HEALTH SYSTEMS & REFORM
2023, VOL. 9, NO. 2, 2165429
https://doi.org/10.1080/23288604.2023.2165429

Taylor & Francis
Taylor & Francis Group

RESEARCH ARTICLE

Adaptation and Response of a Major Parisian Referral Hospital to the COVID-19 Surge: A Qualitative Study

Fanny Chabrol[a], Lola Traverson[a], Renyou Hou[a], Lisa Chotard[a], Jean-Christophe Lucet[b,d], Nathan Peiffer-Smadja[c,d], Gisèle Bendjelloul[b], François-Xavier Lescure[c,d], Yazdan Yazdanpanah[c,d], Kate Zinszer[e], and Valéry Ridde[a]

[a]Université Paris Cité, IRD, Inserm, Ceped, F-75006 Paris, France; [b]Equipe de Prévention du Risque Infectieux, Hôpital Bichat Claude-Bernard, Assistance Publique-Hôpitaux de Paris, Paris, France; [c]Service des Maladies Infectieuses et Tropicales, Hôpital Bichat Claude-Bernard, Assistance Publique-Hôpitaux de Paris, Paris, France; [d]Université Paris Cité, Inserm, IAME, F-75006 Paris, France; [e]Ecole de Santé publique de l'Université de Montréal, Centre de recherche en santé publique, Université de Montréal, Québec, Canada

ABSTRACT

Since the beginning of the COVID-19 pandemic, few studies have focused on crisis management of multiple services within one hospital over several waves of the pandemic. The purpose of this study was to provide an overview of the COVID-19 crisis response of a Parisian referral hospital which managed the first three COVID cases in France and to analyze its resilience capacities. Between March 2020 and June 2021, we conducted observations, semi-structured interviews, focus groups, and lessons learned workshops. Data analysis was supported by an original framework on health system resilience. Three configurations emerged from the empirical data: 1) reorganization of services and spaces; 2) management of professionals' and patients' contamination risk; and 3) mobilization of human resources and work adaptation. The hospital and its staff mitigated the effects of the pandemic by implementing multiple and varied strategies, which the staff perceived as having positive and/or negative consequences. We observed an unprecedented mobilization of the hospital and its staff to absorb the crisis. Often the mobilization fell on the shoulders of the professionals, adding to their exhaustion. Our study demonstrates the capacity of the hospital and its staff to absorb the COVID-19 shock by putting in place mechanisms for continuous adaptation. More time and insight will be needed to observe whether these strategies and adaptations will be sustainable over the coming months and years and to assess the overall transformative capacities of the hospital.

ARTICLE HISTORY
Received 5 August 2022
Revised 7 December 2022
Accepted 3 January 2023

KEYWORDS
COVID-19; emergency response capacity; hospital; resilience

Introduction

The first SARS-CoV-2 cases in France were treated in a Parisian referral hospital on January 24, 2020, followed by successive waves. On February 23, 2020, the French government activated the ORSAN-REB, a mechanism that triggers specific measures to deal with an exceptional sanitary situation such as the COVID-19 pandemic. Among these measures, the hospital emergency *Plan Blanc* was activated on March 13, 2020, to allow for exceptional mobilization of hospitals (adaptation of activities, exceptional human and financial resources, etc.).

The COVID-19 pandemic occurred in a difficult context for hospitals in France, at a time of frequent collective protests that intensified in November 2019 when the French president announced a major hospital plan.[1] Working conditions, and especially the lack of financial and human resources, were already being strongly criticized by various collectives. In this fragile context, the COVID-19 crisis severely affected the French health care system, in which hospitals are central. It raised questions about the health system's capacity to adapt, absorb, or even recover from this shock. Hospitals were at the epicenter of the crisis and endured significant media attention. As providers of acute care, they were at the front line of the "war against the virus."[2]

In recent years, and especially since the 2013–2014 Ebola epidemic in West Africa, the idea that health systems should be resilient when confronted with sudden shocks (e.g., epidemics) gained considerable attention.[3] Although the concept continues to require clarification[4] and empirical strength,[5] it appeared to be a promising concept for an on-site hospital study within a broader comparative research project.[6] Indeed, hospital resilience as a concept exists, but pre-COVID was largely focused on infrastructure preparation for natural disasters.[7]

Most studies on hospital reorganizations published during the COVID-19 pandemic were led by health care professionals, usually at the level of one service in one hospital.[8–10] Most of the studies conducted in hospitals

CONTACT Fanny Chabrol fanny.chabrol@ird.fr IRD, INSERM, Ceped, Université Paris Cité, F-75006 Paris, France

This article has been re-published from Issue 1 to Special Issue 2 of the journal. This change does not impact the academic content of the article.

since then have focused on organizational resilience and on management aspects.[11,12] We provide a broader interdisciplinary approach encompassing governance restructuring, human resources mobilization, and deep insight into infection prevention aspects. Also, only a few studies have focused on several services within a referral hospital since the very beginning of the pandemic.[13,14]

The aim of this study was to provide an overview of the COVID-19 crisis response of the Bichat—Claude-Bernard (BCB) Hospital, a Parisian referral hospital that managed the first COVID-19 cases in France, and to gain a broader understanding of its resilience capacities.

