

# Hospital Pharmacists' Preparedness in Times of Crisis

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## Introduction

The pharmacist's role in crisis response is just as essential as it is the provision of pharmaceutical care in traditional settings. (1) Pharmacists should be proactive and define their role in crisis management before others define it for them. Pharmacists' ambulatory, pharmacotherapy and critical care readiness should be delivered in line with existing and emerging supply chain and distribution tasks. Shortages of personal protective equipment (PPE), disinfectants and medicines as well as the uncertainty about available treatment options shaped the work of hospital pharmacists throughout the SARS-CoV2 pandemic. (2) One of the major risks in crisis is the occurrence of medicine shortages. Shortages of medicines have been on the rise globally this century. Factors that contribute to shortages, such as insufficient manufacturing capacity, a shortage of active pharmaceutical ingredients, and restricted distribution/allocation, are among those that are out of the scope of the pharmacist's activities. (3) Nevertheless, pharmacists effectively manage medicines shortages by implementing defined strategies ahead of the occurrence of a shortage. (2) The European Association of Hospital Pharmacists (EAHP) has worked on the issue of medicine shortages in 2014, 2018 and 2019 demonstrated that the impact that shortages have on patient care and the intensity of the work of hospital pharmacists has tremendously increased, especially in times of crisis. (3)

## Material and methods

In order to further investigate problems encountered during the current SARS-CoV2 pandemic the survey on crisis preparedness among hospital pharmacies in Europe, EAHP created and conducted the survey on the future crisis preparedness of hospital pharmacies via Survey Monkey. The online questionnaire, along with its

objectives and timeline, was distributed to EAHP members through a campaign carried out on social media and via the EU Monitor as to increase the engagement of individual hospital pharmacists. Throughout 17 questions aimed at collecting the general characteristics of the survey participants; medicine, disinfectant and PPE shortages; mitigating approaches adopted for medicine shortages; type, source and utility of the support received; lessons learnt; and areas of improvement for future pandemics. The survey was conducted between September and December 2020. Data on the classes of medicines affected by shortages were compared with those of the 2019 survey on medicines shortages to assess the impact of the pandemic on the type of medicine shortages. The answers to the questions regarding the medicine shortages, disinfectants, and PPE were considered as a binary response variable. Three backward stepwise logistic regression (BSLR) models were used to identify independent variables. All analyses were performed using R 3.6.3 (R Foundation for Statistical Computing, Vienna, Austria). Statistical significance was set at  $p < 0.05$ .

## Results and discussion

Among 59% (n=861) of respondents, medicine shortages during the SARS-CoV2 pandemic posed significant problems in delivering the best care to patients and/or operating the hospital pharmacy. Anaesthetics were most affected by shortages (46%, n=670), followed by antimicrobials (37%, n=539), muscle relaxants (29%, n=425), benzodiazepine (26%, n=380) and opioids (22%, n=316). Antimalarial and antiviral drugs were reported to be in shortage by 13% (n=193) and 12.5% (n=183), respectively, of the survey respondents and were widely used and/or misused, especially during the early stages of the SARS-CoV2 pandemic. The frequencies that resulted in a statistically significant increase in 2020 compared

with 2019 were those relating to anaesthetics ( $\chi^2_{(1, 6117)} = 242.37$ ,  $p < 0.001$ ) and antimicrobials ( $\chi^2_{(1, 6117)} = 16.03$ ,  $p < 0.001$ ). The top three mitigating strategies adopted to address the shortages were: therapeutic substitution (42%,  $n=620$ ), creating additional strategic stock at local, regional or national level (38%,  $n=557$ ) and borrowing medicines from other hospitals (35%,  $n=512$ ). Importing medicines from another country (33%,  $n=478$ ) and generic substitution (31%,  $n=448$ ) were also reported among a variety of mitigation strategies, while the least selected methods were compounding/production of medicines in the pharmacy (28%,  $n=405$ ) and using medicines from central contingency reserves kept at national level (27%,  $n=403$ ). The country's National Competent Authority (NCA), was among the entities that provided the most support to overcome medicine shortages (57%,  $n=838$ ) followed by manufacturers and the Scientific Societies and Healthcare Professional Organisations (SSHPO), which were reported in 39% ( $n=571$ ) and 20% ( $n=300$ ) of the answers, respectively. The main type of support received by the respondents was the allocation of contingency stocks to their hospital (51%,  $n=741$ ), followed by feedback received from manufacturers on the availability of medicines (46%,  $n=675$ ) and the expected duration of shortages (40%,  $n=584$ ).

Another aspect considered in the survey was the usefulness of the help received from each of the aforementioned supporting entities. The respondents were asked to assign a 5-point Likert scale score ranging from 1 ('not useful') to 5 ('extremely useful'). The highest mean usefulness score was assigned to the NCA (mean=3.2,  $SD=1.15$ ), followed by the SSHPO (mean=3.10,  $SD=1.21$ ) and manufacturers (mean=3.06,  $SD=1.07$ ). Handling a higher workload and stress ( $n=951$ ) as well as quickly adapting the processes and practices at the hospital pharmacy ( $n=942$ ) were lessons that almost 65% of participants learnt during the first peak of the pandemic, followed by working with scarce resources which was reported by 55% ( $n=813$ ) of respondents. The proper handling of PPE (43%,  $n=627$ ) and the assessment of therapeutic options despite the limited availability of scientific data (37%,  $n=543$ ) ranked in fourth and fifth place as learning points from the pandemic. Concerning the areas of improvement to better prepare pharmacy services for future pandemics, almost half of the respondents indicated that improvements are needed in hospital stock management (49%,  $n=721$ ), communication with authorities (47%,  $n=688$ ), crises and surge management (47%,  $n=688$ ), the use of preparedness protocols (47%,  $n=682$ ) and communication with other healthcare professionals (46%,  $n=674$ ). Only 28% ( $n=404$ ) of respondents indicated communication with the management of the healthcare facility as an area for

improvement. Moreover, the significant association between the percentages of the infected population with increased odds of all three types of shortages assessed suggests that the countries hit hardest by the pandemic were those in which the procurement of health goods was the greatest problem. Moreover, the fact that anaesthetics, antimicrobials, muscle relaxants, benzodiazepine and opioids were the most reported classes of medicines in short supply and that, for many of them, there was a significant relative increase in the frequency of shortage reporting compared with the 2019 survey. (2) The high rate of responses reporting stress management and the need to quickly adapt processes and practices at the hospital pharmacy as lessons learnt from the pandemic, as well as the need for improvements in stock management and communication with authorities and other health professionals as further areas for improvement, demonstrate the difficulties encountered during the SARS-CoV2 pandemic, characterised by a constant change in the available scientific literature and in the epidemiological situation which has produced the need for a frequent update of therapeutic protocols/guidelines and medicine inventories. (2)

## Conclusion

This survey represents the perspective of the hospital pharmacists as a response to global SARS-CoV2 pandemic crisis. It shows how a global pandemic can affect the magnitude and type of medicine, disinfectants and PPE shortages. Hospital pharmacists highlighted many weaknesses in management of the pandemic, which can be considered as a starting point to plan a more resilient and overarching mitigating framework to manage future crisis.

## References

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