Turk Thorac J 2021; 22(1): 95-8 DOI: 10.5152/TurkThoracJ.2021.20141

Short Communication

COVID-19 Pandemic Action Plan of a University Hospital

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Cite this article as: Yapar N, Uçan ES, Bayraktar F, et al. COVID-19 pandemic action plan of a university hospital. Turk Thorac J 2021; 22(1): 95-8.

Abstract

In December 2019, in Wuhan, China, scientists observed a sudden and sharp increase in the number of cases of pneumonia and acute respiratory distress syndrome of an unknown origin. By the end of January 2020, the outbreak had spread to Asia, Europe, America, and Australia. In this article, we have outlined the pandemic action plan of our university hospital.

KEYWORDS: Pandemic, severe acute respiratory syndrome coronavirus 2, new coronavirus, coronavirus disease 2019, action plan

Received: *June 16, 2020* ***Accepted:*** *October 25, 2020*

INTRODUCTION

As 2019 was approaching its end, in China, scientists observed a sharp increase in the number of cases of acute respiratory distress syndrome of an unknown origin. The causative agent was named new coronavirus, and the disease was called coronavirus disease 2019 (COVID-19), which rapidly transformed into a pandemic from an epidemic [1, 2]. The first COVID-19 case was confirmed in Turkey on March 11, 2020. At the Dokuz Eylül University Hospital, we confirmed the first case on March 16, 2020. Our hospital was already alarmed after the epidemic spread out of China. The heads of departments of infectious disease and clinical microbiology, chest medicine, emergency medicine, internal medicine, and intensive care unit (ICU) evaluated the pandemic plans. We concluded that none of the departments could manage the pandemic alone; therefore, our goal was to overcome it with peaceful cooperation.

The hospital administrative office managed the strategic organization and logistics. The dean's office of medical faculty planned work lists of faculty members responsible for the care of patients with COVID-19.

In this article, we aim to explain the pandemic action plan of our hospital and share our experiences about the organizational activities.

MANAGEMENT OF PANDEMIC CLINICS

We organized a pandemic outpatient clinic (open 24 hours), pandemic inpatient services, and adult and pediatric pandemic ICUs.

The Infection Control Committee (ICC) prepared instructions for triage, standard and special control measures, and personal protective equipment (PPE). The committee carried out continuous educational activities and was involved in organization of all COVID-19 prevention measures. The committee members visited all the pandemic units and checked for irregularities, which, if found, were solved as soon as possible.

PANDEMIC INPATIENT CLINICS

We decided that the pandemic inpatient clinics should be localized in one area instead of being scattered throughout the hospital. To effectively implement the infection control measures, we decided that the private floor, which had 60 single-patient rooms with bathrooms on the 6th floor of the hospital, would serve as the pandemic inpatient services. On the basis of the rising numbers of patients, pandemic inpatient services on the 4th and 5th floors would be started and opened step by step with each service containing 20 beds. With the increase in the number of patients, clinic numbers