Methods

Study Design and Setting

This qualitative case study is part of a multiple case study project, the HoSPiCOVID project (Ridde et al. 2021). The introductory article of this special issue provides an overview of the study project conducted in eight hospitals in five countries: Brazil, Canada, France, Japan, and Mali. Based on a scoping review on the concept of resilience,[4] this project defines hospital resilience as its capacity, when faced with shocks, stress, or destabilizing chronic tensions, to implement strategies to absorb, adapt, and/or transform in order to maintain and/or improve access to health care.[6]

In France, the chosen hospital, the BCB hospital, is an 850-bed university hospital (around 9,000 staff) situated in Paris. The hospital belongs to the Assistance Publique—Hôpitaux de Paris (AP–HP), the largest public hospital network in Europe, employing more than 100,000 people in 39 health care facilities. The hospital is one of the three Parisian referral centers designated for patients with suspected or confirmed emerging infectious diseases. It managed the first three COVID-19 cases in France, diagnosed on January 24, 2020. At the peak of the first wave, on April 4, 2020, 313 beds in nine clinical units, including up to 60 ICU beds (19% of bed capacity), were designated for COVID-19 patients.

Data Collection

Our study targeted health professionals and management staff at all hierarchical levels, from nursing assistant to hospital director. Neither patients nor their relatives were interviewed. Interviews were conducted on a voluntary basis. Between March 2020 and June 2021, the research team conducted observations during entire days spent at the hospital (n = 44), semi-structured interviews (n = 94), focus groups (n = 3), and lessons learned (LL) workshops (n = 2) (see Table 1: Data collection). The study period covered the three first COVID-19 waves, i.e., March–May 2020, September–November 2020, and March–June 2021.

The number of interviews was not predefined. Rather, interviews were continued until saturation was reached, with a view to reflecting the different waves and a variety of professional statuses and distinct medical services. We followed an interview guide that was co-developed with the other HoSPiCOVID teams, organized around the conceptual framework dimensions. We also designed a specific focus group guide to draw on professionals' willingness to share their experiences, as well as to validate our preliminary results.

Two well-trained qualitative researchers led the data collection. They were not part of hospital staff. Some hospital professionals also collaborated with the project, but they did not collect data.

Ethics

The study received ethical approval from the Institutional Review Board (IRB 00006477) for Northern Parisian Hospitals, Paris 7 University, AP–HP, on April 15, 2020. All interviews were recorded after obtaining the consent of participants. Observation notes and workshop discussion notes completed the set of qualitative data.

Data Analysis

This empirical research was supported by an original analytical framework on health system resilience.[6] The COVID-19 pandemic represents a series of shocks to the system. The first rationale of the framework is to investigate the associations between: 1) the effects, positive or negative, caused by the pandemic; 2) the strategies implemented to deal with these effects; and 3) the impacts, positive or negative, of these strategies on the hospital's organizational routines. We called these "configurations," to better reflect the complex and nonlinear processes. Configurations are a heuristic tool to generalize the analysis and enable comparisons between countries.[15]

In the HoSPiCOVID project, four configurations were recurrent across the eight hospitals chosen in the five selected countries. The introductory article of this special issue explains the overall analytical approach of the project and shows how these configurations facilitated comparisons between hospitals. However, this

Table 1. Data collection.

Onsite observations (March 2020—April 2021)		
Service/Meeting		Day/Session (N)
Infectious Disease Departement		10
EPRI Departement		10
Crisis team meetings		10
Mortuary Room		14
Total		**44**
Semi-structured interviews (March 2020—April 2021)		
Professional categories	Profession	Participants (N)
Managment staff	Executive committee member	5
	Department head	10
	Head nurses	10
	Clinical research coordinator	2
	Logistics manager	2
Medical staff	Senior physician	6
	Junior physician	2
	Trainee physician	4
Paramedical staff	Nurse	21
	Nursing assistant	13
	Physical therapist	5
	Occupational therapist	1
	Clinical technician	1
Administrative and technical staff	Stretcher-bearer	2
	Messenger (coursier)	1
	Mortuary room agent	4
	Secretary	1
	Chaplain	2
	Funeral agent	2
Total		**94**
Focus group (June 2020)		
Focus group		Participant (N)
Session 1 (June 23)		8
Session 2 (June 23)		8
Session 3 (June 24)		7
Total		**23**
Lessons learned workshops (May 2021)		
Workshop	Profession	Participant (N)
Session 1 (May 5)	Hospital director	1
	Department head	3
	Physician	3
	Head Nurse	2
	Nurse	1
Session 2 (May 6)	Head Nurse	4
	Clinical research coordinator	1
	Nurse	4
	Nursing assistant	1
	Working coach	1
	Stretcher bearer	1
Total		**22**

article presents only the French case study, focusing on three configurations that emerged from the empirical data: 1) reorganization of services and spaces; 2) management of professionals' and patients' contamination risks; and 3) mobilization of human resources and work adaptation. These configurations were analyzed in terms of their specific contexts, effects, strategies, and impacts to fully understand how the COVID-19 pandemic affected the BCB hospital's organizational routines and how the hospital organized its response to deal with the transmission of the virus (see Table 2 for details on the three configurations).

