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Letter to the Editor



Covid-19 pandemic: A frontline hospital reorganization to cope with therapeutic and diagnostic emergency

The COVID-19 pandemic has led to serious complications for patients, healthcare professionals and healthcare systems. After China, Italy was among the first nations to deal with the spread of the virus, reaching a total of 246,428 confirmed cases as of July 28, mainly concentrated in the northern regions of the country: 40 % of all Italian cases were in Lombardy [1]. A crisis management plan is a fundamental tool for being able to respond effectively to an emergency like the current pandemic. This should take into account several organizational aspects of a hospital. In particular for the COVID-19 pandemic, the European Centre for Disease Prevention and Control enlisted the following: establishment of a core team and key internal and external contact points; human, material and facility capacity; communication and data protection; hand hygiene, personal protective devices and waste management; triage, first contact and prioritization; patient placement, moving of the patients in the facility, and visitor access; environmental cleaning [2].

Since the emergence of the first cases, indeed, the pressure caused by the epidemic revealed the need for a profound reorganization of the hospitals organization to adequately respond to the needs of citizenship [3]. The situation required the suspension of most deferrable activities, concentrating spaces and resources to assist COVID-19 affected patients [4].

To evaluate the organizational changes necessary to respond to the SARS-CoV-2 pandemic we report on the experience of Fatebenefratelli-Sacco Hospital in Milan (Lombardy), a reference center for the treatment of infectious diseases in Northern Italy, which has been deeply involved since the beginning in the management of the current emergency phase. This case is interesting as the hospital also includes many other centers of excellence, which had to remain active, although at a reduced regimen, entailing the need to respond both to COVID-19 affected and "regular" patients.

The pharmacy department was central to the coping of these ever-changing scenarios. Among the challenges facing the pharmacy department, the main ones involved staffing, supplying and distributing drugs and off-label use of drugs requiring a reformulation of the response method in a very short time [5].

In the analysis we took into consideration as the reference period from February 20th to May 20th 2020, which were the months of maximum emergency in the reference area.

The new COVID-19-related activities that the hospital began in addition to ordinary practice involved more than 1250 health workers on a daily basis, resulting in an extraordinary workload with more than 12,000 emergency room visits in the period between 20th February and 20th May 2020 with more than 300 patients directed to the Intensive Care Unit and 1400 in COVID-19 designated Units. With regard to diagnostics, more than 37,000 swabs and 7000 serologic tests for SARS-

CoV-2 were performed in the same period.

The organization of the wards showed an overall increase in the study period of the ICU and Infectious disease beds, which were completely dedicated to COVID-19 affected patients. The other areas have maintained at least a portion of their beds for the performance of ordinary activities that cannot be postponed. The medical and surgical areas dedicated to non-Covid-19 patients contracted their business to about a third of the usual. The reduction of many of the emergency activities was possible thanks to the establishment of regional "pathology networks", which allowed to concentrate these activities in a limited number of hospitals, allowing the others to concentrate resources in care of COVID-19 affected patients. The maternal-infant wards saw a reduction of only 30 %; the intrinsic nature of the case studies in that area did not allow assistance to be postponed (Fig. 1).

The hospital Pharmacy therefore found itself having to simultaneously respond to new needs related to the emergency and to continue to provide the usual activities, in particular to organize the supply drugs to categories of non COVID-19 affected chronic patients assisted by the hospital. The Pharmacists managed the off-label and compassionate-use of drugs in the COVID-19 wards creating new drug management protocols.

Table 1 briefly describes the activities carried out by the pharmacy in the period under consideration (February 20th - May 20th), both to maintain the ordinary activity of the pharmacy for the distribution of drugs for chronic patients and the management of COVID-19 related drugs.

A critical issue in this respect was the shortcoming in the supply of drugs and devices [6] despite extraordinary supplies being obtained including from abroad. This involved the organization of further activities: reception, control (sometimes the incoming products had short expiration date), tracing the distribution in the various departments. To meet demand of drugs the pharmacy organised the galenic production from active principles of some of them. The pharmacy provided the reagents, together with PPE, also to territorial services and residential homes referring to the hospital.

For these patients, in order to avoid situations of possible contagion, started a Home delivery service, thanks to support from the pharmaceutical companies. The service involved more than 200 patients, the pharmacists had been in continuous (24/7) contact with the medical and nurses staff to try and find the appropriate solutions to the daily emergencies. In such a hard time it became even clearer how much it's fundamental to have a multidisciplinary approach and a very close and deep working relationship between different professions, to make it easier to reach a decision and find the appropriate solutions.

The experience reported above shows how it is essential to provide an emergency plan for exceptional phenomena such as the pandemic to

<https://doi.org/10.1016/j.phrs.2020.105160>

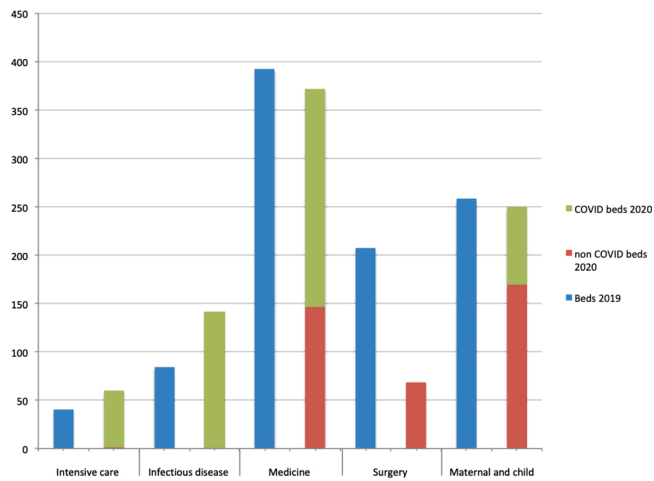


Fig. 1. Reorganization of inpatient stays.

Table 1
Pharmacy department activities.

Activity	March 2020	April 2020	May 2020	Monthly average 2019	Comments
Number of outpatients who received their supplies from the Pharmacy distributing area	2,954	2,613		3,500	We observed only a 15 % drop, despite the lockdown measures
Number of issued drug/devices orders	1,497	955		500	The orders have tripled in number in March and have doubled in number in April
Number of products supplied to COVID19-wards	6,470	7,291			304/day (only COVID19-wards)
Number of technical operators at work on Saturday	2	2		1	
Number of loading operations of products supplied by Lombardy region or granted by manufacturers	698	744			For the same products, also the unloading operations were managed
Covid19- related products lent to other hospital or nursing-homes	122	129		20	
Number of therapies delivered to patients' homes	226				

be drawn up in "peacetime". The emergency plan must provide for

continuous training, periodic review and must involve all sectors of the hospital organization.

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