

Temporal Trends in Medication Utilization Among Hospitalized COVID-19 Patients in the United States

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This study is part of a research collaboration agreement between FDA and Aetion, Inc. to use real-world data to advance the understanding and the natural history of COVID-19 in specific patient populations, as well as treatment and diagnostic patterns during the COVID-19 pandemic

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This abstract reflects the views of the authors and should not be construed to represent FDA's views or policies.

Introduction

Real-world data (RWD) allow observation of trends and changes in COVID-19 prescription patterns

Objective

Describe treatment trends for hospitalized COVID-19 patients in the United States

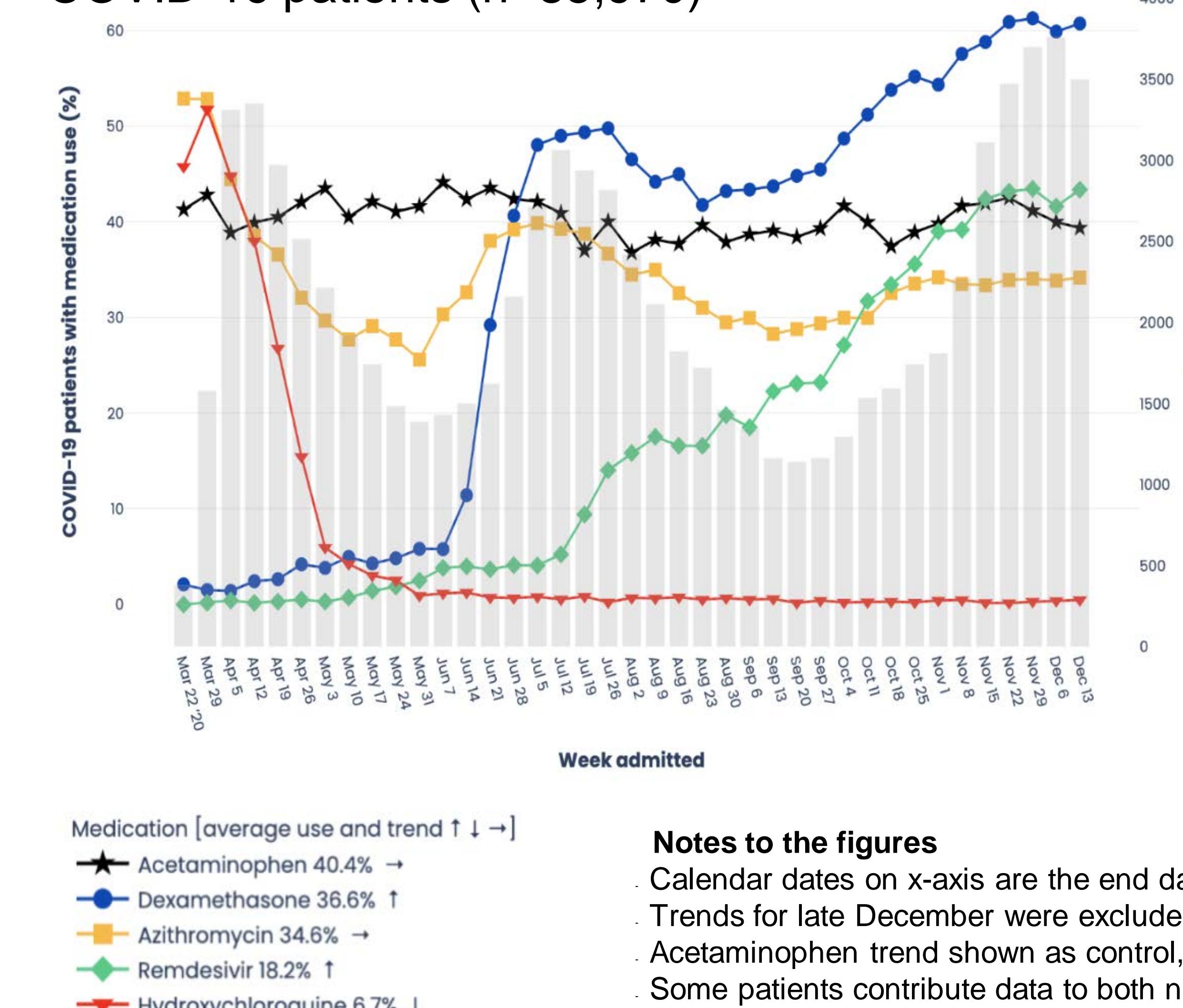
Materials and Methods

- Patients hospitalized with COVID-19 identified using HealthVerity claims and Chargemaster data (March-December 2020). HealthVerity includes de-identified data from major payer types (commercial, Medicaid, and Medicare) from all US states and territories.
- Percent of patients newly treated (90 day new user washout) with therapies of interest during the first week of the hospital stay
- Trends by calendar week of admission, overall and by COVID-19 severity (requirement for invasive mechanical ventilation [IMV] or supplementary oxygen [O2] using a simplified version of the modified WHO score. Admissions without evidence of respiratory support requirements classified as "Admissions without requirement for O2/IMV")
- All analyses conducted using the Aetion Evidence Platform® (2021).

