

COVID-19 Pandemic, Paradigm to Face Catastrophic Situations

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Hospitals face hospital disasters when the implemented security barriers fail and events such as intra-hospital outbreaks occur, however in recent years these events have been catastrophic with the presentation of infectious diseases such as Ebola, Cholera, Influenza and currently COVID-19.

A catastrophic emergency is one that exceeds the response capacity, it simply goes beyond our hands, it is general external threat that generates a large number of affected people and in which we do not have the elements for rapid control. When we hear catastrophe, we think of hydrometeorological conditions such as floods and geophysical conditions such as earthquakes, but in this era, we are facing the biological ones that would integrate the epidemics that we mentioned earlier [1].

The earthquake in Haiti in September 2021 caused half a million children to not have access to drinking water and hygienic facilities with the risk of returning to catastrophic situations such as the 2010 outbreak secondary to another earthquake where 820 cases of cholera occurred and close to 10,000 deaths from this disease [2,3].

Floods cause outbreaks due to contamination of drinking water sources, Chen., *et al.* mention that torrential rains (> 350 mm) is a significant risk factor for enteroviruses (RR = 1.96 95% CI 1.474 - 23.76) and bacillary dysentery (RR 7.703 95% CI 5.008 - 11.849) [4]. The review by Brown and Murray documents some illnesses secondary to floods such as leptospirosis, cholera, rotavirus, norovirus, hepatitis A, *Salmonella*, *Legionella* in American countries such as Canada, USA, and Mexico, Europe such as France, Germany, and England and Asia such as China, Thailand and Indonesia [5] per what all countries regardless of economic situation are affected by these catastrophic events.

Biological conditions have caused us three major pandemics. The influenza pandemic declared by the World Health Organization (WHO) in June 2009 with 30,000 confirmed cases in seventy-four countries, began in Mexico in April 2009 due to the H1N1 influenza virus, here as with COVID-19 today, one of the main prevention strategies in 2009 was the massive application of vaccines, more than 78,066,290 vaccines applied throughout the world [6].

The 2014 - 2016 Ebola outbreak in West Africa affecting Guinea, Liberia, and Sierra Leone presenting 28,616 cases and 11,310 deaths, where the role of bats in its chain of transmission is also associated to COVID-19, in this case of fruit bats of the Pteropodidae family as a natural host. This, by affecting other countries such as Spain, Italy, the United Kingdom, the United States with thirty-six cases of Ebola and thirty-five deaths [7] outside Africa, can also be considered a pandemic of lesser magnitude.

In 2019, the SARS-CoV-2 virus is appeared in Wuhan, China and causes until September 3, 2021, 218, 946, 836 confirmed cases and 4,539,723 deaths, which defines it as the pandemic of the century.

To face these catastrophic events, in addition to the plans at the level of world organizations and secondary to the injuries learned, all hospitals have developed biocontingency or hospital emergency plans.

In the biocontingency plan [8], the strategies and procedures are predictive, preventive, and initiative-taking, avoiding the need to have reactive situations in the face of the pandemic. However, experience is that COVID-19 shows us that these plans did not work fully, since the lack of protective equipment and alcohol solution for hand hygiene caused the reactive situation of new producers of these materials.

The objectives of the emergency plans are to control the risk or emergency, to establish alternative functioning mechanisms in the hospital to achieve the continuity of the operation, to guarantee the safety of the patients, personnel, and visitors, to minimize the negative consequences avoiding the presentation of infections associated with secondary health care, in this case the presence of hospital-acquired COVID-19 cases [9].

In 2015, the WHO launched the safe hospital initiative, and in 2016, most hospitals in Mexico developed their hospital emergency plans, where phase 1 includes an evaluation of infrastructure, resources, analysis of alliances with external entities, and the need to conduct continuous training. The second phase is planning, in which the functions were assigned to each hospital's group, responsible persons and mobility routes for people and material resources are appointed. Phase 3 of vital importance is the feasibility test where drills are conducted, which have had the problem that in the past they have not been taken seriously by the population, this is fortunately changing after influenza, earthquakes and COVID 19. This phase is that we all become aware and perform it accurately to detect the flaws to be improved and when phase 4 of execution is presented, we have a planned response capacity, reducing the emergency, conducting adequate procedures and timely actions with which the hospital will be able to continue to provide your services.

In COVID.19, knowing the global epidemiological situation perfectly, having internal and external communication networks in hospitals with central authorities, continuous resource management and implementing prevention and control measures in a timely manner has allowed hospitals to continue paying attention and solving the problem presented from this catastrophic situation. Everyone's objective is to minimize risk, reduce exposed personnel and the equipment to use, determine the areas and transport routes, defining the contaminated, transitional, and clean ones, how to conduct processes such as taking studies, specialist interconsultations, registration forms, use of personal protective equipment, disposal of hazardous waste in the COVI-19 area.

All hospitals in the world follow these steps; training to perfectly understand SARS-CoV-2 and the subsequent disease, reactivate or form the emergency operating committee, rapid planning for the distribution of COVID-19 care areas with a triage, a hospitalization area and an intensive care unit specific, integrating the detection of SARS-CoV-2 by PCR, rapid test in the hospital laboratory with BSL-2 or BSL-3 security or seeking the external support mechanism to carry it out, the transfer of patients to COVID19 hospitals, the effective communication keeping all staff informed of the situation day by day, the closure of non-essential face-to-face activities, the change to online training, telemedicine, momentary modification of non-group rehabilitations, consultation care and emergency surgeries as well as reactivation of activities according to the epidemiological change to continue the operation of the hospitals [10,11].

The evolution of the knowledge finds the environment is considered an important source for the transmission of SARS-CoV-2 to the new investigations where the recovery of a viable virus is limited in clinical and community settings. Assessing their own symptoms, co-workers, family members at home and patients in the hospital daily for timely detection of suspected cases, sent laboratory detection and implementation of 10-day drop isolation of positives. Risk mapping, strengthening the work of multidisciplinary teams, detecting lack of resources and flaws in our processes allow us to work on continuous improvement to continue facing this pandemic and prepare for new catastrophic events [12,13].

The WHO continues to recommend that everyone, regardless of whether they are vaccinated, follow the following measures: practice physical distancing, maintaining at least one meter distance between people at all times, cough etiquette (cover the nose and mouth with a bent elbow or a handkerchief cough and sneeze; avoid touching your eyes, nose and mouth; wash your hands regularly and thoroughly with soap and water or clean them with an alcohol solution containing at least 80% ethanol or 75% isopropyl alcohol, stay outdoors and minimize gatherings indoors, avoid crowded or poorly ventilated areas, follow the recommendations for wearing a surgical mask and us-

ing an N-95/KN-95 respirator when performing aerosol-generating procedures; individual responsibility for your decisions and actions does not only affect you yourself but with everyone you interact with therefore exercise a strong sense of civility avoiding risk in spontaneous or unplanned meetings. An example of an unforeseen event I am alone in my office, so I do not wear a mask, seismic alarm I evacuate without wearing the mask, risk for me and others in the safety zone, lesson learned I wear the mask all the time or I foresee a strategy to put it on immediately when initiate the evacuation which demonstrates my civility and ensures safety for all [12,13].

The scientific paradigm faced by COVID-19, including evidence-based medicine, the values, beliefs, and fear that humans face in new situations, has made it clear that we must continue to manage and modify the infrastructure, processes, and guidelines in hospitals to provide a safe patient care and emergency care, as well as the individual behavior of each one of us.

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