REPORT #6 CA-COVID-19-OMC

PREPARATION OF THE SPANISH HEALTH SYSTEM AHEAD OF A PUBLIC HEALTH CRISIS

Report 7/13/2020 of the COVID Advisory committee to the Local Medical Associations (OMC)

Executive summary and Key proposals.

A series of **factors predict the future appearance of new Public Health crises**: climate change, global trade, transcontinental mobility, and megacities. Preparation for the response to these crises is an **unavoidable obligation of public authorities**. In addition, the increasing scientific and technological possibilities of manipulating micro-organisms can produce serious accidental or intentional problems, which add an additional dimension and responsibility of biological security to the preparation of responses.

The **lessons that we must learn** after the harsh experience of the COVID-19 pandemic indicate the need to: strengthen the central and regional **Public Health** structures; activate and connect **Primary Care** to add to its network roles in prevention, care, and control; prepare **Hospitals** by stimulating the internal flexibility shown and providing external means to meet demand peaks; promote **telemedicine** with the technology, organizational and legal framework; prepare **Nursing Homes** and social health centers and connect them solidly with the Health System and the Public Health System; protect, care for and train **health professionals** and ensure them the means to work and protect themselves; and, finally, to achieve wide access and availability of **information systems**, as well as interoperability with **clinical databases**.

Key proposals

1) Activate the **three pillars of preparedness**, as well as a recovery plan for normality:

- Create a **global alert system** for CBRN (chemical-biological-radiological-nuclear) risks and natural disasters, with control indicators, effective communication to the population, and access to existing scientific knowledge.
- **Respond early to a crisis**, including a rapid intervention mechanism and an articulated National Plan.
- **Intervene immediately**, responding to the **needs** generated by the crisis and mitigating its consequences.

The objective must be to prevent propagation, minimize damage to morbidity and mortality, reduce the social and economic impact, and seek the most efficient means to control the crisis.

2) We must **integrate all the institutional and territorial levels** of action of the health authorities (central, regional, and local health network); to this end, the State Public Health Agency or Center is called upon to play an essential role in this inter-sectoral and multilevel action.

3) Plans are needed, but also **education, training, and simulations**, on which effective preparation and a good and rapid response depend.

4) The governance of Public Health crises entails emphasizing **the value of solidarity and the general interest**; we must activate and apply the ethical framework of Public Health, to help us guide interventions so that they achieve a greater impact on the health of the population.

5) Preparation covers the structures and essential functions of **Public Health** and the Health Care System, which must mobilize personnel, resources, and supplies established in its response plans to serve the population and support surveillance and actions.

6) **Communication with the population and with professionals** is an essential part of the response. Through the choice of communicators, channels, audiences, and appropriate messages, the population's adherence to the necessary behaviors can be promoted as well as the minimization of panic or mistrust reactions.

7) **Psychological support** is required both for the population and for professionals and workers mobilized to respond to Public Health crises.

8) **Health sciences students and professionals in specialized training** must participate in the responses. They must be prepared for this, starting from their initial stages of training; in addition, this involvement must be a stimulus to health professionalism through exemplary commitment during difficult times.

9) A critical factor is knowledge: **networks of researchers** and the media and resources must be able to be activated and align with the main knowledge questions and challenges posed by pandemics.

The COVID-19 Advisory Committee to the Local Medical Associations is an expert panel including diverse professions, sectors, and specializations, which was created on 21 April 2020 to advise the General Spanish Medical Council regarding various scientific, technical, and organization aspects arising due to the pandemic, in order to propose action and generate technical reports that underlie the public position of the General Spanish Medical Council.

PREPARATION OF THE SPANISH HEALTH SYSTEM IN THE FACE OF PUBLIC HEALTH CRISIS

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1- Introduction: Reflections and lessons learned from the COVID-19 pandemic.

The Covid-19 pandemic, which has overwhelmed Spain and all Western countries, did not find any country adequately prepared to face it; even where there were plans for preparedness for public health crises, it seems that they have not had a particularly effective response either.

In the last two decades, all countries, including Spain, have suffered (directly or indirectly) several epidemic outbreaks with international involvement related to emerging infectious diseases. Just remember the epidemics of Ebola, Zika, or Dengue. Diseases transmitted by contact or via the air are of great concern due to the speed of their spread and the ease of person-to-person spread (especially during asymptomatic and prodromal periods of the disease). The central role of this last group is played by influenza viruses and coronaviruses, SARS-CoV-1, H1N1 influenza virus, MERS (Middle East Respiratory Syndrome).

