

The Virtual Center of Operations in Emergencies and Disasters

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EXPERIENCES ON
SOCIAL SECURITY 2

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2

Inter-American Conference on Social Security

Secretary General
Gibrán Ramírez Reyes

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CISS
SEGURIDAD SOCIAL
PARA EL BIENESTAR

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PREAMBLE

The purpose of the notebook series of *Experiences on Social Security* is to narrate the origin, design, implementation and results of programs, strategies, and public policies in the field of well-being and social security. In this way, the decision makers, especially those who are our members, may (re)think how diverse public problems are addressed, learn from the successes and mistakes of their peers, and generate new ideas that allow innovation.

In this series, the points of view of everyone involved in each public policy are taken into account; from their design to their implementation. An objective analysis of their achievements and challenges in granting social well-being in the Americas has also been considered. A fundamental part is understanding the context that originated the public policy, the key actors, the resources used, the modifications occurred during time, and the results, whether expected or not.

In this first issue, the series addresses an information and response coordination management system to emergencies and disasters developed by the Mexican Institute of Social Security [*Instituto Mexicano del Seguro Social*] (IMSS). This system is the Virtual Center of Operations in Emergencies and Disasters (CVOED).

For the General Coordination of the Inter-American Conference on Social Security (CISS), we consider that it is important to systematize low-cost solutions such as the

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CVOED, because they present easily replicable and innovative alternatives, which can be used by the members of the CISS.

This notebook emerges from work sessions with the Special Health Projects Division team (DPES) of the IMSS. For its drafting, we interviewed the system operator staff members, as well as the team of people who created it. Furthermore, research from the archive and secondary sources were also consulted, such as articles and internal evaluations.

We thank the IMSS's staff for the support provided in the making of this first number of the series Experiences in Public Policy and we hope that our members find it inspiring.

INTRODUCTION

Disasters such as floods, earthquakes, hurricanes or landslides are more and more frequent all around the world. According to the United Nations (UN), approximately 70 % of the disasters are currently related to the weather, and affect around 221 million people each year. In the past two decades, the UN reports that more than 1.35 million people—especially women and girls— have lost their lives due to disasters caused by climate change, and more than 4000 million¹ have been hurt or injured, have had to migrate or have reached out to some emergency help.

The general director of the World Bank, Kristalina Georgieva, warns that the rise of the oceans due to the melting of the poles, and the destruction due to storms or drought, could cause entire communities to be forced to migrate. This situation will be particularly serious in Latin America, where 17 million people could become affected as a consequence of the disasters (four million only in Mexico and Central America). Although the damages caused by emergencies are not always avoidable, they can be minimized with better prevention and action mechanisms, this being one of the greatest challenges of our current world.²

¹ CRED/UNISDR, *Economic Losses, Poverty and Disasters 1998-2017*, p.3. Available at https://www.unisdr.org/files/61119_credeconomiclosses.pdf

² Rigaud, Kanta Kumari, *et al.*, *Groundswell: Preparing for Internal Climate*

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Due to its geographical location and its land structure, natural disasters are very frequent in Mexico, with severe negative consequences for the population. Because of this, for many years now, many institutions in the country have begun designing and implementing risk prevention and action protocols in cases of emergencies and disasters. Among these institutions, the most relevant has been the IMSS, for its in charge of responding in the field of health services when these events occur.

The lack of coordination was clear in certain events that marked the country for their catastrophic consequences. Probably, the most remembered may be the September 19, 1985 earthquake, when an 8.1-degree magnitude earthquake in the Richter scale hit Mexico City. It crumbled hundreds of buildings and hospitals (among them, the National Medical Center of the IMSS), which took the lives of thousands of people and left hundreds of injured that required health services. It has been estimated that the city lost almost 30 % of its hospital capacity at the time, making it impossible to attend all the people that needed medical care.³ In addition, the lack of adequate civil protection protocols and the absence of an immediate response on behalf of the authorities lead to a scenario of chaos and misinformation.

Migration, Banco Mundial, Washington D.C., 2018

³ BBC Mundo, "Terremoto de 1985: el devastador sismo que cambió para siempre el rostro de Ciudad de México", September 19, 2017. Available at https://www.bbc.com/mundo/noticias/2015/09/150917_mexico_sismo_antes_despues_fotos_an

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Doctor Felipe Cruz Vega, the current office bearer of the special project division of the IMSS and a great promoter in the CVOED's constitution, comments:

I lived the 1985 earthquake, which I call the second disaster, because after the first earthquake came the second: apart from the lack of medical facilities, the hospitals that continued activities didn't even have records of the patients that they were caring for. Therefore, you would see the families of the patients going from hospital to hospital around the entire city looking for their loved ones.

In 1985, the city was not prepared for an earthquake of that magnitude nor for the replica that would take place the next day and would take even more lives. Neither the buildings nor the response protocols by the different authorities were prepared for it, and there was no coordination for sharing information. Therefore, valuable time was wasted that could have been used in the rescue activities. As a product of the painful experience of the earthquake, officers such as Doctor Felipe Cruz began to create prevention mechanisms for future catastrophes.

Two decades later, in 2009, the influenza virus A H1N1 again tested the health authorities' capacities in Mexico. This time, the lack of a system that could provide useful, real-time information blocked the action process during the crisis, in which special attention to the implementation and functionality of the measures taken was needed. It was necessary to control and measure the expansion of the epidemic and its consequences. The situation was so alarming —Felipe Cruz says in the interview— that on April 23, the Health secretary announced a series of

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measures such as closing the schools in the entire national territory and cancelling any activities in public spaces.

The information that was being generated was of extreme importance to learn about the evolution of the virus, fears aroused that the strain was extremely contagious and had a high mortality rate. Fortunately, the prognosis ended up being wrong, but there were economic losses estimated of 57 000 million pesos, which is 0.7 % of the GDP of the country that year.⁴ Information about the behavior of the pandemic became crucial for decision-making, and the IMSS was the institution in charge of carrying the record. As shown further on, the lack of an efficient information administration system made it imperative to improve the IMSS' response capacity in front of contingencies.

The CVOED is an answer to the prevailing need to face situations that escape the institutional normality and in which the institutions are surpassed in different ways during periods that require, precisely, more coordination and timely information for decision-making, and which cannot wait the normal response times. Likewise, its creation answers to the circumstances that created the parameters for its constitution. The existing tools and technological resources at the end of the first decade of the new millennium and its evolution until today, combined with the historical necessities of the institutions, allowed the generation of an information and coordination system

⁴ Expansión, "El día en que una pandemia de influenza AH1N1 alertó al mundo", April 29, 2014. Available at <https://expansion.mx/salud/20014/04/29/el-dia-en-que-una-pandemia-de-influenza-ah1n1-alerto-al-mundo>

that is based on the harnessing of the Internet through computers and mobile smart phones.

It is true that there is still much to do, but the CVOED is a tool that allows the improvement of communication and coordination in case of disasters and emergencies at a low cost. As every initiative, it faces important challenges and will have to adapt to technological and social changes that will come in the future; however, today it is established as a program that has shown timely and efficient action in front of emergency or disaster situations: “As far as I know, it is the only system of its type in the world. I feel it was built day by day, and there was always an additional new idea to improve it”, comments Dr. Cruz.

