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### ► To cite this version:

Renyou Hou, Lola Traverson, Fanny Chabrol, Lara Gautier, Sydia Rosana de Araújo Oliveira, et al..  
Communication and Information Strategies Implemented by Four Hospitals in Brazil, Canada, and  
France to Deal with COVID-19 Healthcare-Associated Infections. *Health Systems & Reform*, 2023, 9  
(2), 10.1080/23288604.2023.2223812 . hal-04158123

**HAL Id: hal-04158123**

**<https://hal.science/hal-04158123>**

Submitted on 19 Jul 2023

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**To cite this article:** Renyou Hou, Lola Traverson, Fanny Chabrol, Lara Gautier, Sydia Rosana de Araújo Oliveira, Pierre-Marie David, Jean-Christophe Lucet, Kate Zinszer & Valéry Ridde (2023) Communication and Information Strategies Implemented by Four Hospitals in Brazil, Canada, and France to Deal with COVID-19 Healthcare-Associated Infections, *Health Systems & Reform*, 9:2, 2223812, DOI: [10.1080/23288604.2023.2223812](https://doi.org/10.1080/23288604.2023.2223812)

**To link to this article:** <https://doi.org/10.1080/23288604.2023.2223812>



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Published online: 10 Jul 2023.



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## Communication and Information Strategies Implemented by Four Hospitals in Brazil, Canada, and France to Deal with COVID-19 Healthcare-Associated Infections

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### ABSTRACT

During the COVID-19 pandemic outbreak, COVID-19 healthcare-associated infections (HAI) and risk management became major challenges facing hospitals. Using evidence from a research project, this commentary presents: 1) various communication and information strategies implemented by four hospitals and their staff in Brazil, Canada and France to reduce the risks of COVID-19 HAIs, and how they were perceived by hospital staff; 2) the flaws in communication in the hospitals; and 3) a proposed agenda for research on and action to improve institutional communications for future pandemics. By analyzing “top-down” strategies at the organizational level and spontaneous strategies initiated by and between professionals, this study shows that during the first waves of the pandemic, reliable information and clear communication about guidelines and health protocols’ changes can help alleviate fears among staff and avoid misapplication of protocols, thereby reducing infection risks. There was a lack of a “bottom-up” communication channel, while, when making decisions, it is crucial to listen to and fully take into account staff’s voices, experiences, and feelings. More balanced communication between hospital administrators and staff could strengthen team cohesion and lead to better enforcement of protocols, which in turn will reduce the risk of contamination, alleviate the potential impacts on staff health, and improve the quality of care provided to patients.

### ARTICLE HISTORY

Received 30 August 2022  
Revised 7 June 2023  
Accepted 7 June 2023

### KEYWORDS

Communication; COVID-19; healthcare-associated infection; hospital; information; resilience

## Introduction

During the COVID-19 pandemic, COVID-19 healthcare-associated infections (HAI) and risk management became major challenges facing hospitals.<sup>1,2</sup> In the early phases of the pandemic, where knowledge about the SARS-CoV2 virus—transmission pathways, medical treatments, and sequelae—was limited,<sup>3,4</sup> hospitals had to respond quickly by implementing infection prevention protocols to limit the spread of the virus and contamination of their staff.

Studies have shown that COVID-19 HAI risk management strategies varied from one hospital to another depending on their epidemiological situation,<sup>5</sup> numbers of hospitalized COVID-19 patients,<sup>6</sup> and supplies of personal protective equipment (PPE).<sup>7,8</sup> Nevertheless, while during previous epidemics, such as Ebola and

MERS, researchers stressed the importance of internal communication in reducing HAIs,<sup>9–11</sup> few studies have paid attention to communication and information strategies in COVID-19 HAI risk management. Mainly quantitative, these studies have shown that providing information and refreshing training can reduce HAI transmission,<sup>12,13</sup> but they have not given precise and concrete information on the ways in which communication strategies were implemented at the organizational and individual levels.

This commentary focuses on the communication and information challenges that both hospital administrators and staff faced in a context of constantly changing and limited proven information during the first wave of the pandemic. Evidence used to support this commentary comes from the HoSPiCOVID research project,<sup>14</sup> which investigates the resilience of hospitals in the

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**Table 1.** Characteristics of the four studied hospitals.