On the other hand, these emerging diseases are closely related to four factors: climate change, global trade, the transcontinental mobility of hundreds of millions of people, and the appearance of megacities that function as a resonance chamber for epidemics, facilitating their evolution into pandemics. This reality reflects the global health paradigm that we live in worldwide.

As long as these factors persist, the possibility of another pandemic like COVID-19 recurring is not only highly probable, but also a certainty.

For these reasons, the COVID-19 pandemic in Spain and the experience that has been gained from it, as well as previously in other health crises, makes it essential to compare in meetings, multidisciplinary scientific congresses, and publications, determining good practices and identifying opportunities for improvement to face future risks and to develop strategies that allow future effective, rapid and global responses.

It is essential to contextualize the pandemic, integrate the extraordinary scientific and technological development of biotechnology and accept the uncertainty that its magnitude and speed introduces, since it is exceedingly difficult to verify. Today, systems of genetic drift, gene editing, gene regulation in several species, the synthesis of new organisms or the reconstruction and/or modification of existing pathogens for application in scientific research in life sciences are possible.

Thus, in addition to the favorable conditions that the global health paradigm supposes for the appearance and transmission of mutations in pathogens for human beings, biological agents are numerous, widely distributed in nature, and easily accessible. Their handling and modification may not require great specialization, and being invisible, they can contaminate the environment including air, water, and land, and infect humans, animals, and plants,

generating reservoirs and vectors of different diseases. Its effects are devastating on human, animal or agricultural health, generating loss of life, deterioration of the environment, economic losses, deterioration of social welfare... In addition, once an emerging disease appears, its detection and identification can be long and difficult, and its treatment uncertain.

All this indicates the need for cross-disciplinary protection and defense of health and life from a global perspective, beyond human life, which incorporates all the relevant professions. And it raises new questions:

- Is it possible that other bacteriological agents, viruses, and toxins burst out violently locally or globally, accidentally or intentionally, with the same ease that COVID-19 has?
- And that this occurs as a consequence of a direct, intentional, programmed action of any origin or as an involuntary escape or error from a laboratory, either due to a new mutation, transfer, or changes in the pathogen?
- Is it possible to imagine the ease with which national or international social chaos with unforeseeable consequences can be created after what has happened?

Lessons learned:

The first relevant question, especially now that we navigate this so-called "new normal" is: **What have we learned in Spain during the COVID-19 pandemic?**

1- **Public Health structures**, especially public health surveillance, must be strengthened and radically changed to conduct tasks of surveillance, preparation, and response to epidemics of communicable diseases.

2- A **Public Health Agency or Center** with organizational autonomy and technical excellence is needed, which brings together the available scientific-technical capacities and puts them at the service of society.

3- **Primary and Community Care** in coordination with Public Health structures is a key central axis during all phases of an epidemic/pandemic. This is necessary so that it can successfully face this role, reorganize it in the short term and reinforce it by providing it with resources and training to respond to public health crises. A national plan for public health crisis management must be defined.

4- **Hospitals** have shown that it is possible to reorganize and reconvert themselves into quasi-monographic approach centers for the epidemic in its severe clinical forms. It is necessary to take advantage of this experience,

to define contingency plans / public health crisis management, which facilitate and catalyze future structural and functional changes.

5- The timely start-up of **support structures for the hospital network**, such as medicalized hotels or field hospitals, can be essential elements for controlling a pandemic when existing resources have been overwhelmed. Therefore, it is necessary to include it in the rapid response plan (within the crisis management plan) and anticipate the capacity and needs to be covered in order to install them early in the event of an epidemic; nonetheless, its provision should not occur at the expense or to the detriment of the Primary Care network, which has a fundamental task in the care and control of patients and contacts. Infrastructures and public resources, such as those of the Ministry of Defense, and those of the private sector, must be present in the crisis management plan.

6- **Telemedicine** has burst into the relationship between the patient and the clinical team. Its full implementation must be facilitated: the demonstration of its effectiveness is an unavoidable and urgent need, as is providing it with infrastructure, an organizational framework, and legal coverage. And promote the digital transformation of the system, with a strong investment in Information and Communication Technologies, as well as investment in artificial intelligence systems that can be a good help for managing large flows of information.

7- **Nursing and healthcare residences** urgently require adequate staffing and training and preparation and a redefinition of their activities, functions, and care standards. It is essential to establish a clear and operational relationship between the Ministries of Health, the Primary and Community Care Centers, and the Elderly and healthcare residences to prevent a repetition of the tragedies that have been experienced in them.