Results

Among the 85,970 patients (87,128 admissions) included, the most commonly used treatments were **azithromycin** (42.2%) and **hydroxychloroquine** (39.2%) early in the pandemic (March/April 2020), and **dexamethasone** (59.6%) and **remdesivir** (42.1%) later on (November/December 2020) [Figure 1].

Figure 1. Medication usage among hospitalized COVID-19 patients (n=85,970)



Notes to the figures

- Calendar dates on x-axis are the end dates of each calendar week (e.g., the first week spans March 15-March 22).
- Trends for late December were excluded from plots as data are incomplete.
- Acetaminophen trend shown as control, to test for fluctuations driven by data artifacts rather than changes in real-world prescribing patterns.
- Some patients contribute data to both non-O2/IMV and O2/IMV plots, due to >1 COVID-related admission with different respiratory support requirements.

Conclusions

- Considerable temporal shift in prescribing trends in hospitalized COVID-19 patients, with **remdesivir** and **dexamethasone** surpassing **hydroxychloroquine** use following publication of emerging scientific data and FDA regulatory actions.
- Immediate and substantial increase in **dexamethasone** use followed publication of the RECOVERY trial results.

Figure 2. Usage of medications among hospitalized COVID-19 patients during admissions WITHOUT requirement for supplemental oxygen or ventilation (n=31,427)