We analyzed the BCB hospital's resilience processes and outcomes to determine whether it had: 1) an absorptive capacity (i.e., provided the same services with the same level of resources); 2) an adaptative capacity (i.e., provided the same services with fewer or different resources); and/or 3) a transformative capacity (i.e., transformed the system's functions and organization to contend with a changing environment).[16]

All interviews were transcribed and coded using computer-assisted qualitative data processing software, MAXQDA Miner, guided by the framework analysis

Table 2. Configurations.

Configuration 1: Reorganization of Services and Spaces			
Effects of the pandemic on the organizational routines		* Referral hospital (front line for treating COVID-19 patients, high visibility, growing media pressure) * Sharp increase in number of infected patients * Seriousness of infection in some patients * High contamination risks for both patients and professionals * Risks of bed and equipment shortages	"We're prepared. . .. we have an organization, an anticipation [capacity] that's longstanding because we're a reference center; we have all the capabilities to take care of these patients." (Head of service, April 2020)
Strategies implemented		* Creation of a crisis team (daily or twice weekly meetings) * 'Pushing back the walls' and arming services (e.g., reorganization and opening of COVID units by the IPC team; separation of the two floors of the ID ward into a COVID and a non-COVID floor; expansion of the mortuary room with racks and a refrigerated truck; expansion of the ICU for COVID patients; installation of COVID resuscitation beds in the operating room).	"We had to completely refit the service with equipment and personnel. . .. We had to completely rebuild the service in a short time". (Head nurse, April 2020)
Perceived impacts	Positive	* High efficiency, collegiality, and acceptability of the crisis team * Facilitation of the implementation of decisions * Effective space gain	"And then, all of a sudden, everything gets organized at high speed, because there are several leaders who work well together and who set the bar in the right direction. . .. in the current hospital crisis, everyone found themselves moving in the same direction. It's something that never happens!" (Head of service, April 2020).
	Negative	* Rapid decisions and need for rapid execution (brutality for the professionals) * Difficult airtightness and regulation of professionals' and patients' circulation * Rise of cross-contaminations * Delay in care and loss of opportunity for some patients (especially non-COVID patients)	". . . it was an on-going day-by-day management, like that, and. . . tense. . .. The communication about the organizational change that was put in place wasn't very good, such that people were a bit lost, didn't understand". (Logistics manager, December 2020)
Configuration 2: Management of Professionals' and Patients' Contamination Risks			
Effects of the pandemic on the organizational routines		* Referral hospital (role to define guidelines for protective measures against infection risks) * High uncertainties about the SARS-CoV-2 virus and its transmissibility * Frequent updates in guidelines and protocols * High levels of anxiety for professionals * Overconsumption and theft of PPE * Physical fatigue, lassitude * Decreased compliance with protection protocols * Clusters of staff infection in several units	". . . it was a management of the shortage: the protocols were geared only to the materials available, and not to what should really be carried". (Nurse, July 2020) "We felt the situation was different according to services, we had a 10 days stock but besides that we didn't know who had what and various services seemed to have more stocks that others" (Head nurse, May 2020)
Strategies implemented		* Enforcement of protection protocols (e.g., mandatory universal wearing of surgical masks) * Prohibition or firm regulation of family visits * Creation of specific circuits for COVID patients in the ID and the ER wards * Opening of a screening center for all the professionals and ambulatory patients * Definition of PPE stocks/quotas with specific distribution phases * Conduct of systematic cluster surveys * Logistical support from AP-HP for the supply	". . . you have to put on the gown, have to do this, have to do that. . .. You mustn't touch your glasses, you have to be careful when taking them off, you mustn't take off your gloves and then take off your glasses, because your hands are dirty; you have to [first] clean your hands, and so on. . . it's a whole process!" (Stretcher bearer, April 2021)
Perceived impacts	Positive	* High availability and crucial role of the IPC team * Better use and management of equipment in a resource-limited context * Easier access to screening	"We have succeeded, within the establishment, in more or less saying what each department needs. It's a big job. (Head nurse, April 2020)
	Negative	* Frequent changes in infection control measures leading to confusion among hospital staff, anxiety, atmosphere of mistrust * Limited top-down communication	". . . I was very disappointed when the masks were changed, when we were told 'no more FFP2s', the surgical masks. We know we need FFP2s. We would have preferred. . . to be told the truth." (Nursing assistant, June 2021)
		* Feelings of being inadequately informed and equipped, and of practicing care in suboptimal conditions (dissatisfaction)	"It was a whole controversy and debates on TV about shortages at the hospital and I remain convinced that it was the management of scarcity that prevailed. Protocols were adapted to the available equipment, not what we had to wear" (Nurse, July 2020)

(*Continued*)

Table 2. (Continued).