BACKGROUND

As we have mentioned, one of the key persons in the CVOED's constitution was Doctor Felipe Cruz Vega, medical surgeon graduated from the National Autonomous University of Mexico (UNAM) and current chief of the Special Projects Division of the IMSS. He began to venture into the topic of disasters more than 40 years ago, when he met the founder of the Disaster Directorate of the Pan-American Health Organization (PAHO), doctor Claude de Ville de Goyet; one of the main experts in disasters on the planet and, in the words of doctor Cruz, the man who currently knows more about disasters.

Felipe Cruz worked closely with Claude de Ville, mostly at the end of the 80s, when after the earthquake in El Salvador camps were settled to care for the injured. According to the interview with Doctor Cruz, the injured were taken care for in tents for more than nine months, which is why the PAHO decided to send a team to strengthen the sanitary measures; Doctor Cruz was a part of it.

Years later, in the earthquake in Haiti in 2010, doctor Felipe Cruz was a part of the emergency team, where he observed that many members of the team were not doctors nor health specialists. That is to say, they would go to benefit "from disaster tourism"; a situation that transcended to doctors of the United Nations and became a "huge shame for the international organizations", therefore measures

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were taken thereof. Since then, Cruz participated in diverse activities related to disasters:

My roots are in general surgery, when I entered the central level of the IMSS as surgery adviser; but on weekends, I would go with a group of friends to whichever locality and we would operate there. Then, I received an invitation to a disaster course in Tegucigalpa, Honduras, focused in epidemiology. They sent for me and there I fell in love with the subject because I saw great areas of opportunity.

From his experience, he observed that in Mexico, and especially in the IMSS, there were deficiencies in the availability of information and in the coordination capacity before, during and after the emergencies; the same challenges that institutions face in the entire world. Since then, he searched for different ways to standardize the information gathering process with the tools that were at hand. Specifically, email and diverse documents in Excel format were used, which were useful to address the normal information demand, but that were not so precise nor expedite as was required.

Turning back to the 1985 earthquake, Doctor Cruz worked with the Chilean Doctor José Luis Ceballos Celada, an expert in the subject sent by the PAHO. Together they began to record the impacts in the hospitals after the earthquake⁵ and how the staff of these hospitals acted in

⁵ For example, one of the most important hospital facilities in Mexico (the Juarez hospital, considered the cradle of surgery in this country) was partially destroyed. The rescued newborn from the collapse would be called “the miracle babies” afterwards.

front of the disaster, as it was a crisis that overstepped a country that was not prepared for it. The catastrophic experience made Felipe Cruz search and implement basic hospital supervision mechanisms, in order to ensure they were prepared for these situations; medical resources, specialized staff, available beds, fans, operating rooms, medicine, etc. After the events, the IMSS adopted these measures.

A more direct background of the CVOED was the influenza A H1N1 crisis of April 2009, also mentioned in the introduction. On March 3 of the same year —only a few weeks before the pandemic— Professor Daniel Karam Toumeh took the position as general director of the IMSS. This crisis was a test to the mettle for the new steering team, above all because it was in charge of the difficult task of generating information about what was happening daily with the influenza. That is to say, reporting the number of patients that would go to the clinics, if they had the illness or not, the number of hospitalized patients, the number of deceased because of the virus, etcetera.

Cruz tells that the virus surprised him and his team, as they were who had to resolve the problem immediately so that it would not spread and become a pandemic. Because of this, they had to be extremely cautious with the measures they were taking, as they had to control even the connection with the five continents with the purpose of avoiding a larger crisis. In order to advise the Institution's staff, the PAHO sent Doctor *Ciro Ugarte*⁶ who contributed to overcome the problem.

⁶ Current director of the health emergency department of the PAHO.

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During the crisis, Daniel Karam⁷ wanted to keep constant communication with every health dependency in the country. Therefore, calls would be made at least twice a day to the delegates. Nevertheless, this would take up too much time and then videoconference calls started, which had an important role to report the activities to the director, but the process would continue to be of poor agility.

Furthermore, the Institute had a reliable information system, probably the most developed of all the country's institutions, but it was designed to report information monthly, therefore the greatest challenge was to generate reliable daily information, a matter that resulted in a number of problems and frictions within the Institute. For example, the information that was submitted was inconsistent: one day it would appear that a person had deceased because of the virus, and the next day he would "relive" in the records.

In general, the integration of the information in the IMSS would be carried out by means of Excel formats that would be sent to the different units for their filling. The first problem that resulted from this method was the lack of uniformity in the data. For example, upon requesting the number of patients cared for, some units would answer "5", others "five" with letters, others would separate them in three men and two women, etcetera. This complicated the integration of the information. With time, the formats evolved to standardize the reports, using

⁷ Daniel Karam has a bachelor's degree in Economy by the Instituto Tecnológico Autónomo de México (ITAM) and has a master's degree in Public Administration by the Public School John F. Kennedy of the University of Harvard. He was the director of the IMSS from 2009 to 2012.

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tools such as cell blockage, data selection lists and the use of frames; however, the integration process continued being complicated, as the information sent had to be concentrated by all the units in one unique document.

The solution to the problems due to the lack of information was the creation, in record time, of a program that appeared in the computers of all the hospitals of the IMSS: the Online Notification System for the Epidemiological Surveillance of Influenza (Sinolave, by its initials in Spanish), whose objective was to directly obtain data in real time. The Sinolave required time and efforts to consolidate as a reliable system, that generates solid information in a critical moment such as the influenza A H1N1 outbreak, nevertheless it allowed to gather the necessary data for the decision-making.

One of the main lessons the crisis left, at least regarding the emergency administration, was the need to have timely information in real time, since a monthly information system could be adequate for the normal operation of the institution, but was limited to addressing unexpected events. Therefore, it became of fundamental importance that the procedures of obtaining and integrating information required substantial improvements, and the urgency of a better coordination between the involved, from the medical staff in the different clinics and hospitals of the country to the management staff.

In addition, the influenza epidemic occurred during the tragic fire in June of that year at the nursing home ABC, in Hermosillo, Sonora, and where 49 children lost their lives and 109 were severely injured and burnt for life. The combination of both events in a same year forced to rethink how to improve the health institution's response before

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catastrophic events. Therefore, doctors Felipe Cruz and Everardo Martínez (who was head of the Electronic Health Record Administration Division, and that had the largest experience in programming and information technology) began to work to gather information virtually.

As a result, that same year, a program called Secure Medical Unit [*Unidad Médica Segura*] was created, which operated officially until 2010, but had important consequences for the Institute. During the following years the program's information continued to be used and to be improved in different aspects. One of them was the georeference of the medical units of the IMSS, to be able to identify them with certainty, and a way of sharing information in real time between the different units in case of emergencies or disasters was sought.

The Secure Medical Unit program gave place to other programs, such as Secure Hospital [*Hospital Seguro*], which continued the efforts to achieve a better administration during risks and disasters. Particularly, an effort was made to georeference all the medical units of the Institution, through a shared account in Google Maps; the units were invited to register their location on the map. The process was very slow and was not systematic. Even some units would select a mistaken location and there were cases where the medical units appeared geolocated in impossible locations, such as in the middle of the sea or deserted places.⁸

⁸ To provide an image of the task's dimension, the IMSS has around 1400 medical units in the entire country, without taking into account the over 3000 of the IMSS-Bienestar program, which provides attention to 12.3 million people in rural and marginalized urban areas of the country wi-

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To overcome these barriers, a system that would allow the visualization of the maps with the locations of the units and information that could be relevant for the decision-making was created. During the process, it was thought that it would be useful to have an emergency notification application where the units could report real-time adverse situations to the central level. To put things in perspective, we only need to recall that it was the same year of 2009 when instant messaging platforms by Internet through cell phones —such as WhatsApp— got out in the market, establishing their current popularity years later. The Institute’s staff using free software created this entire system.

