



# Specialized Pharmacist Roles and Perspectives in the Collaborative Management of COVID-19

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## Abstract

The COVID-19 pandemic poses a multitude of unprecedented challenges to the healthcare system and broader public policy arena. Comprehensive guidelines and recommendations have been slow to develop as each community and medical institution face unique challenges due to a dissimilarity in demographics and resources. We seek to describe the experience at our institution to highlight challenges that others may encounter with an emphasis on the value that specialized pharmacists can provide at various levels of the healthcare system.

## Keywords

pharmacist perspective, COVID-19

California issued a “stay at home” order that became effective on March 19th, 2020.<sup>1</sup> Since then, our 284-bed community-teaching hospital in Los Angeles County has experienced surges of COVID-19 patients, with peak rates of 20 cases per week. COVID-19 extends beyond any 1 discipline and involves many aspects of care for varying disease severity.<sup>2–4</sup> Therefore, interprofessional collaboration is essential, and pharmacists with specialized training can serve an inordinate role in providing guidance and facilitating open communication on relevant issues such as inventory management, critical appraisal of treatment options, optimization of medication administration times, and discharge planning, among other concerns.

We would like to share our perspectives (critical care, infectious diseases, ambulatory care) and institutional experience with COVID-19 in the hopes of describing challenges and the value that specialized pharmacists can provide.

## Critical Care Perspective

A pharmacist with specialty training in the critical care setting fundamentally provides clinical, educational, scholarly, and administrative services. Comprehensive knowledge of therapeutic options to manage patients who require mechanical ventilation (MV) is necessary to overcome obstacles that may occur due to medical complexity surrounding critical ill COVID-19 patients. A challenge our institution encountered was implementing recommendations regarding sedative and analgesic agents to prevent adverse events and reduce staff

entry into the patient rooms. It was observed at our institution that many of the COVID-19 patients requiring MV support due to acute respiratory distress syndrome (ARDS)/atypical ARDS require higher doses of sedatives as well as a longer duration of MV ( $\geq 7$  days). The 2018 clinical practice guidelines for sedation in the ICU suggest using propofol or dexmedetomidine over benzodiazepine to facilitate mechanical ventilation.<sup>5</sup> To minimize the risk of propofol infusion syndrome and target a deeper level of sedation (often not achievable with dexmedetomidine), our institution elected to prioritize midazolam intravenous infusion for COVID-19 patients.<sup>6,7</sup> The institution elected not to deviate from the standard concentration and approved titration recommendation for these sedatives to assure familiarity among practitioners. Additionally, the institution had to modify neuromuscular blocking agent (NMBA) practice with the preference of vecuronium in place of atracurium, as well as abiding by the current recommendation for continuous NMBA administrations in ventilated ARDS

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**Table 1.** Select Listing of Externally Available Information Resources for COVID-19.

Website name and web address	Description
Registry of Clinical Trials by the U.S. National Library of Medicine (ClinicalTrials.gov)	Database of clinical trials submitted to the U.S. Food and Drug Administration, including those involving potential COVID-19 treatments.
ASHP COVID-19 Resource Center ( <a href="https://www.ashp.org/COVID-19">https://www.ashp.org/COVID-19</a> )	Compilation of COVID-19-related news and evaluation of potential therapies. Published material include webinars and podcasts. Includes a regularly updated table assessing various evidence for COVID-19-related treatments.
SIDP COVID-19 Resources ( <a href="https://sidp.org/covid19/">https://sidp.org/covid19/</a> )	A compilation of 10-20 minute video reviews of experimental agents for COVID-19, addressing drug activity, pharmacokinetics, safety data, and efficacy data.
IDSA COVID-19 Resource Center ( <a href="https://www.idsociety.org/public-health/COVID-19-Resource-Center/">https://www.idsociety.org/public-health/COVID-19-Resource-Center/</a> )	Features clinical guidance on various COVID-19 issues including diagnosis, treatment, infection prevention, and pediatric care.
Surviving Sepsis Campaign COVID-19 Guidelines ( <a href="https://www.sccm.org/SurvivingSepsisCampaign/Guidelines/COVID-19">https://www.sccm.org/SurvivingSepsisCampaign/Guidelines/COVID-19</a> )	Guidelines on management of critically ill adults with COVID-19, including recommendations on hemodynamics, ventilation, and infection control/prevention.
NIH COVID-19 Treatment Guidelines ( <a href="https://www.covid19treatmentguidelines.nih.gov/">https://www.covid19treatmentguidelines.nih.gov/</a> )	Comprehensive guidelines regarding care of patients with COVID-19, composed by an interdisciplinary panel. Recommendations address anti-thrombotic therapy, antiviral treatments, immune-based therapy, and select critical care concerns.
CDC COVID-19 Portal ( <a href="https://www.cdc.gov/coronavirus/2019-nCoV/index.html">https://www.cdc.gov/coronavirus/2019-nCoV/index.html</a> )	Collection of various public health guidance on issues regarding COVID-19 epidemiology, including recommendations for community-related exposure, infection prevention strategies, and reporting of positive cases.