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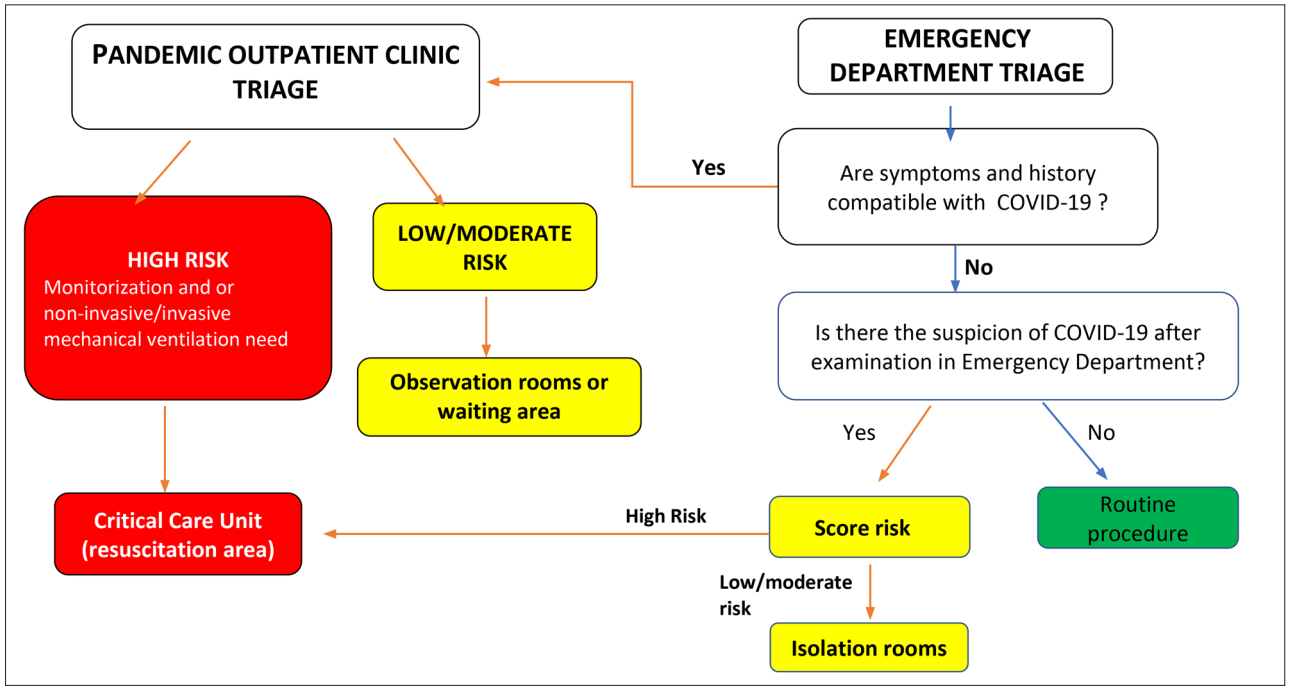

Figure 1. Pandemic action plan in outpatient clinic and Emergency Room

increased from 1 to 6. As the number of patients decreased, we closed some of the clinics. On March 16, 2020, we officially opened 2 pandemic inpatient clinics.

PANDEMIC OUTPATIENT CLINICS

We began pandemic outpatient clinics next to the emergency service on the ground floor. We divided the outpatient clinic into a triage area, fast examination area, and monitoring area with beds. Furthermore, we organized a 5-bed resuscitation area and 3 intubation rooms suitable for non-invasive/invasive mechanical ventilation for critical patients. We performed all invasive procedures with the risk of aerosol induction in these modules. In the triage area, patients were asked about their symptoms and travel and contact histories. They were then directed to the pandemic outpatient clinic, emergency service, or other outpatient services. In the emergency room, patients suspected of being infected with COVID-19 were directed to the pandemic outpatient clinic (Figure 1).

Radiological examinations were performed in the outpatient clinic. Blood and other specimens taken in the pandemic outpatient clinic were transported to the laboratory. Pneumatic system was not used for transportation. Nasopharyngeal samples were taken in the cabins outside the building and collected in the refrigerator and then transported by the laboratory personnel.

We determined the route for the patients to be transported to the pandemic inpatient clinic, the elevators to be used, and the transport conditions. The ICC checked the organizations regularly.

PANDEMIC INTENSIVE CARE UNITS

Before the rise in the pandemic burden, there was a multistage plan in the ICUs to meet the increasing number of patients with COVID-19 infection. First, we determined the total bed capacity and optimum personnel needed for future ICUs. We organized some other services that could be used as ICUs in urgent situations. All equipment supply was controlled and completed.

We cancelled the planned non-urgent surgeries to free up the post-surgery ICU beds. Patients who tested negative for COVID-19 infection and needed mechanical ventilation were accepted into the non-COVID-19 ICUs. Patients who needed monitoring firmly stayed in the services.