Country	France	Canada (Site A)	Canada (Site B)	Brazil
Region/ province/state	Île-de-France	Québec	Québec	Pernambuco
Hospital status	Infectious disease referral university hospital	Pediatric specialty university hospital	General hospital	Infectious disease referral university hospital
Bed capacity	850	550	489	600
Staff capacity (total personnel)	9,000	6,960	10,357	3,178
First COVID-19 wave period (approximate)	March–May 2020	March–July 2020	March– July 2020	March–July 2020

context of the COVID-19 pandemic in five countries (Brazil, Canada, France, Japan, Mali). The analysis of empirical data collected in four of the seven hospitals highlighted the issue of communication, considered by the staff as crucial for their well-being and to reduce the infection risks (Table 1). This commentary presents: 1) promising communication and information practices from the hospital case studies to reduce the risks of COVID-19 HAIs; 2) flaws in communication in the hospitals; and 3) a proposed agenda for research on and action to improve institutional communications for future pandemics.

The research teams conducted qualitative data collection in the hospitals, combining various methods: on-site ethnographic observations, semi-structured interviews, focus groups, and lessons learned workshops. Following an interview guide co-developed by the HoSPiCOVID teams, 142 interviews were conducted in the four studied hospitals, targeting different professional categories: health care workers (physicians, nurses, orderlies), hospital managers, infection prevention and control advisors, stretcher-bearers, etc. Interviews were conducted in the interviewees' native language. Researchers conducted interviews until empirical saturation was reached. In each hospital, the research team organized lessons learned workshops with hospital staff to confirm the findings and to collect new data through a collective discussion of the preliminary results.<sup>14</sup> Additional information about the research methodology is provided in the introduction article as well as in the case study articles of the Special issue.

### Promising Information and Communication Practices from the Hospital Case Studies

During the early stages of the pandemic, the lack of information about the virus was one of the major causes of fear and stress among hospital staff; as a nursing assistant in the French hospital said: "It is the unknown that scares us." Despite prompt decisions, staff often felt insufficiently informed about the virus, and this was reinforced by the dearth of communication and

information within the hospitals. Hospitals and their staff used a variety of strategies to attempt to effectively communicate information about: 1) the local pandemic situation; 2) the state of knowledge about the virus; 3) the protective measures; 4) the supplies of some materials and PPE; and 5) the number of contaminated staff.

Using the analytical framework on health system resilience designed by Ridde et al.,<sup>14</sup> we classified the identified strategies into two levels<sup>16</sup>: 1) organizational strategies implemented for communicating on protection protocols and checking their application by hospital staff; and 2) individual strategies mobilized by the hospital staff to protect themselves and the patients from HAI.

### Organizational Strategies at Meso-Level

#### Creation of Emergency Committees

From the very beginning of the COVID-19 pandemic, in the four hospitals, emergency committees were created and dedicated to pandemic management. These committees were considered by staff to be essential for communication and information dissemination. They enabled quick responses to the rapidly changing situation, as well as the implementation of more appropriate strategies regarding: 1) criteria for inpatient admission based on capacity to accommodate patients; 2) recruitment of additional health care workers in response to current needs in various departments/units; 3) prevention and protection protocols; and 4) PPE supplies and distribution. These strategies had to be communicated to staff quickly to ensure more efficient work and avoid contamination.

#### Key Role of Infection Prevention and Control Units

The infection prevention and control (IPC) units were also perceived as essential by hospital professionals. IPC professionals regularly visited the different departments to check on the application of the protection measures and to remind staff of the new measures put in place. By providing more information on contamination pathways, the IPC professionals played an important role in reassuring the staff who were highly stressed and

anxious. Hospital staff recognized a certain effectiveness to the communication strategies implemented by the hospital at the organizational level. However, in both the French hospital and the Brazilian hospital, some frontline workers did not always receive the update knowledges on the virus or the new prevention recommendations in time, pushing them to implement individual strategies.

