

## Covid-19 and Dealing with it: Lessons Learned in a Pre-Hospital Emergency System of Yazd

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#### Lessons Learned

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### Introduction

The prevalence of COVID-19 is a worldwide issue. The outbreak began in China in 2019, and since then, all countries have been concerned about it (1). It poses a serious threat due to the high speed of propagation and transmission and infecting a large number of people. Also, the key point of effective confrontation against any contagious viral disease is its prevention (2). On March 27, 2020, the COVID-19 conference was initiated by the World Health Organization office in Geneva with the participation of more than 500 member countries, during which the experiences, achievements, and

successful policies of countries namely China, Japan, South Korea, and Singapore were presented (3). China proposed a coordinated social distancing system, law-based mandatory quarantine solutions, scientific findings, and immediate interventions as key strategies and based their policies on the above-mentioned topics. Japan introduced three main policies on its agenda: rapid diagnosis of patients, improvement of intensive care units, and empowerment of the service system for dealing with acute respiratory distress patients. Immediate and effective screening, along with using primary health care, has been one of the main strategies in South Korea. Setting compulsory social distance, as a rule, empowering service providers to manage inpatients and outpatients, supporting health care providers, and strengthening the management of private hospitals have been some of the main strategies observed in Singapore(3).

The incidence of coronavirus was officially announced on February 18, 2020, in Iran. Since the outbreak of the disease, many plans have been designed for early diagnosis, treatment, hospitalization, and recovery of patients. Currently, the reported progress of outbreak and death rate in Iran is alarming. Moreover, the limitations and deprivations due to international sanctions against Iran, the unexplained disease, the inefficient use of the capacity of information technology, the inability to manage public opinion, and the lack of a multi-sectoral approach to health have aggravated the situation. The consequences of this social concern can cause fear and negative emotional reactions in society (4). At the time of developing this study

(October 6, 2020), the COVID-19 epidemic infected 483844 people and caused 27658 deaths in Iran.

The pre-hospital emergency system has a very prominent role in the management of Covid-19 disease as the front line of the health system (5). The Emergency Medical Organization of Iran, as one of the agile organizations of the Ministry of Health and Medical Education and also as the first line of this system, has used all its power and capacity to provide valuable measures in the management of Covid-19 disease. One of the most important actions of this organization is monitoring the suspected cases of acute respiratory distress syndrome by the Emergency Operation Center after receiving the first report of the epidemic in Wuhan, China. Other activities include compilation, notification, and editing the pre-hospital system preparation instructions for infection control, disease management and transfer of coronary patients (the special code 550 used instead of the term "suffering from COVID-19"), review of possible scenarios, provision of personal protective equipment for pre-hospital system staff, and deployment of the professional ambulance (CBRNE) in International Airports and terminals as required(6). Yazd Emergency Organization has a capacity of 25 urban pre-hospital emergency bases and 31 road stations, 56 active ambulances, 29 supporter ambulances, an ambulance bus, an emergency helicopter, and 361 human resources

providing pre-hospital services in the province. Since March 2017, this organization has tried to play an effective role in the management of Covid-19 disease by taking innovative measures in addition to the instructions issued by the country's emergency organization. Stated in this article are the experiences and strategies of the members of the organization regarding the crisis obtained through interviews with experienced specialists in the field of pre-hospital emergency. After evaluating the position of the organization during the epidemic of Covid-19 disease and identifying the existing vulnerabilities, solutions were provided by the pre-hospital emergency managers of Yazd province. To efficiently manage the disease epidemic in the province, based on the national response framework, the Incident Command System was activated at the university level.

The members of the Incident Command System were notified, and a description of the duties for each member and their deputies was sent. Relevant meetings were held regularly, and following the management functions contained in the National Disaster Response Plan, the incident action plan was prepared and announced. Additionally, to manage Covid-19 estimation and gather information from different units of Yazd University, the information integration process was identified with the focus on the Medical Care Monitoring Center (MCMC) unit (Figure 1).