Configuration 3: Mobilization of Human Resources and Work Adaptation			
Effects of the pandemic on the organizational routines		* More or less intense influx of patients * Varying workloads and heightened stress for hospital staff * Need for staff reinforcement * Intense media coverage * Strong general population support for health care professionals	"The COVID crisis was exhausting; a lack of personnel, a lack of human and logistical resources, which meant a lack of gowns, masks, and all that follows." (Nurse, July 2020)
Strategies implemented		* Recruitment of external workforce reinforcements * Provision of logistical and financial support to professionals (donations, car, taxi, hotel, salary bonuses) * Redeployment of staff from non-COVID to COVID units * Increased overtime and on-call duty for hospital staff * Reduced length of sick leave for COVID-positive professionals * Increase in professionals' workloads * Activation of psychological support mechanisms * Hospital staff self-organization strategies (e.g., flexible schedule according to the needs of the service, collaborative work between different professions, reorganization of social occcasions)	"... that's where self-organization becomes incredible, in that we decide for ourselves what's most useful." (Clinician, May 2020) "People were asked to work overtime. Actually, they weren't asked. . .." (Head of service, April 2020) "In the end, we had to adapt day by day, because there were more and more cases over a specific period. So, it was tiring for everyone, it was pressure on everyone. Afterwards, there were some people who came to help us." (Nursing assistant, June 2020)
Perceived impacts	Positive	* Feeling of a memorable experience * Team collaboration and solidarity * Relative blurring of the hierarchy of professions * Key role of head nurses (information, mobilization)	"For now, we're in a kind of interlude, we're in something exceptional, and with the reinforcements we can finally provide quality care" (Field notes, April 2020)
	Negative	* Limited compensation of the lack of personnel * Newly arrived professionals lacking skills and needing training * Intensification of work and difficult working conditions * Exhaustion of professionals (strong physical fatigue, stress, fatigue, weariness, burnout, private and family life) * Lack of recognition (poor salaries, bonuses) * Negative impact on care and quality of care	"The days were non-stop, doing two or three things at once, all the time. And that went on for two months. For two months, I did nothing but work at high speed 16 to 18 hours a day. . .. it's impressive because it puts you in an extraordinary psychic and intellectual state." (Clinician, May 2020) "It was really hard for me at a family level, my parents are old and I'm their caregiver. I took so many precautions to disinfect myself and the house every day, it was a whole protocol at home too" (Nurse, June 2020)

approach and principles, i.e., using a deductive/inductive approach to coding.

Results

The BCB hospital and its staff deployed multiple and varied operational strategies that, according to BCB professionals, had both positive and negative impacts.

Reorganization of Services and Spaces

A Referral Hospital Dedicated to the Management of Infectious Diseases

As a referral hospital for emerging infectious diseases (MERS, Ebola, SARS), the BCB hospital was prepared to adapt and respond to the arrival of the first COVID-19 cases. From the beginning of the pandemic, the BCB hospital was in the front line for treating COVID-19 patients. Its referral status provided the hospital and its staff with great visibility, linked to growing pressure from the media. The sharp increase in the number of infected patients, the seriousness of the infection in some patients, and the contamination risks for both patients and professionals made spatial reorganizations necessary to avoid running out of beds and equipment.

Continuous Reorganization to Cope with High Numbers of COVID-19 Patients

To face the considerable influx of patients with an unknown disease and contain the risks of contamination, strategies were implemented at two levels.

At the organizational level, the hospital implemented new crisis governance mechanisms and, in February 2020, created a crisis team to lead comprehensive spatial reorganization strategies. Initially, the team was relatively open to allow for broad participation, but it was subsequently limited to a few key decision-makers. Led by a triad of medical crisis directors—the hospital's chief executive officer, the medical director, and the head of the risk and quality management program—and composed of the main medical leadership—infectious diseases (ID), infection prevention and control (IPC), intensive care unit (ICU), emergency department (ED)—and administrative services, the crisis team decided on the opening, closing, and fusion of services or beds. Meetings initially occurred daily, and then at least twice a week, and decisions were taken based on the number of new patients in the ER and the expected needs in relation to the country's COVID-19 incidence. Crisis team decisions were sent out as a daily report to all hospital staff.

At both the organizational and individual levels, professionals organized themselves to "push back the walls" and "arm the services." The IPC team coordinated spatial and logistical reorganizations and the opening of COVID units. Its role was to inform staff about such reorganizations, train staff on IPC measures, and prepare patients' rooms. During the first wave of the pandemic, the ID ward was entirely transformed into a COVID unit (unit emptied, rooms cleaned, computerized patient coding system installed, etc.). During the second wave, the two floors of the ID ward were separated, with the first floor dedicated to non-COVID patients and the second to COVID patients (with specific equipment, including high-flow oxygen devices). The capacity of the mortuary room (MR) was expanded both internally (racks) and externally (refrigerated truck) to contend with the overflow of deceased patients. Lastly, dressing screens were installed in several departments to separate non-COVID and COVID sections, and COVID resuscitation beds were installed in operating rooms.

