Farmacia HOSPITALARIA
Órgano oficial de expresión científica de la Sociedad Española de Farmacia Hospitalaria

SPECIAL ARTICLE
Bilingual edition English/Spanish

Pharmacy Department management and organization

Organización y gestión interna del servicio de farmacia

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DOI: 10.7399/fh.11514

How to cite this paper
Herranz-Alonso A, Rodríguez-González CG, Sarobe-González C, Álvarez-Díaz A, Sanjurjo-Sáez M. Pharmacy Department management and organization. Farm Hosp. 2020;44(Supl 1):S5-10.

Abstract

The WHO declared the SARS- CoV-2 outbreak a pandemic in March 11, 2020. Spain has been the third country with the highest number of reported cases of COVID-19. In the face of the pandemic, the authorities of the Autonomous Community of Madrid led an unprecedented transformation of hospital services by increasing the number of beds available, setting up temporary field hospitals in fairgrounds, and transforming hotels into support centers for patients with mild symptoms of COVID-19.

In the light that this crisis will continue to be a real threat for the years to come, our hospital pharmacies need to be better prepared for similar outbreaks in the future.

During the COVID-19 pandemic, the Department of Hospital Pharmacy of Hospital General Universitario Gregorio Marañón has faced four challenges: an exponential increase in the demand for resources, constant changes to therapeutic protocols and approaches, regulatory changes, and a dramatic impact on hospital staff (strain on human resources and psychological impact).

This article is aimed at describing the main organizational changes implemented to the Department of Hospital Pharmacy of Hospital GU Gregorio Marañón and its relationship with other hospital pharmacies of the Community of Madrid. An account is provided of the strategies to be adopted for reorganizing a Department of Hospital Pharmacy and achieve a safe and effective use of medications. Strategies range from the creation of integral hospital task groups (COVID-crisis task group, protocolization task group, research task group) to the adaptation of the internal organiza-

Resumen

Con fecha 11 de marzo de 2020 la Organización Mundial de la Salud declaró el estado de pandemia por SARS-CoV-2. En algunos momentos de la crisis, España fue el tercer país del mundo en número de casos. Las autoridades de la Comunidad de Madrid, una de las más afectadas, han respondido con una transformación hospitalaria sin precedentes, aumentando el número de camas disponibles, creando hospitales de campaña en recintos feriales y transformando hoteles en centros de apoyo para pacientes leves.

Dado que la aparición de estas crisis continuará siendo una amenaza real en los próximos años, es necesario revisar la preparación de nuestros servicios de farmacia para afrontar este tipo de situaciones.

El reto al que se ha enfrentado el Servicio de Farmacia del Hospital General Universitario Gregorio Marañón durante la crisis de la pandemia COVID-19 ha venido determinado por cuatro circunstancias: incremento exponencial de la demanda de recursos, cambios constantes en los protocolos y decisiones terapéuticas, cambios regulatorios y gran impacto en las personas (gestión de recursos y gestión de las emociones).

En este trabajo se describen los principales cambios organizativos de un servicio de farmacia a través de la experiencia del Hospital General Universitario Gregorio Marañón y sus relaciones con otros servicios de farmacia de la Comunidad de Madrid. Se detallan los procedimientos que deben contemplarse para la reorganización de un servicio de farmacia para lograr un uso seguro y eficiente de los medicamentos. Se detallan desde la participación en los comités globales de hospital (comité de crisis

KEYWORDS
Pharmaceutical care; Hospital pharmacy service; Coronavirus; SARS-CoV-2; Pandemic; Management.

PALABRAS CLAVE
Atención farmacéutica; Servicio de Farmacia Hospitalaria; Coronavirus; SARS-CoV-2; Pandemia; Gestión.

tion of the Department of Hospital Pharmacy, which encompasses aspects related to management and leadership; a communication plan (internal and external); staff management, and the reorganization and adaptation of processes.

People, patients and professionals are at the core of these strategies. This paper is a reflection on key factors of "humanization in COVID times".

COVID, comité de protocolización y comité de investigación) hasta la organización interna del servicio de farmacia, que incluyen: gestión y liderazgo, plan de comunicación (interna y externa), gestión de las personas, reorganización y adaptación de los procesos.

Las personas, pacientes y profesionales son los grandes protagonistas de esta actuación, por lo que incluimos una reflexión sobre los factores clave para la "humanización en tiempos de COVID".