Abbreviations: ASHP, American Society of Health-Systems Pharmacists; SIDP, Society of Infectious Diseases Pharmacists; IDSA, Infectious Diseases Society of America; NIH, National Institutes of Health; CDC, Centers for Disease Control and Prevention.

patients.<sup>8</sup> Other institutional changes due to COVID-19 include following the interim guidance on management of coagulopathy in COVID-19 patients by encouraging pharmacologic venous thrombosis prophylaxis or treatment with low molecular weight heparin (LMWH)/enoxaparin, assuming no contraindications exist.<sup>9</sup> LMWH was initiated in patients with renal dysfunction due the availability and familiarity of dosing adjustment based on anti-Xa levels at our institution. Intensity of prophylactic anticoagulant therapy was at the discretion of the managing physicians and was often based D-dimers levels. Heparin infusion was encouraged in patients with anticipated procedures associated with higher risk of bleeding. With the implementation of these changes, a remaining challenge includes preparing for anticipated or realized drug shortages (e.g. sedatives, analgesic, vasopressors).<sup>10</sup> For example, alternative sedative and analgesic strategies can help sustain inventories, such as intermittent bolus dosing or a no sedation approach in non-COVID-19 MV patients.<sup>6,11</sup> If fentanyl supplies become depleted, IV infusion of hydromorphone is available and can serve as an alternative, which would require training for all healthcare staff involved. Fortunately, we did not experience a shortage of sedatives, analgesics, and NMDA because as a precaution we added to usual procurement. A preemptive approach to the implementation of order sets was imperative to allow the necessary time to train and educate nursing/physicians/pharmacy.

ICU pharmacists are compelled to anticipate, adapt to new situations, while simultaneously seeking opportunities to curtail unfamiliar institutional practices to reduce medication errors. It is essential to utilize historical recommendations with current data to ensure safe and efficacious treatment of

critically ill patients while taking an inter-professional approach with other providers to educate hospital staff and monitor patient outcomes.

## Infectious Disease Perspective

Antimicrobial stewardship programs (ASP) are well positioned to provide valuable resources for managing COVID-19, which includes maintaining familiarity with new data as it is released and disseminating key points to other providers. Given the urgency of the current pandemic, there may be a heightened impulse among patients and providers to endorse preliminary results without the customary levels of peer oversight. The role of ASP pharmacists in critical appraisal of available literature in this setting provides guardrails against the risk of inferring significant findings from insufficient data. The value of avoiding the promotion of potentially harmful interventions (or inadvertently withholding beneficial ones) cannot be overstated in the dynamic setting of a novel pandemic. Strategies for staying informed of the most recent literature include the use of social media and various professional society websites/newsletters (Table 1). As healthcare providers with drug expertise, pharmacists have been to be instrumental resources for relaying accurate and objective health information in the setting of past infectious outbreaks.<sup>12</sup> At our institution, the use of remote in-services and electronic distribution of regularly updated internal guidelines (eg, use restrictions for proposed anti-viral agents) have been effective modes of education. Key components of success in this arena include regular updates and maintaining open lines of communication between all levels of patient care.

Another issue many institutions face during COVID-19 is the need to track patients receiving therapy for proven or probable infections. The framework of prospective audit-and-feedback review, which our ASP ordinarily performs to monitor the appropriateness of antibacterial agents, can also be applied in the management of COVID-19. For example, many COVID-19 patients are on concurrent broad-spectrum antibiotics with potentially inappropriate indications, such as elevated procalcitonin levels which have been documented to vary widely in the setting of COVID-19.<sup>13</sup> Additionally, pharmacists working with ASPs can help identify clinical signs or symptoms of COVID-19 that may warrant repeat testing or precautionary isolation after initially testing negative. This role becomes especially valuable while a highly reliable method of identifying infected or contagious patients remains elusive.<sup>14,15</sup>

### Ambulatory Care Perspective

The impact of COVID-19 extends to ambulatory and primary care. To reduce exposure among healthcare workers and minimize systemic healthcare strain, the CDC has advised ambulatory care facilities to utilize telehealth services for triage and assessments of patients.<sup>16</sup> Hindrances to telehealth include reimbursement barriers and difficulty ensuring access for vulnerable patients who may lack access to electronic portals. There are also significant privacy and security risks that can adversely affect patients' and clinicians' trust and willingness to adopt the system.<sup>17,18</sup> Although some insurance companies have been offering similar reimbursement for telehealth as face-to-face visits during this time, our institution's family medicine department found challenges in billing and reimbursement for telehealth services, and continued with face-to-face visits during the pandemic. Furthermore, face-to-face visits allow family medicine residents to preserve much of their primary learning experiences. The ambulatory care pharmacist continued to follow-up with previously referred patients for chronic disease management utilizing telehealth, but these services were not billed.

Beyond the current changes, the future of primary care may permanently evolve. Many patients previously found it difficult to attend primary care appointments due to limited transportation access or scheduling unavailability. The COVID-19 pandemic led to unprecedented adoption of technology used for remote encounters. Technology can assure patient access to routine and preventative care among patients and providers, and without this form of medical access those with uncontrolled disease states can be at great risk of complications. Therefore, expansion of telehealth can create opportunities to expand conventional access to healthcare. Many telehealth challenges related to COVID-19 provide opportunities for pharmacists, including patient counseling, therapy monitoring, documentation in the electronic medical record, and discharge coordination. For example, COVID-19 patients can be educated to use drive-through pharmacies, curbside pick-up, or delivery services to limit the risk of transmission.

Within the primary care setting, pharmacists can provide both COVID-19 and non-COVID-19 related care to patients who may have lost sight of their previous health care goals. Ambulatory care pharmacists are uniquely positioned to provide comprehensive patient care given their training in motivational interviewing and lifestyle medicine, as well as chronic disease state management. With proper training and regulatory authority, pharmacists can also administer COVID-19 testing within the community setting, and this role may continue to expand into the outpatient clinic setting.<sup>19</sup>

As described above, COVID-19 presents a diverse array of challenges that require innovative solutions from multiple disciplines. While our institutional experience is unlikely to be universal, this account illustrates the valuable roles that pharmacists can provide in the collaborative care of COVID-19 patients throughout various levels of the healthcare system.

### Authors' Note

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