To determine the best way of designing the system, an investigation was made of the adverse events that had occurred in Mexico and in the world —hurricanes, earthquakes, tsunamis, etcetera— in order to observe the communication’s dynamics after these events. What was found was that the mobile Internet would reestablish far before the telephone services; therefore, from the beginning a system that could be used both on computer systems and on smartphones was thought of. The system was presented to Santiago Echevarría, the director of Medical Benefits of the Institute at the time, who approved it to begin operations.

Because of such overtness, a first test of the system was presented through an institutional exercise in which the regulation directors and the general secretary had to be connected. Cruz mentioned that when the general director was informed about the system, his first reaction was “if

thout distinction between rights-holders.

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you say that it can be done through a computer and the iPhone, I want to see it!" In this way, he made them work under pressure and after two weeks of trials, it was done.

The first simulation exercise was not successful: there were fears about the capacity of the IMSS's intranet to support the exercise, those fears materialized, and the exercise was carried out with the system working only partially. The technological innovation director, who was present, informed the general director about the problems with the intranet. He changed instructions so that they were provided with everything necessary to carry out the second trial in three weeks and hired a company that had databases in Mexico City, Querétaro and Monterrey, which would allow the connection of more than 6000 users at the same time.

Professor Karam could not assist to the second trial, as he was in Boston, but the surprise was that he could connect from his mobile device and it worked. There were still opportunity areas, but as of that moment, Cruz and Martínez began to work in protocols for each department, each had their own file and concentrated in the red book that was called CVOED.

The first time it was formally used in a real event was during hurricane Karl⁹, and although not everyone had access codes, the management of the event was achieved with four users and it worked well. Later on, it was used for other events of lesser magnitude, such as accidents with a massive count of injured people.

⁹ The thirteenth tropical storm of the hurricane season in the Atlantic of 2010, in the state of Veracruz.

By the end of 2010, the Earthquake Plan [*Plan Sismo*] was presented, whose objective was to provide support, strength and congruence in the execution of all the institutional response plans and all the solidary initiatives of the civil society and the private sector, at the immediate moment to the event of an earthquake of great magnitude in our country and until the control and reestablishment of the strategic services. The IMSS undertook to participate in said plan, and when the general director asked about the possible strategies to include in it, the CVOED was mentioned, the proposal was accepted, after which he gave instructions to implement it in the entire Institute, although with a financial deficiency: it was not assigned financial resources.

At that time, the IMSS only had one developer focused in the CVOED, Kristhian Manuel Jiménez Sánchez, who narrates his entrance to the team in the following way:

I started my social service at the Institute in the North delegation, where I began to review local systems for emergencies of the hospital's units. The information technology coordinator was sent to the central offices and called me. There, I created the systems used in the medicine tenders. Before that, it was all Excel and email, and I made the system so that it would gather information via web and nationwide. In 2009, someone told me: "Hey, Doctor Felipe Cruz needs a system to gather information of the Secure Medical Unit". I began to check it out with Doctor Everardo, and with the experience I had with the tenders, it wasn't complicated and from there, Doctor Cruz told me: I can offer you something better than what you currently have, so you now work with us.

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Due to the great load of work that the development of the system meant, four more IT specialists were assigned from the Institute to work in the CVOED, which is why having diverse information modules in the system was achieved in a very short time.

The CVOED had operated in situations not necessarily catastrophic. For example on June 2012, in Los Cabos, Baja California Sur, during the G-20 summit. This type of reunions must guarantee the physical security of the assistants, their nourishment and, above all, having an emergency protocol.

Felipe Cruz's team had worked hand in hand with the Presidential Guard [*Estado Mayor Presidencial*] for this type of events for over 36 years, and this time was no exception. Because of the challenge the summit represented, they had to turn the largest hospital in the region (47 beds) in a much larger complex, which was able to care for a larger number of people. In addition, one of the most important factors, was to have a communication system between the rest of the health sector, the public and private security, among others. Because of the required characteristics, the best option was the use of the CVOED.

Thanks to this system, it was possible to engage communication with many institutions, such as the federal and local Health secretaries, the IMSS, the Presidency of the Republic and the Federal Police. One of the particularities was that in the hotels that received people for the event a group of doctors, specialists and nurses were installed with the purpose that there were specialized staff capable of diverse tasks, from providing a painkillers to performing a surgery. The coordination of all these teams was done through the system and, in the words of Doctor Cruz: "in

this case, CVOED was an example of success because it worked marvelously”.

The hardest test, says Cruz, was when a Federal Police bus went out of a curve and 17 people were injured, requiring immediate attention. On this occasion, the coordination between the parties worked well thanks to the CVOED. As an anecdote, Cruz adds that a representative of the United States injured an ankle and they were able to respond quickly, “therefore it was a good moment”.

Another case of success was on March 2012, when Joseph Ratzinger —Pope Benedict XVI— visited Mexico for the first time, specifically the city of Guanajuato. Cruz comments that on that day, the number of assistants (from the entire world) was over seven million, for which reason his team had to be organized by sections. To speed-up the communication, they also used the CVOED and, although fortunately there were no incidents during the visit, the communication at all times was stable and efficient.

Thanks to the usefulness and functionality the CVOED displayed, a workgroup was also created with the Health Secretary, the Security and Social Services of the Workers of the State Institute (ISSSTE), the Mexican Red Cross, and the National Association of Private Hospitals, institutions with which the IT platform is shared. In the same manner, on November 28, 2012, the Health Secretary presented the system *cvoed.net* to the National Coordination of Civil Protection and the Interior Ministry, as a tool to be used in the health sector in the case of a major disaster in national territory.

It is worth mentioning that the CVOED has been designed and developed with the endorsement and collaboration of the PAHO, the WHO, and the World Association for Disaster

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and Emergency Medicine (WADEM), and that it complies with the instructions of the National Coordination of Civil Protection and the Health Secretary.

THE CVOED

The CVOED is an information technology system designed by the Special Health Projects Division (DPES) of the Medical Benefits Department of the IMSS. It allows the coordination and direct communication in real time from areas affected by crisis, emergencies or disaster. From operational to steering levels, forming a communication and coordination line in the local, state, and national sectors that aids to the quick, organized and coordinated response in front of situations that put the lives of the people, the social infrastructure or the continuity of the institution's operations at risk.

Its mission is to be the leading center where all the information generated in situations of crisis, emergencies or disasters that affect some Operative Unit of the IMSS is received, analyzed and processed; to help coordinate actions and provide support to the decision making for a quick, effective response according to each situation, with an efficient use of the human and technological vanguard resources that the Institute has.

Its general objective is to coordinate the actions and decision making for a quick, efficient response according to each situation, in order to reduce victims, costs and return the state of normality.

- * An information technology system that works both on the Internet as on the intranet.

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- * It is based on the use of web 2.0 and social networks.
- * It provides real time communication.
- * It supports the decisions of the Emergency Operation Committee (COE).
- * It allows standardizing the operational and regulatory response in crises.
- * It supports the continuity of operations and the return to normality in less time.
- * It is flexible and capable of hosting a high-level turnout.
- * It does not require a specific physical area for its operation.
- * It allows the creation of situation rooms at any place no matter the geographical location, with minimal requirements.
- * It avoids extraordinary operation costs.
- * It is accessible from any mobile device with data service: smart phones, tablets, laptops, etcetera.
- * It strengthens the Institutional Plan in front of an Emergency and Disasters.
- * It concentrates information from previous moments, during and after emergencies and disasters.
- * It has the necessary tools for the institutional response before the requests of information by the federal government.

