs.

<sup>5</sup> The Technical Committee of the Trust comprises: the National Commissioner for Social Protection in Health, who serves as the President; General Directors of Financing, Health Services Management, Affiliation and Operation of the CNPSS; General Director of Programming and Budget Organization of the Ministry of Health; General Coordinator of the National Institutes of Health; Secretary of the General Health Council; Director of Programming and Budget "A" and the Head of the Unit of Policy and Budgetary Control of the Ministry of Finance and Public Credit. A representative of the Secretariat of Public Function and the National Works and Public Services Bank also serve on a permanent basis.

The General Health Law lists and defines the health conditions incorporated in the Catastrophic Expenses Disease Catalogue, while its periodic revision is the responsibility of the General Health Council (10).<sup>6</sup> The Law also describes the different criteria used in the selection of interventions for the illnesses, the most important of which include a cost-effectiveness evaluation, clinical and epidemiological significance, adherence to ethical standards and social acceptance.

The provision of health care to affiliates suffering from one of the catastrophic health conditions must be guaranteed by health-care services that have proven compliance with standards related to capacity, quality and security. Thus, an interested service unit must develop a series of organizational protocols to ensure an effective internal management process, functional information systems, and human and financial resources, among others.

The Under Ministry of Health Sector Integration and Development is in charge of verifying compliance with these requirements. Specifically, the General Directorate of Quality Health Education (DGCES) within the Under Ministry evaluates and issues accreditation to health facilities (11). The external evaluation process follows a strict methodology. While accreditation is not time-limited, DGCES reserves the right to perform quality control actions and suspend the accreditation while it verifies the continued compliance of the health service provision unit. Accredited health services are registered in the list of CHEF service providers, and a collaborative agreement is issued by the CNPSS enabling providers to offer health care to patients and to receive the respective reimbursements.

CHEF health-care service providers can be public or private. The public sector recognizes two categories of provider according to their legal status: hospitals that belong to the health services of the state, and public decentralized organisms (PDO). Depending on the complexity of the diseases they can treat, public and private facilities are classified as providing secondary or tertiary level care. Details of the interventions covered by the Fund, including diagnostic tests and treatment, are explicitly identified in the protocols with which health providers must comply. A service fee table is also defined.

The provision of health services under the CHEF may represent an incentive to service providers in many ways, such as autonomy in managing the additional financial resources; improved equipment and technical development of their facilities; a major specialization; better health outcomes due to an increased volume of patients with a particular condition; and/or research and teaching opportunities.

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<sup>6</sup> The General Health Council reports directly to the President in terms of Article 73, XVI.1 of the Political Constitution of Mexico. It is composed of a President who shall be Secretary of Health, a Secretary and 13 regular members, two of whom will be President of the National Academy of Medicine and President of the Mexican Academy of Surgery. Regular members are determined by its own regulations. Council members will be designated and dismissed by the President of the Republic; Council members will be designated and dismissed by the President who shall nominate to such office specialized professionals in any health field.

# 3

## SELECTION CRITERIA OF ILLNESSES

Although there is no universally accepted definition, a catastrophic illness is one that requires extensive medical and/or hospital care. This kind of illness usually imposes a significant financial burden on patients and/or their medical insurance provider. Examples of catastrophic illness are cancers, strokes and debilitating heart diseases, some congenital malformations, and in general chronic conditions that require long-term treatment.

Three characteristics of such illnesses are that: i) the expenses are mainly related to the cost of drugs; ii) they present a slow remission, and iii) although they equally affect rich and poor people, the survival of the latter depends on the support of public insurance since the household's budget alone is unsustainable or non-existent (12).

Unlike private health insurance, where coverage is directly linked to user contributions, resources dedicated to public health insurance in low- and middle-income countries are generally restricted, based on fluctuating public finances and subject to the struggle for resource allocation among the different state agencies. In a restricted budgetary scenario, health decision-makers must define a group of benefits that will be generally cost-effective given the expected volume of needs of the target population. In the original design of the System for Social Health Protection, such a list of specific interventions was set up for the Universal Health Services Catalogue and for the Catastrophic Health Expenditure Fund. The same principle was implemented for the more recent Medical Insurance for a New Generation, launched at the beginning of 2007.

Documentation on how health conditions were selected and included in the CHEF is limited to one official report that describes a fundamentally technical and economical process, formally carried out under the responsibility of the General Health Council (CSG) with participation of the MOH authorities. In addition to these public sector actors, social and philanthropic organizations, and the pharmaceutical industry are reported to participate in decisions on the Fund's coverage (13).<sup>7</sup>

Negotiations on what should be covered under the Universal Health Coverage and Catastrophic Health Expenditure Funds started during the reform of the General Health Law that led to the creation of Social Protection in Health in 2004. During this process, several members of Congress, particularly women and HIV/AIDS patient rights defenders, lobbied intensively to include pertinent conditions in the new health insurance policy. The success of their lobby contributed to the formation of alliances that led to the reforms. Legislators also voted positively on health issues such as neonatal complications and women's health, particularly cervical/uterine and breast cancers.

In reality, several of these concerns had already been addressed – albeit insufficiently – by the health system through specific programmes. Examples are financial support for antiretroviral treatment for patients with no social security, and neonatal complications as part of a programme to reduce maternal and neonatal mortality called an Equal Start in Life (14).

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<sup>7</sup> Much of the information contained in this reference document is based on the observations of Dr N. Daniels, a Ministry of Health consultant and specialist in health decision-making processes since 2006.

In its initial stage, inclusion of illnesses in the Fund was influenced by political as well as technical arguments. Some conditions, such as cervical/uterine cancer, could be efficiently detected but lacked the finances for treatment. Others like childhood leukaemia were included without due consideration of how they would be covered under the new insurance scheme. Chronic kidney insufficiency was included as pilot test, but no formal announcement has been made since on this condition.

Political pressure groups have succeeded in voicing the importance of certain health conditions to the health authorities, something that the health actors on the ground are unable to do. Examples of CHEF illnesses supported by external pressure groups are lysosomal storage diseases, cataracts, and haemophilia.<sup>8</sup>

Haemophilia patients in the country also have a support group that is well organized and a fervent defender of patient rights. The Mexican Haemophilia Federation, after an initial request in 2005, finally got haemophilia included in the CHEF list of catastrophic illnesses in 2011.

Before the creation of CHEF, the General Health Council evaluated which interventions should be insured for illnesses generating catastrophic expenditures. Based on negotiations and discussions in Congress, the CSG developed a proposal with nine groups of illnesses covering 60 interventions. The technical selection criteria were based on a cost-effectiveness analysis, disability-adjusted life years and general costs.

In 2004, the General Health Council invited nine expert physicians to deliberate on the specific health conditions to be included within each of the nine illness groups. This process was influenced by specialists from national health institutions in the Federal District, whose hospital prevalence data served as the basic selection criterion (13). The costs of care were incidental.

This selection process based on the input of certain external pressure groups caused unease among health sector actors, who felt that decisions had been made for political and not necessarily ethical or clinical reasons. While leukaemia and cervical/uterine cancer might well be included for their incidence and cost-effective treatment, it was not clear, for example, why prostate cancer or chronic kidney insufficiency had not been considered, or if they had, why they were rejected. Health personnel therefore requested a transparent mechanism be set up to select the illnesses to be covered by the CHEF, which would give decisions greater legitimacy both inside and outside the health sector.

The search for a better selection process started at the beginning of 2006 (the final year of the Administration in office). Dr Norman Daniels, Advisor to the MOH, proposed the principles included in his method “Accountability for Reasonableness” to guide the new process, a manual on which was issued by the CSG in October 2006. In parallel, four working groups were formed to examine ethical, clinical, economic, and social acceptability issues.

While the clinical and economic groups were fully conversant with the proposed System for Social Protection in Health, the ethical and social acceptability expert groups were not; nor did they have experience in decision-making processes or well-defined programmes of work. This, along with the impending change of Administration and poor communication among the working groups, meant that by the end of the year no concrete progress had been made on how to improve the decision-making process on illnesses to be included in CHEF. To date, there is still no evidence showing that a fairer and more transparent selection model will be considered.

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<sup>8</sup> Lysosomal storage disease patient defenders initiated their lobby in 1999 seeking coverage for patients with or without social security from public health institutions. They won a significant legal suit before the National Council for Discrimination Prevention (CONAPRED) in 2006, which resolved that patient human rights had not been respected. As a consequence, the General Health Council was forced to include the disease in the list of CHEF illnesses. This law suit was supported by Genzyme, producer of the medicines for the disease. According to Lakin and Daniels, this happened before the Health Commission of the House of Representatives had time to evaluate the illness, or the CONAPRED resolution.

# 4

## INCLUSION OF HEALTH SERVICE PROVIDERS

Based on the Accreditation Manual, 206 public and private health-care service provision units in December 2013 were registered with the National Commission on Social Protection in Health to treat patients with catastrophic health conditions. Of these, 70.9% belonged to state health services, 15.5% to public decentralized organisms and 13.6% to private health units. Cutting across all units, 65% provided secondary level of care (Table 2).

