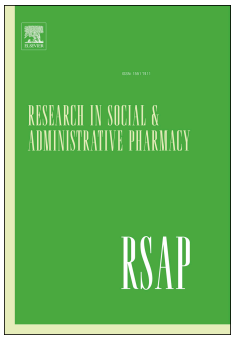

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Management of human resources of a pharmacy department during the COVID-19 pandemic: take-aways from the first wave

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Case study

ABSTRACT

The coronavirus disease 2019 (COVID-19) is the biggest public the world has seen in many years and poses new challenges and opportunities to healthcare systems. The new reality imposed by the pandemic requires a modification of practices to ensure the health and safety of patients and medical teams. The purpose of this article is to share the experiences of the pharmacy department of the Centre hospitalier de l'Université de Montréal (CHUM) in response to the COVID-19 pandemic. Seven of the most important issues will be addressed: crisis management, internal communications, employee stress, reorganization of workspaces, reorganisation of pharmacist workforce, telework and schedule management. Some of the changes made in human resources deployment will likely remain even post-pandemic.

INTRODUCTION

The coronavirus disease 2019 (COVID-19) is an extraordinary is the biggest public health threat the world has faced in recent years. On March 12th 2020, the COVID-19 outbreak was declared a global pandemic by the World Health Organization (WHO) [1]. The novel virus poses new challenges and opportunities to healthcare systems around the world by requiring changes to daily practices in order to ensure the health and safety of patients and medical staff.

The first probable case of COVID-19 in Quebec, Canada, was reported on February 27 2020. The province started implementing restrictions on public gatherings on March 12th, followed by an order to close all non-essential businesses on March 23rd. Since then, Quebec has declared nearly half of the incident cases of COVID-19 in Canada.

The Centre hospitalier de l'Université de Montréal (CHUM) is an academic hospital with 772 beds and 39 operating rooms that employs more than 13,000 healthcare workers. Located in downtown Montreal, the CHUM is one of the largest hospitals in North America. As established by the provincial contingency plan, the CHUM was mandated to keep positive COVID-19 patients requiring specific tertiary or quaternary care and, as of April, to start receiving COVID-19 patient transfers from regional hospitals.[2]

This paper presents the measures implemented by the CHUM's pharmacy department in response to the COVID-19 pandemic. Seven of the most important issues will be

addressed in the form of case studies: crisis management, internal communications, employee stress, reorganization of workspaces, reorganisation of pharmacist workforce, schedule management and telework. It concludes with a discussion of the changes that have persisted after the first wave that the department plans to maintain in the long term.

LITERARURE REVIEW

A literature review was conducted to retrieve documents addressing hospital human resource management in a pandemic, ideally involving the pharmacy workforce. The electronic databases consulted included PubMed Central and Google Scholar with keywords *pandemic, staff and hospital, COVID-19, stress, mental health*. A total of 21 articles were retained. The review also consulted websites of several agencies such as the Center for Disease Control and Prevention (CDC), the American Society of Health-system Pharmacists (ASHP), the US Department of Labor, Quebec's Ministère de la santé et des services sociaux (MSSS), the Ordre des pharmaciens du Québec (OPQ) and the Association des pharmaciens des établissements de santé du Québec (APES).

CRISIS MANAGEMENT

In response to the pandemic, a crisis unit was created from the beginning and was composed of seven pharmacists and four non-pharmacist managers (e.g. head of department, deputy head, assistant, etc.) to better deal with the rapidly evolving situation. This unit's purpose was to identify and find solutions to the challenges that the

department was facing and was expected to face in the near future. A clear chain of command was key: everyone knew their responsibilities and to whom they should report. Subjects covered included: drug supply, employee absenteeism, reorganization of the work space to respect social distancing, schedule changes, emergency situations, teaching, pharmaceutical care, and daily operations in specific clinical sectors. The one-hour daily meetings on weekday mornings were run by the head of department who also participated in the hospital's weekly emergency preparedness/management committee.[3]

The crisis unit created a preparedness plan as advised by the US Department of Labor in their "Guidance on Preparing Workplaces for COVID-19".[4] The guide recommends staying in line with the instructions of public health organizations (on federal , as well as provincial, territorial or state levels) and incorporating those guidelines into the plan, all while adapting it to the reality of the workplace.[4,5]

By mid-March, the unit came up with three contingency plans. The first is concerning the progressive suspension of clinical and managerial activities by pharmacists based on priorities. Most pharmacists practice in two clinical sectors two thirds to three quarters of their time, and spend the rest validating prescriptions. It is therefore possible to reassign tasks without too much difficulty if a pharmacist is ill and some clinical activities are suspended. A total of 13 of 39 clinical pharmacist positions (33%) were deemed essential as they were closely related to medication service. These positions were in the oncology outpatient clinic (7), the intensive care unit (3), parenteral nutrition

(1) and clinical research (2). On the management side, the coordinator positions could be gradually withdrawn if needed.