8- Health services **personnel** have demonstrated their ability to **reorient** and adapt their competencies for the healthcare needs (clinical and logistical) of the pandemic, regardless of their specialty or professional role, minimizing hospital overflow and enabling the possibility of better care for patients in times of greatest uncertainty. It is necessary to maintain the universal vocation of the training of health professionals and systematize regular training of these transversal skills.

9- **Health personnel** are the collective that has suffered and suffers the most infections. This fact carries two lessons. The first, which must always be emphasized, is the professionalism of the medical care teams and other workers, who perform their duties despite the risk they faced. The second, is the need to understand the causes of these infections beyond the initial lack of equipment for protection.

Identifying this will prevent the deficit of personnel from worsening.

10- The failures in the health **supplies** needed to deal with COVID-19 have shown that it is not possible to depend on industries located thousands of kilometers away and with unstable logistics lines. Therefore, we must define strategies to reinforce the health supply system from two confluent axes:
    a. From Europe: establishment of a European action plan for health emergencies that considers the coordination and cooperation necessary to deal with threats together. Likewise, its contents would include protocols for the rapid purchase, production, and distribution of basic supplies, prioritizing the most affected countries.
    b. On the national level: rapid adaptation of the state industry for the local provisioning of supplies; logistics information systems that allow detecting abnormally rapid decreases in stock and provisioning according to the predictions of the evolution of the risks detected early.

11- The **universalized electronic medical record** in the public system constitutes one of Western countries' most important medical databases. Managing this information correctly would make it possible to respond to the current pandemic's clinical and epidemiological unknowns and improve our response in future pandemics. However, leveraging this information requires a technical, professional, and ethical infrastructure that currently does not exist. It also requires collaboration between autonomous communities and their willingness to integrate the information into an interoperable clinical record system throughout the national health system. Creating it should be another priority to meet.

12- **Research** must be revalued in all the aspects that respond to the needs of the National Health System, prioritizing innovations in organizational areas, primary care, public health, health services, or social innovation for the implementation of decisions on generating the knowledge and innovation that this pandemic and future pandemics need. Investing in this field and highlighting the role of universities and other research centers minimizes the risks of future pandemics.

The following necessary questions are:

- Are we prepared to respond to an outbreak or other public health crisis?
- Do we have an interoperable/integrated information system or collaborative methods to share information in a streamlined way?
- Do we have an alarm system?

- Do we have a Plan with a rapid response that we would have needed for COVID19 and that could reduce, stop, and respond immediately to the threat?
- Have we prepared a contingency plan and another to reset the consequences produced and reduce their damage like the situation we find ourselves in now?
- Do we have a communication and education plan for citizens to make them aware of their responsibilities in this regard? Or will we continue to act based on events and the political interests of all walks of life.
- Obviously, the answer to all these questions is negative. But can we prepare ourselves and do more for health care from an integrated approach to biosafety and national and European stewardship and from an integrated approach to national health?
- Can we prepare ourselves to think the unthinkable ("*thinking the unthinkable*") stably and systematically? The State would need to have teams of professionals dedicated to this special branch of intelligence.

In conclusion, although there are many examples of contingency plans and crisis management plans, from the national plans to deal with the influenza pandemic, to the various international plans of the CDC, ECDC, WHO, and other international organizations, this pandemic has shown the flawed operationalization of these plans. Having plans is necessary, but it does not seem to be enough... Therefore, the main challenges faced by these technical recommendations are neither their formal logic nor the scientific evidence on which they are based, but mainly the exhaustion of the health system that, although capable of unusual resilience, seems to have come dangerously close to the end of his resistance. In addition, it is necessary to consider the limited real implementation of the plans that have historically accompanied reforms or reorganizations, no matter how much scientific evidence supports them. Without support or motivation, change is not possible. "*Ideas don't last long, you have to do something with them*" (Santiago Ramón y Cajal).

2- Technical recommendations for preparation before a health crisis-threat.

Below, we define the basic pillars for public health crisis preparation, the objectives to be established, and the legal basis for action.

2.1- Basic pillars of preparation:

Preparing for a threat is necessary as the risk of its occurrence is real and because the consequences on citizens' health and social well-being are transcendent. Anticipating the threat to save time is the only way to reduce the initial impact of a health crisis, and this can only be achieved if you are alert and prepared for your approach.

Once the acute phase of a public health crisis has been overcome, the return to normality includes, as a final strategic phase, the preparation of the territory to face a future crisis linked or not to the one in existence.

