# HUMANITAS VERSUS CORONAVIRUS

Guidelines to face COVID-19, care for patients and protect health professionals



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# INTRODUCTION

The challenge: to transform a high-tech, highly specialised polyclinic hospital into a totally different hospital with a strong infectious vocation and a strong presence of COVID-19 patients. In the meantime, according to the indications of the local Health Authorities (Regione Lombardia), the hospital has continued to manage patients with time-dependent (stroke) and oncological pathologies, as part of the Emergency network in the area.

It is an unprecedented challenge for Humanitas, which did not even have an infectious disease department. It happened in Rozzano, as well as in the other hospitals of the Group, located in Lombardy (in Milano, Bergamo and Castellanza), Piedmont and Sicily.

A very rapid change of layout, carried out under great pressure to cope with the COVID-19 epidemic and the new medical needs, in total safety for both patients and Humanitas professionals.

A teamwork that involved Group's professionals from technical office, clinical engineering, general services and information systems. Each for their own skills, they have contributed to the design, creation and operation of a new clinical and care reality.

This work was flanked by that of the Operations Management engineers, who punctually revised and modified the planning of clinical activities on the basis of the needs that had gradually emerged, by that of the Medical Management and that of doctors, ancillary staff and technicians on the front line for patient care. The latter have been allowed to carry out their clinical work safely, ensuring dedicated and well separated routes and spaces for COVID patients. A complex teamwork that involved all the hospital's professionals and expertise, including staff and customer service, who made themselves available to support patients and their families.

The chapters of the document have been produced by the various Humanitas professionals involved in the COVID emergency, in the form of recommendations and actions implemented. The aim is to share the experience gained with other professionals, even from other countries around the world, who are facing the epidemic.

## 1. THE MANAGEMENT SUGGESTIONS

Elena Azzolini, Medical Direction Riccardo Bui, Operation Management

Abstract: Converting a highly specialized polyclinic hospital into a hospital with a strong infectious component related to COVID positive patients requires solid guidance and collaboration from all staff. A steering committee must be set up, with a representative for each of the Departments most involved; it must meet every day to take stock of the situation and decide on the actions to be taken according to the evolution of the situation. There must be an executive team to carry out the hospital's transformation work and anticipate the new needs, also in terms of materials to be supplied (e.g. personal protective equipment): the priority is to be able to receive and treat potentially COVID positive patients without undermining the safety of all the others (patients and workers). Dedicated pathways and care spaces should be created, allowing a clear separation between potentially COVID positive patients and all others. Only the most urgent care activities should be maintained and an alternative way of carrying out all other activities, including administrative activities, should be found. It is important to involve and empower all workers, so communication must also be strategic: it must be coordinated, transparent and updated according to the most accredited international guidelines.

Link to official guidelines:

Society guideline links: Coronavirus disease 2019 (COVID-19) WHO Interim guidance, 02.27.2020

# 2. THE RESPONSE OF HUMANITAS PROFESSIONALS

## **Building & Facilities Management**

Simone Arduca, Building & Facility Management Marco Barbierato, Commissioning, Procurement and General Services Marco Massaron, Technical Direction Paolo Oliva, Clinical Engineering Davide Rizzi, Information Systems Gabriele Tunesi, Clinical Engineering Roberto Zito, Technical Office

**Abstract:** Within the hospital, inpatient wards, operating blocks and intensive care have been radically transformed to make them suitable for COVID positive patients. In the same time, additional, so-called 'temporary', spaces outside the hospital have been set up: tents, containers, toilets, prefabricated buildings. Infectious wards differ from normal wards because they have a negative pressure ventilation system, so that there is no airflow from the rooms with COVID-19 patients to the other areas of the hospital.

To treat the respiratory failure of many patients, a larger amount of oxygen and compressed air has to be delivered safely to the new beds created because of the epidemic emergency.

The newly created spaces for intensive care have been equipped with monitoring systems, electric beds, mechanical ventilators and all the devices that are useful for the management of this type of patients. The flows of people and materials within the hospital have been redesigned in order to have a clear separation of the potentially infected from the others, with dedicated pathways for each process, from admissions to waste disposal. Hospital entrances have been reduced and for each of them checkpoints, real filter stations, have been created.

Smart working and networking, thanks to the contribution of the Information Systems Unit, have now an important role in the organisation of the hospital.

#### **Intensive Care Unit**

Maurizio Cecconi, Anesthesiology and Intensive Care Department Massimiliano Greco, Anesthesiology and Intensive Care Department

**Abstract:** In response to COVID-19 epidemic, Humanitas Research hospital completely reorganized its critical care area, from zero COVID-ICU beds to 45 COVID-ICU beds, plus 3 ICU beds in the Emergency Department for COVID-ICU patients.