The second plan details the offloading of Pharmacy Technical Assistant (PTA) activities in order to continue priority tasks. This exercise helped to identify the minimum number of employees required to maintain operation of the medication circuit. It was deemed that 80% of the regular staff would be required. The third plan addresses the maintenance of medication service with the possibility of reassigning pharmacists to perform certain technical tasks that require little to no training in the eventuality that PTAs are sick or absent from work. Each pharmacist was contacted to find out what positions they could occupy (ex.: carousel, sterile preparation, robot, narcotic management, etc.). Three choices were given: qualified, qualified after brief training or unable/unwilling to do the task.

No contingency plan was created for management because the organizational chart already pre-determines a back-up for each position. Being aware of the tasks and common responsibilities of the other managers allows the rest of the team to compensate for an absence if someone must be quarantined or if they were to become ill. The same chart is used during vacation periods.

ADAPTATION OF INTERNAL COMMUNICATIONS

In an unprecedented situation, methods of communication need increased consideration to determine the best approach.[6] In the first week following the creation of the crisis unit, it was decided to set up a secure communication network between pharmacists to reach them quickly in the case of an emergency. We were previously using an operator's application to send one-way text messages on cell phones or pagers. This method was imperfect, some pharmacists never got the message and there was sometimes a significant delay (15 to 30 minutes) before the reception of the message. The CHUM's pharmacy department therefore migrated to PetalMD® for real-time secure communications between pharmacists.[7] Its interface is comparable to consumer grade messaging services, and allows users to discuss patient cases in conformity with Canada's confidentiality laws.

As mentioned previously, a designated crisis unit meets up every morning to discuss matters pertaining to COVID-19. A daily newsletter named Phar-Info COVIDcontained the summarized information discussed and was sent by email to the rest of the department in the afternoon. This newsletter served as an update on the current number of pharmacists and technicians ill or absent, the number of confirmed COVID-19 cases in the hospital and their location, and the important positions of the hospital and department regarding safety measures that were changing frequently.

Live feed videos on Facebook have been published to directly address pharmacists and technicians on occasion. This measure was implemented in response to certain drawbacks identified with the use of emails, such as its asynchronous nature, and how time consuming keeping up with emails can be. Facebook has served as a social

platform for the 250 members of the department to announce the arrival of new employees, to celebrate moments of success, to share photos after a party, to announce upcoming activities, and more.[8] This mode of communicationwas used to reach people more easily during the COVID-19 pandemic. The number of views and comments facilitated discussions by creating a certain sense of proximity. A difference in preference was noticed between pharmacists (newsletter sent by email) and technicians (online videos), therefore the variation in communication methods helped to reach as many people as possible.

The number of weekly communications were adapted over time. At the beginning of the crisis, daily communications were favored as the situation was quickly changing. After two months, the info-letters were reduced to 2 to 3 times per week and the majority of pharmacists agreed with this adjustment (89%).

Throughout the process, an emphasis was made on the importance of establishing transparent communication and communicating key elements clearly and succinctly.[9,10] Maintaining transparency allowed workers to be aware of any new developments, which could reduce their stress. This is crucial, as some workers may feel isolated otherwise, either because they have been assigned to a specific ward and rarely see their colleagues or because they must work from home.[10] Although constant communication was favored, questions were given more time of consideration to ensure that the information given is reliable.

