

Background

- Coronavirus disease 2019 (COVID-19) is caused by the severe acute respiratory syndrome (SARS) CoV-2 virus.
- Most countries have implemented restrictions on trading channels to contain the spread of disease, increasing the risk for drug shortages.
- An increased demand for certain medications during the COVID-19 pandemic has led to drug shortages across the nation.¹
- These shortages are anticipated to worsen with time as the COVID-19 pandemic continues and have the potential to affect both patients hospitalized with COVID-19 directly and patients hospitalized with other illness.
- A medication shortage dashboard is a tool developed by Illinois Council of Health-System Pharmacists (ICHP) to track and communicate information on drug shortages throughout the state.

Objective

The aim of this study is to track drug shortages within Illinois health systems and identify causes, trends, and potential solutions to these timely, pertinent issues.

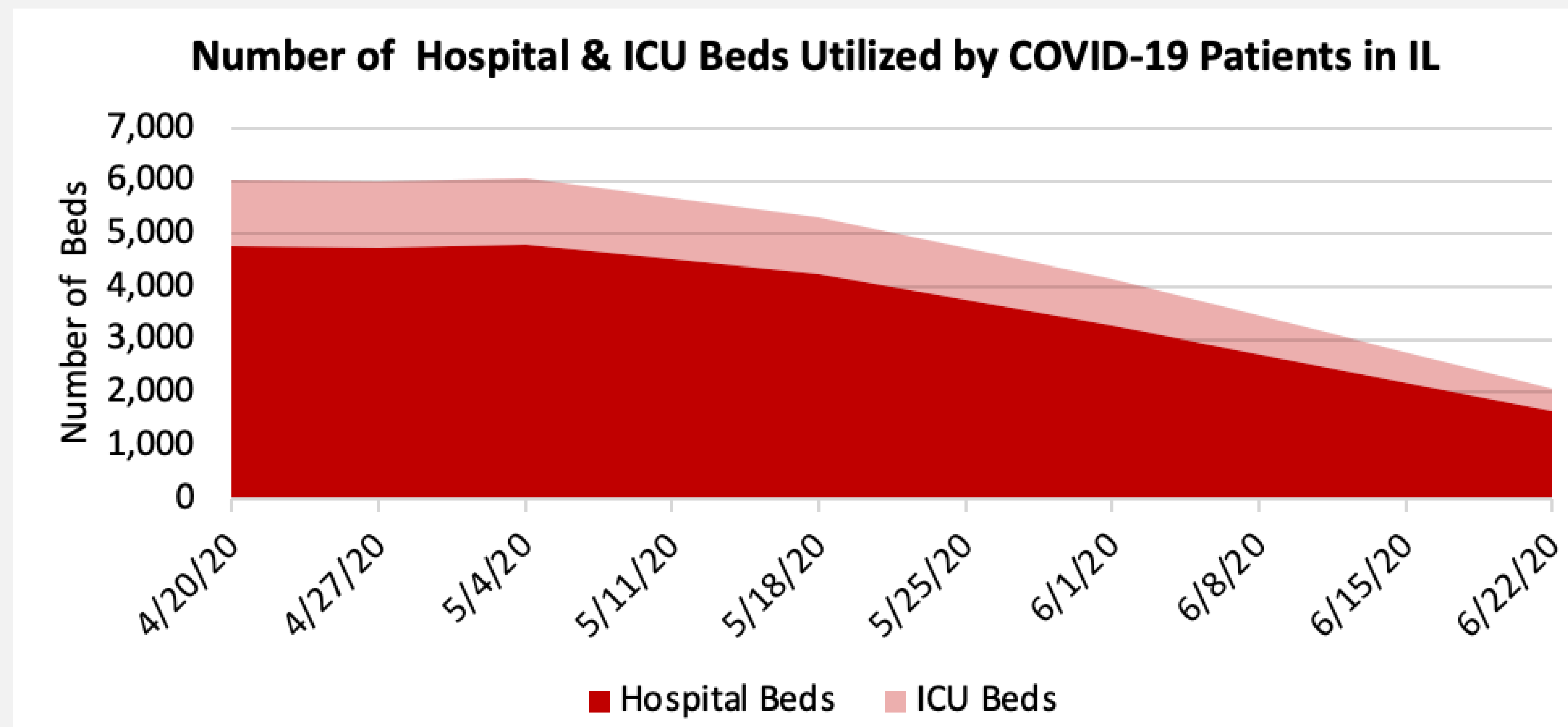
Methods

- ICHP developed a medication shortage dashboard, which collected information regarding supply level from health systems in the state.
- Classes of medications inquired about included: anti-infectives, neuromuscular blocking agents (NMBAs), sedatives/analgesics, vasopressors, and “other”.
- Health systems identified if they had ample supply, mild shortage, moderate shortage, or critical shortage.
- For the purpose of this study, data from 6 different medication shortage dashboards, ranging from 5/20/2020, to 6/22/2020, were analyzed.
- The deidentified data gathered was used to track drug shortages within Illinois in order to better understand potential causes and trends of medication shortages as they relate to the current COVID-19 pandemic.
- Drug shortages and number of COVID-19 cases within Illinois were analyzed for any correlations