### **Individual Strategies at Micro-Level**

#### **Regular Team Meetings**

The interviewees frequently mentioned the need to be well informed. In a context where there were large amounts of contradictory information about COVID-19 in the media and social networks, staff considered the ‘official’ information communicated by the health authorities to be more reliable. The desire to learn more about the virus led hospital staff to set up regular spontaneous team meetings in their department, sometimes in video-conferences, to adapt to the ever-changing pandemic situation.

#### **Fast Communication via Social Networks or Telecommunication**

New information and communication technologies were used by health care workers to facilitate communication and discussion around care practices. A common strategy across the four hospitals was the creation of WhatsApp groups that made it easier to transmit important information to staff who were unable to attend meetings. Interviewees expressed their satisfaction with these individual and spontaneous strategies, which not only facilitated the spread of accurate information to reduce infection risks, but also strengthened solidarity between colleagues and made them more careful when they helped each other to put on and take off the PPE.

Despite these promising strategies, the interviewees identified major flaws in information and communication.

### **Challenges of Communicating and Supporting Staff with Information during the Early Phases of a Pandemic**

#### **Information Dissemination Heterogeneity between Departments**

The study identified some inequalities in access to information between different departments in hospitals. For departments directly affected by COVID-19 (e.g., the infectious and tropical diseases department), communication was relatively accessible. Conversely, staff in other

departments (e.g., the aftercare and rehabilitation department) sometimes felt they were invisible to the managers. These staff had to take time to carefully read the emails and to read the report from the crisis unit because it was their only way to get information.

#### **Lack of Transparency of Some Decisions**

Concerns were often raised by professionals about changes in protocol, given a lack of transparency on these decisions, which created misunderstandings and mistrust toward the institution. In both Canada’s Site B hospital and the French hospital, some interviewees believed health and safety rules were adjusted based on the hospital’s supply of PPE. They reported feeling that their experiences and safety were not given enough consideration by the management leadership. Many of them said that the ways in which changes in protection protocols were communicated lacked “diplomacy” and were even described as “infantilizing.”

#### **Proposed Agenda for Research on and Action to Improve Institutional Communications**

In this commentary, we discuss both “top-down” communication strategies and individual strategies initiated spontaneously by and between professionals in the four selected hospitals. Many interviewees highlighted the lack of a “bottom-up” communication channel, even more so in departments that were not directly affected by COVID-19. Many of them also said that interpersonal solidarity between colleagues was the main reason why they continued working during the pandemic despite their mental and physical fatigue. In other words, hospital resilience in the pandemic context relied heavily on “individual resilience,”<sup>17</sup> professionals having to continually adapt to change without being able to rely on the institution, sometimes even at the cost of the mental and physical health of staff, as demonstrated in the French case study article of the Special issue.<sup>18</sup>

Therefore, we believe it is crucial when making decisions to listen to and fully consider staff’s voices, experiences, and feelings<sup>15</sup> and to move away from a hierarchical top-down communication model. The IPC team’s ability to listen is important in the pandemic context, as staff need to express their worry, stress, or even anger. More balanced communication between hospital administrators and staff will also strengthen team cohesion and lead to better enforcement of protocols, which in turn will reduce the risk of contamination, alleviate the potential impacts on staff health, and improve the quality of care provided to patients.<sup>19–21</sup>



Moreover, in the early stages of the pandemic, hospital staff often considered the communication strategies presented above to be helpful in debunking fake news and in reassuring them. Nevertheless, as the pandemic evolved, we observed in the four hospitals that staff's trust in their institution decreased during subsequent waves, partly due to communication failures and the poor transparency of information underlying the changes in prevention and protection protocols, including the numbers of staff infected by COVID-19.<sup>22</sup> Clear and transparent communication about changes to guidelines and health protocols—especially in the context of rapidly changing scientific evidence on a novel pathogen—can also help to alleviate fears among staff<sup>23,24</sup> and avoid misapplication of protocols, thereby reducing infection risks. It is also important that hospital leaders, communications teams, and IPC teams transparently acknowledge their limitations with respect to knowledge about the virus, as well as the material constraints affecting the development of prevention and protection protocols.