Three pillars support the health emergency preparedness plan:

1. **Identification of potential chemical, biological, radiological, and nuclear (CBRN) risks and natural disasters** (local, national, international, global) and activation of a rapid response team/plan:
    a. Creation of a Global Alert system: cross-cutting, sensitive, effective, and dynamic that integrates all public and private intelligence and knowledge devices regarding risk to the health of populations, especially communicable diseases
    b. Definition and monitoring of alert indicators (*Red flags*), especially in outbreaks of emerging diseases.
    c. Effective communication to inform and alert the population and the international community.
    d. Evaluation systems regarding existing knowledge on scientific advances and emerging diseases.

2. **Preparation for implementing an early and appropriate response** to the anticipated crisis:
    a. Rapid intervention device with a National Plan structured and developed considering the most relevant assumptions aimed at minimizing effects
    b. Evaluation and determination of estimated resources, training of response teams (health, firefighters, police…), preparation of institutions to respond.

3. **Immediate response to the needs generated by the health crisis** through the implementation of special and specific contingency measures and plans.

And to the three previous pillars, we should add a Plan for the recovery of normality with an operational implementation.

2.2.- Objectives:

The following six objectives can be established for the preparation for public health crises:

1- IDENTIFY THREATS EARLY: New emerging diseases or outbreaks of diseases already present (for example COVID-19 outbreak)
2- CUT THE CHAIN OF TRANSMISSION OF THE DISEASE: For this, the transmission chain of the pathogen needs to be minimally known.
3- CONTROL THE SPREAD: Improve knowledge of the pathogen, epidemic data (reproduction rate, attack rate...), and microbiological data of the pathogen.
4- MINIMIZE AS FAR AS POSSIBLE THE MORTALITY AND COMPLICATIONS due to the illness: Through access to appropriate prevention, care, and treatment measures.
5- MITIGATE THE SOCIAL AND ECONOMIC IMPACT: Ensuring the continuity or, if necessary, the recovery of critical services as soon as possible. And favoring measures to protect the income of the most vulnerable as a measure to contain inequalities among the population
6- EFFICIENT USE OF RESOURCES: Support the efficient and effective use of resources during response and recovery.

2.3.- Applicable legislation:

Legislative resources are critical, and they are also essential elements in preparing for public health crises:

- Organic Law 3/1986, of 14 April, on Special Measures in Public Health Matters.
- Law 14/1986, of 25 April, General Health.
- Law 33/2011, of 4 October, General Public Health. (State Center for Public Health).
- Law 9/2017, of 8 November, on Public Sector Contracts, which transposes into the Spanish legal system the Directives of the European Parliament and of the Council 2014/23/EU and 2014/24/EU, of 26 February 2014.
- Regional and local regulations.
- Regulations related to COVID-19.
- Royal Decree-Law 8/2020, of 17 March, on extraordinary urgent measures to deal with the economic and social impact of COVID-19.
- Royal Decree-Law 22/2020, of 16 June, which regulates the creation of the COVID-19 Fund and establishes the rules regarding its distribution and release.
- International Health Regulations.
- EU provisions.

3.- Areas of application and territorial framework

Territorial areas (central, regional, and local), the instruments of cross-cutting collaboration, organization, and the impact of public health crises are defined below.

3.1- Territorial areas of health authority: central, autonomous, and local health network.

Each territory will have its own intervention plan; the objectives and the specific measures adopted in each territory will respond to the aforementioned pillars with the necessary local adaptations for their adequate implementation. Training and continuous training of professionals and workers will be conducted systematically, as well as health crisis simulations to check the proper functioning (operationality) of the action plans, with a periodicity of not less than one year, which must include audits of the information systems (quality and availability of data).

These simulations should not only be aimed at professionals and employees of health centers, but should also be extended to other institutions, sectors, and groups that must respond in coordination: workers in nursing homes and other social and health centers, security forces, military, firefighters, teachers, responsible for basic logistics centers, from slaughterhouses to supermarkets through industrial centers that have to provide basic supplies...

a) Central Health Authority:

The Ministry of Health will be the State administration body that will coordinate crisis management in collaboration with the units and structures of the autonomous communities responsible for crisis response. In this regard, the Ministry must be strengthened and restructured from the scientific and professional point of view to recover the lost technical capacity and leadership.