The literature regarding the implementation of alternative communication channels in times of crises specifically in the context of hospital practice is scarce. Among the few articles of interest, the authors simply list the measures put in place, which are similar to those undertaken so far by the CHUM's pharmacy department.[10,11]

MANAGEMENT OF EMPLOYEE STRESS

For healthcare workers to continue to provide care to those who need it, they need to feel safe and supported in their work environment. During a pandemic, employees must feel that their own safety, and the safety of their families, is a top priority for all team leaders and managers in healthcare facilities. They also may require additional mental health services during a pandemic as a result of increased stress and workload. This is no different for members of the pharmacy department in a hospital setting. Several measures had to be put in place in order to ensure the mental wellbeing of pharmacists and pharmacy technicians alike.[12]

The CHUM's pharmacy department has deployed such measures in order to help employees cope with the mental burden associated with the COVID-19 pandemic. First, upper management was visiting each pharmacy team at all levels in the hospital in order to reassure pharmacists and pharmacy technicians alike, and to reiterate steps that are being taken to ensure their safety and the safety of their loved ones. The head of department and the chief technician had visited each pharmacy sector twice a week during the first month of the crisis. When the situation was more under control, these

visits were spaced out to every 2 to 3 weeks in order to limit travel and avoid becoming vectors of contamination.

Second, staff members were continuously being encouraged to bring any concerns they may have had to the attention of team leaders, and any such concern was being dealt with actively. Finally, help from mental health services was being provided to anyone who might have required it. These methods are just some of the many ways the WHO recommends health facility managers deal with employee stress.[12] They also recommend that team leaders make sure staff members are aware of where and how to access mental support services, should they require such assistance. During such a crisis, staff members might become overwhelmed, and therefore, managers must ensure sufficient work breaks in order to account for the increased workload, and allow staff to rest and avoid exhaustion.[12] Pharmacy staff members can also use this time to evaluate their own mental and physical status.[13]

A survey on personal concerns and methods of communication was sent two months after the COVID-19 pandemic to the 80 pharmacists available. Almost half of the pharmacists responded (see table 1). Healthcare employees might not only be concerned for their own safety, but might also fear becoming a vector, and spreading the disease to their patients and their loved ones at home. We hypothesize that this is due to the high proportion of young pharmacists (63% are ≤ 40 years). Still, 31% of

pharmacists find it very or relatively difficult to work effectively in the context of the pandemic.

REORGANISATION OF WORKSPACE

In order to limit the potential spread of the virus in the pharmacy department, the workplace had to be reorganised. The goal was to restrict the staff's unnecessary movements, to limit the spread of the virus.

In accordance with the provincial recommandations, the required distance between members of the department was set to two meters (6 feet). Before and after the use of a workstation, it was required to disinfect and clean the desk, mouse, keyboard, telephone and chair, as suggested by the ASHP.[14] Approximately 30 workspaces were temporarily closed in the central pharmacy and the four pharmacy satellites. In distribution, the increased distance between pharmacists and technicians made it harder to communicate rapidly and directly. Telework was integrated at the same time to further favor social distancing, the implementation will be discussed later in the text. In July, a second reorganisation took place to restart using the vacant workstations and increase communication between employees. It was asked to put a mask on when 2 meters distancing wasn't possible, especially in the hours when the employees were doubled. The dining area was also rearranged and pharmacists and PhT were given permission to eat at their workspaces in different areas of the pharmacy, which includes the administrative premises.

REORGANISATION OF PHARMACIST WORKFORCE

Clinical pharmacists were separated in four clusters (red, green, blue, purple) according to their risk of exposure to COVID-19 so that their travel within the hospital is limited and therefore the potential risk of spreading the virus is lowered.[15] The red, green, blue and purple clusters were composed of 22 (33%), 11 (17%), 30 (45%) and 3 (5%) pharmacists respectively. Pharmacists in the red cluster were exposed to patients infected with COVID-19 either at the intensive care unit, on the COVID wards or on the pneumology ward. These pharmacists could not enter the prescription validation area of the pharmacy and telework was favored.[15] Pharmacists in the green cluster were possibly exposed to COVID-19 infected patients in areas such as the emergency department. The green cluster was limited in size and served as a hybrid between the red and blue clusters to facilitate staffing. Pharmacists in the blue cluster were mainly oncology pharmacists that were not exposed to potentially infected patients in hospital. The purple cluster was composed of the research pharmacists who stayed in the research pharmacy satellite during the active period of the pandemic since it would have been difficult to replace them if ever they were to get infected. During the first wave, their presence was necessary to rapidly implementresearch protocols for COVID patients.