Clearly Identified Leadership and Self-organization

These strategies were perceived by the professionals as having both positive and negative impacts. The crisis team's leadership facilitated the implementation of decisions (high efficiency, collegiality, acceptability):

> It worked in an incredibly fluid way. In routine situations, there's a whole series of tensions in the organizations, in relationships, that make things go slowly, or at least not fast enough. And then, all of a sudden, everything gets organized at high speed, because there are several leaders who work well together and who set the bar in the right direction. (Service head, April 2020)

Day-to-day, the team anticipated needs, de-programming certain units or services to expand COVID bed capacities. These decisions, characterized by their speed of execution (i.e., within 24 hours), were often experienced as very challenging by the professionals, who nonetheless reported great reactivity and several self-organization initiatives. Spatial boundaries were implemented to separate COVID from non-COVID areas to ensure effective space gain (e.g., 20 places in the MR). Due to staff and equipment shortages, spaces could not be expanded massively in the short term. Keeping areas airtight and regulating professionals' and patients' movements were huge challenges, resulting in occasional cross-contamination.

Management of Professionals' and Patients' Contamination Risks

SARS-CoV-2 Uncertainties and Professionals' Anxiety

As a referral hospital, BCB was expected to define guidelines for protective measures against infection risks. The uncertainties about the SARS-CoV-2 virus and its transmissibility led to rapid and frequent updates in guidelines and protocols, which induced high levels of anxiety for professionals. The mandatory wearing of medical masks and the massive arrival of volunteers resulted in an overconsumption of PPE, as volunteers often over-protected themselves. Thefts of material and PPE were also reported. As physical fatigue became a daily struggle, a certain lassitude emerged that led to decreased compliance with protection protocols. Moreover, during the first wave, testing was not widely available for professionals, which resulted in missed diagnoses and clusters of staff infection in several units.

Adapting to New Protocols and Conserving Protective Material

To mitigate pandemic-induced effects, strategies were mainly implemented at the organizational level. The BCB hospital enforced protection protocols to limit contamination risks (e.g., mandatory universal wearing of surgical masks). The protocols were continuously updated, in line with up-to-date virologic and clinical knowledge. Family visits were prohibited or firmly regulated. The ID and ER units created specific circuits for COVID patients to avoid contamination of others. The IPC unit played a crucial role in managing contamination risks by: 1) explaining new prevention measures to professionals; 2) managing PPE stocks/quotas; 3) deciding on specific PPE distribution phases with the logistic department; and 4) conducting systematic cluster surveys to identify reasons and sources of professionals' infection in order to implement appropriate risk reduction strategies. Finally, at the end of the first wave, a screening center was opened for all the professionals and ambulatory patients.

Following a period of national PPE shortage, these strategies were supported at the institutional level, the AP–HP providing logistical support for the supply with a system of inter-hospital distribution of material resources (PPE).

Contested Strategies and Limited Communication

The impacts of these strategies were mixed. They enabled better use and management of equipment in a resource-limited context and easier access to screening. However, despite the ban on visits and the repeated screening of professionals, some clinical wards,

especially those with both non-COVID and COVID patients, experienced hospital-acquired COVID-19 infections. The IPC team made themselves available to support professionals in understanding and complying with new protocols. However, the frequent changes in infection control measures (e.g., use of surgical or N95 masks and other protective materials) led to confusion among hospital staff and created anxiety and an atmosphere of mistrust toward the IPC team and the hospital administration during the first wave:

> It was a controversy, there was a lot of talk about it on television, there was a lot of debate … and I remain convinced that, in fact, it was a management of the shortage: the protocols were geared only to the materials available, and not to what should really be carried. (Nurse, July 2020)

Several departments circumvented the family visit ban, as it presented a complex ethical dilemma, preventing family members from seeing their loved one before they died and mourning the deceased. Limited top-down communication led to a disconnect between the decision-making process and staff execution and practices. Professionals' feelings of being inadequately informed and equipped, and of practicing care in suboptimal conditions, crystallized into dissatisfaction.

Mobilization of Human Resources and Work Adaptation

Continuous Need for More Staff

From January 2020 onward, the BCB hospital continuously received a high number of COVID patients. Depending on the period, the influx of patients was more or less intense and entailed varying workloads for hospital staff. This resulted in heightened stress for professionals and the need for staff reinforcement. At the beginning of the pandemic, there was strong general population support for health care professionals fighting the virus. Also, from the beginning, the BCB hospital and its staff were the subject of intense media coverage.

Strategies to Mobilize and Support Staff

To contend with these effects, strategies were implemented at three levels.

At the institutional level, the AP–HP requested external workforce reinforcements on a web application and via LinkedIn, including retired professionals. Colleagues from less affected regions also volunteered. Temporary contracts were offered and volunteers welcomed. Logistical support was provided to professionals during the lockdown periods (e.g., meals, transportation, hotel), and other forms of support took effect a few months later (e.g., salary bonuses).

At the organizational level, the hospital redeployed staff from non-COVID to COVID units according to the different acute phases of the pandemic. Working hours were also reorganized and workloads increased for professionals involved with the pandemic management. For example, it was decided that one nurse was needed for six COVID patients (later extended to eight) versus the typical one for 10 or one for 12. Overtime and on-call duty were also increased. In April 2020, sick leave for COVID-positive professionals was reduced from 14 to seven days following new national guidelines. Psychological support mechanisms (e.g., hospital outreach, systematic visits of COVID clinical wards, hot line) were activated for professionals. A transdisciplinary ethics committee was coordinated by the ER to help clinicians and staff discuss medical priority-setting.