For these purposes, it will promote the creation of a State Public Health Agency or Center that, configured as a network, can provide all the necessary scientific capacities in a stable or contingent manner, adequately covering the entire territory according to local needs and circumstances. It will also seek the support of Scientific Societies and Professional Associations in the health field. And, these initiatives must be accompanied by an improvement in the public health capacities of the autonomous communities. The autonomous communities are responsible for the detection and control of risks, in addition to informing the State center or the institution that is responsible for coordination (CCAES, *Spanish Acronym for Coordination Center for Health Alerts and Emergencies*)

The Ministry of Health will be responsible for risk management at the national level and:

- It will establish the appropriate indicators and collect and analyze them, undertaking the pertinent studies that allow a better understanding and management of the crisis. It will publish such information.
- It will ensure the availability, distribution, and application of all the necessary resources to respond to the public health crisis in the health field.
- It will establish inter-sectoral planning with collaborators outside the health system; among these collaborators are other government sectors (agriculture, livestock, transportation, commerce, labor, defense, education, the judiciary) and collaborators from the private sector, such as the private sector industry and non-governmental organizations.
- It will promote, through the Instituto de Salud Carlos III [Carlos III Health Institute], which must be directly linked to the Ministry of Health, the lines of research that facilitate knowledge, as well as its financing, sponsors, and application strategies. Likewise, the Food Safety Agency, which has essential Public Health powers, will be reincorporated into the Ministry of Health.
- It will update and streamline the regulatory mechanisms for clinical trials and proposed research projects.
- It will control borders and international exchange.
- It will communicate to the population all information considered opportune to facilitate the responsibility and collaboration of the citizens.
- It will coordinate with the relevant international organizations: EDCD; WHO; EU…

b) Autonomous Communities Health Authorities:

The autonomous governments will be responsible for the execution of the intervention plan at the level of their territory adapted regionally and coordinated with the national intervention plan, considering the coordination, application of public health measures, and established protocols. They will also monitor the existence and, where appropriate, provide the necessary supplies for the proper functioning of the health sector, data collection and its communication to the Ministry within the established periodicity and the communication to its population of messages, which are duly harmonized with those of the other territories to avoid inconsistencies.

c) Local Health Authorities:

The territorial health authorities (Health Areas, departments, etc.) will establish an action plan in the event of a health emergency adapted locally and coordinated with the intervention plan of the local government, agreed with the basic areas, hospital centers, specialty centers, social, and surveillance established within its territory; defining a virtual network that will be deployed in the event of a health crisis.

Health centers, nursing homes, and other socio-sanitary centers, regardless of their ownership, public or private, will participate in the terms defined in the intervention plan.

The authorities of your Community will approve the plan that will be incorporated into the regional plan, which in turn will be in line with and adapted to the state plan.

3.2.- Cross-cutting and inter-territorial collaboration:

Coordination is a key element in the proper management of a health crisis. During a public health emergency, the provision of **mutual assistance between the different territories** regarding the available health resources and the exchange of information and knowledge will be an essential basic practice.

In the cross-cutting sector, those contingents, civilian or military, prepared to address these types of events should integrate under the sole management of Public Health, within the appropriate area of seriousness and extension of the public health crisis (provincial, autonomous communities, national, international, pandemic): **Bodies and State Security Forces; the Armed Forces from the Military Emergency Unit (UME), which in turn will be duly coordinated with the National Civil Protection System.**

In inter-epidemic periods, it is essential to ensure systematized and constant cooperation through a public health network that, in its normal operation, already develops cooperative work between territories and with central coordination. Promoting new cooperation mechanisms and supporting those that are already working must be a priority, adequately equipping the public health network.

A systematic training plan on health crisis management and care for multiple victims will be defined and implemented for key professionals in the different areas mentioned. Training and continuous training of professionals and workers will be carried out systematically, as well as health crisis simulations to check the proper functioning of these networks, with a periodicity of not less than one year, which must include audits of the information systems (quality and availability of data).

Special attention is required for **nursing homes and other socio-sanitary centers** where a particularly vulnerable population resides. Coordination with this sector must be perfectly established, particularly with Primary and Community Care. The epidemiological surveillance systems that are established will meet the specific needs of this sector (See document on “Socio-sanitary coordination after the pandemic” in “Residences and social-sanitary centers in the process of de-escalation of the pandemic; the post-COVID-19 scenario”).

International collaboration is essential, in accordance with the responsibilities and commitments acquired by the Kingdom of Spain and in support of low-income countries and emerging countries, both in the provision of scientific knowledge and material, personal and strategic resources.