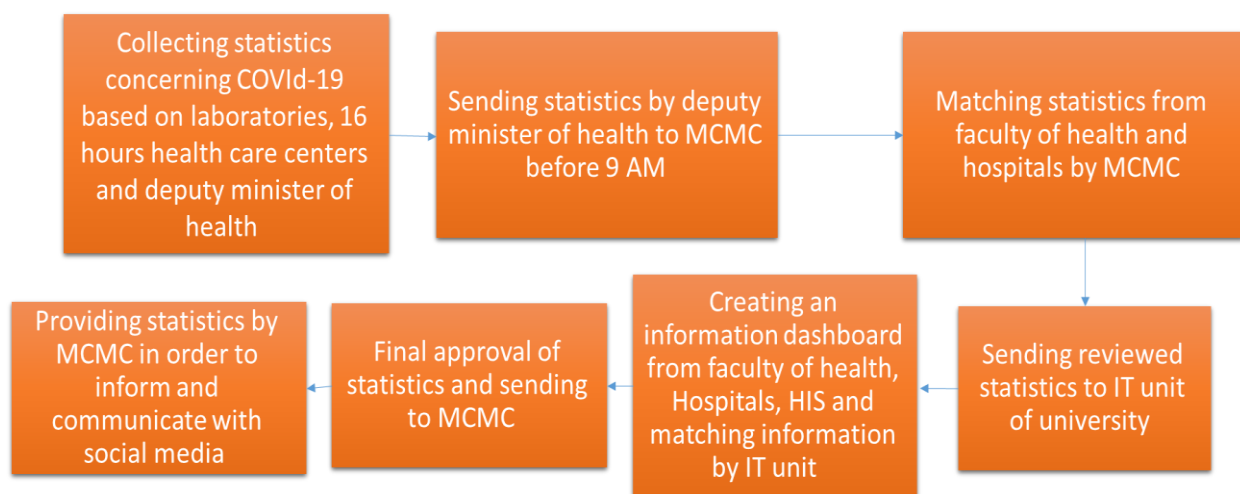


Figure 1. COVID-19 Data Management Process

This measure aimed to examine the statistical process of the university in detail, from the prevalence of coronavirus based on efficient processes to integrate statistics, i.e., obtain statistically valuable information and data to integrate important and valuable indicators in different sectors of health, treatment, medical emergencies, and also provide accurate statistical modeling for policy-making and declination in the continuation of COVID-19 epidemic.

At the beginning of the Covid-19 epidemic, due to the increased public socializing during the outbreak of the disease and the limited number of employees in the operating unit, it was exposed to vulnerability in terms of insufficient manpower. Accordingly, the structure of the organization was changed in terms of some roles, responsibilities, and work processes. As a result, the employees' skills and abilities were examined from different aspects, and accordingly, the job descriptions of some employees of the organization were temporarily reviewed. The Information Technology Unit of Yazd Province Emergency Organization provided the necessary infrastructure to respond to public calls related to Covid-19 concerns. The coronavirus's hotline was launched to meet the needs of consultation for people in the form of 30 internal lines (3-digit numbers 220 to 250) using 30 VoIP phones. After providing sufficient infrastructures, a call for manpower was

announced at Shahid Sadoughi University of Medical Sciences to respond to public calls to receive advice on Covid-19 disease.

In response to this call, the health care providers of the university engaged in other departments such as attending to patients suffering from underlying diseases, congenital-acquired immunodeficiency, special diseases, pregnancy status, and those not involved to work COVID-19 patients in medical care centers were appointed as the experts in charge of this system through a notification issued by the president of the university. Online training classes were held, and the staff was chosen after obtaining the passing score in the exam to ensure their awareness and preparedness to meet the needs of people being counseled. The experts started remote working in the planning program and groups (A to E) under the supervision of 5 group leaders, 24 hours a day. Calls were distributed to users on a rotating basis. If citizens needed advice from a specialist or the information required was not in the capacity of the experts in charge, they were able to refer that specific call to the doctor and request special advice using the code 1060. In such a case, the call of each citizen was referred to a higher level and answered by one of the doctors trained in the related field. Following is an example of a weekly schedule presented in Table 1.

**Table 1.** Schedule for answering calls from Covid-19 (Yazd Emergency Organization)

Group A chief Subgroup A with a separate internal number for each person	Internal No. 2022	Group B chief Subgroup B with a separate internal number for each person	Internal No. 2023	Group C chief Subgroup C with a separate internal number for each person	Internal No. 2030	Group D chief Subgroup D with a separate internal number for each person	Internal No. 2027	Group E chief Subgroup E with a separate internal number for each person	Internal No. 2024
Day	Date	8 AM to 12 PM		12 PM to 4 PM		4 PM to 8 PM		8 PM to 8 AM	
Saturday	21/3/2020	Group A		Group B		Group C		Group D	
Sunday	22/3/2020	Group E		Group A		Group B		Group C	
Monday	23/3/2020	Group D		Group E		Group A		Group B	
Tuesday	24/3/2020	Group C		Group D		Group E		Group A	
Wednesday	25/3/2020	Group B		Group C		Group D		Group E	
Thursday	26/3/2020	Group A		Group B		Group C		Group D	
Friday	27/3/2020	Group E		Group A		Group B		Group C	

On average, 1000 public calls were answered daily from March 15, 2020. This program reduced the burden of incoming calls to emergency operators who were responsible for meeting the daily needs of citizens.

Lessons learned from Covid-19 management enable organizations to better analyze their performance, systematically record and analyze issues and challenges, and cope with mechanisms to reduce future performance risks. Yazd Emergency Organization was able to calm the people's psychological atmosphere and make them aware of incorrect information, especially in cyberspace, and increased the duration that people stay home through the use of innovation.

#### **Conflict of interest**

None declared

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None

#### **Authors' contribution**

All authors contributed to this project and article equally. All authors read and approved the final manuscript.

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