Certain/suspected patients with COVID-19 infection were placed in the anesthesiology and reanimation ICU (20 beds) first and consequently in the internal medicine ICU (21 beds), neurological stroke unit, coronary ICU, and post-anesthetic care unit. The transfer of patients with COVID-19 infection from the ICUs to the pandemic services was arranged. The ICU communication network was used for active communication about new cases, discharges, deaths, and demographic information of patients; information regarding the clinical severity of conditions and the bed capacity of the ICUs was shared.

All ICUs were closed for visitors for infection control measures. The patients' relatives were informed about their clinical conditions by phone 3 times a week [3, 4].

MANAGEMENT OF HEALTHCARE WORKERS

In this pandemic, the primary team was academic personnel and residency students of the medical faculty; therefore, the dean of the medical faculty and the head of hospital administration managed the pandemic together. They agreed that because of the size of the pandemic, all medical doctors should be assigned for pandemic services. Only oncology, hematology, and radiation oncology departments were excluded for patient safety. The dean's office supported the management, education, and surveillance teams, which

were organized by the head of hospital administration. All academic and administrative staff members underwent health checkups by a medical board. Members who were older than 60 years, with comorbid illnesses that put them at an increased risk for COVID-19 infection were placed in low-risk areas. The staff members with certain health conditions were permitted to stay at home. The heads of departments and administrative offices organized work remotely and had scattered work hours. A minimum number of staff was asked to come to work.

The primary purpose of working in shifts and rotations was to protect the healthcare workers (HCWs) and ensure that they worked as efficiently as possible. The workload was distributed equally by time schedules.

For the staff working in the pandemic services and ICUs, new scrubs were sewn and clean uniforms before shifts and showers after the change were arranged. PPE were distributed to all the staff of the pandemic services at one place. Food and water were supplied to the personnel without them having to leave their workplace. After shifts, their body temperature was checked and reported. They were informed to use their institutional emails or message programs for the notifications. A communication center to manage anxiety among HCWs was opened. Moreover, 2 hotels were arranged to accommodate the HCWs who wanted to stay. Psychiatry department members provided support to the HCWs to lessen the burnout syndrome.

In the pandemic outpatient clinics, 3 physicians worked in 8-hour shifts. The residents of all specializations participated in the pandemic outpatient clinics, and 1 physician from emergency services worked in this area in 8-hour shifts. The members of the infectious diseases and clinical microbiology and respiratory diseases departments worked as consultant doctors.

In the pandemic inpatient clinics, residents of internal medicine were placed as frontline workers in the beginning. Moreover, residents of other departments worked in rotations as necessary. Professors of internal medicine, respiratory diseases, and infectious diseases were the responsible physicians for the pandemic inpatient services and consultants at the same time. After daily bedside rounds, a health council with responsible physicians evaluated all the patients and decided discharges and transfer to the ICUs. Patient follow-up and treatments were updated with the guidelines of the Turkish Health Ministry [5]. The clinical follow-up of patients by a multidisciplinary team was highly effective during the pandemic. Communication groups, which included clinicians of the pandemic services and the hospital pharmacy and the administrative staff, quickly solved the problems using mobile applications. Our hospital pharmacy ensured that medications were delivered to patients as soon as possible via direct communication.

Resident students worked in 8-hour shifts with a 48-hour rest period to lessen fatigue, burnout syndrome, and risk of disease. Responsible specialists organized fair workloads during shifts. The definition of jobs and instructions to all HCWs were provided by the heads of all departments and the pandemic clinics.

The occupational health and safety department followed up healthcare staff after high-risk contact. The infected staff members were examined according to the Turkish Health Ministry guidelines [6].

MANAGEMENT OF DIAGNOSTIC LABORATORY

Shortly after the first COVID-19 case was reported in Turkey, testing for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) RNA was started by reverse transcriptase-polymerase chain reaction test (RT-PCR) in the core laboratory of the hospital. Having a molecular microbiologist experienced in nucleic acid tests to detect respiratory viruses helped to adapt to the high number of tests required during the peak of the outbreak. On March 25, 2020, the laboratory was authorized as one of the official COVID-19 diagnostic laboratories in Turkey by the Ministry of Health.