3.3.- Organization and governance

For all purposes and with the appropriate implementation, the following will be established:

1. Coordination, action, and leadership protocols
2. Mechanisms to identify threats: CBRN (Chemical, biological, radiological, and nuclear defense) and natural disaster
3. Public Health Crisis Management Committee
4. Ethical framework of a health crisis

In relation to the ethical framework, it must be noted that the perspective of Public Health, particularly in exceptional crisis situations, gives more weight to the principle of justice and tends to balance the general interest of the population with individual interest. Three fundamental elements could be defined for the **governance of a crisis from the ethical framework**:

- protection: self-protection; protect others with special care to protect those fighting the epidemic (essential assets); promote health by encouraging others to protect themselves; protection of data and privacy of people aligned with the need for information for the proper management of the epidemic
- solidarity with the situation
- and responsibility to achieve good management

All public health measures taken will be **reasonable, proportionate, equitable, non-discriminatory, and compatible with national and international laws**. It is important to focus actions considering how risk factors affect some population groups in particular. For these purposes, particular attention will be paid to the identification and approach of vulnerable groups, different depending on the public health crisis being addressed in principle they will be:

- Patients with previous chronic diseases
- Older adult population
- Residents in long-term centers
- Minors
- Pregnant women
- People at risk of poverty and social exclusion, with a special focus on immigrants in irregular situations due to their greater isolation and lack of social support
- Other groups that are identified, depending on the crisis

3.4.- Predicting the impact in various sectors:

Health: Primary Care: medical centers; home care, laboratories; Hospital: acute beds, ICU; laboratories; radiodiagnosis units, transfer units. Public Health/Epidemiological Surveillance…

Socio-sanitary: Nursing homes; Penitentiary centers; Mental care centers, immigrant detention centers, other centers.

Educations: schools, university, professional training.

Employment.

4.- Health system response.

The objective will be to minimize the impact on people and the system, by containing and reducing morbidity and mortality, and avoiding healthcare collapse. Therefore, there needs to be a crisis management team composed of representatives from each sector and level of care, headed by a person in charge of Public Health.

In general and adapted to local characteristics, the following must be established in each of the areas:

1. Continuity of essential health services and patient care.
2. Internal and external coordination.
3. Quick adaptation to the increase in demand.
4. Effective use of available resources.
5. Systematic evaluation of the available evidence and adequate dissemination of important changes.
6. Safe environment for all workers.
7. Continuity of basic maintenance services (cleaning, engineering…).
8. Define the crisis team director/manager/officer.

4.1.- Public Health response

1. The usual system for public health surveillance will be maintained: for the collection, analysis, interpretation, and permanent and systematic dissemination of data.
2. A specific surveillance system will be established for the crisis being addressed. Each area will determine the basic sources of information and will define a basic set of indicators (case definitions, mortality, death certificate; age groups; sentinel system,

immunization…) aligned and, when possible, sequentially coordinated with the information systems and international standards of international (ECDC, WHO,…), national, regional, and local organizations (if necessary). It will be determined at the national level in order to establish comparable and compatible common criteria for the entire system and internationally.

Both surveillance systems will provide a basis for the public health decisions that are made.

The actions to be developed from Public Health will follow these main lines:

1. Universal infection prevention and control measures: Hand hygiene; Isolation (sick isolated from the rest), quarantine (limit movements), physical distancing (measures adopted to decide when and where people can meet), measures and control of physical environments (school, work, health...); measures related to travel and borders, control of national and international travel centers.
2. Control of health and safety in the workplace, based on the Occupational Risk Prevention Services.
3. Resource management: identification, availability, and distribution of medicines, analytical tests, personal protective equipment, necessary medical equipment, vaccines (identify priority groups, mass vaccination centers, acquisition, distribution, and maintenance). Establish information systems that facilitate the identification of abnormally fast reductions in stock or potential risks that require early supply action.
4. Case and contact management: the measures in each case will be those provided for according to the original problem (home isolation and duration, self-care...). And contact control will be adjusted to the characteristics of the crisis and the epidemic phase. Self-monitoring and self-reporting measures will be encouraged in case of symptoms.
5. Adequate provision of **human resources** in the areas of Primary Care and Public Health, natural collaborators in the management and monitoring of cases and contacts.
6. Border control: always with reference to international agreements and obligations, fundamentally with the European Union. Declaration of the existence of a health crisis; recommend deferring non-essential trips to areas in health alert; isolation measures if appropriate for symptomatic patients and contacts. In island regions, systematic screening of travelers may be recommended.
7. Coordination: with all areas and particularly with Primary and Community Care to structure population measures.
8. Effective communication with the population: citizen collaboration is key to successfully addressing a health crisis, which is why informing the population is a primary responsibility of state, regional, and local public health authorities, who must plan communication strategies to all phases: before, during and after the crisis.

4.2.- Communication to the population.