At the individual level, professionals adopted coping strategies. Working in COVID units generally meant a more collective approach to working and self-organization strategies, mainly during the first wave. Professionals devoted more time to end-of-life support for patients and families, as well as to collective discussions on ethics (e.g., the benefits and/or risks of resuscitation).

Memorable Experience Followed by Great Disappointment

During the first wave, personnel shortages were partially alleviated through recruitment and redeployment strategies. However, the benefits of these strategies were also perceived as limited, given the newly arrived professionals' lack of skills and need for training. This situation sometimes led to work overload for the more experienced staff, who questioned the usefulness of the reinforcements. Head nurses played a key role in informing on decisions, mobilizing staff, and being responsible for the safety and well-being of professionals. The shortage of personnel was felt more intensely during the second and third waves as, by then, all regions of France were affected by COVID and no reinforcements were possible, contributing to professionals' exhaustion (physical fatigue, stress, burnout). Given the massive efforts required to care for COVID patients, many medical and surgical scheduled hospitalizations had to be canceled, except for emergency and cancer surgery, and professionals felt that this inevitably had negative impacts on care and the quality of care.

Discussion

In this section, we discuss the specific results of the French case study. For additional information on the five countries involved in the global study and a discussion of the methodological issues involved in making comparisons, see the introductory article of the special issue, and for a comparative perspective on lessons learned and public health implications of the studies, see the concluding article.

An Unprecedented Mobilization to Absorb the Crisis

Professionals perceived the first wave as a "memorable experience" with extraordinary rallying between teams. The crisis strengthened professional solidarity and closeness (e.g., empathy; rich and formative experiences). This mixing of medical and paramedical professions led to a relative blurring of the professional hierarchy, with a greater focus on collaboration and shared decision-making. The study's results are in line with other studies emphasizing the exceptional mobilization of professionals and hospital crisis leadership.[11,12] The BCB hospital deployed ongoing leadership in which professional values overcame professional self-interest.[17,18] Working together in a supportive environment galvanized staff collaboration and commitment[11]; at the same time, however, professionals expressed uncertainty about their capacity to sustain their engagement into the future.[19]

Mobilization was observed in a series of multidisciplinary collaborations, innovations, and successful improvisations.[12,20] This study demonstrates the importance of focusing on the dimension of hospital infrastructure and on maintaining diverse available spaces that can be flexible, i.e., be moved and removed to enable many configurations of beds and services.[21]

However, these strategies were often announced through top-down communication, with little input from professionals. The crisis management team had difficulty communicating decisions effectively and working closely with middle management. Professionals were asking for more collective discussions, and there was tension between a high demand for up-to-date information and an overall lack of time for discussions. Communication was one of the biggest challenges highlighted by professionals during the crisis management.[11] It was difficult for the hospital and the crisis team to find an efficient way to regulate the flow of information coming from multiple sources, and professionals were overwhelmed by e-mails. Information often had to be relayed through other, informal communication channels by the professionals themselves (e.g., newsletters, WhatsApp groups).

BCB professionals considered several reorganization strategies prompted by urgency to have been patchwork solutions that brought extreme strain and pressure on them. Decisions to open or close services were experienced as both challenging and detrimental to normal hospital activities that were also important, resulting in lost opportunities or decreased quality of care for COVID-19-negative patients.[22] Despite their apparent rigidity, IPC protocols were experienced as changing too often, whether due to PPE shortages or to changing national recommendations. When rules appeared too rigid and inhumane (e.g., denying family visits), they were sometimes circumvented, as shown in another Parisian study where deviations from central orders were also documented.[11]

A Critical Appraisal of Hospital Resilience

The study covered the first three waves of the pandemic in the BCB hospital. It confirms what was observed in another Parisian referral hospital, i.e., that organizational resilience emerged from anticipation and adaptation capacities.[12] In addition, our study has highlighted the over-reliance on individual resilience.

The unprecedented adaptability of staff (from top management to nurses and technical staff) encouraged self-organization in a bureaucratic organization and made it possible to mitigate (temporarily) the effects of fatigue at work and to "fight better." However, it also led to psychological suffering, intensified by the chronic lack of paramedical staff in public hospitals, which has been identified as the main obstacle to greater adaptability. The pandemic put greater demands on the "everyday resilience"[23] of BCB hospital and its staff in the face of chronic shortages of personnel and equipment. The bulk of the effort fell on the shoulders of individuals, who relied on their own personal resources and on cooperation with colleagues to cope with disruptive situations. The hospital was able to absorb the shock (i.e., caring for high numbers of patients) by relying on the availability and involvement of its personnel. We found that its resilience relied greatly on individuals, as shown in other studies that examined this reliance and its impact on individuals' physical and mental health.[24,25] Lot and De La Garza acknowledge limits to hospital organizational resilience, in which the administrative structure provides positive support but professional fatigue calls for structural reform in the long run.[12]

The patchwork approach and lack of time made professionals feel they were working in an ever more constrained human and material environment. They were bitter about their experience and expressed feelings

of resignation, of having to accept the unacceptable (already after the first wave), as preexisting shortages of staff and material only worsened. At the same time, this (non)-strategy reveals the "logic of censoring emotions in the hospital in the face of illness, death and suffering."[26] The "consent to overworking" has already been described in the French context.[27] Professionals also pointed out that the strategies implemented were sometimes detrimental for non-COVID activities, potentially delaying scheduled care and causing a loss of opportunity for patients.