The first area to be allocated to COVID patients was the Post-Anesthesia Care Unit (PACU) from a day surgery operatory block, chosen because it was large, separated from the rest of the hospital, with oxygen/air supply for ventilators already in place and easily scalable. During the first week of the emergency the COVID-ICU was able to admit its first 4 patients, but the number of critical care patients increased exponentially thereafter. The hospital information service instituted a teleconferencing system, to allow physician inside the ICU to talk to colleagues outside and share decision and information. Soon the COVID-ICU hosted 16 patients, with 4 teams composed by 9 ICU nurses and 2 anesthesiologist/intensivist alternating every 6 hours every day. To host more COVID-ICU patients, 2 new COVID-ICU were opened: a 9 beds ICU in the cardiac ICU area and a 7 beds ICU in the Coronary Care Unit. Then a third COVID-ICU was opended, obtaining other 10 beds in the polyvalent ICU.

The critical care service was also caring for 8 non-COVID ICU beds, in response to the request from regional coordinating center to remain active as a referral center for stroke and oncological patients, totaling 53 ICU beds for ventilated patients.

#### **Emergency Department**

Antonio Desai, Emergency Department Antonio Voza, Emergency Department

**Abstract:** Within two days we have been able to set up four tents, with 20 bed, outside the hospital but adjacent to the ER, and to deeply reorganize even the spaces inside the ER area. In those premises we have done a clear separation of "coronavirus free" and "potentially infected" patients for every code of severity and we created 6 new specific dedicated routes.

With the presence of a dedicated radiology, well separated from the central radiology, there is no need for patients to move around. The work shifts of the ER staff have undergone drastic changes, leading, in many circumstances, to the doubling of night shifts and daytime support.

#### **Medical Wards**

Alessio Aghemo, Medical Department Elena Azzolini, Medical Direction Salvatore Badalamenti, Medical Department Michele Ciccarelli, Medical Department Marco Folci, Medical Department

**Abstract:** In order to be able to admit a such important number of affected patients daily, Humanitas Research Hospital reorganized its clinical wards. The plan was aimed to gradually increase capabilities to receive and treat patients by trained teams of doctors coming from different clinical areas. Besides a growth of physical space dedicated to COVID-19 affected people, more and more clinicians have been progressively trained and involved on-field. To help a fast integration and to maintain a high standard of cure, Humanitas developed several informatics tools with the purpose to simplify the action of doctors and nurses. Three steps were applied starting from ward adaptation to the emergence up to medical training and integration as well as a standardisation of all clinical activities.

## Nurses: the role of training

Davide Donadello, Health care Services Daniela Donizetti, Health care Services Cristian Maraschi, Health care Services

**Abstract:** To face COVID-19 emergency, the team of nurse trainers quickly set up a system of training courses to ensure staff competency. The training was focused on topics related to the personal safety and the management of COVID-19 positive patients. Since the outbreak of the emergency, thanks to the training teamwork, about a thousand of health professionals have been trained.



## The Laboratory Tests

Maria Teresa Sandri, Hospital Laboratory

**Abstract:** Hospital Laboratory activity has rapidly adapted to collect and test samples suspected of being COVID+, the result of which is a priority for clinical management.

We started with the choice of the two rooms to be converted into the COVID laboratory and to be equipped with the requirements of a biosafety level 2 laboratory; then the choice of the best diagnostic PCR kits (before the Lombardy Region centralised the supply). We created more stringent procedures to make laboratory operators work safely. Finally we increased the number of operators and we extended the working hours; in this way the test result can now be provided within 12 hours from the receipt of the sample.

#### **Remodeling a Cancer Center**

Marco Alloisio, Cancer Center Alexia Bertuzzi, Cancer Center Stefania Bramanti, Cancer Center Camille Grosso, Cancer Center Armando Santoro, Cancer Center Marta Scorsetti, Cancer Center Alberto Testori, Cancer Center

**Abstract:** During COVID-19 outbreak, Humanitas Cancer Center faced a thorough reorganization of the whole activity to guarantee the continuity of care and protect patients and health-care providers. Despite the lack of evidence of a higher COVID-19 infection rate in cancer patients, the risks of anti-cancer therapy should be carefully assessed case-by-case. The reduced surgical activity secondary to the shortage of ICU beds led medical and radiation oncologists to modify treatment timelines. Essential to the aim of providing best care, the Multidisciplinary tumor boards were maintained with different modalities.