Introduction

On March 11th, 2020, the World Health Organization (WHO) declared the SARS-CoV-2 pandemic after more than 125 countries had been affected, with more than 130,000 confirmed cases worldwide. The first case in Spain was confirmed on January 31st. On May 15th, Spain became the third country in the world in number of cases. The authorities of the Community of Madrid, one of the most affected regions —with 66,332 cases and 42,227 hospitalizations at that time— responded with an unprecedented transformation of hospitals, increasing the number of hospital beds —including intensive care beds—, creating field hospitals in fairgrounds and transforming hotels into support centers for patients with mild disease.

Pharmacy services (PS) had to react quickly and provide solutions as the number of patients increased and as exceptional measures were adopted by the authorities. PS reorganized their processes to ensure a safe and efficient use of medicines.

In the light that this crisis will continue to be a real threat in the years to come, it is necessary to review the level of preparedness of our PS to deal with such situations. In this paper we describe the main organizational changes made in the PS of the *Hospital General Universitario Gregorio Marañón* (HGUGM) and its relations with other PS in the Community of Madrid. People, patients, and professionals are the main protagonists of this action, so we include a discussion on the key factors for "humanization in times of COVID".

Difficulties

The challenge faced by the PS of the HGUGM during the COVID-19 pandemic crisis was determined by four circumstances:

1. *Exponential increase in demand for resources*

The high infectivity of the virus led to an exponential increase in patients needing hospital care. As of May 15th, the HGUGM treated 5,874 patients, of whom 3,229 received outpatient care and 2,645 required hospitalization. In just 20 days, the HGUGM reached its maximum capacity, with 1,064 COVID patients admitted. Under normal circumstances, the HGUGM has 20 medical ICU beds, whereas during the peak of the pandemic it reached 116 beds. On the one hand, ICU beds were set up in the library, operating rooms or post-anesthesia recovery units; on the other hand, the gymnasium, family rooms or special units such as electrophysiology, located in nearby areas, were transformed into emergency support areas.

2. *Constant changes in protocols and therapeutic decisions*

The Ministry of Health, along with the Spanish Agency of Medicines and Medical Devices (AEMPS), prepared several technical documents to establish the therapeutic approach to SARS-CoV-2 infection, which were constantly updated. Hospitals adapted them to reality on an almost weekly basis, according to the evolution of the epidemic and the availability of medicines.

3. *Regulatory changes*

Since the declaration of the state of alert, regulatory changes were made through the publication of orders in the Official State Gazette, which directly affected the reorganization of the PS. These included regulations on the dispensing and administration of medicines in the National Health System[1], the supply of certain medicines[2], and measures relating to nursing homes[3].

4. *Impact on people (resource and emotion management)*

The demand for care, uncertainty in critical decision-making, fear of getting sick, and the situation of social alarm created a complex scenario that prompted service leaders to put the focus on staff management and care.

The traditional team management strategies in a stable environment were no longer effective. Maintaining a balance between emotions, fatigue, the cruelty of the disease, the resources available, regulatory changes, new protocols, and other factors, required a very united, compact team working in the same direction. At the same time, we had to take care of the human side of relationships, since the disease caused several casualties and deaths among the relatives of the PS staff.

Developed strategy

General organizational measures in the hospital

Following the Disaster Action Plans and recommendations of the WHO[4] and the European Centre for Disease Prevention and Control[5], hospital management organizational and general coordination measures included the establishment of governance groups, in which the PS was actively involved:

Daily meetings were held by the operational COVID-19 Crisis Committee, which was composed of Hospital Management, Medical Management, Nursing Management, the services of Microbiology and Infectious Diseases, Emergency and Intensive Care, Internal Medicine, Pharmacy, Occupational Health, Preventive Medicine and Quality, Information Systems, Communication, and Administration Management. The main functions of this Committee were to reorganize the hospital based on daily epidemiological reports, approve protocols, and coordinate with other centers.

A second very important committee was the COVID Protocolization and Treatment Committee, comprising the services of Microbiology and Infectious Diseases, Pharmacy, Emergency Unit, Internal Medicine, Intensive Care, Pneumology, Hematology, Cardiology, Nephrology and Immunology. This committee periodically reviewed the available scientific evidence on the treatment of COVID-19 and defined the protocol for its therapeutic management.