Despite a phase of complete support from government and society (heroization)—sometimes unrealistic and expressed via opulent commercial gifts—professionals often felt unheard with respect to long-standing claims about their working conditions, remuneration, etc.[28] Professionals complained about lack of recognition and difficult working conditions. Ethical and professional values of caregiving were seriously eroded, leading to discouragement and even resignations.

Limitations

The resilience conceptual framework could not capture the possible transformative outcomes of the pandemic. For that, we would have needed more time to document the impact of the pandemic on health care access among the population that usually attends BCB hospital, as well as patients' perceptions of the reorganizations implemented.

Conclusion

We have documented the organizational responses of a Parisian referral hospital confronted with several waves of COVID-19. Our work is one of the few studies that have focused on one hospital as a whole, rather than only one service or one professional body, during three waves of COVID-19. The application of health system resilience conceptual tools to a hospital was useful, and the use of configurations highlighted the complex processes, the multiple decisions taken, their acceptance, and the tensions that arose. Overall, our study demonstrates that the BCB hospital and staff had the capacity to absorb the COVID-19 shock and to put mechanisms in place for constant adaptation to the COVID-19 context.

In Paris and in France, the pandemic occurred within a context of collective protest, which had peaked in November 2019. The pandemic has ended in hospitals as of spring 2022, with fierce denunciation of chronic shortages and the lack of political and governmental attention to these shortages. More time and insight will be needed to observe whether these strategies and adaptations will be sustainable over the coming months and years and to assess the transformative capacities of hospitals in France and their preparedness for future pandemics and many other social and health priorities.

Disclosure Statement

No potential conflict of interest was reported by the authors.

Funding

This work was supported by Canadian Institutes of Health Research grant number DC0190GP and the French National Research Agency (ANR Flash Covid 2019) grant number ANR-20-COVI-0001-01.

ORCID

Fanny Chabrol http://orcid.org/0000-0002-3256-3217

References

1. Huon H. Le collectif inter-urgences. urgences: hôpital en danger. Paris, France: Albin Michel; 2020.
2. Gaudillière J-P, Izambert C, Juven P-A. Pandémopolitique. Réinventer la santé en commun. Paris, France: La Découverte; 2021.
3. Kruk ME, Myers M, Varpilah ST, Dahn BT. What is a resilient health system? Lessons from Ebola. Lancet. 2015;385(9980):1910–12. doi:10.1016/S0140-6736(15)60755-3.
4. Turenne CP, Gautier L, Degroote S, Guillard E, Chabrol F, Ridde V. Conceptual analysis of health systems resilience: a scoping review. Soc Sci Med. 2019;232:168–80. doi:10.1016/j.socscimed.2019.04.020.
5. Biddle L, Wahedi K, Bozorgmehr K. Health system resilience: a literature review of empirical research. Health Policy Plan. 2020;35(8):1084–109. doi:10.1093/heapol/czaa032.
6. Ridde V, Gautier L, Dagenais C, Chabrol F, Hou R, Bonnet E, David P-M, Cloos P, Duhoux A, Lucet J-C, et al. Learning from public health and hospital resilience to the SARS-CoV-2 pandemic: protocol for a multiple case study (Brazil, Canada, China, France, Japan, and Mali). Health Res Policy Syst. 2021;19:76. doi:10.1186/s12961-021-00707-z.
7. Zhong S, Clark M, Hou X-Y, Zang Y-L, Fitzgerald G. Development of hospital disaster resilience: conceptual framework and potential measurement. Emerg Med J. 2014;31(11):930–38. doi:10.1136/emermed-2012-202282.
8. Ng JJ, Gan TRX, Niam JY, Menon RK, Ho P, Dharmaraj RB, Wong JCL, Amtl C. Experience from a Singapore tertiary hospital with restructuring of a vascular surgery practice in response to national and institutional policies during the COVID-19 pandemic.