The CVOED has registered users in all the IMSS units. It is worth mentioning that the Institute cares for around 50 million people —that is, almost half of the Mexican population—, it has around 400 000 employees and more than 7700 units around the entire country, including medical units, administrative facilities, attention modules

and nursing homes, but also other types of centers such as theaters, vacation centers or self-service stores.¹⁰

One of the main barriers to overcome when the Virtual Center was created was that there were no existing databases with the established catalogue of all the operational units of the Institute. To generate it, the team proposed reviewing the payroll databases, as it was the most complete, current source and that included all the people that integrated the different units of the IMSS. Nevertheless, there was no precise information of the geographical location of the units— crucial information, precisely, in situations of emergency and disasters.

At first, as it has already been anticipated, only four people of the DPES were dedicated to georeference the units, but it was complicated because some departments were not precise enough, especially in areas that are far from urban centers. The foregoing was corrected by generating an identification module in which each unit is localized on the map.

One of the most important advantages of the system was that its implementation did not require creating nor acquiring new infrastructure (only the purchase of a server that hosts the system), nor purchasing software, as it was done by the same team of developers and programmers of the Institute. In this way, there was no need to hire additional staff for this task. If this is compared with the creation of rooms of physical situation or other similar alternatives, this system offers an important advantage.

The CVOED does not have an assigned budget other than the staff's salary, which includes an information technologist during the morning, who administers the

¹⁰ IMSS, *Reportes mensuales de actividades*, Mexico, 2019.

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platform, and a coordinator, whose function is to monitor the events, gather information, follow-up, keep the directors informed and enable the administration tasks — if needed— for an effective and quick response. Another cost that could also be considered is a contract with an external provider for the service of data storage, but this is shared by the CVOED with other systems and applications of the Institute, therefore, it is not possible to know with precision the cost of only the Virtual Center.

In addition, one of the main characteristics of the system is that it was developed in an open code platform in a modular, interactive and incremental manner. This, on the one hand, allowed to reduce costs and, on the other, enabled the development of new modules in short time, achieving a useful, flexible, robust, and secure information system that can be adequate in different situations. The foregoing is particularly useful if we remember that the CVOED answers in case of emergencies and disasters, that is to say, situations of unpredictable nature.

An advantage of this design is that situation rooms can be created in a very simple and low-cost way; even in situations that are not emergencies or disasters, such as a strike that blocks the access to an IMSS unit, as it is simple enough to enter the system from any device connected to the Internet to continue monitoring the Institute's activities.

The CVOED is made up of two large layers: one contains public information that any person may consult without the need to register, and the other requires opening up a session with a user and password, and is only for the IMSS staff. The access to the Virtual Center can be done from both the institutional Intranet and the Internet, through the website <http://cvoed.imss.gob.mx/>

IMAGE 1. PUBLIC MODULE CVOED DURING THE EBOLA OUTBREAK ON 2014

PROGRAMAS

- Premios al Merito - PRAEMED - PRAECIF
- Hospital Seguro *

Noticias

- Enfermedad por Virus del Ebola.pdf
- Folia Teorica Virus Ebola.docx
- Minuta de la reunion celebrada el 01 de agosto 2014.docx
- Enfermedad por el virus del Ebola, implicaciones de la introducción en las Américas
- PROCEDIMIENTO DE ACTUACIÓN FRENTE A CASOS SOSPECHOSOS Y CONFIRMADOS DE ENFERMEDAD POR VIRUS DE ÉBOLA (EVE) EN RELACIÓN CON EL BROTE DE AFRICA OCCIDENTAL

RECER 3 SOCIALES

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- YouTube
- Facebook

RECER 3 RELACIONADOS

- Foro Franco-Mexicano de Mejoras Prácticas Contra la Obesidad
- 50ª Semana Quirúrgica Nacional e Internacional
- Colección Libros Medicina de Excelencia
- OMS
- Biblioteca OMS
- OP9
- CRID
- WACEM
- CENAFRED

EVENTO QUIMICO, BIOLÓGICO, RADIOLÓGICO Y NUCLEARES

QBRN

Source: <http://cvoed.imssgob.mx/>

IMAGE 2. STARTING PAGE OF THE CVOED VIRTUAL CENTER OF OPERATIONS IN EMERGENCIES AND DISASTERS



Centro Virtual de Operaciones en Emergencias y Desastres

El Centro Virtual de Operaciones en Emergencias y Desastres (CVOED) es un sistema informático que permite la comunicación directa en tiempo real desde las zonas afectadas por una crisis, emergencia o desastre hasta los niveles directivos formando una línea de comunicación y coordinación.

Ver más...

Información general y programas en temas de emergencias y desastres



Información para público en general



Información para profesionales de la salud



Planes institucionales



Documentos internacionales de interés

Source: <http://cvoed.imss.gob.mx/>

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On the first layer, of free access, useful information for the population can be consulted, and its objective is to increase the prevention culture. For example, during 2014 the public module was used to provide information to the population about general protection measures about the Ebola outbreak.

In this public layer, the following sections can be consulted:

- * *Institutional planning in front of emergencies and disasters.* Here, the plans of the IMSS for emergencies and disasters are published, and are organized in general topics and specific phenomena.
- * *Education and training in emergencies.* In it, presentations, documents of related topics, and various training courses can be consulted.
- * *People search in case of disaster.* This module activates only in case of a major emergency or disaster, and has the end purpose of concentrating in a single site the information of the people who have been cared for at the IMSS as product of the situation.

The public section also has the links to different international expert organisms in emergencies and disasters, such as the WHO, the PAHO or the WADEM. There is also a space meant for the promotion of relevant programs of which the DPES is in charge and others where the National Risk Atlas can be seen.

The second layer of the system, where most of the CVOED's tools are located, consists of five different modules:

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<p style="text-align: center;">IDENTIFICATION MODULE</p>	<p style="text-align: center;">COMMUNICATION MODULE</p>
<ul style="list-style-type: none"> * Identification card * Georeference maps 	<ul style="list-style-type: none"> * Emergency notification application * Live messenger * Social networks
<p style="text-align: center;">RESOURCE MODULE</p>	<p style="text-align: center;">RESPONSE MODULE</p>
<ul style="list-style-type: none"> * Personal * External threats * Committees and brigades * Immediate response groups * Critical processes and action cards 	<ul style="list-style-type: none"> * Availability on beds and services * Availability of blood components
	<p style="text-align: center;">DIRECTORY MODULE</p>
	<ul style="list-style-type: none"> * Internal * External * IMSS

Identification Module

In this module the geolocation of the Operative Unit and its identification card, which contains the personal data of the director, in charge or responsible of the unit, and the general data of the building are found. This card must be correctly filled out by the responsible person, and the information needs to be verified and updated every two months or when the director or the person responsible of the unit changes.

The georeference is made the first time that a unit enters the system, and its veracity is confirmed each semester. The foregoing is done by means of a map, whose image can be closed-up and moved until the building is identified or by clicking over the location.

IMAGE 3
 GEOLOCATION IN THE CVOED SYSTEM

Si su ubicación en el mapa no es la actual
de clic en el siguiente link:

[Rectificar Mapa](#)

de lo contrario de clic en enviar:



lat: lon: zoom level:

Latitud:

Longitud:

Se necesita un valor.Formato no válido.El ZOOM es inferior a 17.