Likewise, the need to generate knowledge about the effectiveness and safety of the treatments led naturally to the creation of a Research Committee or Consortium of the main services involved, including the hospital's Research Institute. This Committee promoted the participation of the institution in clinical trials and observational studies.

Internal organization of the Pharmacy Service

The PS management created an Internal Crisis Committee that evaluated the situation daily, based on the information gathered by the different committees in which it was involved and on the status of critical processes, new circuits established and resources. To this end, the Committee designed a daily monitoring scoreboard that supported decision-making.

If a quality management system is key to achieving the objectives of a PS, in a critical situation it is essential to document all the procedures that were designed for the health emergency. Table 1 contains a checklist of the procedures to be considered for the reorganization of a PS in a pandemic, which are addressed throughout this article.

Communication plan

Social distancing imposed by COVID-19 forced the suspension of face-to-face meetings and medical sessions. The PS of the HGUGM developed a communication plan to the sharing of information and work coordination. The communication plan addressed the following aspects:

1. Internal communication:
   - Creation of a repository of standard operating procedures shared with and easily accessible by all professionals.
   - Access to and training in the use of online communication tools for secure communication (e.g. Teams, Zoom, etc.).
2. External communication:
   - Identification of the key pharmacist for each of the committees and clinical service agents.
   - Creation of online communication channels with the General Subdirectorate of Pharmacy of the Autonomous Community and other PSs in the area, especially for the coordination and management of shortages of supply.
   - In addition, the protocol for alternative remote communication with chronic patients has been essential, including key messages and resolution of the most frequent doubts of patients who contacted the PS by phone, email, and social networks.

Organization of people

Different strategies were established to reduce the impact of the pandemic on the organization of PS workers:

1. Reduction of the movement of PS personnel:
   Access of external personnel to the PS was limited. Face-to-face visits from the pharmaceutical industry, clinical trial monitors, supervised interns, and external rotations were suspended.

Table 1. Checklist of procedures required in a pandemic situation

Procedure	Yes	No
Service management and leadership		
Establishment of an Internal Crisis Committee		
Implementation of a system for monitoring critical activities and indicators: design of a balanced scorecard with data on bed occupation and distribution in the hospital and outpatient centers, prescription profile, procurement and stock data about critical drugs, preparation and dispensing of drugs (to inpatients and day hospital, discharged, transferred and chronic patients)		
Communication plan – Internal (information repository, procedures, and tools) – External (communication with management, Autonomous Communities, other hospitals, suppliers, patients, etc.)		
Partnership management (clinical services, information technology, engineering, cleaning and waste, etc.)		
Organization of people		
Reduction of movements of PS staff		
Protection of professionals – Protocol for the use of individual protection equipment: Why, Who, When, and How? – Protocol for cleaning and infection control		
Establishment of teleworking and special shifts		
Vacancy-filling, education, and training plan (monitoring of absences, vacancy filling, training program, welcome plan, etc.)		
Organization and adaptation of processes		
PS on-call hours		
Procurement and stocking (list of critical products, consumption, shortages and alternative suppliers, medicinal gases, management of donations)		
Prescription assistance and pharmaceutical validation (protocolization, effectiveness and safety alerts, etc.)		
Dispensing of medicines to intra- and extra-hospital units (first-aid kits, automated dispensing systems, provision of drugs to new clinical units, hotels, nursing homes, field hospitals, etc.)		
Centralized development and packaging of medicines for COVID patients (antiviral medicines and immunomodulators for COVID-19 [e.g. tocilizumab], critical care unit medicines [e.g. standard infusions], home hospitalization medicines [e.g. analgesic infusers], repackaging of medicines and development of formulations to alleviate shortages [e.g. hydro-alcoholic gel])		
Development of medicines for non-COVID patients (cancer patients, immune-mediated diseases, renal failure, etc.)		
Dispensing medication upon discharge or transfer to other centers		
Dispensing medication to outpatients (telepharmacy program)		
Information systems (databases, user management, training, data exploitation, etc.)		
De-escalation and conversion of COVID units into non-COVID units		
Humanization program		
Care for COVID patients (information resources, technological contact, etc.)		
Care for non-COVID patients (telepharmacy program)		
Care for professionals (emotion management, involvement in decisions, sharing good news, taking care of rest, psychological support, etc.)		

PS: Pharmacy Service.