## Conclusion

The multi-country comparative approach<sup>14,25</sup> showed that effective communication and reliable information contributed to the management of COVID-19 HAI in the three countries (Brazil, Canada, and France). In future research, it would be useful to study those local strategies and innovations to better understand individual resilience and the “adaptive” capacities<sup>26</sup> of hospitals and their staff during the pandemic.

## Ethical Approval

Ethical approval was granted by the Science and Health Research Ethics Board at the Université de Montréal for the entire project (CERSES-20-061-D). In addition, in France, ethical approval was granted by the Institutional Review Board (IRB 00006477) of Paris Northern Hospitals, University Paris Sorbonne and AP-HP (April 15, 2020). In Brazil, the study was approved by the Comissão Nacional de Ética em Pesquisa (CONEP) (CAE: 30982620.8.0000.0008).

## Informed Consent From Participants

All participants interviewed were informed about the aim of the study beforehand, consented to participate in the study, and gave their written informed consent.

## Disclosure Statement

No potential conflict of interest was reported by the author(s).

## Funding

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

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## References

1. Kampmeier S, Tönnies H, Correa-Martinez CL, Mellmann A, Schwierzeck V. A nosocomial cluster of vancomycin resistant enterococci among COVID-19 patients in an intensive care unit. *Antimicrob Resist Infect Control*. 2020;9(1):154. doi:10.1186/s13756-020-00820-8.
2. Du Q, Zhang D, Hu W, Li X, Xia Q, Wen T, Jia H. Nosocomial infection of COVID-19: a new challenge for healthcare professionals. *Int J Mol Med*. 2021;47(4):31. doi:10.3892/ijmm.2021.4864.
3. Jain VK, Iyengar KP, Vaishya R. Differences between first wave and second wave of COVID-19 in India. *Diabetes Metab Syndr*. 2021;15(3):1047–48. doi:10.1016/j.dsx.2021.05.009.
4. Thakur V, Bhola S, Thakur P, Patel SKS, Kulshrestha S, Ratho RK, Kumar P. Waves and variants of SARS-CoV-2: understanding the causes and effect of the COVID-19 catastrophe. *Infection*. 2022;50(2):309–25. doi:10.1007/s15010-021-01734-2.
5. Huang F, Armando M, Dufau S, Florea O, Brouqui P, Boudjema S. COVID-19 outbreak and healthcare worker behavioural change toward hand hygiene practices. *J Hosp Infect*. 2021;111:27–34. doi:10.1016/j.jhin.2021.03.004.
6. Sturdy A, Basarab M, Cotter M, Hager K, Shakespeare D, Shah N, Randall P, Spray D, Arnold A. Severe COVID-19 and healthcare-associated infections on the ICU: time to remember the basics? *J Hosp Infect*. 2020;105(4):593–95. doi:10.1016/j.jhin.2020.06.027.
7. Ming X, Ray C, Bandari M. Beyond the PPE shortage: improperly fitting personal protective equipment and COVID-19 transmission among health care professionals. *Hosp Pract*. 2020;48(5):246–47. doi:10.1080/21548331.2020.1802172.
8. Wong SCY, Kwong RT-S, Wu TC, Chan JWM, Chu MY, Lee SY, Wong HY, Lung DC. Risk of nosocomial transmission of coronavirus disease 2019: an experience in a general ward setting in Hong Kong. *J Hosp Infect*. 2020;105(2):119–27. doi:10.1016/j.jhin.2020.03.036.
9. Edwards R, Sevdalis N, Vincent C, Holmes A. Communication strategies in acute health care:

- evaluation within the context of infection prevention and control. *J Hosp Infect.* 2012;82(1):25–29. doi:10.1016/j.jhin.2012.05.016.
10. Cha KS, Shin MJ, Lee JY, Chun HK. The role of infection control nurse during emerging infectious disease epidemic: focusing on the middle east respiratory syndrome. *Korean J Healthc Assoc Infect Control Prev.* 2017;22(1):31–41. doi:10.14192/kjhaicp.2017.22.1.31.
  11. Augustin MN, Mbeva J-BK. Knowledge, attitudes, and behaviors of healthcare professionals at the start of an Ebola virus epidemic. *Infect Dis Now.* 2021;51(1):50–54. doi:10.1016/j.medmal.2020.04.010.
  12. Etafa W, Gadisa G, Jabessa S, Takele T. Healthcare workers' compliance and its potential determinants to prevent COVID-19 in public hospitals in Western Ethiopia. *BMC Infect Dis.* 2021;21(1):454. doi:10.1186/s12879-021-06149-w.
  13. Yu T, Zhang X, Wang Q, Zheng F, Wang L. Communication openness and nosocomial infection reporting: the mediating role of team cohesion. *BMC Health Serv Res.* 2022;22(1):1416. doi:10.1186/s12913-022-08646-3.
  14. 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(1):76. doi:10.1186/s12961-021-00707-z.
  15. Cambon L, Alla F, Ridde V. Santé publique : pour l'empowerment plutôt que l'infantilisation. *AOC Media – Analyse Opinion Critique*; 2020 [2023 Apr 15]. <https://aoc.media/opinion/2020/07/07/sante-publique-pour-lempowerment-plutot-que-linfantilisation/>.
  16. 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.
  17. Lerosier T, Touré L, Diabaté S, Diarra Y, Ridde V. Minimal resilience and insurgent conflict: qualitative analysis of the resilience process in six primary health centres in central Mali. *BMJ Glob Health.* 2023 Apr;7(Suppl 9):e010683. doi:10.1136/bmjgh-2022-010683. PMID: 37185362.
  18. Chabrol F, Traverson L, Hou R, Chotard L, Lucet JC, Peiffer-Smadja N, Bendjelloul G, Lescure F, Yazdanpanah Y, Zinszer K, et al. Adaptation and response of a major parisian referral hospital to the COVID-19 surge: a qualitative study. *Health Systems & Reform.* 2023;9(2):2165429. doi:10.1080/23288604.2023.2165429.
  19. World Health Organization. Health systems resilience toolkit: a WHO global public health good to support building and strengthening of sustainable health systems resilience in countries with various contexts. Geneva: WHO; 2022. <https://www.who.int/publications/i/item/9789240048751>.
  20. Khalil M, Mataria A, Ravaghi H. Building resilient hospitals in the Eastern Mediterranean Region: lessons from the COVID-19 pandemic. *BMJ Glob Health.* 2022;7(Suppl 3):e008754. doi:10.1136/bmjgh-2022-008754.
  21. Stennett J, Hou R, Traverson L, Ridde V, Zinszer K, Chabrol F. Lessons learned from the resilience of Chinese hospitals to the COVID-19 pandemic: scoping review. *JMIRx Med.* 2022;3(2):e31272. doi:10.2196/31272.
  22. Berkhout SG, Sheehan KA, Abbey SE. Individual- and institutional-level concerns of health care workers in Canada during the COVID-19 pandemic: a qualitative analysis. *JAMA Netw Open.* 2021;4(7):e2118425. doi:10.1001/jamanetworkopen.2021.18425.
  23. Robina-Ramírez R, Medina-Merodio J-A, Moreno-Luna L, Jiménez-Naranjo HV, Sánchez-Oro M. Safety and health measures for COVID-19 transition period in the hotel industry in Spain. *Int J Environ Res Public Health.* 2021;18(2):718. doi:10.3390/ijerph18020718.
  24. 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 front-line clinician experiences: a qualitative study. *Chest.* 2021;160(5):1714–28. doi:10.1016/j.chest.2021.05.041.
  25. Yin RK. Case study research: design and methods. 4th ed. Thousand Oaks: Sage Publications; 2009.
  26. Kirkpatrick H, Boblin S, Ireland S, Robertson K. The nurse as bricoleur in falls prevention: learning from a case study of the implementation of fall prevention best practices. *Worldviews Evid Based Nurs.* 2014;11(2):118–25. doi:10.1111/wvn.12026.

## Appendix A. Description of data collection in the four studied hospitals

Country	France	Canada (Site A)	Canada (Site B)	Brazil
Qualitative survey period	March 2020–June 2021	May–October 2020	June–November 2020	March–September 2020
Number of days of on-site observation	44	n/a (not available)	n/a	2
Number of semi-structured interviews	94	15	15	18
Number of focus groups	3	n/a	n/a	n/a
Number of lessons learned workshops	2	1	3	2