CVOED en Grayskull 2.0

Source: IMSS, CVOED, Guía del usuario, Mexico, 2019.

Communication Module

The second module allows for communication in real time between the different users of the system. The CVOED is designed to allow for horizontal and vertical communication of different hierarchical levels:

- * *Vertical Communication.* Each Operative Unit can communicate with the superior hierarchical level to its own regulatory area.
- * *Horizontal Communication.* Each unit can communicate also with the staff of their same hierarchical level, regardless their area, privileging the local coordination.

This design enables the acting and coordination according to the level of response required for the attention of any situation. To respond faster to the occurrence of a disaster, three communication tools have been designed:

Emergency notification application. Before the presence of an adverse event, the person responsible at the time must warn that there is a phenomenon occurring. This tool is of exclusive use for the notification of a disaster, crisis or emergency and it is divided into two spaces: in the first, the event is written briefly and clearly; in the second, the preventive actions or of response carried are described and allows the inclusion of the exact location of the event and the uploading of photos of what occurred.

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Live Messenger. It is a real-time online chat room. The particularity of the messenger is that the communication in the forum is horizontal and vertical. That is to say, it can interact with persons of the same hierarchical level and with the immediate superior level, who in turn can communicate among each other and with the level of superior decision. It is an instrument of easy communication, affordable, and efficient that must be used on a daily basis to give follow-up to the events, express doubts and provide suggestions or routine communication between users.

IMAGE 4. CVOED MESSENGER

		Enviar
SINALOA HOSPITAL GENERAL DE ZONA C/MF 32	BUENOS DIAS, HEMOCOMPONENTES ACTUALIZADO.... SALUDOS DESDE GUASAVE	2015-05-08 11:15:34
SINALOA JEF SERVUS PREST ECON SOC	BUENOS DIAS, EN LINEA.-	2015-05-08 10:11:46
ESTADO DE MEXICO ORIENTE UNIDAD DE MEDICINA FAMILIAR 183	HOLA BUENOS DIAS LA UMF 183 SE REPORTA SIN NOVEDAD. BUEN FIN DE SEMANA.	2015-05-08 10:04:24
ESTADO DE MEXICO ORIENTE UNIDAD DE MEDICINA FAMILIAR 198	!! HOLA !! BUENOS DIAS .. LA UMF/UMAA No 198 SE REPORTA SIN NOVEDAD, HASTA ESTE MOMENTO ..NOS ENCONTRAMOS EN ALERTA, ANTE CUALQUIER EMERGENCIA ... GRACIAS.. !!!!	2015-05-08 09:41:52
ESTADO DE MEXICO ORIENTE CENTRO DE SEGURIDAD SOCIAL 07	BUENOS DIAS CSS MEZAHUALCOYTL REPORTANDOSE SIN NOVEDAD FELIZ FIN DE SEMANA.	2015-05-08 09:28:15
ZACATECAS JEF SERVUS PREST MEDICAS	Buenos días estamos atentos y sin novedad	2015-05-08 09:11:59
ESTADO DE MEXICO ORIENTE CENTRO DE SEGURIDAD SOCIAL 06	BUENOS DIAS EL C.S.S. DE SAN RAFAEL SE REPORTA SIN NOVEDAD GRACIAS FELIZ FIN DE	2015-05-08 09:07:31

Source: IMSS, CVOED, *Guía del usuario*, Mexico, 2019.

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Social networks. Currently, social networks, such as Facebook, Twitter or YouTube, have become very efficient communication tools, and have levels of penetration that extend further among the population. This allows emergencies and disasters to be known even before they are notified on official media, as well as spreading recommendations, warnings or other important type of communication. The use of these tools within the CVOED is exclusive for topics of emergency and disasters.

Resource Module

The third module of the CVOED shows tools and important catalogues in the planning or institutional response in front of emergencies and disasters. It divides in the following:

Personal. A consultation file shows information related to the number and the category of the staff that works in each Operative Unit. This directory is important to learn the technical capacity of the units and the staff that is available to address the situation.

External threats. In this section, external threats adjacent to the Operative Unit can be added; that is to say, everything that can generate or worsen a situation of contingency. Each threat is entered individually and located in the map. The registered threats that have changed or stopped existing must be eliminated from the system. For example, if there is a fuel tank near an Operative Unit, it will be very important to have this information in case of a fire. The objective is

IMAGE 5. EXTERNAL THREATS

Mapa de Riesgos - Google Chrome
 http://coordinamss.gob.mx/COED/home/standard/print/riesgos/externos/index.php

Amenazas Externas en la Unidad Operativa

Aviso: En este módulo se deberá ingresar los amenazas externos de la unidad operativa a su cargo, ingresar los datos solicitados en los campos y ubicar los riesgos externos en el mapa para su geolocalización.

Ingresar Amenazas

ICONO	ID_RIESGO	DESC_RIESGO	NIVEL_PRELIGROSIDAD	DISTANCIA_M	FECHA	ELIMINAR
▲		DEPOSITOS DE COMBUSTIBLE	3	200	2011-02-09 10-20-18	ELIMINAR REGISTRO
▲		TANQUES DE DIESEL	3	200	2011-02-09 10-29-51	ELIMINAR REGISTRO
▲		OFICINAS DE PGR	3	5	2011-02-09 10-30-45	ELIMINAR REGISTRO
▲		INUNDACION	3	30	2011-02-09 10-32-10	ELIMINAR REGISTRO
▲		ACCESIBILIDAD Y EVACUACION POR LA UBICACION ACTUAL	3	5	2011-02-09 10-33-39	ELIMINAR REGISTRO
▲		AREA DE BLOQUEO DE CALLES POR MANIFESTACIONES O ACTOS PUEBLICOS	2	5	2011-02-09 10-35-38	ELIMINAR REGISTRO

Mapa de ubicación
 Mapa | Satélite | Imagen

Source: IMSS, *CVOPED, Guía del usuario*, Mexico, 2019

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that it has as much information possible that is relevant in situations of emergencies or disasters.

Committees and brigades. Allows adding information of the members of the Operative Unit's Operation of Emergencies Committee and of the brigades that can be contacted in case of emergencies or disasters.

Immediate response groups (GRI). The GRI consist of health and multidisciplinary staff with useful skills and knowledge to respond to emergencies or disasters. It is worth mentioning that all of them are volunteers that, if necessary, can travel to the affected areas and provide support to the event.

Critical processes and action cards. In this section, the critical processes and action cards can be registered and viewed which, in case of emergencies and disasters, establish action protocols. Both are main components of the Operations Continuity Plan of the Medical Benefits Department of the Institute.

Critical Processes. The substantial functions or activities that for no reason can be suspended, not even during emergencies or disasters, as they are of great importance for the operation's continuity. Every critical process must have a person responsible and must identify every area, internal and external, with which it must interact to guarantee its continuity.

Action Card. A list of the actions that the responsible person of a critical process during an emergency

or disaster must make, in order to guarantee the continuity of operations.. The actions to be taken during the first hours after the event, as well as the subsequent, must be written down clearly, briefly and sequentially. It is important that the card establishes the command succession, that is to say, the substitutes in case the cardholder is not available.

Response Module

In this module, there is valuable information especially for the medical area, which includes updated data about the availability of beds and services, blood components and the nominal census of the patients. This module generates information that helps making decisions in emergencies and disasters, as it allows knowing the available resources and necessities.