2. Protection of PS professionals in all areas/activities:

   The individual protection equipment required for all PS activities was defined with the collaboration of the Occupational Health Service. Three risk categories were established: internal activities, direct patient care, and medication replacement in the automated dispensing systems of clinical units. To guarantee infection control in the PS, the cleaning protocol for the different areas of the service was updated in collaboration with the cleaning service.

3. Establishment of teleworking and special shifts:

   Teleworking and special shifts were established with a two-fold objective: (i) reduce the risk of contagion, and (ii) balance work-family life. In addition, in the PS of the HGUGM, where 30% of the pharmaceutical professionals were infected during the first 10 days of the pandemic, teleworking and the commitment of professionals were key to maintaining service quality standards.

   Another model of people management was applied in *Complejo Hospitalario Universitario de Santiago*, where the impact of the pandemic came with a few days' delay, and work shifts and teleworking were organized according to the vulnerability of the professionals, their personal circumstances, and the criticality of the jobs[6].

4. Vacancy-filling, education, and training:

   At least two people were assigned to each PS role in the HGUGM, and a knowledge updating program was designed to facilitate staff rotation in the event of absences.

   Welcome and training protocols were adapted, especially for the technicians and nursing staff who incorporated to fill vacancies due to sick leaves.

Reorganization and adaptation of processes

The success of the PS lies in that processes were rapidly redesigned to meet the high demand, ensuring a safe and efficient use of medicines (Table 1). To this end, one of the first decisions made was to provide continuous 24-hour PS care with the physical presence of pharmacists and technicians.

Procurement and supply activities were conditioned by the frequent modification of protocols. Critical medicines increased from 40 to 130 references in a matter of days, which led to shortages of supply and the adaptation of procurement models (direct to supplier, with prior authorization from the AEMPS, or centralized redistribution by the Autonomous Community depending on the activity).

Prescription assistance and pharmaceutical validation activities focused on incorporating protocols into information systems, clinical alerts, and other relevant information on the safety and effectiveness of treatments. These assistance activities were particularly relevant to the wide range of professionals, ranging from senior doctors to sixth-year medicine students.

The medication dispensing circuit underwent a major adaptation, from inventories and standards for the correct use of automated dispensing systems[7] to the creation of new circuits for the care of COVID inpatients and outpatients.

Likewise, the centralized development and packaging of ready-to-use medicines was critical, with activity increasing by 186% in the case of the HGUGM.

Among the new circuits, it is worth highlighting the dispensing of medication upon discharge or in the event of referral to another health center. To this end, two types of kits were developed, which included combinations of standard medication (hydroxychloroquine, lopinavir/ritonavir, azithromycin, and paracetamol) and medication for transfer to another center (enoxaparin, cefixime, hydroxychloroquine, lopinavir/ritonavir, loperamide, paracetamol, and metoclopramide), which was individualized at the time of dispensing according to the prescription and while information on its use was provided to the patient. This organization made it possible to dispense the medication safely and without delay to more than 50 patients/day.

Finally, it is crucial for PS organization to plan how critical non-COVID activities will be maintained, such as the administration of treatments in day hospitals, in perfect coexistence with the activity related to the pandemic. An example of success was the implementation of telepharmacy programs[8].

Humanization in times of COVID-19

Everything involving this disease is a barrier, so humanization took on enormous value for both, patients and professionals.

In general, the degree to which we can implement actions related to humanization will depend on the level of integration of the PS strategy[9,10].

COVID-19 patients

The disease is experienced by the patient and the family in great loneliness. The patient stays completely isolated in the hospital (or other healthcare setting) or at home, facing alone the uncertainties and fears of the disease, about which so little was known.

For all these reasons, accompaniment at a distance becomes more necessary than ever, and the PS must remain close to patients. Patients indicated that they needed more information about the medicines they were receiving. Some of the actions that can be implemented include:

- Technologies to obtain information about the disease and the treatment being administered (e.g. chatbot, links to websites with scientific evidence).
- Reminders to take medication (*"at the hospital they told me to use the inhaler"*).
- Sending messages of encouragement with medication that was sent home (e.g. "these pills are pearls of hope"), or dispensed in the emergency room or upon discharge.