Results

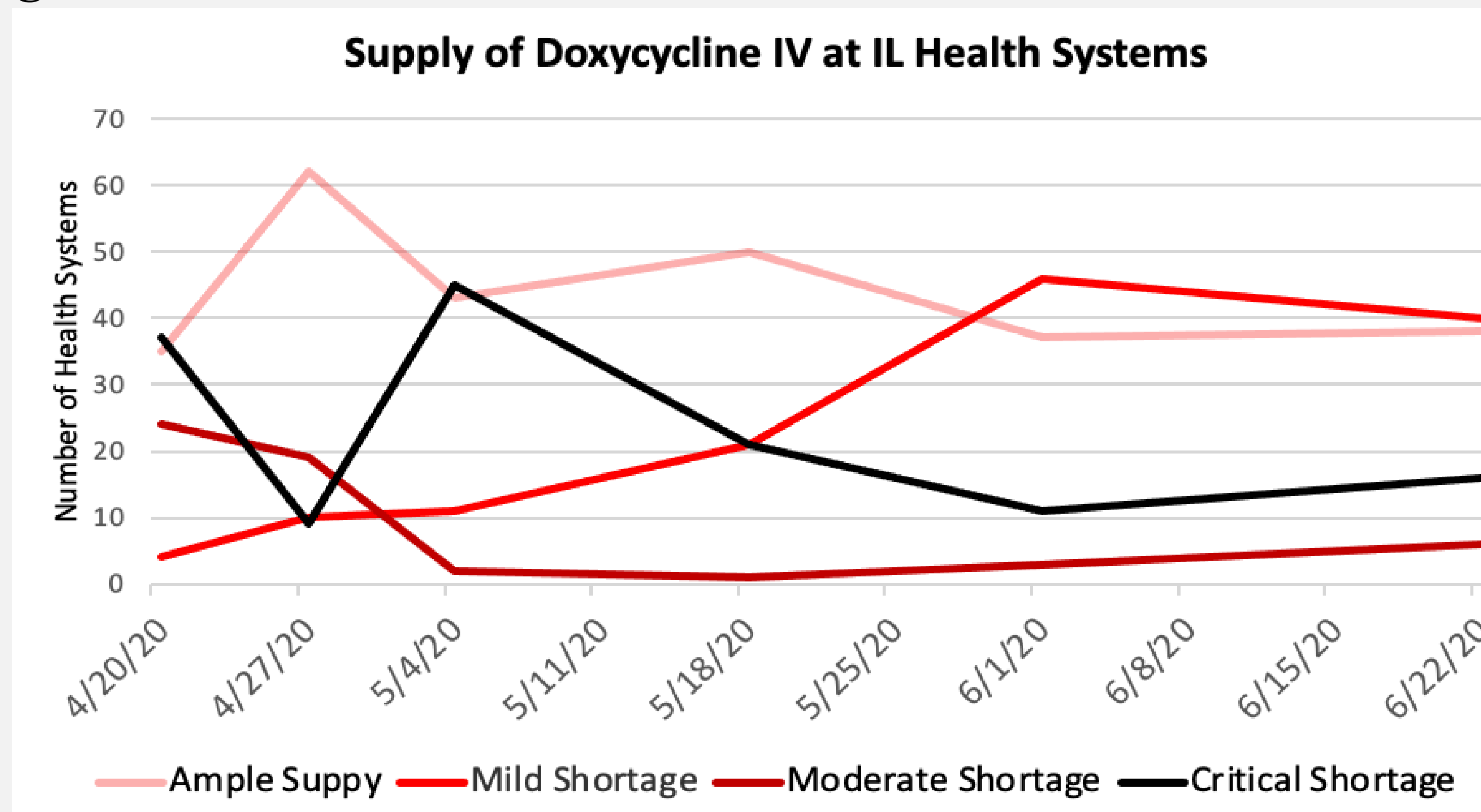
Illinois’s medication shortage dashboard tracked the supply level of 42 medications used in the treatment of patient’s hospitalized with COVID-19. Data from an average of 75 health systems was analyzed each week, an average response rate of 52% of Illinois health systems.