Some of the routine molecular microbiology tests were temporarily closed to use the workforce effectively. The number of technicians was increased to be able to work in 2 shifts; 2 academic staff members, 1 microbiology specialist, and 2 resident students of the medical microbiology department worked actively in the laboratory with technicians. The laboratory was divided into high-, moderate-, and low-risk areas to adjust working conditions and use of PPEs. Anti-SARS-CoV-2 antibody evaluation was also started with priority for HCWs.

Key points of the laboratory management during the pandemic action plan are summarized below:

1. Using high-quality flocked swaps and homemade transport media helped to standardize the pre-analytical step and reduced the percentage of undetermined PCR results.

2. Initially, residents of the infectious diseases and chest medicine departments were responsible for collecting the nasopharyngeal samples. When the number of patients increased, all the doctors were trained to take samples by the ear, throat, and nose surgery by infectious diseases residents. Individual cabinets with glass windows and arm holes were prepared.

3. Specially trained personnel and special boxes were used for transportation of samples to the laboratory to ensure safety.

4. RT-PCR test kits were produced in Turkey and provided by the Ministry of Health to ensure that there was no shortage of tests. Version updates of the kits took place during this period.

5. Because of the confidentiality of the results, we were unable to use the available hospital information system. It was mandatory to use a special software provided by the Ministry of Health. During the pandemic action plan, clinicians, heads of the central laboratory, and hospital administration staff coordinated via communication portals, thereby ensuring effective problem solving. It was an excellent

example of laboratory-clinician cooperation.

6. The COVID-19 infection is expected to last for years with possible waves; therefore, it is planned to increase the number of technicians, improve device infrastructure for molecular tests, and arrange a special area for respiratory samples in the coming months.

The laboratory team worked diligently and responsibly, which was the most crucial component of laboratory management during the pandemic period.

REGISTRY OF CASES

İzmir Provincial Directorate of Health notified the International Code of Diagnosis (ICD) for COVID-19 infection as U07.3. We integrated this code in the hospital information system and announced the use of code for suspected patients. The registry of cases was carried out by email to the Provincial Directorate of Health. A communication group for the registry was created, and warnings for proper ICD code used were made frequently through this group. The group enlarged with as personnel from molecular laboratory, public health, and internal medicine joined. It became a platform for sharing COVID-19 PCR results rapidly by our laboratory.

Until this article was submitted for publication (at the beginning of June 2020), a total of 5,010 patients were admitted to our pandemic outpatient clinics and emergency department, and 1,971 patients were hospitalized in the pandemic inpatient clinics. Of all these patients admitted to the hospital, 638 patients received a diagnosis of COVID-19, and 51 of them died.

In conclusion, all the staff of the Dokuz Eylul University Hospital from the head manager to janitors put up a fight within the framework of institutional culture and under scientific guidance against the COVID-19 pandemic. All faculty and other members of hospital staff exhibited an honorable success history. We are grateful for their sacrifice, and we owe them gratitude.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept - N.Y., E.S.U., F.B., N.G.; Design - N.Y., E.S.U., F.B., N.G., A.A.S.; Supervision - S.K., M.C.; Resources - S.K., M.C.; Data Collection and/or Processing - N.Y., E.S.U., F.B., N.G., A.A.S., Z.K., B.B., S.A.Ç., O.K., V.A.O., Y.S., S.K., M.C.; Analysis and/or Interpretation - N.Y.; Literature Review - N.Y., E.S.U., F.B., N.G.; Writing - N.Y., E.S.U., F.B., N.G.; Critical Review - N.Y., E.S.U., F.B., N.G.

Conflict of Interest: The authors have no conflicts of interest to declare.

Financial Disclosure: The authors declared that this study has received no financial support.

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