**Table 2. Type of unit per health care level, accredited to cover CHEF interventions, 2014\***

Type of unit	Number of units per health-care level		Total accredited
	Secondary level	Tertiary level	
State health services	117	29	146
Public decentralized organisms	8	24	32
Private	8	20	28
<b>Total</b>	<b>133</b>	<b>73</b>	<b>206</b>

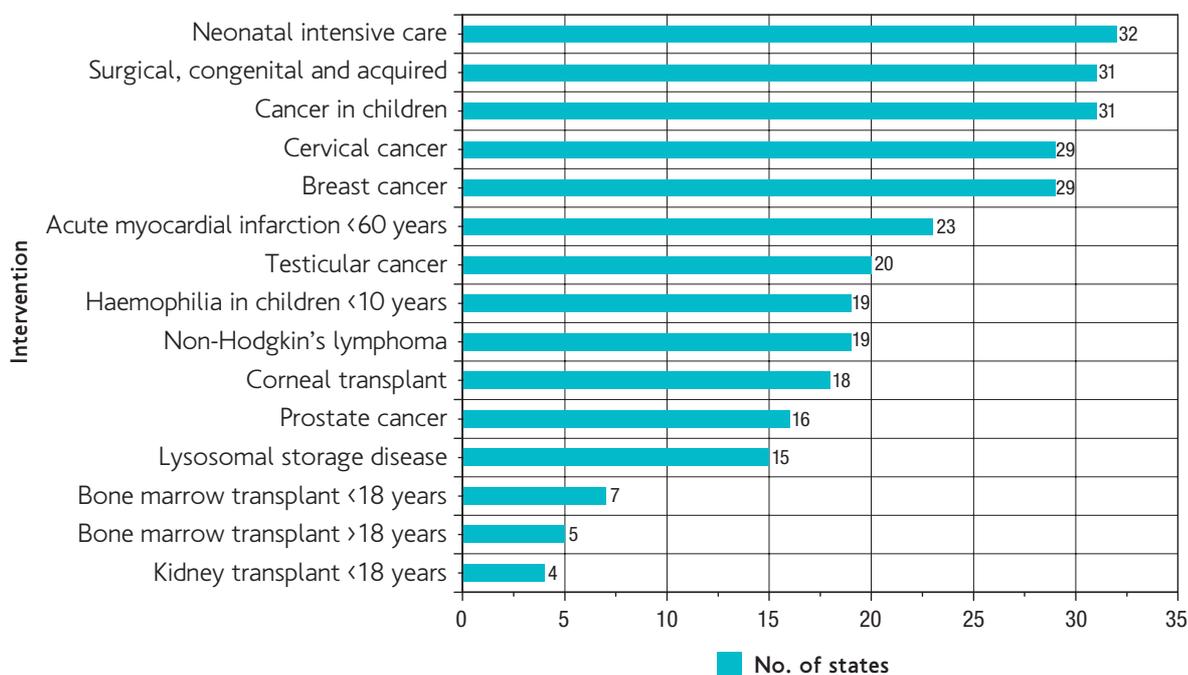
\* Excluding accredited units for treatment of HIV/AIDS and cataracts.

Source: Based on data from the National Commission for Social Protection in Health.

Of all accredited health units, 44% are located in five states (33 units in the Federal District; 20 in the State of Mexico; and 13 units each in Jalisco, Guanajuato and Tamaulipas). The states with the least number of accredited units are Durango, Nayarit and Yucatán, with two health-care service provision units each.

Across the entire country, there are 651 accredited services (health units can treat more than one catastrophic condition). Among the most numerous are services for respiratory failure and prematurity (153), cancer in childhood and adolescence (93), and breast and cervical/uterine cancer (54 each). Three groups of illnesses have 100% geographical coverage: intensive neonatal care; surgical, congenital and acquired disorders; and breast cancer. At the other end of the scale, two conditions incurring catastrophic expenditure that have the least number of accredited providers are bone marrow transplant and kidney transplant for children under 18 years (Fig. 2).

**Fig. 2. Number of states\* that cover specific interventions for the CHEF, 2014**



\*31 states plus the Federal District.

Source: Personal elaboration.

After almost 10 years of implementation of the CHEF, health facilities offering treatment for illnesses generating catastrophic expenditure are not equally distributed for all interventions, as can be observed in Fig. 3. Only the capital city is able to offer all services, closely followed by the State of Jalisco. Given that eight states offer less than 50% of the Fund's coverage, a large number of the country's insured are not able to exercise fully their right to health.

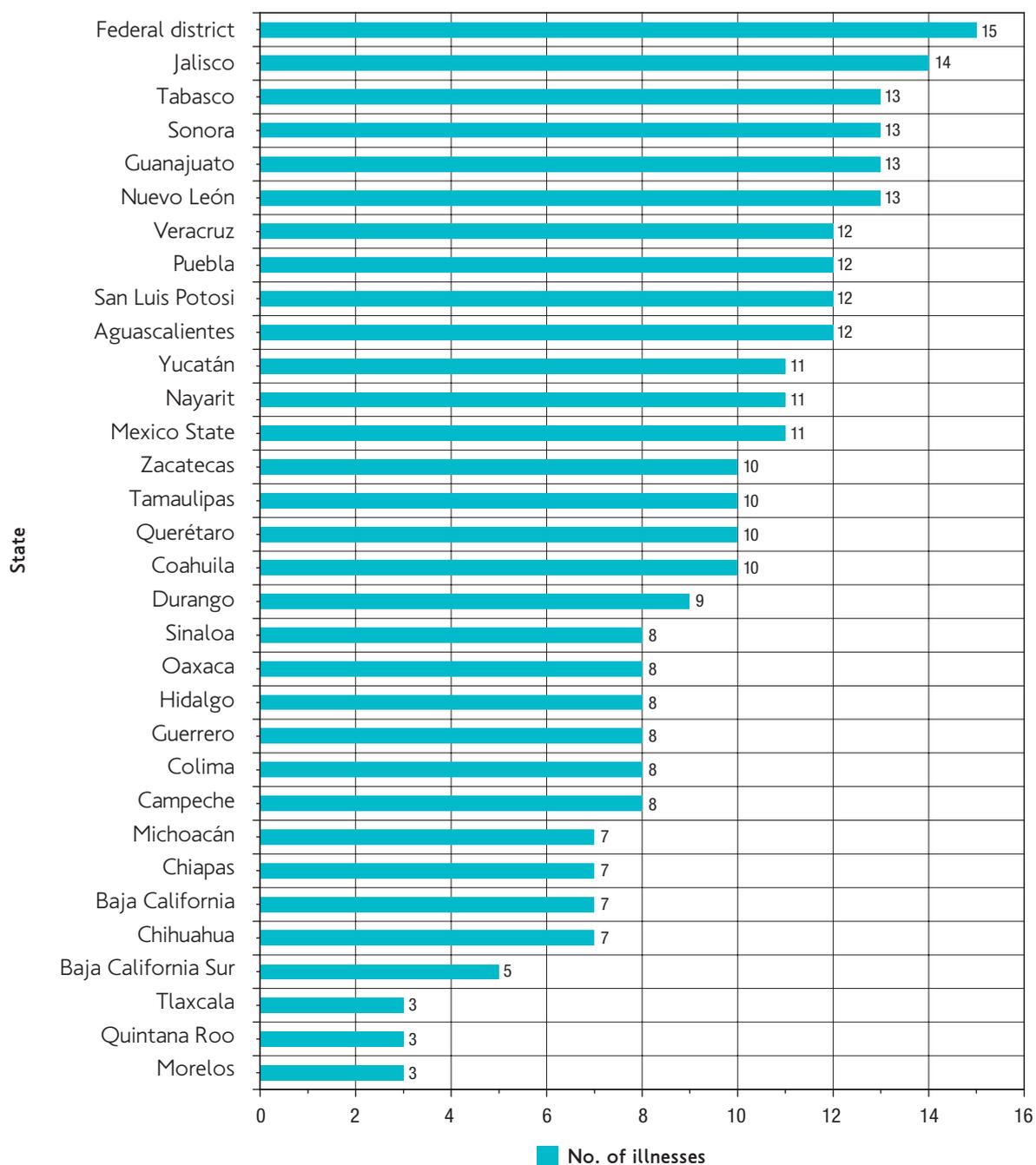
#### 4.1 Service provider payments

Since the management of CHEF resources is centralized under the National Social Protection in Health Commission and the SPSS Trust, payment to service providers must follow a sequence of established processes. Briefly, these include:

- suspected and diagnosed cases confirmed at the health unit;
- case information sent to the CNPSS;
- case validated by the CNPSS;
- the CNPSS requests the REPSS to send payment receipts;
- payment receipts are sent to the SPSS Trust; and
- the Trust authorizes reimbursement to the SESA/REPSS account.

In many cases, this process considerably delays the resources getting to the service provider who, understandably, wants to initiate treatment as soon as the diagnosis is confirmed. This situation creates internal financial imbalances in the health-care service provision units which, in turn, are forced to negotiate and delay payments to their own suppliers, or to carry out internal reallocations that may jeopardize their financial status.

Fig. 3. Number of group of illnesses covered by state, 2014



According to data obtained from CNPSS output results, payment delays to service providers, based on a delay of at least a year, varied from 3% in 2009 to 6.4% in 2012 (for validated and paid cases). A more detailed analysis of the total cases validated in 2012 and paid by 31 December 2013 shows that payment delay is distributed differentially among the covered illnesses. For instance, all cases of bone marrow transplant on children under 18 years, lysosomal storage diseases, acute myocardial infarction and chronic kidney disease had been paid by the end of 2013. However, payment delays of the other illnesses oscillate from 3.3% for breast cancer to 48% for corneal transplants. In between are delays of 17% for surgical, congenital and acquired disorders; 18% for non-Hodgkin lymphoma and 27.6% for neonatal infant care. It is possible that some delays are caused by inefficient administrative management in hospitals as well as REPS staff.