An essential aspect is to structure and develop appropriate **communication;** for these purposes, the following is required:

a) **Identify the communicators**, choose spokespersons from experts in the field who are skilled in transmitting information, empathetic and socially well accepted.

b) Identify the audiences (citizens, professionals, the media, politicians…) and determine what type of information is required and the frequency with which it will be provided. The information will be understandable, truthful, coherent, and technically argued and will also be provided early to avoid misinformation and rumors; empathic; and thus guide the citizen, the media, health care providers, and other groups to respond and comply with public health recommendations.

c) Establish and agree on the key messages to be sent to the different identified audiences.

d) Establish communication platforms and define two-way communication channels that allow the identification of the audience's concerns: direct telephone calls, automated text messages, email, social networks, and a website...

1. In the preliminary phase, the population will be sensitized and educated about non-pharmaceutical interventions and their use by individuals and communities, as well as any other public health strategy for the prevention and interruption of transmission, where appropriate, that facilitates control of the crisis. Messages that address fear, stigma, and discrimination will always need to be established.
2. During the crisis, reliable data will be provided that allows the population to learn how the crisis is developing and how it is resolved, elements of coordination will be established to avoid inconsistencies and the information that is considered already provided in the previous phase will continue to be transmitted and reinforced. The population will be provided with some basic knowledge that will allow them to interpret the data.
3. Once the pandemic is over, gradual elimination and ending criteria will be determined, and an evaluation will be carried out to identify new communication strategies and campaigns to facilitate long-term behavior change. And key points will be provided to identify possible outbreaks.
4. Communication is a cornerstone for public health, yet a common gap in health management. Specialists and Specialists-in-training in Preventive Medicine and Public Health must be trained as communicators and in knowledge management and communication. In addition, healthcare professionals should receive training on effective communication.

4.3.- Healthcare system response.

In the Health System, the following measures will be implemented following the criteria of proportionality and sustainability, in a general and collaborative manner, deployed and adapted locally when necessary:

1. Strict **definition** of actions and resources destined to control the risks of those others that will maintain attention and assistance to the needs and pathologies NOT linked to the crisis. Provide clear identification and restriction of rooms, routes, and buildings used in connection with patient care. Limit patients, staff, and visitor traffic through care and hospitalization units.
2. **The care/logistics units will have an estimate** of their maximum response capacity, admission capacity; the number of beds needed; adaptability of space for critical care and its possible expansion, accessibility to mechanical ventilators, and availability of any other necessary resources, including Personal Protective Equipment (PPE, including masks, gloves, goggles, and suits), maintaining an emergency reserve of priority resources in sufficient quantity to allow its availability for as long as it takes to obtain new supplies.
3. **Human resources** policy: prioritize safety programs, detection of the minimum personnel required per service, absenteeism management, recruitment (students, retirees, volunteers), retraining/training, redeployment, apply preventive measures to all personnel and availability of treatment for them, support measures for families of health workers that facilitate the increase in the workload and management of protection insurance, where appropriate, systematic and specific training for the rapid response to health crises as well as crisis simulations.
4. **Logistics and supply management,** including pharmaceutical supplies. Maintain an inventory, ensure supply, quality control, establish contingency agreements with suppliers, identify storage rooms, define the role of the pharmacy in non-traditional care settings, coordination with pre-hospital networks and transportation services, contingency transportation strategies to ensure continuity and transfer of patients.
5. Establish a **surveillance and early warning system** that allows collecting all the information on any unusual health event with referral to the public health surveillance system.
6. Define a **system for evaluating the available scientific evidence** and disseminating knowledge to help make healthcare decisions during the pandemic.
7. **Laboratories and Radiodiagnosis units.** Guarantee the development of basic tests, availability of necessary resources, personnel, biosafety measures, and ensure procedures for transporting samples.

8. **Coordination with other areas.**
9. **Control of basic maintenance services.**

To optimize patient care during a crisis, support services such as laundry, housekeeping, waste management, food services, and security must be identified and maintained. Introduce a mechanism to ensure the continuous availability of these supplies and specifically:

1. **Primary and Community Care**, establish a strategy to structure care for pandemic and NON-pandemic illnesses, and also those lines of intervention that facilitate the approach to the crisis, such as:
    a. self-care
    b. adapt home care
    c. ensure telematic healthcare and social access
    d. diagnostic units: laboratory and radiodiagnosis
    e. suitability of the triage system and non-hospital emergency services
    f. coordination with: public health, hospital, and community social services.

