



Drug Shortage: A Crisis during the COVID-19 Pandemic

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Abstract Because of the lack of information regarding the coronavirus illness 2019 (COVID 19), people worldwide have been purchasing pharmaceuticals in anticipation of the sickness, which has driven demand to an unprecedented level. While this was going on, drug manufacturers were shut down to stop the spread of COVID-19. As a result, the chain of distribution for drugs was interrupted, which led to a shortage of drugs. A drug shortage, as defined by the Food and Drug Administration (FDA), refers to a disruption in the availability of all medically interchangeable medicines controlled by the FDA. This disruption occurs when the supply is inadequate or predicted to be insufficient to satisfy the anticipated demand [1]. This article focuses on understanding the reason for the shortage and pharmacists' role in bridging those gaps.

Keywords COVID-19, drug therapy, drug shortage, pharmaceutical production.

1. Introduction

The US is a world leader in pharmaceutical research and development; only 28% of the factories that make active pharmaceutical ingredients (APIs) for the US market are in the US. The other 72% are in China (13%), India (18%), Europe (26%) and rest of the world (13%) [2]. According to data given by the FDA at a public conference in November 2018, the frequency of persistent medication shortages has been on the rise as of late after falling from a peak in 2011, and these shortages have persisted for more extended periods, with some instances spanning over eight years. During the five years from 2013 to 2017, the FDA examined 163 medications that experienced a shortage. There was a 67% generic version of each of the 109 medicines included in the study, and 63% were injection-only medications ("sterile injectables") [3].

Covid-19 crisis repercussions on medication supply

The COVID-19 pandemic has shown numerous problems with the US pharmaceutical supply chain. Reduced air and ground traffic, curtailed exports, and factory closures have all been consequences of the pandemic's progression. At the beginning of 2020, pharmacists were concerned about the scarcity of medications as they witnessed the novel SARS-CoV-2 virus causing shutdowns in many parts of China. In the months following the outbreak of the COVID19 pandemic, 37 Chinese pharmaceutical companies that supplied active components to American medicinal products were forced to close their doors [4]. The excessive dependence on precursor chemicals and active pharmaceutical compounds from China has raised significant concerns, particularly regarding shortages in the global supply chain.

During the COVID-19 pandemic, many policy efforts have been aimed at increasing the production of medicines in the United States. According to the FDA, there should be public quality standards for manufacturing practices. To



lessen the likelihood of shortages, a quality metrics system can be implemented to encourage manufacturers to improve themselves and enhance product quality [4].

A constantly evolving list of authorized API sources of generic pharmaceuticals could be an oversight of the FDA. When the demand for these items suddenly spikes, it can be challenging for generic manufacturers to swiftly identify other API sources because many buy APIs from an equally international web of vendors. The generic supply chain might benefit from a more adaptable and secure framework that does not compromise on quality if it had access to an approved API providers list, which would speed up finding new API sources. The most up to date information regarding APIs and drugs and any changes to manufacturing processes or FDA approvals should be included in such a list [5].

Table 1: Immediate Actions Needed to Boost Medication Supply and Ensure Equitable Access [6]

Boost medication supply	Minimize cost
Mobilize any state or federal government stockpiles of critical medications to hospitals experiencing surges in vaccines	Use a “Netflix” option for new antiviral drugs and patients
Institute a 24-h turnaround for approving the importation	Authorize Medicare to of generic drugs or grant immediate reciprocal approval negotiate prices for COVID for selected generic drugs manufactured in other 19–related drugs. countries
Work with major brand-name and generic pharmaceutical •Be willing to issue companies to boost mass manufacturing of approved medications	compulsory licensing for drugs in short supply
Encourage and fund nonprofit generic drug rebates for COVID-19– manufacturing in the United States.	Prohibit deductibles and specific drugs
Increase the domestic manufacturing of active pharmaceutical ingredients	
Establish centralized systems to track need, based on patient caseload, to inform manufacturing needs and shift supply rapidly and equitably	

Role of Pharmacist during Drug Shortage

When pharmacists notice a shortage, they quickly describe how disrupted supplies are utilized and estimate how much medication is required. Including pharmacists in various practice settings facilitated an in-depth knowledge of the therapeutic indications for the drugs in shortage, especially for their anticipated emergent use unrelated to the treatment of COVID-19 patients. When making this selection, it is crucial to examine the significance of a drug to the outcome for a specific patient. When other medical professionals are in a bind and need a substitute medication, pharmacists are the people to turn to for advice.

Here are a few strategies that pharmacists can utilize to ensure continuity of care:

- Pharmacists should monitor developments on pharmaceuticals currently under investigation for treating COVID-19 and work with prescribers to review any prescriptions for off-label or office usage of drugs.
- According to their professional and ethical standards, community-based pharmacists should prioritize filling prescriptions for patients whose current drug therapy is to be continued, for use in inpatient settings, and when no other treatment options are available
- Salbutamol and other life-saving symptom medications are on critical allocation. Dispensing no more than one inhaler per patient and exploring other treatment options as needed are both responsibilities of pharmacists, who must exercise their professional judgment. To prevent medicine overuse, pharmacists should inquire about inhaler use from all patients before giving the medication. It may be necessary to reassess therapy if a rescue inhaler is used excessively.
- For the sake of their patients' well-being, pharmacists should think twice before filling prescriptions for themselves, their acquaintances, or family members who are planning to stock up "just in case." [7]



Conclusion

In times of limited medication availability, pharmacists are crucial. Aside from providing medications, they play an active role in ensuring patient care and safety during times of scarcity. Ultimately, when it comes to medicine shortages, pharmacists are supposed to be the ones to initiate conversations with healthcare professionals, offer alternative treatments, guide patients in the correct use of medications, and push for regulations that strengthen the supply chain. Pharmacists can primarily lessen the effect of medication shortages on healthcare delivery and patient outcomes because of their position as frontline healthcare workers.

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