Figure 1.



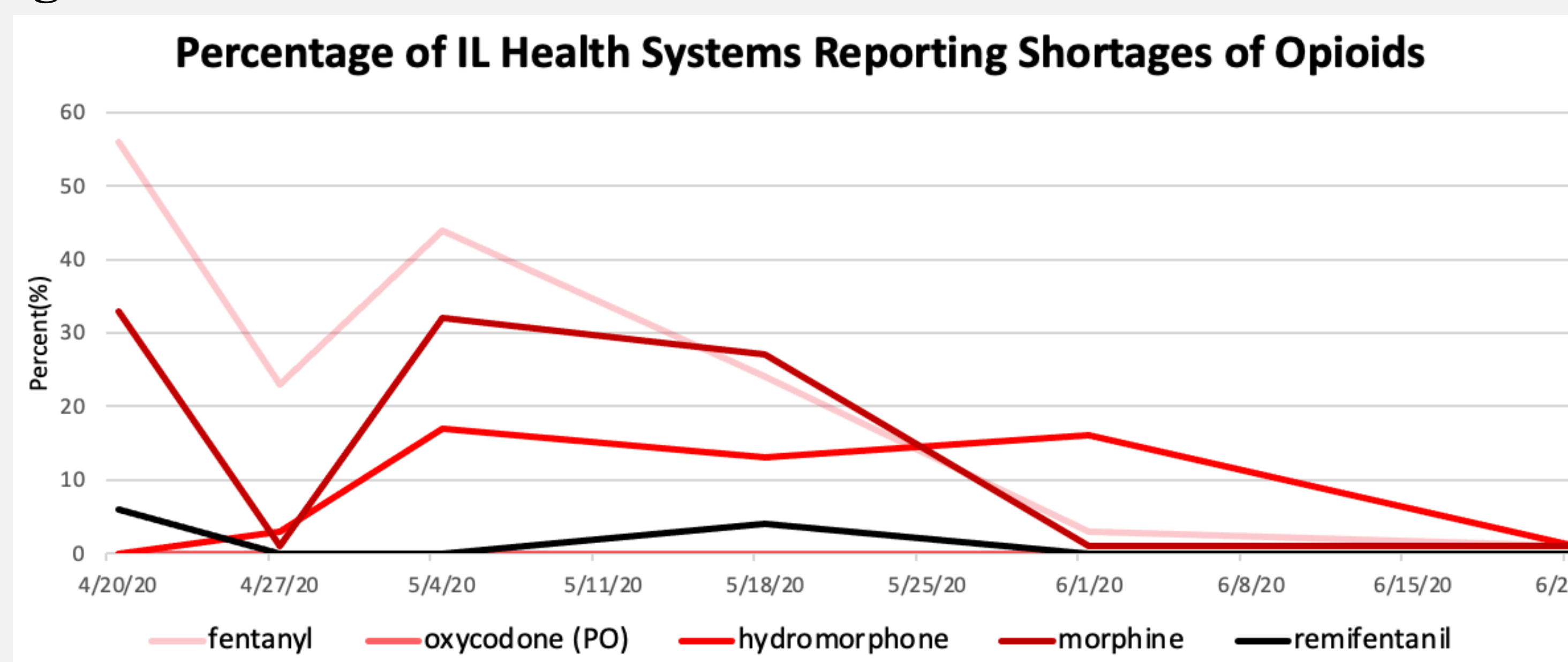
The number of new COVID-19 cases in Illinois peaked on May 12, 2020, followed by a gradual decline for the duration of the study period.

Figure 2.



IV doxycycline had the highest percentage of shortages of anti-infectives, peaking at 47% (47/101) of Illinois health systems reporting moderate/critical shortages.