Beds and services. The medical units should report information on the number of available beds and services in their unit. In normal situations, the information is directly reported, but in emergency or disaster cases, it should be filled out three times a day or when information is requested by means of the messenger or notification application.

Blood components. The medical units that have blood banks must inform about the availability of blood components. In normal situations, the information is reported daily, but in emergency or disaster cases, it should be filled out three times

IMAGE 6. BED ND SERVICES AVAILABILITY

The screenshot shows a web browser window with the URL https://cvoed.imss.gob.mx/COED/home/normativos/DPM/infraestructura/reportes/disponibilidad_camas_reporte_nacional.php. The page content includes a navigation menu with 'Inicio' and a button 'Ingresar Disponibilidad de Camas'. The main heading is 'Disponibilidad de Camas y Servicios'. Below this is a table with the following data:

Estado	Camas en Urgencias	Camas en UCI	Camas en UCIN	Camas en Medicina Interna	Camas en Pediatría	Camas en Ginecología	Camas para Pacientes Abiados	Camas de Traumatología	Salas de Cirugía	Ventiladores de Funcionales	Disponibilidad de Farmacia Interna	Disponibilidad de Farmacia Externa	Disponibilidad de Rayos X
AGUASCALIENTES	11	10	10	12	3	4	5	6	12	7	SI	NO	SI
TOTALES	11	10	10	12	3	4	5	6	12	7	SI	NO	SI

At the bottom left of the table area, there is a button labeled 'Ver detalle'.

Source: IMSS, CVOED, Guía del usuario, Mexico, 2019.

a day, or when the information is requested by means of the messenger or notification application.

Nominal Census of the Patients. Includes information of the patients that enter the medical units as a direct result of an emergency or disaster. This information must be registered as soon as the situation allows it, and can be shared with the Health Sector and the Interior Ministry, always respecting the provisions established in the General Law for the Protection of Data in Possession of Liable Parties.

Directory Module

Its purpose is to have the contact information of every person, inside and outside the institution, who can help face emergencies or disasters concentrated in one single place. This information must include, at least, telephone numbers (office, home and cell phone) and email address. In order for these directories to work, it is important that they are constantly updated; therefore, the person in charge of each Operative Unit must update the information at the moment in which s/he is notified of a change and verify it at least every two months.

Internal directory. The contact data of the staff that integrates the executive body, from every shift, of each unit is registered. The objective is to contact the people with authority within the IMSS for decision-making 24/7.

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External directory. Allows entering contact data of institutions other than the Institute that can be of help in situations of emergencies or disasters, among them, the following:

- * Resource and service provider (healing material, medicine, etcetera).
- * Assistance entities such as the Red Cross, the fire department, etcetera.
- * State, Federal and Municipality Police Departments.
- * Military Authorities.

The analysis of including in an external directory other specific authorities corresponds to each Operative Unit, according to the tasks it deploys. For example, adding contact data with embassies, members of the congress, etcetera.

IMSS Directory. A database where all the information of the IMSS' units is concentrated and can be consulted by every validated user of the CVOED.

IMAGE 7. IMSS DIRECTORY

DIRECTORIO INTERNO IMSS									
DELEGACION	UNIDAD OPERATIVA	DIRECTORIO POR TURNOS	DIRECCION	RESPONSABLE	RED VIRTUAL	LADA	TELEFONO	EXTENSION	
01	AGUASCALIENTES JEF SERVS ADMINISTRATIVOS	VER POR TURNOS	CALLE ALAMEDA NUMERO 704 COLONIA DEL TRABAJO CIUDAD AGUASCALIENTES ESTADO AGUASCALIENTES	JUNIO CESAR VELAZQUEZ	1132	01449	9752157	41132	
01	AGUASCALIENTES JEF SERVS PREST MEDICAS	VER POR TURNOS	CALLE ALAMEDA NUMERO 704 CP-20180 AGUASCALIENTES ESTADO AGUASCALIENTES	ALONSO MARTINEZ MENDOZA	8 4000 1110	449	975 21 61	41116	
01	AGUASCALIENTES JEF SERVS PREST ECON SOC	VER POR TURNOS	CALLE ALAMEDA NUMERO 704 CP-20180 AGUASCALIENTES ESTADO AGUASCALIENTES	SERGIO VELAZQUEZ GARCIA	40001118	449	9752200	41116	
01	AGUASCALIENTES JEF SERVS JURIDICOS	VER POR TURNOS	CALLE ALAMEDA NUMERO 704 CP-20180 AGUASCALIENTES ESTADO AGUASCALIENTES	LEO CANDE ALBERTO RAMIREZ VELA	840001129	449	014499752160	1129	
01	AGUASCALIENTES COORD DE INFORMATICA	VER POR TURNOS	CALLE ALAMEDA NUMERO 704 CP-20180 DEL TRABAJO CIUDAD AGUASCALIENTES AGUASCALIENTES	JORGE HUMBERTO LOPEZ WANCHO	4000 1105	449	975-22-00	41105	
01	AGUASCALIENTES FEATURAS DE SERVICIOS DE FINANZAS	VER POR TURNOS	CALLE ALAMEDA NUMERO 704 CP-20180 DEL TRABAJO CIUDAD AGUASCALIENTES AGUASCALIENTES	ADRIAN ANTONIO MARTINEZ DE LUNA	4000 1126	01449	9752158	41126	
01	AGUASCALIENTES COORD DE ABASTECIMIENTO Y EQUIPAMIENTO	VER POR TURNOS	CALLE CAROLINA VILLANUEVA NUMERO 705 COLONIA C.D. CIUDAD AGUASCALIENTES ESTADO AGUASCALIENTES	JORGE ORTEGA RUELAS	4007 1504	01449	9709979	103	

Source: IMSS, CVOED, Guía del usuario, Mexico, 2019

Regulation and Administration

It is important to mention that the CVOED's administration is responsibility of the director or the person in charge of each Operative Unit, in co responsibility with all the members of its governing body and with the workers who are assigned activities in the system. The CVOED is thought out for three types of users:

1. Those who update and provide the data or notify some emergency or disaster. They are generally employees of the units.
2. The managers of each delegation, who can observe and monitor the units of which they are in charge.
3. The central authorities of the Institute.

It should be emphasized that the CVOED addresses only emergencies and disasters where there is or can exist damage to staff, the patrimony or the right-holders of the IMSS: the system is thought out to address emergencies in the Operative Units and not for individual emergencies.

A classification of emergencies and disasters system was also created, as not all situations require the same response nor do they have the same magnitude.

- * *Type 1.* It is solved locally and the situation is only notified via CVOED.
- * *Type 2.* It involves more than one delegation of the Institute; therefore, requires some coordination

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between three or four units, but not a national response.

- * *Type 3.* Situations that require a response from more than four delegations, and where the rest are warned, such as the case of an earthquake. In this type of situations, a great deal of coordination is required not only within the IMSS, but with other institutions at different government levels.

The adverse events administered by means of the CVOED are also divided by its origin in five categories:

- * Geological
- * Socio-organizational
- * Chemical-Technological
- * Hydrometeorological
- * Sanitary-Ecological

Although the CVOED complies with various regulations of the legal framework applicable to the IMSS and other laws such as the General Law of Civil Protection and the General Health Law, one of the main obstacles is that, to date, it is not regulated by any official provision, so its use and update depends on the will of its managers. Currently, there is work being done to create the regulations that allow improving its function.