#### **Cardio Center**

Gianluigi Condorelli, Cardio Center Bernhand Reimers, Cardio Center Lucia Torracca, Cardio Center

Abstract: The Cardio Center has contributed to the COVID-19 emergency on both the clinical and research side. A part of the physicians are performing services in the COVID wards and another part is continuing the cardiological and interventional activity (although in a lower number than normal, the cardiac surgery team has carried out the necessary interventions of patients belonging to Humanitas at the IRCCS Monzino, Hub for this branch). The Coronary Care Unit and Cardiac Surgery Intensive Care Unit spaces have also been provided for the care of COVID-19 patients: the cardiology, cardiac surgery and cardiovascular critical-care teams as well as experts in cardiovascular diagnostics have all contributed to the organizational effort. Also from a clinical point of view is the active participation of the physicians of the Thrombosis Centre. Research activity has been and is ongoing on several fronts, with international collaborations, including the study of the outcome of patients who underwent surgery during COVID-19 pandemia, the research into the pathogenesis of the cardiovascular effects of SARS-CoV-2 infection in humans, the link between anti-COVID-19 medications and arrhythmias, the molecular biology studies and specific biomarker studies.

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## The Physiotherapy Unit

Roberto Gatti, Physiotherapy

**Abstract:** To cope with the COVID emergency, the Physiotherapy Unit changed the organization of its work, dividing itself between those who cared for COVID patients, trying to limit their functional decline and those who continued the usual rehabilitation activities on patients without COVID.

The role of physiotherapists is fundamental to minimize the damage that infection and hospitalization can cause in COVID patients, especially if they are elderly and frail but, when necessary, they also helped their fellow nurses.

Seizing an opportunity of the moment, the Physiotherapy Unit has launched a project to administer streaming rehabilitation interventions for discharged patients.

#### **Patient Experience**

Chiara Ariotti, Patient Experience Office Monica Porli, Patient Experience Office

**Abstract:** Access to the hospital has been reserved for patients and denied to accompanying persons, with a few exceptions that had to be formally authorised. This restriction applies all the more to those accessing the Emergency Room. A range of services have therefore been organised for the patients' relatives: to give them information on the health conditions of their loved ones and on management at home once they have been discharged; to be able to guarantee the change of linen and the recovery of their belongings; to allow them to communicate at a distance, in safe conditions. Remote communication has also been organised through partnerships with private sponsors.

Particular attention has been paid to positive swab communication, for which a psychological support service has also been activated. Patients in isolation may also need psychological support, as well as religious assistance, according to their religion.

#### Internal and external Communication

Elisa Accurso, Communication Office Walter Bruno, Communication Office Monica Florianello, Communication Office Alessia Morello, Communication Office Paolo Pedemonte, Communication Office

**Abstract:** The management of communication during a particular event such as the COVID-19 outbreak requires all communicators to remodel the messages they usually disseminate both internally and externally, through the pages of newspapers, TV, the web or social media. The message is charged with totally new purposes: it is no longer merely informative or celebratory, but must be reassuring and educational, transparent and not deceiving, in order to keep the level of engagement of the internal community as high as possible.

The Communication Office has been transformed into an active editorial staff 7 days a week, a real hub that centralizes all communication and information flows. Through the various internal and external channels and the available tools – video, emails, internal signage, photo gallery, magazine, etc. – it has addressed the issue and conveyed it to the target audience.

# **3.SCIENTIFIC RESEARCH**

Alberto Mantovani, Scientific Director Michele Tedeschi, Clinical trials and Scientific Documentation Centre Monica Florianello, Communication Office

Abstract: Humanitas is also at the forefront of scientific research, with a wide range of projects and studies that address all the critical issues and questions raised by the infection, with a 360° approach focused on the patient, which has always been its hallmark. Alongside fundamental research, numerous translational and clinical studies are in progress in immunology and genetics. Trials are in progress on the clinical front, to evaluate the use of new drugs and antibodies, and on the diagnostic front (antibodies, new tests, chest CT scans using Artificial Intelligence). Clinical protocols are also being developed and applied, also in intensive care, for the management of patients affected by COVID-19. These are complemented by observational studies aimed at establishing correlations between clinical and biochemical factors and the prognosis of patients, and organizational studies to rethink the paths of patients affected by other diseases (in the cardiology, rheumatology, endoscopy, chronic intestinal diseases, and so on).

In addition, as part of a committment to social responsibility, Humanitas contributed to the Covid-19 Executive Report of the Health Commission of Accademia Nazionale dei Lincei.

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