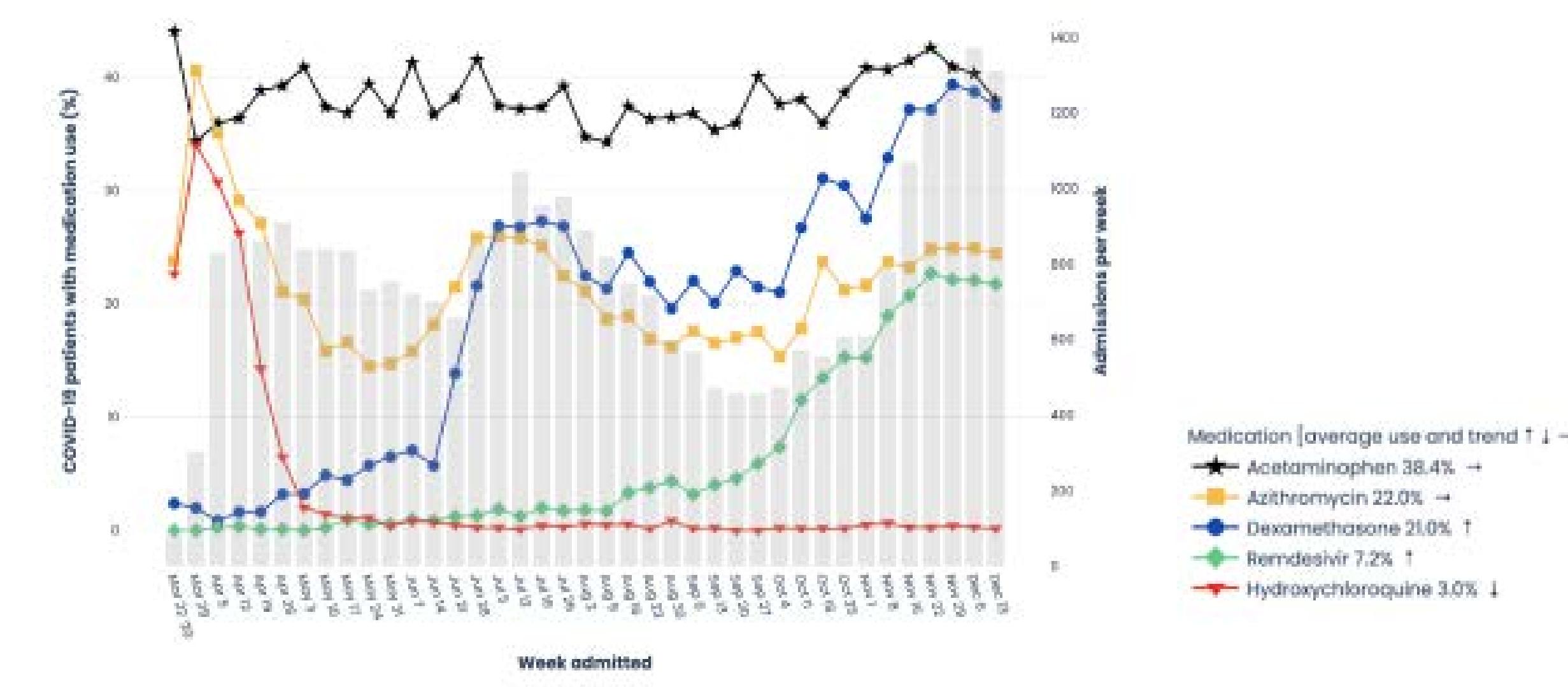
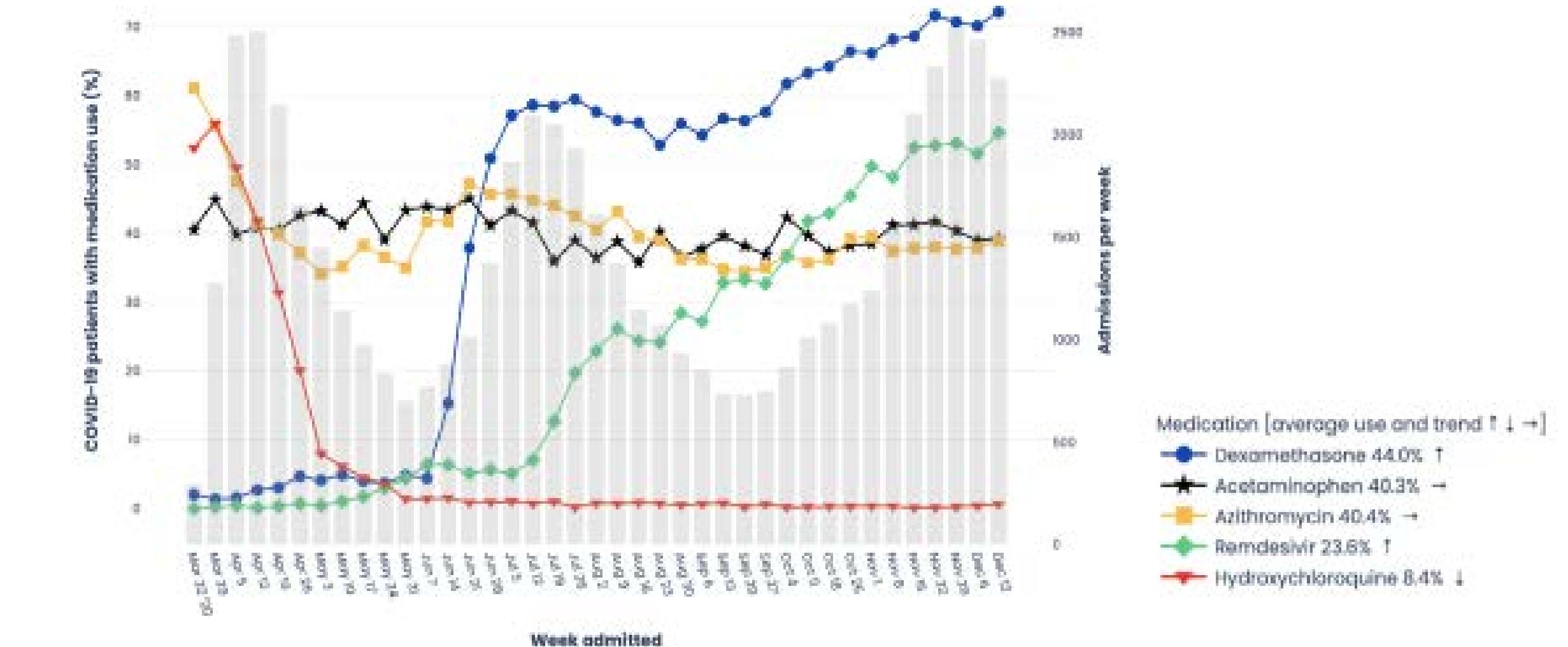


Figure 3. Usage of medications among hospitalized COVID-19 patients during admissions with requirement for supplemental oxygen or ventilation (n=56,859)



- Trends may also have been influenced by factors such as physician experience with disease management, access to medications, guidelines, and perceived efficacy/safety relative to other treatment options.