The lack of regulations does not have a specific cause. According to the comments of the persons in charge of the CVOED, the urgent elements of the daily tasks of the institution have “swallowed” the time and priority has been given to other areas, such as the attention to the emergencies or disasters, the making

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of protocols, plans, and documents, improving the platform, etcetera. In 2014, there was an attempt at generating the regulation, but it could not be accomplished due to changes in the steering staff of the Institute.

This lack of regulation has also made its implementation quite challenging in other institutions. For example, between 2011 and 2014, the ISSSTE approved the system and shared its use, but with the arrival of new managers, its use was reduced drastically, mainly because of the lack of interest and knowledge of the system. Because there is no regulation that makes the use of the CVOED obligatory, it is up to the managers if they use it. For this reason, every time there is a change in the administration it is affected. The same happened with some state health departments, such as the ones in Tlaxcala, Hidalgo, State of Mexico, Mexico City and Morelos, who have used the system in a greater or lesser extent in different administrations.

The correct use of the CVOED allows a better coordination and communication, and also provides data for better decision-making before, during, and after emergencies and disasters; phases that we describe below:

Phase before the event. The prevention and preparation stage to face situations of emergency or disasters where important elements are considered, such as:

- * The catalogues of the institutional units, the identification card, its georeference, and the records of external threats.
- * The type and complexity of the medical attention units, their equipment, and the staff available.

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- * The integration of local Emergency Operation Committees and brigades for operative level, GRI, and internal and external directories.
- * The statistical analysis of the medical activity and the support catalogues to the operation, such as supply, transportation or mobile medical resources.

In addition, the medical attention units are classified to determine which their real capacity of attention is and to plan various future scenarios. This phase integrates all the information in maps to define impact areas, establish access routes, and make an analysis of external threats.

There is also continuing education and training of the strategic staff before the occurrence of disasters or emergencies. For this, the CVOED integrates a series of courses, guides, and documents that allow the response capacity of operative response. Likewise, it has a virtual library where documents on the subject and repositories of organizations from the whole world are shared.

Response phase. One of the most important elements is the notification of an adverse situation, as it is the trigger of the whole process. A second element is the monitoring of the institutional resources available during the crisis.

Once this second phase is started, whether the building remains functional and safe to guarantee the continuity of operations must be identified. This is done by activating the security brigades, which, after a preliminary evaluation, determine the safety of the building. The foregoing is particularly important for the case of medical units, which as far as possible must expand areas to provide service to massive arrivals of injured people, and access the

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CVOED to report the availability of beds, services, and blood components.

In the same manner, as soon as the injured arrive at the medical units, their information must be entered in the Nominal Patient Census. All these reports and activities must be done as quickly as possible, and will enable the processes of institutional information exchange, which will allow for a better search of the victims and their condition. On the other hand, the follow-up of the situation will become more effective with the information in the maps, which allows identifying the damages and the escalation or decrease of the contingency.

Post-crisis phase. Finally, follow-up must be given to the event, updating the information in the system as the different processes and protocols progress to return to normality. This phase is a challenge for the institution's directors, as it is when a final diagnosis of the damages must be offered and the priorities of reconstruction or repair must be established. This diagnosis must be considered as a priority for the planning and the adequate evaluation of the damages.

The CVOED has a high scope at a national level, and is considered the main tool to strengthen the Institutional Plan before Emergencies and Disasters of the IMSS, as well as being its main communication tool: it has registered in average 2200 monthly announcements by means of the emergency notification application and messenger live. Moreover, the staff of the Institute carries out the corresponding actions according to the magnitude of each situation.

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IMAGE 8. PLANNING PHASES,
ATTENTION TO EMERGENCIES AND DISASTERS



Source: IMSS, *Plan Institucional Frente a Emergencias y Desastres: Marco de actuación general*, Mexico, 2016.

RESULTS

The CVOED has demonstrated to be a functional communication and information administration tool for addressing emergencies and disasters. With it, the IMSS has monitored earthquakes, hurricanes, floods, bomb threats, human violence, fires, explosions and sanitary-ecological crises; follow-up has been given to them and the necessary actions have been coordinated to respond to them. By means of the CVOED, over 3200 adverse events have been addressed and administered in Mexico: 923 geological, 797 socio-organizational, 775 chemical-technological, 730 hydrometeorological, and 36 sanitary-ecological.¹¹

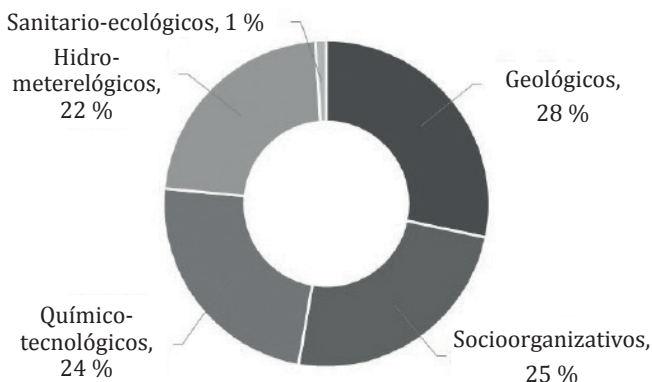
The program has marked a before and after in the prevention of emergencies and disasters in Mexico, and is an example of good practices that has contributed to reduce the loss of lives by allowing to respond quickly and efficiently in front of these situations. Felipe Cruz emphasizes:

We have contributed in a very important way to minimize the mortality and morbidity in emergencies. Having a quick response in front of these emergencies, being able to connect not only within the institution, but for example with the Mexican Red Cross, makes us not only have a direct

¹¹ IMSS, *CVOED, Productividad histórica 2018*, Mexico, 2019.

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IMAGE 9. ADVERSE EVENTS REGISTERED IN THE CVOED PER TYPE



Source: IMSS, CVOED, *Productividad histórica 2018*, Mexico, 2019.

hospital response, but also a pre-hospital one, by being able to direct the worst case patients to an adequate hospital for that attention we avoid that s/he is circulating.

The main resistance it faces is that during periods of normality some members of the staff, especially those in charge of updating the information in the medical units, do not find this task useful, and because it is not obligatory due to the lack of regulations, they take longer than expected to update the data. This may have the consequence that when an emergency or disaster does occur, it takes longer than it should to have the reliable information updated.

Nevertheless, during catastrophic events, the most important above all, the participation increases considerably.

In average, around 20 % of the units keep their information updated in normality conditions, but once the emergency or disaster occurs, as well as in the following days, the number reaches 100 % in the affected units. A frequent problem in these circumstances is when the chief of the unit has recently taken his/her position and, therefore, does not have the CVOED code, making the process less agile. This situation could change if a regulation were established, for example, each time someone accesses the head of the unit their code is provided, and the mechanisms to guarantee that this occurs effectively are generated.

The CVOED, thanks to its flexibility, has also been used for massive events as a communication and administration tool. For example, as mentioned above, during the G-20 summit in Los Cabos or during Pope Benedict's XVI visit to the state of Guanajuato.

In 2013, the program was announced as an innovative concept worldwide in the 18th World Congress of the WADEM in Manchester, England. A year later, within the framework of the VI National Meeting of the National Council of Health, Dr. Mercedes Juan López, in her capacity as President of this organization, confirmed the usefulness and use of the CVOED within the Health Sector. She generated the agreement to continue working on the integration of the institutions and dependencies of the sector to integrate into the system.

The CVOED has been taken to diverse international platforms such as the PAHO, the WHO, and the WADEM, where it has been well accepted given its flexibility and low cost. These two advantages opened the possibility of adapting it for its use in the African countries, which, as has been mentioned above, suffered from the Ebola outbreak in 2014.