A study of CHEF operations during 2004–2007 found that three difficulties faced by service providers also caused delays in reimbursement: integrated clinical records; registering cases in the information system of the Fund (Management System of Catastrophic Expenditures); and validation of cases statewide. This study also demonstrated that delays in receiving payments was higher in state health service units than in public decentralized organisms (15).

The suggestion that reimbursements increase patient treatment and thus represent concrete benefits to the health-care service provision units is thus only partially true. Public decentralized organisms (PDOs), and especially private service providers, have the advantage of being able to use the resources autonomously; both providers are reimbursed directly and can use the funds according to their needs. On the other hand, state health service hospitals must follow the guidelines established by the authorities of their state. These authorities receive, pool and decide on how to distribute the resources. The mechanisms they use to transfer the resources can be cash (which may not necessarily represent the full amount of the reimbursement); medical equipment or other inputs needed to provide the accredited services; or payment of expenses unrelated to these services.

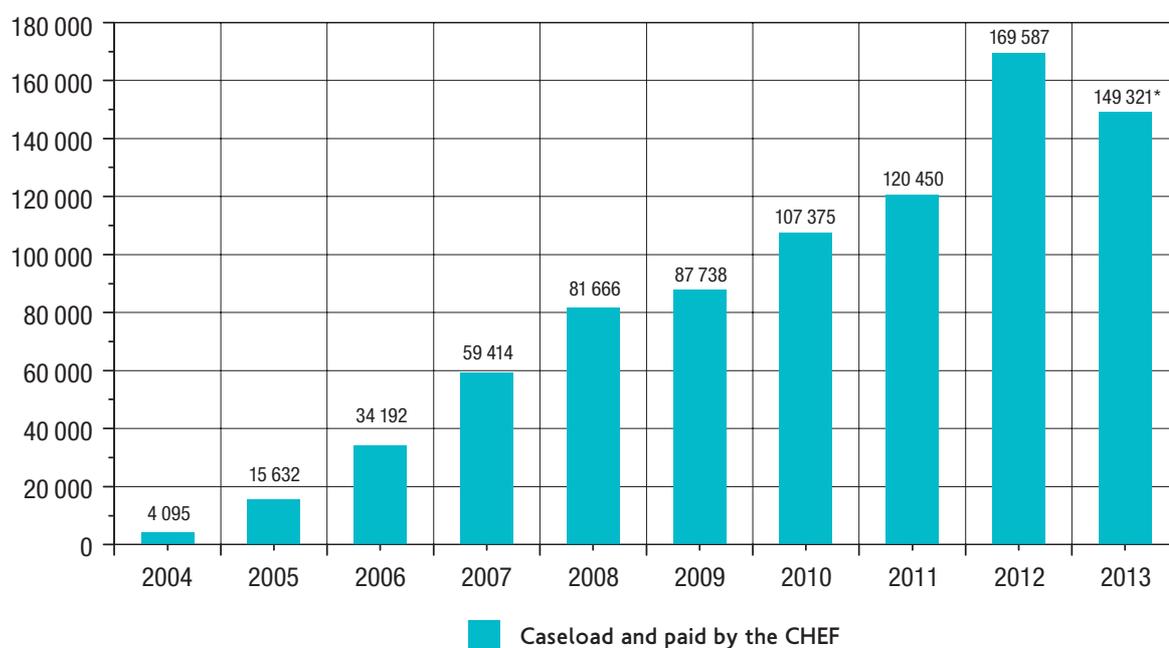
Other disparities can be seen among different types of service provider. PDOs have legal status, their own assets, and are mainly national health institutes, regional high specialty hospitals and some of the large specialty hospitals in the states. In addition, they have the human resources, technology and appropriate inputs required to offer the services since the creation of CHEF. Conversely, most of the state health service hospitals had to go through an initial adjustment and improvement period regarding infrastructure, equipment and specialized human resource recruitment.

# 5

## CARE PROCESSES AND RESULTS

Between 2004 and 2013, CHEF covered the care costs of 829 470 patients (Fig. 4). The rapid growth in the number of cases covered is related to the progressive addition of health-care service provision units, and a higher number of interventions covered by the Fund.

**Fig 4. Cases reported for the CHEF, 2004-2013**

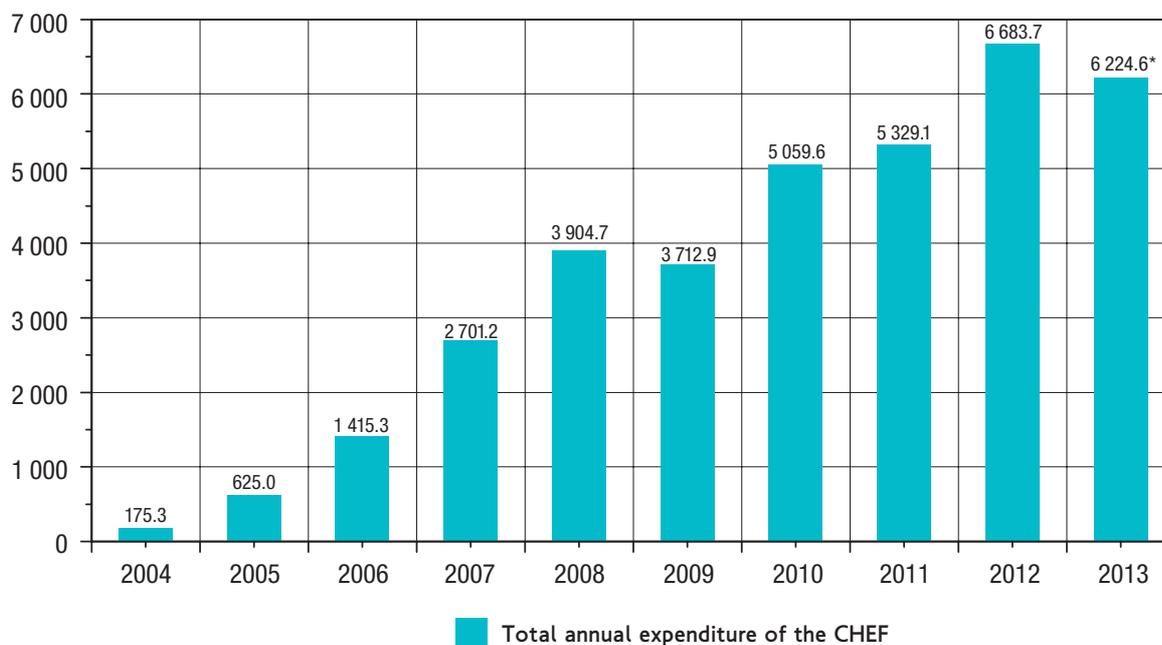


\*Reported to 30 November 2013.

Source: MOH/National Commission for Social Protection in Health, Report of Results, 2013.

By December 2013, resources transferred for the care of validated cases reached 35 831.4 million pesos (Fig. 5). However, some anomalies were identified in the affectation of CHEF resources, particularly the payment of interventions that were not included in the list of health conditions covered. For example, between 2005 and 2010 resources were used for infrastructure (16) and seasonal influenza and pneumococcal vaccine; in 2009–2010 activities to fight the A(H1N1) influenza epidemic were supported with MXN 2 543.92 million from the Fund's resources (17).

**Fig 5. CHEF expenditure in million pesos, 2004-2013**



\*Reported to 30 November 2013.

Source: MOH/National Commission for Social Protection in Health, Report of Results, 2013.

From the total validated cases in 2012 and those paid as of December 2013, several things can be highlighted (Table 3):

- 6% of cases attended in 2012 were outside the cut-off date;
- over 95% of cases related to six health conditions: HIV/AIDS (39.6% – includes antiretroviral treatment, viral burden and CD4 lymphocyte count); cataracts (25.9%); neonatal intensive care (15.2%); breast cancer (7.14%); cervical/uterine cancer (5%); and surgical, congenital and acquired disorders (2.3%);
- 33.7% of the transferred resources were for HIV/AIDS patients, followed by breast cancer (25.2%) and intensive neonatal care (11.37%).

Undoubtedly, the highest cost for the Fund is related to lysosomal storage diseases, whose average cost is MXN 2.3 million per case per year, followed by bone marrow transplant.

**Table 3. Cost per medical event<sup>9</sup> from cases validated in 2012 and paid by December 2013 by the CHEF (in million pesos)**

Illness	No. of cases	Amount	% of CHEF payments	Average cost per patient <sup>10</sup>
Cervical/uterine cancer	3 722	86.5	1.39	23 240
Cancer in children	2 492	351.1	5.62	140 891
Bone marrow transplants in children under 18	68	46.2	0.74	679 412
Intensive neonatal care <sup>11</sup>	15 050	710.3	11.37	47 196
Cataracts	58 301	669.9	10.73	11 490
Breast cancer	8 305	1 573.4	25.20	189 452
Surgical, congenital and acquired disorders <sup>11</sup>	3 104	232.2	3.72	74 807
Corneal transplant	117	1.9	0.03	16 239
Malignant testicular neoplasm	599	47.4	0.76	79 132
Haemophilia	45	8.4	0.13	186 667
Bone marrow transplant in adults	14	9.1	0.15	650 000
Lysosomal storage diseases	23	52.5	0.84	2 282 609
Non-Hodgkin lymphoma	749	177.7	2.85	237 250
Acute myocardial infarction	587	29.2	0.47	49 744
Prostate cancer	376	10.6	0.17	28 191
Beneficiaries follow-up <sup>11</sup>	10 740	155.1	2.48	14 441
Chronic kidney insufficiency	56	5.1	0.08	91 071
HIV/AIDS	54 362	2 078.0	33.28	38 223
<b>Total</b>	<b>158 710</b>	<b>6 244.6</b>	<b>100.00</b>	

Source: National Commission for Social Protection in Health. SPSS Report of Results 2013.