Approximately 60 hours of work was put into the initial adaptation of the schedule to be able to respect the cluster principle and discuss these changes with pharmacists. The

clusters were constantly reevaluated during the first wave as the attribution of ''hot'' or ''cold'' areas would change in the hospital.

It should be noted that the Quebec healthcare system has opted to suspend any elective in hospital intervention so as to free up as many beds as possible in the event of an overload of COVID-related hospitalizations.[16] Thus, several wards were closed due to a drop-inactivity such as the lung transplant service for example. We observed a decrease in the number of prescriptions comparable to the 30% reported at the Beaumont Hospital in Dearborn, Michigan, a 632-bed tertiary care hospital in the United-States (Figure 1).[17] This situation is due to the decrease of approximately 30% in the number of admissions and occupied beds in the hospital (Figure 2). We were therefore able to remove one pharmacist per day normally assigned to the task of prescription validation to be able to liberate them instead for the coverage of an additional COVID patient ward. This 40 hours per week position was rotated weekly through a pool of 6 voluntary pharmacists. At the peak of the crisis, a total of 8 clinical pharmacists positions covered all the COVID positive patients which correspond to about 20% of the patients in hospital. Their clinical tasks were similar to those described by australian pharmacists.[18] The presence of pharmacists on the COVID units made it easier to answer the nurses' questions in a timely fashion, as well as review patients' pharmacological records to optimize pharmacotherapy while regrouping drug administration.[18] The pharmacists could also evaluate the possibility to administer intravenous medication quicker in order to reduce the time nurses spend in patients' rooms and the frequency at which they would have to enter.

Due to a provincial directive, several pharmacists canceled their scheduled vacations, which generated a surplus of available pharmacists. This situation made it easy to replace pharmacists waiting for results of COVID testing if needed.The surplus was managed by commissioning pharmacists to carry out several projects related to COVID-19, namely the creation of a management protocol for the intensive care unit as well as the advancement of a project aimed at limiting drug wastage. The pharmacists of the oncology service were being doubled temporarily to avoid overtime hours and fatigue.

After the first wave ended, the number of prescriptions never came back to pre-pandemic numbers. This allowed us to continue to reorganize our workforce and to reevaluate the long-term prospect of the changes made during COVID. For the second wave, modification of pharmacist scheduling on wards and in prescription validation will depend on the workload in given areas. The reorganisation process will be dynamic and pharmacists will have to be flexible to schedule changes if needed.

SCHEDULE MANAGEMENT

Many changes were made to scheduling. PetalMD® is an electronic application used for direct messaging but also enables real time schedule updates by sending notifications.7This made it much easier to communicate changes with employees in comparison to the previously used paper or PDF format schedules. This application can also generate schedules automatically while taking into account given parameters and

contains a "Hospital console" function allowing the hospital to see if there are breaks in medical or pharmaceutical services. Given the complexity of the availability and restrictions of the 84 pharmacists, it wasn't possible to implement automatic scheduling during the first wave. The client was programmed in April-May with the help of the company and the first automated electronic schedule was implemented in June for July to January. This tool will allow us to be better prepared for the second wave where many changes will likely be necessary.

TELEWORK

Like many other workplaces, the pharmacy department of the CHUM also decided to turn to telework. The department's experience with telework began as a project to respond to prescription validation overload in evenings before the pandemic. This allowed us to notice and address difficulties related to the concept and technology including difficulty having access to the numerized prescriptions, difficulty communicating with other hospital staff from a distance, and measuring validation performance. The first wave came after some of the setbacks associated with telework were resolved.

The vast majority of the 84 pharmacists and some PhT (the ones responsible for prescription entry) were granted remote access to all necessary hospital software within mid-march. The CHUM gave all employees a one-week timeframe in order to allow them to install all the necessary software, and also provided IT support when needed.

During the first wave, 1 pharmacist position on 12 dedicated to prescription validation and 3 of the 8 pharmacists in the oncology outpatient unit were changed to telework.