RECOMMENDATIONS AND LESSONS LEARNED

The design and implementation of the CVOED allows extracting some reflections that may be of use for other institutions, especially the health institutions and those in charge of managing the return to normality after emergencies and disasters.

Although each institution works in different contexts and faces different problems, obtaining important lessons from the experience of the others is possible. In the case of the CVOED, there are at least five lessons that are useful.

1. Information is Vital in Emergencies and Disasters

Information allows to improve decision-making, especially during critical moments, and lacking it generates delays or wrong responses, that may cause the loss of lives. This can be observed in the case of the pandemic of influenza A H1N1, or the earthquakes or tropical storms that we mentioned above.

It is worth mentioning that it is not enough just to generate information; it is also important to establish management processes that make it possible for the decision-makers to have it on a timely basis. This is

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applicable above all to large and complex institutions such as the IMSS and many of the social security and health service institutes of the American continent. The administration process of the information in these institutions goes through more than 20 hierarchical levels, from the doctor to the general management. In such institutions, it is very likely that the information does not arrive on time or does so very imprecisely. A system such as the CVOED reduces this problem and enables action with more efficiency.

Information is one of the main resources that an emergency and disaster program must have. We define the help that it can provide at three key moments:

- * *Before.* Preventive information and training for the staff. It must include well-defined action protocols, yet flexible enough to face unplanned situations. The persons responsible of necessary tasks before adverse situations must be identified and training must be constant.
- * *During.* While the emergency or disaster is happening, and during the immediate hours after, it is important to learn its magnitude, its localization and its level of effects, as well as any other relevant information that can help control or avoid more damages. This stage is critical, as by its very nature information comes partially, imprecise and delayed.
- * *After.* During the days after the event, it is important to know all the effects generated during the adverse events with the purpose of generating proposals and solutions that allow a return to normality in the shortest time and in the best way possible. In addition,

the information generated will serve to review the established protocols and improve them if necessary.

2. It is not always necessary to make great investments to solve great problems

Often, public policies are prevented due to the lack of money or adequate technology; therefore, it is important to search for creative alternatives that, like the CVOED, can have a high impact nationwide by using the resources that the institutions already have. We say that this system is of high impact because not only does it relieve a problem, but also because it does not represent great expenses; therefore, it is not at risk of disappearing with changes in administration. The optimization of resources is a guarantee of its transcendence in time. In addition, it responds to the needs of accountability related to the results.

Nevertheless, it must be acknowledged that this is not always possible. During the 90s, without the advances in information technology in the past years, a solution of this type would have been impossible or would have implied, at least, a great investment.

3. Flexibility helps in situations of uncertainty

The situations of emergency or disaster are characterized by uncertainty. It is impossible to anticipate neither when they will happen, nor what implications they will have; therefore, an information system of this type must be

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accessible from different media: computer, cell phones or whichever other device with Internet connection.

Likewise, the flexibility to create new modules in relatively short times is very useful when there are situations that require a certain type of specific information or where great demands that are impossible to anticipate are generated. It is easier and more efficient to have the capacity of adapting to the circumstances than trying to prepare with anticipation for every possible scenario. Flexibility is necessary to create mechanisms that maximize the efficiency and effectiveness before, during, and after each contingency.

Lastly, flexibility must not be misinterpreted for instability; it is rather the capacity of adapting and maintaining the stability with the response capacity before any unforeseen situation. A flexible program is constantly improving in every phase of its operation.

4. It is important to institutionalize the processes

Although political will is necessary when designing and implementing new strategies, it is not enough for them to be kept on time and to strengthen: it is important to institutionalize the processes. In case of the CVOED, its lack of clear regulations causes the risk that, with the changes in administration, the efforts made before may be lost, or that the persons in charge are not committed to carry out the necessary activities on a regular basis. This is especially critical during emergencies and disasters, as although during periods of calm it may not seem necessary to keep the system up to date, or its importance is not dimensioned,

when emergencies or disasters occur, being prepared may mean the difference between life and death for many people.

The most important programs are generated according to the staff's capacity and the available resources, but also to their plans and their organization. The institutionalization of a program has to do with the operation and staff's routine, but with the purpose of achieving a true obligation, and with it, its continuity, it is necessary that it be established in the regulation.

5. Inter and intra institutional coordination is fundamental to channel efforts towards a same objective

In emergencies and disasters, different institutions and operative units often get involved in returning back to normality as soon as possible. The lack of coordination, both inside and outside the institutions, can generate double efforts or even contrary efforts. A system that can allow efficient and timely communication allows channeling the different efforts in an optimal manner, generating synergies between the different stakeholders.

The actions that involve different instances¹² need to generate mechanisms of effective coordination. A good

¹² Such as the federal government and the local governments, the legislative, executive, and judiciary powers, the scientific community, the civil society organizations, the private sector, the media and the society in general.

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articulation inside and outside the institutions that are directly involved allows to optimize the support actions.

Lastly, the CVOED can easily be replicable by other institutions that require mechanisms of information administration to address emergencies and disasters. Its low cost of implementation is one of the main advantages, particularly for institutions with budgetary constraints.

Given its flexibility, it also opens the gates to the possibility of creating a shared system between the different institutions, both at national and regional levels, which would improve the administration of risks and disasters involving the coordination of more than one institution. The horizontal and vertical communication model has demonstrated to be functional and effective for large institutions with many levels of decision, such as the IMSS. Therefore, it could adapt without difficulties to more complex systems that involve many institutions.

CONCLUSIONS

As we mentioned before, emergencies and disasters will be more and more common in the countries that are members of the CISS, which requires adopting preventive and administrative measures during and after these events. While highly technological centers may offer possible risk management and a response during emergencies, they can also involve high costs that oftentimes are impossible to cover. In this situation, the CVOED presents a useful alternative to strengthen the prevention and response capacities at affordable costs, and with the possibility, because of its modular design, of expanding its use, not only for social security institutions, but also for any other relevant institution.

Likewise, it is important to acknowledge that the CVOED still has important challenges ahead; mainly to formulate a regulation that makes its use obligatory, with the purpose that, with time, it becomes an installed and internalized practice in the IMSS. On the other hand, while one of its main attributes has been its low cost, the fact that financial resources are not allocated to the updating of the system can bring about challenges of functionality in the future that on the long run could put at risk the existence of the system. Such problem, on the other hand, can easily be addressed, as it requires a very low investment of time and resources.

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Interviews

Cruz, Felipe, chief of the Special Health Projects Division of the IMSS.

Jiménez Sánchez, Kristhian Manuel, developer in the Special Health Projects Division of the IMSS.

Saavedra, Juan Luis, Special Health Projects Division of the IMSS.

In charge of Roberto Castillo, chief of the Special Projects Division of the CISS, in May 2019.

Institutions require coordination mechanisms specifically designed for emergencies and disasters, because it is precisely during those moments when the coordination and communication become more complicated. Likewise, it is also during those moments when it is necessary to have easy access to all the relevant, updated and reliable information available to improve decision-making for timely responses.

The Virtual Center of Operations in Emergencies and Disasters (CVOED) is a digital platform developed in Mexico by the Social Security Mexican Institute (IMSS) to give a better response to these problems. It is a communication and coordination mechanism, as well as a mechanism of organization and constant updating of information, that allows to know with precision what is being done and what needs to be done at all times: before, during, and after a catastrophic event. In addition, it is an economical and easily replicable instrument, that we are certain will be a source of inspiration to the members of the CISS. The objective is to save lives.

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