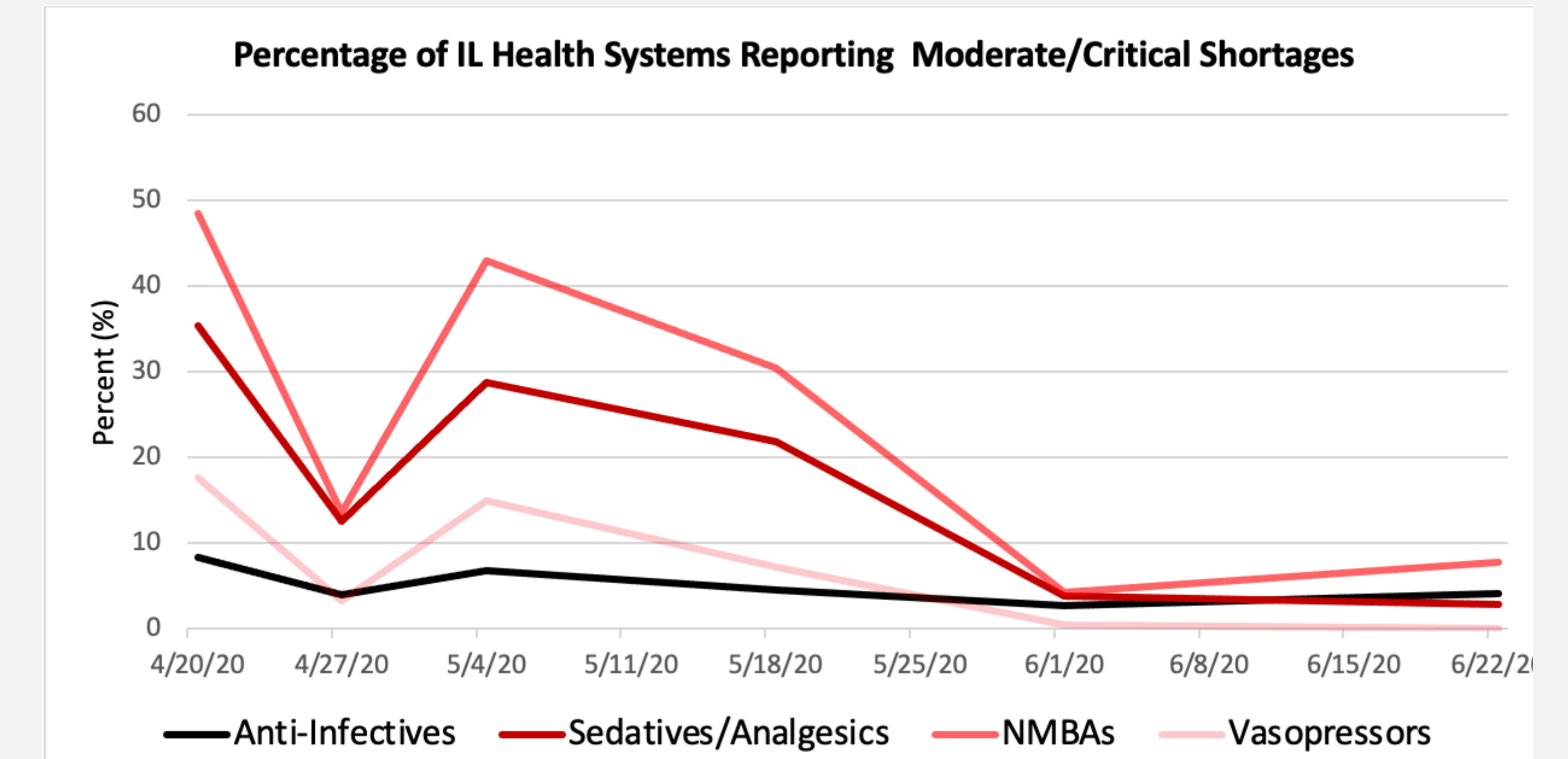
Figure 3.



Results

Opioids followed a similar trend to that of the NMBAs, vasopressors, and some anti-infectives.

Figure 4.



Overall the trends of each class of medications had strong positive correlations with the number of hospital beds utilized by COVID-19 patients in Illinois, with $r^2 \sim 0.7$ for each class. The sedatives/analgesics class had the strongest correlation with the number of hospital beds ($r^2 = 0.77$), and anti-infectives had the weakest positive correlation.

Limitations

- Response rate slightly lower than expected
- Benefits of the medication dashboard may not be evident
- Data available for analysis was de-identified; unknown if the same hospitals were responding each time
- Unknown if a certain region was experiencing a higher rate of drug shortages or higher rates of COVID-19 infections

Conclusions

Higher utilization of hospital beds by COVID-19 patients is positively correlated with increased drug shortages. These occur most commonly in first-line medications but can also occur in less commonly used medications. It is imperative that health systems take appropriate action to prevent and manage drug shortages by communicating these shortages in a tool such as a dashboard. Pharmacists can play a crucial role in managing limited supplies of medications, while still ensuring patients receive the best care possible. *Acknowledgements:* Thank you to ICHP for allowing us to conduct this study with data collected from the Illinois COVID-19 medication shortage dashboard. The authors have no conflicts of interest to disclose.

References:

1. Badreldin HA, Atallah B. Global drug shortages due to COVID-19: Impact on patient care and mitigation strategies. *Res Social Adm Pharm.* 2020;S1551-7411(20)30569-6.