J Vasc Surg. 2020;72(4):1166–72. doi:10.1016/j.jvs.2020.05.026.
9. Chandler-Jeanville S, Nohra RG, Loizeau V, Lartigue-Malgouyres C, Zintchem R, Naudin D, Rothan-Tondeur M. Perceptions and experiences of the COVID-19 pandemic amongst frontline nurses and their relatives in France in six paradoxes: a qualitative study. Int J Environ Res Public Health. 2021;18(13):6977. doi:10.3390/ijerph18136977.
10. Vranas KC, Golden SE, Mathews KS, Schutz A, Valley TS, Duggal A, Seitz KP, Chang SY, Nugent S, Slatore CG, et al. The influence of the COVID-19 pandemic on ICU organization, care processes, and frontline clinician experiences: a qualitative study. Chest. 2021;160(5):1714–28. doi:10.1016/j.chest.2021.05.041.
11. Harkouk H, Castel P, Hervouët L, Fletcher D. Qualitative analysis of the organisational response of a university hospital during the first wave of the COVID-19 crisis. BMJ Open Qual. 2022;11(2):e001817. doi:10.1136/bmjoq-2022-001817.
12. Lot N, De La Garza C. The socio-organizational and human dynamics of resilience in a hospital: the case of the COVID-19 crisis. J Contingencies Crisis Manag. 2022;30(3):244–56. doi:10.1111/1468-5973.12419.
13. Atkinson MK, Cagliuso NV, Hick JL, Singer SJ, Bambury EA, Hayirli TC, Kuznetsova M, Biddinger PD. Moving forward from COVID-19: organizational dimensions of effective hospital emergency management. Health Secur. 2021;19(5):508–20. doi:10.1089/hs.2021.0115.
14. Beharrell W, Richards L, Driscoll M, Gray J. What can we learn about systems leadership from the building of a Welsh surge hospital and how might this be applied beyond the current COVID-19 response? BMJ Lead. 2021;5(2):93–97. doi:10.1136/leader-2020-000311.
15. Yin RK. Case study research: design and methods. Los Angeles, USA: SAGE; 2009.
16. Blanchet K, Nam S, Ramalingam B, Pozo-Martin F. Governance and capacity to manage resilience of health systems: towards a new conceptual framework. Int J Health Policy Manag. 2017;6(8):431–35. doi:10.15171/ijhpm.2017.36.
17. Forster BB, Patlas MN, Lexa FJ. Crisis leadership during and following COVID-19. Can Assoc Radiol J. 2020;71(4):421–22. doi:10.1177/0846537120926752.
18. Beilstein CM, Lehmann LE, Braun M, Urman RD, Luedi MM, Stüber F. Leadership in a time of crisis: lessons learned from a pandemic. Best Pract Res Clin Anaesthesiol. 2021;35(3):405–14. doi:10.1016/j.bpa.2020.11.011.
19. Dos Santos JLG, Balsanelli AP, Freitas EO, Menegon FHA, Carneiro IA, Lazzari DD, Menezes JAL, Erdmann AL, Camponogara S. Work environment of hospital nurses during the COVID-19 pandemic in Brazil. Int Nurs Rev. 2021;68(2):228–37. doi:10.1111/inr.12662.
20. Tort-Nasarre G, Alvarez B, Galbany-Estragués P, Subías-Miquel M, Vázquez-Segura E, Marre D, Romeu-Labayen M. Front-line nurses' responses to organisational changes during the COVID-19 in Spain: a qualitative rapid appraisal. J Nurs Manag. 2021;29(7):1983–91. doi:10.1111/jonm.13362.
21. Setola N, Naldi E, Arnetoli MV, Marzi L, Bologna R. Hospital responses to COVID-19: evidence from case studies to support future healthcare design research. Facilities. 2022;40(1/2):131–45. doi:10.1108/F-03-2021-0023.
22. Edge R, Meyers J, Tiernan G, Li Z, Schiavuzzi A, Chan P, Vassallo A, Morrow A, Mazariego C, Wakefield CE, et al. Cancer care disruption and reorganisation during the COVID-19 pandemic in Australia: a patient, carer and healthcare worker perspective. PloS One. 2021;16(9):e0257420. doi:10.1371/journal.pone.0257420.
23. Gilson L, Barasa E, Nxumalo N, Cleary S, Goudge J, Molyneux S, Tsofa B, Lehmann U. Everyday resilience in district health systems: emerging insights from the front lines in Kenya and South Africa. BMJ Glob Health. 2017;2:e000224. doi:10.1136/bmjgh-2016-000224.
24. Labrague LJ. Psychological resilience, coping behaviours and social support among health care workers during the COVID-19 pandemic: a systematic review of quantitative studies. J Nurs Manag. 2021;29(7):1893–905. doi:10.1111/jonm.13336.
25. Jeffs L, Merkley J, Greenberg R, Ginty L, Amaral N, Maunder R, Wiesenfeld L, Brown S, Shing P, Ronald K. An academic health sciences centre's strategy to enhance nurse resilience and psychological safety. Nurs Leadersh (Tor Ont). 2021;34(2):39–44. doi:10.12927/cjnl.2021.26531.
26. Carpot L, Vega A. Mourir à l'hôpital : quelques représentations culturelles. Mouvements. 2001;15-16(3):145–52. doi:10.3917/mouv.015.0145.
27. Gelly M, Spire ASSC. Les agents de l'hôpital public face à l'épidémie de Covid-19. Rev Fr Aff Soc. 2021;(4):15–34. doi:10.3917/rfas.214.0015.
28. Chemali S, Mari-Sáez A, El Bcheraoui C, Weishaar H. Health care workers' experiences during the COVID-19 pandemic: a scoping review. Hum Resour Health. 2022;20(1):27. doi:10.1186/s12960-022-00724-1.