A follow-up was required to evaluate the performance and reliability of the pharmacists working at home to make sure they are able to do the full assigned task. An analysis of the number of validated prescriptions showed that the pharmacists validate significantly 27% more prescriptions in telework when compared to a centralized workstation in the hospitalwithout impacting the performance of the pharmacists in hospital(Figure 3).These data encouraged us to change a second positiondedicated to prescription validationat the emergency satellite into teleworkfive months after the beginning of the first wave. Although the period of observation is shorter, the datais significant only when all pharmacists are compared with each other (Figure 4). In our hospital, teleworking seems to have a greater benefit for pharmacists dedicated to the validation of prescriptions in a centralized workstation (27%) when compared to a decentralized workstation (10-11%) (Figure 1 and 2).We speculate that this might be due to a lesser number of interruptions and distractions at home. These modificationsare still in place more than8 months after the implementation. We report the advantages and the challenges that we perceived in our experience with telework in table 2.

Policies and procedures for telework were written during the summer to maintain its application on the long term. To authorize staff to do telework, we insured that the employee could:

- Respect confidentiality and information security rules;

- Respect scheduling, notifying of an absence and being able communicate at all times during work hours with the rest of the pharmacy team;
- Accept to be evaluated and questioned on their productivity.

From these experiences, it seems ideal to alternate between telework and onsite work to maximize the benefits and minimize the limitations of both environments.

Conclusion

A crisis is a situation that allows teams to come together, and work towards a common goal. During such times, managers and members of the department must demonstrate exceptional adaptability and resilience to change in order to execute on rapid situational decisions. The proactivity and transparency of the pharmacy department management team is important to face challenges related to COVID-19 pandemic. The steps discussed in this article are those that were undertaken by the CHUM's pharmacy department so as to keep the department operational and functional, all whilst protecting the health and safety of pharmacists, pharmacy technicians, other hospital staff and patients. The paper shares the departments experiences in crisis management, internal communications, employee stress, reorganization of workspaces and clinical staff, telework and schedule management. Furthermore, it is believed that the pharmacy department will benefit from maintaining some of these measures in the long-term, such as telework and use of an electronic schedule. The newly implemented

means of communication, such as PetalMD®, as well as the mental health measures, might also prove to be beneficial in a post-pandemic setting. It is hoped that the information provided in this article can aid other healthcare facilities in managing human resources in times of crisis.

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418 **Abbreviations**

419 COVID-19: Coronavirus disease 2019

420 WHO: World Health Organization

421 CDC: Centers for Disease Control and Prevention

422 ASHP: American Society of Health-System Pharmacists

423 QOP: Quebec's Order of Pharmacists

424 PhT: Pharmacy technician

425 **Table 1: Pharmacist concerns during the COVID-19 pandemic**

Employee concerns	n (%)
Q1: Are you concerned about the impact of the coronavirus on your health?	
● Extremely concerned	1 (2)
● Very concerned	6 (16)
● Somewhat concerned	11 (29)
● Not too concerned	20 (53)
● Not concerned	0 (0)
Q2: Are you concerned about the impact of the coronavirus on your hospital?	
● Extremely concerned	2 (5)
● Very concerned	9 (24)
● Somewhat concerned	21 (55)
● Not too concerned	6 (16)
● Not concerned	0 (0)
Q3: Do you find it easy or difficult to work effectively?	
● Very difficult	2 (5)
● Relatively difficult	10 (26)
● Neutral	14 (37)
● Relatively easy	12 (32)
● Very easy	0 (0)
Q4: What is your biggest professional concern?	
● Schedule / Family work balance	4 (11)
● Security	8 (21)

• Less stimulating work	5 (13)
• Difficulty to interact with patients / Optimal care	6 (16)
• Service cuts / work overload	6 (16)
• Information overload / Uncertainty	4 (11)
• Others	2 (5)
• None	3 (8)