To measure health gains related to use of the Fund's resources – which are inextricably linked to the responsiveness and performance of service providers – three clinical tracers were selected as indicators of this study: breast cancer, cervical/uterine cancer and lymphoblastic/acute myeloblastic leukaemia. These clinical tracers made it possible to monitor the evolution of hospital record discharges and mortality trends, and measure health results based on the survival of treated cases.

The launch of the System for Protection in Health and the resulting affiliation of the uninsured population to the Popular Health Insurance generated a considerable increase in the number of hospital patients in the MOH and states health services. As expected, these cases related mostly to interventions covered by the Universal Health Coverage Catalogue. Nonetheless, despite the lower frequency of illnesses that generated catastrophic expenditures, the volume of cases had grown considerably (18).

### 5.1 Breast cancer

Demand for hospital services for breast cancer has grown over the last years. This is largely due to incentives generated by the Popular Health Insurance and an increase in hospital infrastructure in the country (mainly that of the MOH and state health services). Table 4 presents hospital facilities that could diagnose breast cancer (19) from 2004 to 2012, the last year reported by the MOH General Direction of Health Information. The second column shows MOH and SESA facilities visited by individuals with Popular Health Insurance benefits, either CAUSES or CHEF.

<sup>9</sup> Division quotient between the cost of disease and the number of cases.

<sup>10</sup> Annual cost per patient in cases of haemophilia, lysosomal storage disease and chronic renal failure.

<sup>11</sup> Groups of illnesses with differentiated costs.

**Table 4. Number of facilities available for breast cancer diagnosis/treatment in public health institutions for women aged 20 years and above, 2004–2012**

Year	MOH/SESA	Social security units	Total	% of MOH/SESA facilities
2004	4 150	10 203	14 353	28.9
2005	4 249	10 517	14 766	28.8
2006	4 583	11 517	16 100	28.5
2007	4 478	11 498	15 976	28.0
2008	4 940	11 844	16 784	29.4
2009	8 196	12 130	20 326	40.3
2010	11 935	12 609	24 544	48.6
2011	14 738	13 732	28 470	51.8
2012	17 562	13 935	31 497	55.8
<b>Total</b>	<b>74 831</b>	<b>107 985</b>	<b>182 816</b>	<b>40.9</b>

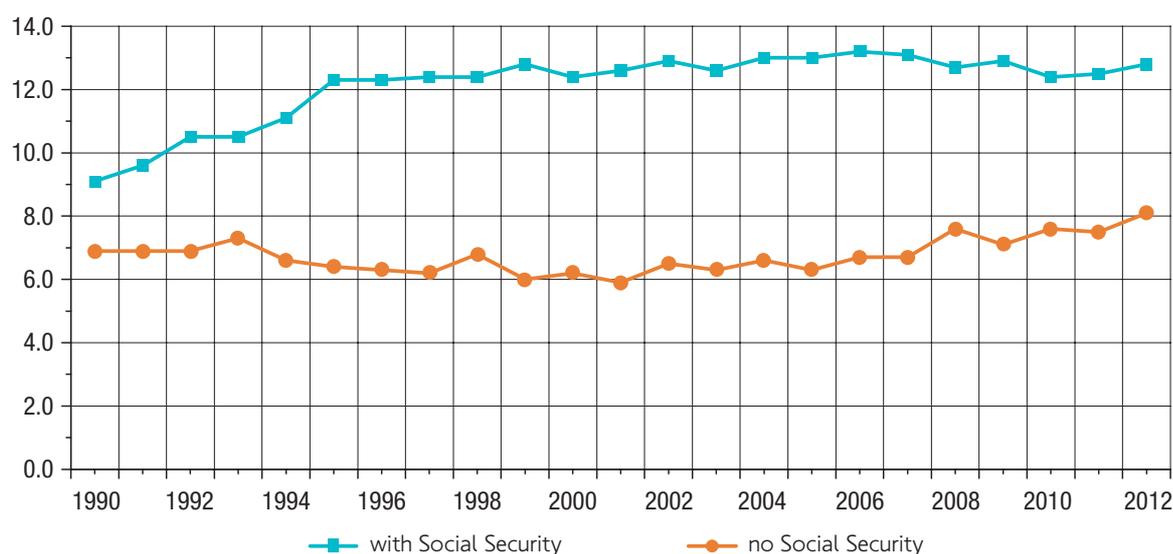
MOH: Ministry of Health; SESA: state health services.

Source: National Health Information System. MOH Dynamic Cubes of Discharges 2004–2012.

It is clear that from 2007 to 2012 demand increased by almost 400% in these hospitals, while social security units showed an increase of only 21%. It is important to mention that hospital care demand for breast cancer in the public sector increased from 28% in 2007 to 56% in 2012. This shows the extent to which the uninsured population gained the opportunity to receive care for this treatment.

Between 1990 and 2012, reported breast cancer mortality increased from 8.3 to 10.6 per 100 000 women aged 25 and over. According to the 2010 burden of disease study, breast cancer climbed from the 16th cause of death in all women in Mexico in 1990 to 9th place in 2010, a 15% increase in 20 years. However, in 2010 it was the first cause of death in women aged 35–39 years old, and the second for women aged 40–44, only surpassed by chronic kidney insufficiency (20). The probability of dying of breast cancer is different for women with or without social security. As shown in Fig. 6, mortality rates from 1990 to 2012, controlling for age effect, increased in both populations, although the annual increase was higher in women with social security. If the analysis is restricted to 2007–2012, one can observe a 0.5% decrease in breast cancer mortality in women with social security. In contrast, mortality in women without social security gradually rose by 3.6% a year which, over 5 years, accumulated to an 18.2% increase.

**Fig 6. Breast cancer mortality rates in women with or without health insurance, 1990–2012**



Source: National Institute of Public Health/Centre for Health Systems Research. CHEF effects on selected interventions, 2014.

Using the rate of annual change as a measure of progress, this showed an upward trend generally from 1990 to 2012. However, a focus on the period 2007–2012 shows considerable variations in annual rates (Table 5). An analysis of trends per age group shows that women under 40 years of age in both groups remained stable over the 22-year period. However, taking the last five years in isolation, mortality in women with no social security increased 5% per year while women with social security saw a annual decrease of 0.7%. In the case of 40–49 year old women with no social security, the increase in mortality from breast cancer was of a lower magnitude at +2% and –3.6% per year in women with and without health insurance, respectively. In 50–69 year old women with no access to social security, the risk of dying of breast cancer increased by 5% per year, contrasting with those who did have access to social security, whose mortality did not increase during the five-year period 2007–2012.

**Table 5. Annual change in mortality rate due to breast cancer according to age and insurance status, 1990–2012**

Age group	Women with no social security		Women with social security	
	1990–2012	2007–2012	1990–2012	2007–2012
	%	%	%	%
25–39	0.4	5.3	0.4	0.7
40–49	1.1	2.0	0.5	3.6
50–69	1.1	5.0	2.1	0.0
70+	0.0	1.8	1.8	0.7

*Source:* National Institute of Public Health/Centre for Health Systems Research. CHEF effects on selected interventions, 2014.

Differences in mortality from breast cancer observed in women with and without social security could be attributed to the performance of the services involved in detection and timely referral, as well as treatment and patient follow-up. In this regard, a 2010 evaluation comparing patients with breast cancer before and after CHEF implementation showed that before CHEF, 71% of patients were at a late clinical stage; after CHEF implementation, the proportion decreased to 62%. In this case, there was no difference in treatment opportunity before or after CHEF. Given European clinical guidelines recommending that treatment should begin no more than 10 working days after diagnosis, or CDC recommendations that stipulate no more than 30 days, observance was 24% and 23% before and after CHEF for the European standards and 40% and 39% respectively for CDC recommendations. Nevertheless, there were significant differences in out-of-pocket expenditure for patients, despite CHEF implementation.

Patients treated for breast cancer spent an average MXN 30 000 more than patients that benefited once the Fund was launched. Out-of-pocket expenditure for many services decreased, such as from 70% to 39% for surgery to remove tumours; 69% to 25% for breast reconstruction; 64% to 22% for chemotherapy; and 53% to 18% for payment of oncology consultations. It should be noted that according to CHEF protocols, women should not need to pay for these interventions.

A recent study of the Centre for Health Systems Research of the National Institute of Public Health had similar results regarding the diagnostic opportunity for breast cancer treatment. The objective of this study was to measure survival rates from breast cancer, cervical/uterine cancer and acute lymphoblastic leukaemia on patients under 19 years of age treated in 11 hospitals in 9 states of the country (20). Only 28% of women who received treatment in these hospitals started their treatment promptly; in women younger than 50 years, this was only 24%; and in women older than 50 years, 31% received prompt attention.