2. **Hospital Care**, establish a strategy to coordinate care for pandemic pathology and non-pandemic pathology, and the following will be planned:
    a. continuity of critical care services
    b. continuity of acute services
    c. continuity of special therapies (cancer; infant, dialysis, childbirth, palliative...)
    d. ambulance service and patient transfer
    e. postpone non-essential care activities and progressively plan their restart
    f. adapt and facilitate admission and discharge mechanisms
    g. adequacy of the triage system

3. **Non-traditional medical care environments,** places will be provided to support the supervening care overload
    a. temporary/occasional hospital centers
    b. alternative care centers (patients who do not require hospital care)
    c. quarantine centers

4. **Care plan for deceased persons and relatives**
    a. guide to completing death certificates
    b. availability of suitable places for mourning, considering the moments of mass deaths, as well as the necessary elements for burial
    c. autopsy protocol
    d. systematic communication and attention to families

4.4.- Psychological support

Health crises cause sizable repercussions on the psychological, emotional, behavioral, and psychosocial well-being of individuals in particular and the community in general.

Although people are often resilient, some may feel overwhelmed and unable to cope with the challenges of a health crisis. Prolonged stress can exacerbate pre-existing disease states and lead to an increased risk of mental health disorders with impaired social and family functioning and decreased school and work performance, as well as impaired decision-making and antisocial behaviors triggered by fear.

The most frequently reported problems are: depression, anxiety, post-traumatic stress, domestic violence, and psychoactive substance abuse. There may also be episodes of stigmatization of both health professionals and patients or relatives for fear of infection.

We must differentiate between the impact that citizens may suffer from that suffered by health workers. **Professionals and workers dealing with the epidemic/pandemic at all levels** (health, socio-sanitary, law enforcement, other public services, supermarkets, carriers...) need effective psychosocial support programs. They often experience extraordinary occupational stress (with anxiety, insomnia, sadness, negativity...) due to increased workload, staff shortages, increased risk of infection for themselves and their families, and prolonged exposure to sick patients acute and dying.

Psychological support should also cover seriously ill people, their relatives, and those families in the process of grieving.

In order to mitigate and/or manage this impact, a well-developed psychosocial response during crises is essential to address the specific needs of different populations. In addition, contingency plans are also needed to ensure that current patients with mental problems receive their services.

Communication and appropriate information about community support and stress management, as well as the use and improvement of psychosocial response and resilience programs, are essential to alleviate fear, social anxiety and panic, and reduce risks.

Each population has its peculiarities, but it is clear that territorial and inter-sectoral collaboration and the support of NGOs, including religious institutions, improve the impact of mental health and psychosocial support services during the response to a crisis.

4.5.- Health sciences students and professionals in training during health crises.

The chaos and uncertainty present in a health crisis demand an unwavering focus on the basic medical principles of professionalism, altruism, quality, and safety. In addition, the need to incorporate students from the final years of training (medicine, nursing, nursing assistants...) to collaborate and participate in different care work at critical moments makes it essential to **plan the learning of these basic principles from the beginning of their training**.

Bioethical issues that might seem theoretical come to life during a crisis.

Educators can proactively teach students strategies to improve end-of-life care, allocation of scarce resources, care for patients who do not meet established public health recommendations…

They will also need to adopt and expand practices developed during the pandemic, fundamentally linked to new technologies, to improve educational possibilities by directing them toward the immediate future.

4.6- Research

Networks of competent researchers will be established to evaluate the evidence dynamically, flexible to the needs and available data during the epidemic/pandemic. These coordinated networks will allow actions to be assessed and prioritized according to the best possible evidence, controlling false news or unreliable information.

Research needs will be determined, especially in the epidemiological and clinical areas and preventive measures such as vaccination. The lines of research will be promoted that facilitate knowledge

Research networks will be established, where collaboration with researchers who help develop mathematical models for the development of epidemics will be essential.

Regulatory mechanisms for clinical trials and proposed research will be updated and streamlined.

Sustained funding sources and sponsors need to be defined, and protocols and rapid methods of ethical assessment and implementation strategies will be established.

Collaboration agreements will be signed with existing networks so that in the event of a crisis, they are prepared to carry out rapid research studies that support public health decision-making, such as seroprevalence studies.

The dissemination of results is an element that will be foreseen in the appropriate terms so that the information is provided to the authorities appropriately and promptly.

5.- Recovery.

The recovery phase of an emergency typically takes longer than the response phase and can require considerably more time, resources and budget. However, this phase is the ideal time to evaluate and adjust intervention measures. Objectives for recovery help identify aspects of priority, monitor issues, overcome residual challenges, and identify lessons learned and gaps identified.

Appropriate strategic analyzes (SWOT/CAME...) and internal and external audits will be carried out to assess which intervention measures have covered the objectives.

A surveillance system will be established to study post-crisis morbidity and mortality to detect the impact that the emergency situation may have had on the health system and on the health of the population, taking into account that some illnesses, such as mental illness, can occur long after it is overcome.

Reference material

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