Non-COVID-19 patients

In the outpatient area, the goal was to protect patients by reducing hospital visits. Some of the actions implemented were the protocols for offsite pharmaceutical care with the organization of "express pick-up" points for medication without the need to enter the hospital, or sending medication to the patient's home. In many hospitals, messages of encouragement and accompaniment were provided (Figures 1 and 2). The degree of satisfaction of the patients was very high, highlighting the decrease in risk and the care received. A satisfaction survey was carried out by the PS of the HGUGM on 341 patients, with an overall score of of 9.7 points given to the service over a 10-point scale, with 100% of respondents stating that they recommend PS services to other patients.

The new infrastructure required is a hurdle, but at the same time it must convey security and closeness. Signs were placed to mark distance between patients, and screens were placed in consultation rooms and dispensing stations. These barriers are "anti-humanization", and patients must be explained that they protect everyone and that PS professionals are closer than ever to patients. Messages with positive phrases can be placed on the screens (Figure 3).

Figure 1. *Messages to patients with home delivery* (Hospital Ramón y Cajal, *Madrid)*.

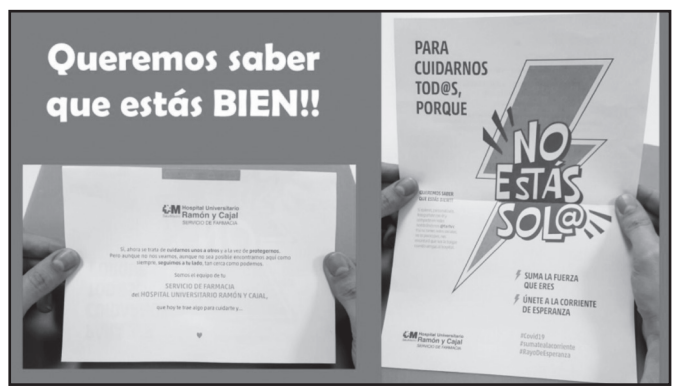

Figure 2. *Customized packages for pediatric patients* (Hospital General Universitario Gregorio Marañón, *Madrid).*

Figure 3. *Screen of the pharmaceutical care consultation room* (Hospital Ramón y Cajal, *Madrid).*

Professionals

This health emergency also hit professionals hard. However, constant care was more tangible than ever, not only within the PS, but also between the different services.

The initial phase of the emergency was characterized by a deep fear of contagion and infecting family members, along with large doses of anxiety and uncertainty. All of this was coupled with an immense workload that had to be rapidly organized.

Caring for people in this case relied on implementing actions that helped professionals feel protected, united, and supported:

- Activating emotional intelligence to reduce fears and uncertainties.
- Reorganization: changes in working hours and teleworking to facilitate work-life balance, ensure social distancing and reduce exposure to the virus.
- Making everyone feel involved in decision-making. The perspective of the professionals who faced the risk most directly was crucial.
- Identifying people who could promote a climate of serenity and create a favorable environment, for example, by recording and sharing videos of the PS with other professionals to give visibility to the role of the PS in the crisis, or thanking donations.
- Celebrating every success achieved in the hospital (e.g. the first extubated patient).
- Communicating to the professionals the gratitude received.
- Offering a break or taking care of the health of our professionals (e.g. bringing breakfast and drinks to the PS, or foodtrucks in the courtyard).
- Offering psychological support to professionals.

Once stabilized, we must prepare tools to assess their emotional state and act in time. The *Hospital Ramón y Cajal* in Madrid developed the SER+CONTRA COVID application aimed at making professionals aware of the effort and strain experienced through an acute stress self-assessment questionnaire and offer support resources.

COVID-19 has achieved to make all professionals truly place the patient at the center, not only of our processes, but of our lives.

Lessons learned. Future applicability in pharmacy services

Epidemiological data indicate a transition phase in which new approaches must be adopted in PS to re-establish their activity in the face of new hospital organization, resume suspended projects, and integrate new demands into PS organization (e.g. off-site pharmaceutical care, increase in home hospitalization, or teleworking by our professionals).

Each PS must identify, today more than ever, the tasks that can be performed or delegated thanks to technological and scientific advances. "Not doing" is more necessary than ever.

The pandemic has been a challenge that has shown how essential coordination between care levels is, which requires a more transversal and collaborative solution.

The transformation of PSs must continue. To such purpose, it will be essential to work and strengthen the alliances that have been forged with clinical services, other hospitals, suppliers, patient organizations, etc. In this way, the contribution of PS to health and its social value will gain visibility.

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