Other important study results were as follows:

- physical access to medical units was a serious obstacle since 45% of breast cancer patients lived more than 50 km from the reference hospitals and one in eight travelled more than 150 km to be treated;

- patients had to enter via the hospital emergency services, which show an inefficient first level of care in terms of timely detection and formal reference to other levels of care;
- differences in care quality among health units depended on the number of follow-up consultations, which varied between an average 3.3 and 20.1, as well as the number of discharges per hospital, which oscillated between 0.5 and 1.7;
- there was a marked lack of continuity in care and patient follow-up.

The most relevant result of the study relates to the effectiveness of breast cancer interventions, measured by patient survival. Depending on the clinical stage of illness when diagnosed, survival after 42 months of follow-up was 100% for patients at 0–I stage; 84% at stage II; 67% at stage III and 38% for those diagnosed at stage IV.

Health-care service providers are classified in two categories: high and low patient follow-up (proxy performance variables used are duration of post-treatment follow-up, timeliness of treatment opportunity after diagnosis, and percentage of women who abandoned treatment). Differences in the general survival of patients per category of service provider are significant: 82% survival in patients treated in health units with good performance against 68% of patients treated in low performance units. In general, health units classified with good performance corresponded to PDOs, while general hospitals under the auspices of state health services mostly had lower performance.

## 5.2 Cervical/uterine cancer

Contrary to the situation with breast cancer, demand for hospital services related to cervical/uterine cancer decreased in the public sector nationally between 2004 and 2010. However, as of 2011 demand started to increase to exceed 2004 levels, due directly to the high demand from women who were not treated in the social security units. Indeed, women attending MOH services for cervical/uterine cancer treatment increased by over 50% between 2004 and 2012. During the same period, demand in social security units decreased by 30% (Table 6). Thus, more than half of the women treated for cervical/uterine cancer in the public sector attended MOH or SESA units.

Mortality due to cervical/uterine cancer decreased from 17.7 to 7.9 per 100 000 women aged 25 and older in 1990 and 2012, respectively. The Global Burden of Disease study 2010 noted that cervical/uterine cancer had dropped from the ninth to the tenth cause of death in women in Mexico from 1990 to 2010, with a decrease of 44% of cases in the 20 years of the analysis.

Trends per age group showed differential behaviour. In 30–49 year old women, mortality due to cervical/uterine cancer dropped from the first to fourth place, although the number of deaths remained constant. In the case of 50–69 year old women, deaths dropped from fifth to seventh place despite a slight increase in the absolute number of deaths. It is of interest that in 1990 this condition was the first cause of death for 35–44 year old women while in 2010, the first causes of mortality in this age group of women was breast cancer and chronic kidney insufficiency (21).

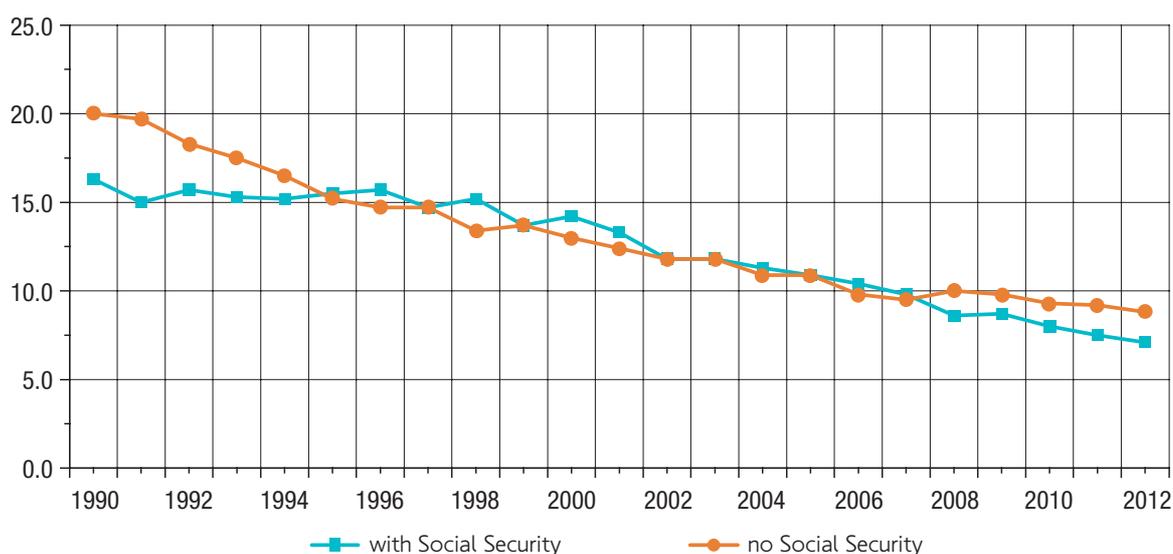
**Table 6. Cervical/uterine cancer cases in women aged 20 and above in public health institutions, 2004–2012**

Year	MOH/SESA	Social security	Total cases	% cases in MOH/SESA
2004	5 112	6 147	11 259	45.4
2005	4 493	5 626	10 119	44.4
2006	5 109	5 422	10 531	48.5
2007	5 096	4 594	9 690	52.6
2008	5 043	4 519	9 562	52.7
2009	4 637	4 378	9 015	51.4
2010	5 180	4 494	9 674	53.5
2011	7 020	4 321	11 341	61.9
2012	7 874	4 270	12 144	64.8
<b>Total</b>	<b>49 564</b>	<b>43 771</b>	<b>93 335</b>	<b>53.1</b>

Source: National Health Information System. Ministry of Health Dynamic Cubes of Discharges, 2004–2012.

Fig. 7 presents the trends of cervical/uterine cancer mortality in two groups: women with and women without social security. For both population groups, controlling for age effect, mortality rates decreased between 1990 and 2012 with similar annual rates of decline. Restricting the analysis to the period 2007–2012, trends are different. Mortality for women with social security decreased annually at a rate of 6.5%, while the decrease for women with no social security was only 1.6% per year. The gap between both groups remained 1.24 times higher for women without social security, although from 1994 to 2006 the rate was practically the same.

**Fig. 7. Mortality rates for cervical cancer according to insurance status, 1990–2012**



Source: National Institute of Public Health/Centre for Health Systems Research. CHEF effects on selected interventions, 2014.

The analysis of cervical/uterine cancer mortality per age group, using the annual change rate as a measure of progress, shows a descending trend in the entire series regardless of insurance status. Nevertheless, when the analysis is restricted to the period 2007–2012, the annual change rate is considerably modified (Table 7). The mortality rate for 25–44 year old women with no social security increased 1.4% annually, while it decreased 2.7% annually for women with social security.

Likewise, the mortality rate decreased 2.8% per year among 45–59 year old women with no access to social security. This contrasts with those who did have access to social security, for whom the annual percentage of change in the mortality rate was 4.2%. Regarding women aged 60 years and above, there was a lower decrease in mortality for those without social security than women with access.

**Table 7. Annual percentage of change in the mortality rate from cervical/uterine cancer according to age group and insurance status, 1990–2012**

Age group	No social security		Social security	
	1990–2012	2007–2012	1990–2012	2007–2012
	%	%	%	%
25–44	–3.5	1.4	–3.5	–2.7
45–59	–3.8	–2.8	–4.0	–4.2
60+	–3.7	–1.6	–3.7	–9.0

Source: National Institute of Public Health/Centre for Health Systems Research. CHEF effects on selected interventions, 2014.

The main results obtained by the Centre for Health Systems Research study (2014) on cervical/uterine cancer highlight that:

- 41% of patients received a timely diagnostic;
- 50% were at stage II and III, 4.3% at stage IV, and it was not possible to classify 4.7% of cases due to lack of information in clinic records;
- patient survival after three years of follow-up was 100% for those diagnosed with in situ carcinoma, 86.0% at stage II, 32.4% at stage III and 21.0% at stage IV;
- general survival for patients treated in units with *good follow-up* was 81.6% and 64.3% in health units with *low follow-up*;
- the accumulated death risk 36 months after diagnosis, for an average case, was 18.4% in units with *good follow-up* and 35.7% in those with *low follow-up*.

Two additional findings are worth mentioning; the physical obstacles faced by patients to access the care units, and the low stimulus of health-care providers to retain patients over long follow-up periods. Regarding physical access, 25.4% of patients had to travel a distance of 50–99 km; 12.3% travelled 100–149 km; and 12.7% more than 150 km. Regarding care continuity, there is a generalized lack of awareness in the health units about what happens to patients once they have been discharged. For example, during the revision of the clinical registers of the study, it was only possible to identify 19 out of 84 registered deaths in the group of women discharged. The remaining deaths had to be identified through visits to patient homes and mortality records.

### 5.3 Acute lymphoblastic leukaemia

Unfortunately the database consulted (22) did not distinguish between acute lymphoblastic leukaemia (ALL) and other forms of the disease. Nevertheless, it is known that 9 out of 10 leukaemia discharges in children under 15 years of age are related to ALL. This is why Table 8 is presented as a proxy of the temporal analysis distribution for ALL health-care units in children in this age group. The table shows that nationally, the number of cases treated doubled in eight years. In patients visiting the social security units, the increase in the same period was 20%, while those visiting MOH or SESA units, the increase reached 200%: by 2012, 7 out of 10 children who visited a hospital for leukaemia went to MOH/SESA units.