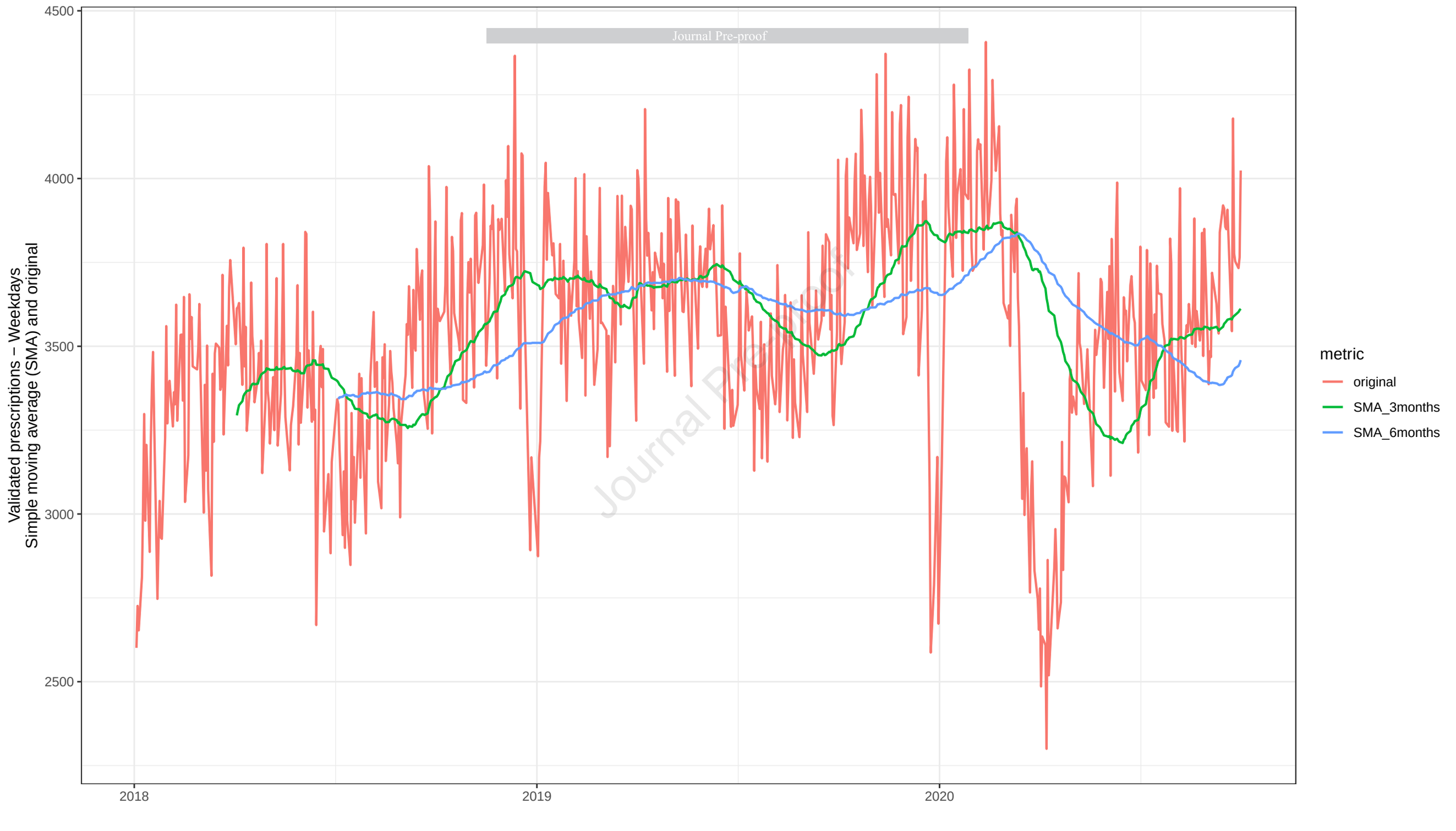
Table 2: Advantages and disadvantages of telework

Advantages	Disadvantages
• Create a sense of belonging to the department • Promote the employer brand • Increase the level of employee satisfaction (ex: work-life balance, stress reduction, reduction of transit time) • Increase organizational flexibility (atypical schedule) • Improve productivity by reducing interruptions • Enabling social distancing during a pandemic (optimization of workspace) • Provide rapid assistance in exceptional cases of work overload	• Social isolation • Need to develop new forms of management • Conflict between private and professional life • Cost to set up a teleworking area at home • Need great self-motivation and time management skills

Figure 1:Number of validated prescriptions on weekday between 2018 and 2020

Figure 2: Admission and occupied beds before, during and after the first wave

435 **Figure 3: Comparison of the number of new prescriptions validated by the**
436 **pharmacist at the hospital (centralized) versus teleworking**
437
438 **Figure 4: Comparison of the number of new prescriptions validated by the**
439 **pharmacist at the hospital (decentralized at the emergency) versus teleworking**
440


Journal Pre-proof
Validated prescriptions – Weekdays
Simple moving average (SMA) and original
4500
4000
3500
3000
2500
2018
2019
2020
metric
original
SMA_3months
SMA_6months
Journal Pre-proof