**Table 8. Children under 15 years of age treated for leukaemia (lymphoblastic and myeloblastic) in public health institutions, 2004–2012**

Year	Cases treated in MoH/SESA units	Cases treated in social security units	Total cases	% cases treated in MoH/SESA
2004	4 611	4 755	9 366	49.2
2005	5 953	4 248	10 201	58.4
2006	7 213	4 633	11 846	60.9
2007	9 416	4 671	14 087	66.8
2008	10 301	4 728	15 029	68.5
2009	11 146	4 891	16 037	69.5
2010	10 737	5 206	15 943	67.3
2011	11 889	5 286	17 175	69.2
2012	13 644	5 646	19 290	70.7
<b>Total</b>	<b>84 910</b>	<b>44 064</b>	<b>128 974</b>	<b>65.8</b>

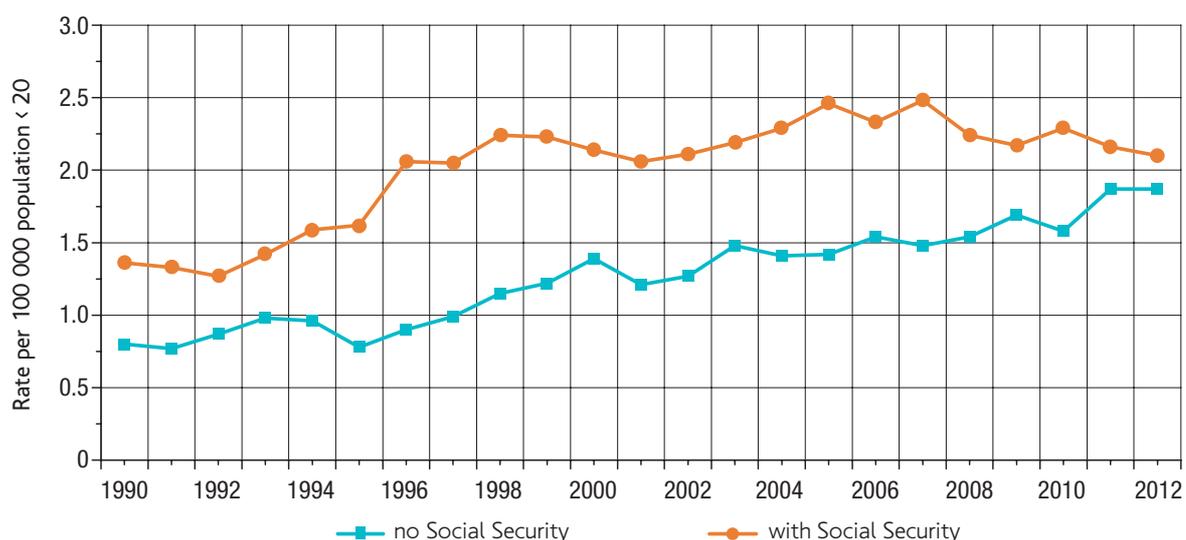
Source: National Health Information System. Ministry of Health Dynamic Cubes of Discharges, 2004–2012.

From 1990 to 2012, around 16 000 deaths were registered for ALL in patients under 20 years of age. The distribution of deaths within this age group was 22% in children under 5; 28% in 5–9 year olds; 25% in 10–14 year olds, and 25% in adolescents of 15–19 years of age.

The trend of deaths due to leukaemia is decreasing with the exception of adolescents, in whom there is an increase in absolute and relative terms. Nonetheless, leukaemia is still the most frequent cause of cancer in patients under 20 years of age, and the second cause of death in 5–14 year olds, surpassed only by road traffic deaths.

The trends of mortality caused by ALL distinguished by insurance status are presented in Fig. 8. It can be seen that mortality rates in patients under 20 years increased from 1990 to 2012, in individuals both with and without social security. The highest increase was in children with no social security. Although the mortality rate due to ALL was higher in children with access to social security, the gap between the groups is decreasing with time. Restricting the analysis to 2007–2012, the trends change: while mortality in the population with social security decreased 3.3% annually, it increased by 4.6% per year for those with no access to social security.

**Fig. 8. Acute lymphoblastic leukaemia mortality in patients under 20 years by insurance status, 1990–2012**



Source: National Institute of Public Health/Centre for Health Systems Research. CHEF effects on selected interventions, 2014.

Taking the annual rate of change as a measure of progress (Table 9), it was observed that in both groups, increased mortality was independent of age. However, the rate of increase was higher – more than double – in the group with no access to social security based on the trends of the last two decades (1990–2012). Analysing the period 2007–2012, mortality in children with access to social security steadily decreased, while the increase remained constant in the no-social security group.

**Table 9. Acute lymphoblastic leukaemia mortality, annual rates of change by age and insurance status, 1990–2012**

Age group (years)	Without social security		With Social security	
	1990–2012 %	2007–2012 %	1990–2012 %	2007–2012 %
< 5	3.2	4.5	1.1	–2.5
5–9	5.0	5.9	2.1	–1.5
10–14	3.3	2.1	1.4	–4.7
15–19	3.7	5.7	3.1	–4.2
< 20	3.9	4.6	2.0	–3.3

Source: National Institute of Public Health/Centre for Health Systems Research. CHEF effects on selected interventions, 2014.

Possible health gains for ALL patients whose treatment costs are covered by CHEF are considered in a study carried out in a limited number of health-care service providers (23). When estimating case survival, the study did not actively search deaths in other primary and secondary data sources of clinical registers: this is because a Centre for Health Systems Research study in 2014 demonstrated that clinic registers underestimate the magnitude of mortality since appropriate patient follow-up is often lacking. Moreover, clinical registers are not, strictly speaking, the original mortality data source.

This study looked at 391 clinical records from nine accredited health-care service providers (two tertiary care hospitals and seven secondary care hospitals). The researchers found that after four years of follow-up, survival was 82% for cases treated in the tertiary level hospitals and 57% in secondary level hospitals ( $P < 0.001$ ). The study also demonstrated the influence of other factors on survival such as the following:

- survival was longer, after three years of follow-up, for children < 10 years of age (83%) compared with those > 10 years (57%,  $P < 0.001$ );
- girls had a higher survival rate (70%) compared with boys (58%;  $P < 0.05$ );
- boys living in urban areas survived longer (75%) than those living in rural areas (53%;  $P < 0.012$ ).

A study published by Miranda Lora et al. (24) identified differences in the availability of human resources, equipment and other inputs in nine service providers accredited to treat ALL patients. Regarding human resources, the lack of specialized paediatric staff – such as infectious disease specialists, anaesthesiologists, surgeons, radiologists and pathologists – is significant with availability varying from 26.6% to 68.3%. Moreover, two hospitals did not have the minimum two oncologists or paediatric haematologists. Regarding equipment, four hospitals did not provide radiotherapy, three had no nuclear magnetic resonance, two did not have tomography, and two lacked an emergency car for chemotherapy needs. Finally, the authors emphasized the paucity of studies to catalogue the type and risk of leukaemia, such as special stains (25.6%), determination of molecular alterations (21.2%), immunophenotype antibody panels (17.7%), as well as the capacity to determine methotrexate levels (19.5%).

Another study by Dorantes Acosta et al. (25) on support received by ALL patients from nongovernmental organizations states that the provision of food as well as financial support for chemotherapy sessions, antibiotics and catheters, is statistically significant in mortality prevention. Although contributions from social organizations for patient well-being are significant, a large part of this support is deviated to cover inputs that strictly should be covered by the service providers as part of the health-care protocols funded by CHEF. This is the case for chemotherapy, antibiotics and catheters.

# 6

## DISCUSSION

This document shows how Mexico has joined countries that respond to the challenge to diminish the gap between people who have access to timely treatment of catastrophic illnesses and those who do not. While there is no ideal model for the whole world, the solution that the Mexican Government brings with the Catastrophic Health Expenditure Fund is in line with what has been achieved in other countries of the region such as Argentina, Brazil, Chile, Colombia, and Uruguay. Mexico has taken many significant steps with the CHEF:

- progress has been made in the standardization of treatments based on the use of protocols approved by the General Health Council;
- providers are accredited using capacity, quality and security criteria;
- economies of scale have been made and the budget can now be carried over to the next calendar year;
- measured progress has been made to increase the vertical coverage of 59 conditions.

Specific issues related to implementation of the CHEF are summarized below.

### 6.1 Access to health services

While the CHEF can be proud of its progress, the obstacles it faces are many and varied, one of the most important being access to care. The fact that five interventions of the CHEF have almost universal coverage (intensive neonatal care; surgical, congenital and acquired disorders; cervical cancer; breast cancer; and antiretroviral treatment) does not mean that access to services is easy, considering the distances that need to be travelled. Medical units, and particularly specialty services, are distributed unevenly across the country and all too often, this is a serious, even insurmountable obstacle for many patients. However, it must be underlined that other obstacles to access to services in many states are, in part, due to situations beyond the scope of local control. These include the insufficient number of specialists graduating in oncology, haematology, nephrology and infectious disease disciplines; prevailing violence in many places; and the desire of many specialists to practise medicine in both the public and private health markets, making many locations unattractive.

A recurrent obstacle, often raised in the literature, relates to travel costs, accommodation and food for patients with breast or cervical/uterine cancer, who must travel long distances to get to a health-care unit. This clearly represents a financial risk, particularly for low-income families.

Fortunately, in several places in the country, social and civil organizations offer support strategies for many of these patients. Such efforts are laudable but insufficient. This reality should incite the Ministry of Health and the National Commission for Social Protection in Health at the federal level, and the social protection for health regimes and health services in each state, to design and implement mechanisms to decrease or eliminate this kind of expense.

### 6.2 Impact on health status

Greater and better health results depend on an adequate alignment between financing and good quality health-care service provision. Today, while financing is largely assured, provision is still weak.

The effects of the CHEF on health are measured against the effectiveness of interventions which, in turn, are based on knowledge and clinical skills. This is completely the domain of service providers, and health outcomes will depend on the successful combination of organizational models, resources and processes. Evidence on breast cancer, cervical/uterine cancer and ALL studies shows that health results were satisfactory when timely diagnoses were made. Unfortunately, this has not been the general rule, representing the loss of opportunities for many patients.

HIV/AIDS and breast cancer are good examples of how inefficiencies occur when the health-care model is interrupted, making it impossible to reach the expected results. If antiretroviral therapy is initiated when CD4 counts are very low, the treatment response is equally low. It is easy to blame the patient for presenting too late when the delay is clearly caused by inefficient coordination among the different areas in charge of HIV detection, CD4 quantity measurement and treatment provision. It is precisely in these situations that the leadership of the Ministry of Health is needed. Similarly, when women are denied access to treatment for breast cancer until its advanced stages, the effectiveness of treatment decreases dramatically and the survival of the patient is jeopardized.

While this challenge is beyond the mandate of the CHEF, aspects that are of direct concern are discussed below.

### 6.3 Illness selection

According to the information collected, the process for the selection of conditions to be covered by CHEF was not as transparent as expected. Instead, the process was dominated by the cost-effectiveness data of a group of experts and lobbying from political actors and pressure groups with particular vested interests.

In this sense the ethical approach was marginal and input from pertinent bodies in society unheeded. Such management of public policy may not be uncommon, but selecting interventions to be covered by public funds without the participation of the necessary actors will not meet the expectations of the population. Several attempts to give transparency to the selection process failed, including a proposal commissioned to address this issue. Thus, a group of experts formed in 2007 were the sole decision-makers on new interventions for the CHEF.

The decision to include cataracts and congenital cataract surgery was subsequently revoked, and the interventions transferred to the Universal Health Coverage Catalogue and the Programme for Health Security in the 21st century, respectively. It is arguable that, if these transfers were related to low treatment costs and relatively low complexity of the clinical/surgical interventions, then other conditions such as cervical/uterine cancer also represent a lower financial burden might also be absorbed by the Universal Health Coverage Catalogue.

Another intervention that was incorporated for political rather than financial reasons was chronic kidney failure, which is still a pilot test since its inclusion and the number of beneficiaries has decreased each year due to its cost.

### 6.4 Financial protection

Undoubtedly, the significant financial obstacles that prevented access of the population with no social security to many high specialty services has been eliminated since implementation of the CHEF. Nevertheless, resources are not yet being distributed when they are needed, nor are they being fully and efficiently used in health-care processes.

There are several reasons for this. From the insured persons' standpoint, one reason is that they do not know their rights or how to exercise them. For service providers, their lack of capacity due to reimbursement delays and the need, in some cases, to hire the specialized support staff and equipment from other providers, hinders

service provision. However, fundamental failures were noted in the social protection in health regimes, which are responsible for protecting patient rights, verifying availability of all elements of the health-care process and ensuring that health units give timely and good quality response to health-care demand.

Lastly, a federal level decision, assigning Fund resources to activities outside its mandate – such the A/H1N1 influenza epidemic and the construction of physical infrastructure – while laudable in intention, constitutes a misrepresentation of resources.

### 6.5 Health service providers

It is clear that the CHEF has been an incentive to improve accredited health units that provide specialty services nationally. Despite this, there is still variation among states regarding their socioeconomic development; the magnitude and characteristics of their health labour force; management services capacity; transparency in the use of public resources; and accountability processes.

Disparities between service providers have existed since the implementation of the CHEF. Public decentralized organisms (PDOs) dominate the field of medical specialties with the advantages of autonomous legal status, while hospitals under state health services have a more bureaucratic management structure. As a result of the launching of the Fund, PDOs were strengthened and, consequently, generally delivered better health results. However, the specialty services of the SESA do not yet have a network of high specialty health-care service providers throughout the country. Nevertheless, they have gone a long way to meeting demand, and some have achieved very positive results.

### 6.6 The health care model

Results of clinical records show that primary care is not assuming its role as the first port of call to the health system and administrator of a continual care process focused on the patient. The dominant behaviour of primary service providers is to react to local demand and thus does not sufficiently detect risk and diagnosis health threats early enough. In addition, there is poor coordination between care levels, so reference and counter-reference of patients are less than satisfactory. This appears to be one of the weak points in the health-care chain that, unless modified, will continue to affect timely and effective detection and treatment of many patients. According to the Universal Health Services Catalogue, detection of suspicious indications in the breast and the cervix should be identified by first level health care and referred, if necessary, to the second level.

Regarding the health-care processes of hospital units, evidence shows a generalized adherence to care protocols that are carried out according to clinical standards. Exceptions are mostly due to the previously mentioned lack of human resources and inputs prevalent in SESA services.

# 7

## CONCLUSIONS AND RECOMMENDATIONS

The Catastrophic Health Expenditure Fund has largely resolved one of the biggest inequities in access to health services that was prevalent in the country before the implementation of the Social Health Protection System. At the creation of the first social security institutions in 1943 and 1959, the insured population had the right to receive universal medical care, while more than 50% of population lacked any constitutional or financial coverage of their health needs, particularly those related to catastrophic expenditures. These individuals, without social security, risked impoverishment after paying the high costs of a catastrophic illness. Yet a basic premise of universal coverage in health is that the entire population has access to the services they need; without this access, universal health coverage is an unreachable goal (26).

After 10 years and with almost one million cases financed, the importance of the CHEF is undeniable, as is the benefit it has brought to the population. This relates not only to reduced catastrophic expenses for individuals and families, but also to facilitated access to health services.

However, the CHEF should not be seen as an end in itself, but rather a complementary component of the health system. While it broadens access across the country to care, this does not necessarily mean cure, particularly if treatment begins during the later stages of the disease. The responsibility of the CHEF is to assure that financial resources arrive on time for their appropriate use in health units. It is the responsibility of the entire health system to assure that the health care process is not broken, leaving patients vulnerable and unable to initiate, let alone continue their treatment.

Flaws have been generated and these need to be eliminated. Critical examples are the tolerance of different quality providers being accredited or the use of the Fund as “petty cash”. To address these flaws, and build the loyalty that the Mexican population is starting to expect from the public health system thanks to the CHEF, the following recommendations are made.

### 7.1 The illness selection process

Efforts should continue to identify and implement a system that is inclusive and transparent. It is not suggested that once an intervention is incorporated in the CHEF it should be permanent, nor that a new intervention cannot be considered. Instead, the process should be dynamic, adapting to changes in knowledge, progress in medical technology and social expectations.

The process for inclusion of interventions should therefore be based on technical, political and ethical considerations that allow the General Health Council to rely on professional and social actors for their decisions.

## 7.2 Financial protection

Recommendations to solve the distortions discussed above are:

- to strengthen patient empowerment in terms of awareness and demand of their rights, which are already integrated in legal protection mechanisms;
- to consider the advance transfer of funds to service providers at the beginning of the calendar year, based on resources generated by the units during the previous year; this would alleviate financial risks and improve the care response to their patients;
- to reimburse patient out-of-pocket expenditures for consultations, tests and items included in the care protocols;
- to accelerate the case validation process and transfer of the respective payments;
- to move forward on separating the functions of the financial entity and the service provider;
- to mandate that social protection in health regimes fulfill their functions as protectors of affiliates\_ rights, and monitor the quality of health care offered by service providers;
- to avoid the discretionary use of Fund resources through adherence to the precepts of the General Government Accounts Law and a review of the accounts regularly published by the top audit of the Federation.

## 7.3 Health service providers

In the short and medium term, the state health services will need to develop their network of specialty health-care service providers throughout the country in order to improve the quality of health service, and therefore health outcomes. To this end, the following actions are recommended:

- to verify the accreditation process in health-care service provision units where evidence of low performance is identified;
- to comply with the regularity of the re-accreditation process;
- to establish more flexible mechanisms for the entry/exit of units and services of the Fund;
- to focus resources strategically on units that, due to their location and level of demand, assure physical access to patients;
- to broaden the specialty services offered, where possible, within both the public and private sectors;
- to strengthen the accountability of social protection in health regimes; and
- to establish a regular monitoring system of service provider performance with clear incentives per performance level.

## 7.4 The health care model

Beyond the urgent need to reform the primary health care level, the following actions are proposed in the short term:

- social protection in health regimes should establish a monitoring system to identify first level units that diagnose CHEF-insured diseases too late and propose corrective measures to the Ministry of Health;
- a benchmark should be established on the performance of first level units as well as an incentive mechanism, including the SESA;
- the SESA should seek a greater integration of health-care levels and enforce the effective reference and counter-reference of patients.

There is little worse for an individual or family than to suffer a catastrophic illness and be unable to recover for lack of health insurance. The solution to the problem is known to be financial, since the origin of the problem is financial. However, the Catastrophic Health Expenditure Fund will only be sustainable in the long term if it is accompanied by changes in the health-care model, as well as commitments and strategies at the federal and state levels to improve the efficiency of the health system.

## ANNEX.

# INTERVENTIONS COVERED BY THE CHEF

### Group of illnesses

1. Cervical/uterine cancer
2. HIV/AIDS
3. Intensive neonatal care
  
4. Childhood and adolescent cancer

### Interventions

1. Cervical/uterine cancer
2. Ambulatory antiretroviral treatment
3. Prematurity
4. Neonatal sepsis
5. Respiratory distress syndrome

### Nervous system tumours

6. Astrocytoma
7. Spinal cord
8. Neuroblastoma
9. Ependymoma
10. Other

### Renal tumours

11. Wilms tumour
12. Other

### Leukaemias

13. Acute lymphoblastic leukaemia
14. Acute myeloblastic leukaemia
15. Chronic leukaemia
16. Pre-leukaemia syndromes

### Liver cancers

17. Hepatoblastoma
18. Hepatoma

### Bone cancers

19. Osteosarcoma
20. Ewing's sarcoma

### Germ cell cancers

21. Gonads
22. Extragonadal

### Eye tumours

23. Retinoblastoma

### Lymphomas

24. Hodgkin's lymphoma
  25. Non-Hodgkin's lymphoma
  26. Soft tissue sarcoma
  27. Carcinomas
  28. Histiocytosis
  29. Bone marrow transplant in patients under 18 years
  30. Bone marrow transplant in patients over 18 years
5. Bone marrow transplant

- |  |  |
|--|--|
| 6. Breast cancer                               | 31. Breast cancer  |
| 7. Testicular cancer                           | 32. Testicular cancer in children under 18 years             |
| 8. Non-Hodgkin's lymphoma                      | 33. Non-Hodgkin's lymphoma in patients over 18 years         |
| 9. Surgical, congenital and acquired disorders | 34. Congenital cardiac malformations                         |
|  | 35. Esophageal atresia                                       |
|  | 36. Omphalocele  |
|  | 37. Gastroschisis  |
|  | 38. Atresia/duodenal stenosis                                |
|  | 39. Intestinal atresia                                       |
|  | 40. Anal atresia   |
|  | 41. Hypoplasia/renal dysplasia                               |
|  | 42. Retrocaval ureter  |
|  | 43. Ectopic meatus   |
|  | 44. Ureteral stenosis  |
|  | 45. Ureterocele  |
|  | 46. Exstrophy of urinary bladder                             |
|  | 47. Hypospadias/epispadias                                   |
|  | 48. Urethral stricture                                       |
|  | 49. Stenosis of the urethral meatus                          |
|  | 50. Spine bifida   |
| 11. Corneal transplant                         | 51. Corneal transplant                                       |
| 12. Lysosomal storage diseases                 | 52. Lysosomal diseases in children under 10 years            |
| 13. Haemophilia in children under 10 years     | 53. Haemophilia in children under 10 years                   |
| 14. Acute myocardial infarction                | 54. Acute myocardial infarction in population under 60 years |
| 15. Prostate cancer                            | 55. Prostate cancer  |
| 16. Kidney transplant                          | 56. Renal transplantation in children under 18 years         |
| 17. Hepatitis C                                | 57. Chronic hepatitis C                                      |
| 18. Digestive tract cancer                     | 58. Colon and rectal cancer                                  |
| 19. Gonadal cancer                             | 59. Malignant neoplasm of ovary                              |

## REFERENCES

1. Secretaría de Salud. Sistema de Protección Social en Salud: elementos conceptuales, financieros y operativos, 2a edición. Mexico City: Biblioteca de la Salud; 2006 ([http://salud.chiapas.gob.mx/doc/biblioteca\\_virtual/programas/Sistema\\_Proteccion\\_Social\\_Salud.pdf](http://salud.chiapas.gob.mx/doc/biblioteca_virtual/programas/Sistema_Proteccion_Social_Salud.pdf), accessed 18 April 2015).
2. Frenk F, Gómez Dantés O. Para Entender: El sistema de salud de México. Nostra Ediciones; 2008.
3. Indicadores sociodemográficos de México 1930–2000 (Sociodemographic Indicators of Mexico 1930–2000), Mexico City: Instituto Nacional de Estadística y Geografía; 2001.
4. Partida Bush V. La transición demográfica y el proceso de envejecimiento en México. Papeles de Población. 2005;45: 119–27 ([www.redalyc.org/articulo.oa?id=11204502](http://www.redalyc.org/articulo.oa?id=11204502), accessed 19 April 2015).
5. Mendoza García ME, Tapia Colocía G. Situación demográfica de México 1910–2010. Mexico City: Consejo Nacional de Población ([www.unfpa.org.mx/publicaciones](http://www.unfpa.org.mx/publicaciones), accessed 19 April 2015).
6. Diario Oficial de la Federación (Official Journal of the Federation). 15 May 2003.
7. General Health Law, Article 77 bis 35 ([www.salud.gob.mx/unidades/cdi/legis/lgs/LEY\\_GENERAL\\_DE\\_SALUD.pdf](http://www.salud.gob.mx/unidades/cdi/legis/lgs/LEY_GENERAL_DE_SALUD.pdf), accessed 18 May 2015).
8. [www.seguro-popular.salud.gob.mx/images/Contenidos/CAUSES%202014.pdf](http://www.seguro-popular.salud.gob.mx/images/Contenidos/CAUSES%202014.pdf).
9. Sistema de Protección Social en Salud: Informe de Resultados, January to June 2013. Mexico City: Comisión Nacional de Protección Social en Salud; 2013 ([http://gaceta.diputados.gob.mx/Gaceta/62/2013/ago/Inf\\_Salud-20130816.pdf](http://gaceta.diputados.gob.mx/Gaceta/62/2013/ago/Inf_Salud-20130816.pdf), accessed 18 May 2015).
10. General Health Law Article 15. Reglamento de la Ley General de Salud en materia de protección social en salud ([www.salud.gob.mx/cdi/nom/comp/r050404.html](http://www.salud.gob.mx/cdi/nom/comp/r050404.html), accessed 2 September 2015).
11. Manual de acreditación. Mexico City: Secretaría de Salud ([http://www.calidad.salud.gob.mx/site/calidad/docs/dec-acr\\_00A.pdf](http://www.calidad.salud.gob.mx/site/calidad/docs/dec-acr_00A.pdf), accessed 18 May 2015).
12. Katz J, Morgan Capron A, editors. Catastrophic diseases; Who decides what? Second edition. New Brunswick NJ: Transactions Books; 2005.
13. Lakin J, Daniels N. The Quest for fairness: A case study of the evolution of Mexico's Catastrophic Insurance Fund ([http://www.hsph.harvard.edu/benchmark/ndaniels/pdf/Case\\_Study\\_Mexico\\_041407.pdf](http://www.hsph.harvard.edu/benchmark/ndaniels/pdf/Case_Study_Mexico_041407.pdf), accessed 24 February 2014).
14. Ortiz M. El seguro popular: una crónica de la democracia mexicana, editor. Mexico City: Fondo de Cultura Económica (colección Biblioteca de la Salud); 2006.
15. Aracena-Genao B, González-Robledo MC, González-Robledo LM, Palacio-Mejía LS, Nigenda-López G. El Fondo de protección contra gastos catastróficos: tendencia, evolución y operación. Salud Publica Mex. 2011;53 Sup 4:S407–15.
16. Social Health Protection System Evaluation. Mexico City: Secretaría de Salud/Dirección General de Evaluación del Desempeño; 2007.
17. Sistema de Protección Social en Salud. Informe de Resultados, January–June 2011. Mexico City: Comisión Nacional de Protección Social en Salud; 2011.
18. Social Health Protection System External Evaluation. Mexico City: National Institute of Public Health; 2012.
19. International Classification of Diseases, 10th edition [e-tool]. Geneva: World Health Organization; 2010.

20. Effects of the Catastrophic Health Expenditure Fund on selected interventions, preliminary results. Mexico City: Instituto Nacional de Salud Pública/Centro de Investigación en Sistemas de Salud; 2014.
21. Ibid pp 63–65.
22. Dirección General de Información en Salud. Database of hospital discharges for morbidity in public institutions, 2004–2012: National Health Information System (SINAIS). Mexico City: Ministry of Health (<http://www.sinais.salud.gob.mx>, accessed 1 April 2014).
23. Reyes-López A et al. Factores pronósticos de supervivencia en pacientes pediátricos con leucemia linfoblástica aguda afiliados al Seguro Popular. *Bol Med Hosp Infant Mex.* 2012;69(3):197–204.
24. Miranda-Lora AL et al. Estructura hospitalaria y su relación con la sobrevivencia de pacientes pediátricos con leucemia linfoblástica aguda. *Bol Med Hosp Infant Mex.* 2012;69(3):205–11.
25. Dorantes-Acosta E et al. Apoyo de organizaciones no gubernamentales a pacientes pediátricos con leucemia linfoblástica aguda afiliados al Seguro Popular en México. *Bol Med Hosp Infant Mex.* 2012;69(3):212–17.
26. Evans DB, Hsu J, Boerma T. Universal health coverage and universal access. *Bull World Health Organ.* 2013;91:546–46A.

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