Drugs that Potentially Alter the Risk and Severity of COVID-19 Infection

Brent Luu, PharmD, Sampath Wijesinghe, DHSc, PA-C, Tarek Kassem, PharmD, Justin Lien, BS, Darrick Luu, Rynee Wijesinghe, Leianna Luu, & Gerald Kayingo, PhD, PA-C

Background

- COVID-19 is one of the most significant pandemics in modern history.
- PAs should understand the current evidence on pharmacological factors that potentially alter the risk and severity of COVID-19 infection.
- In this poster, we present the following key areas:
  - Pharmacological treatments on acute conditions that could impact COVID-19 risk and severity
  - Drug classes that may alter risk or benefit in COVID-19 pathogenesis
  - Highlights of drugs that could alter the progression of COVID-19 infection

Purpose

To investigate how drugs used in **acute conditions** may alter the risk and severity of COVID-19 infection

Methodology

- A systematic literature review was performed on three databases: PubMed, Medline, & Cochrane.
- Keywords:
  - Predetermined: COVID-19, SARS-CoV-2, or Coronavirus
  - Potential outcomes: Benefits, Risks, Mortality, Morbidity, or Contraindication
- Inclusion criteria: articles from 2018 to 2021, randomized control trials, systematic review, and meta-analyses.
- A two-step screening process was applied focusing on acute drug treatments. The selected articles were categorized according to the drug classes. The risks and benefits of each drug class were differentiated from the selected articles.

Results

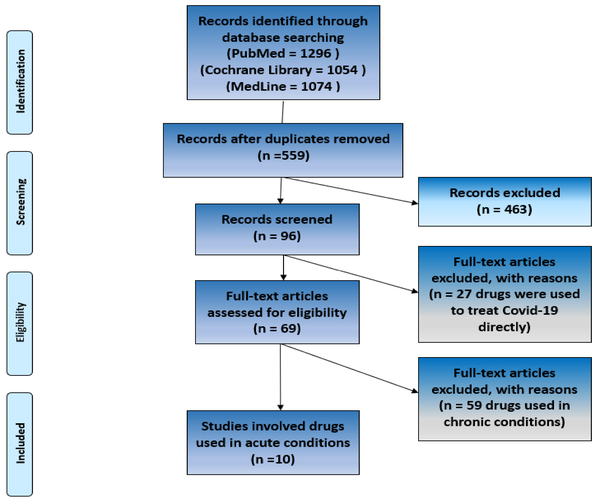
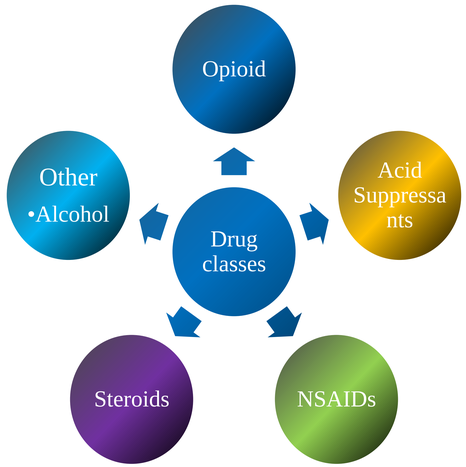


Figure: PRISMA flow diagram for studies involved drugs used in acute conditions.



Summary Table

Drug Classes	Drug Name	Effects	Highlights
Opioids/Opiate[1]	Methadone Buprenorphine Buprenorphine/naloxone (Suboxone)	↑ rate of overdose (OD) among Black patients	• Disproportionate ↑ COVID-19 severity & mortality • Disproportionate ↑ rate of OD
Acid suppressants (PPI or H2-blockers)[2,3]	Omeprazole	↑ risk of COVID-19 infection when used alone	• OR 1.35 (95% CI: 1.01 – 1.82)
	Lansoprazole	↓ risk of death in COVID-19 positive patients	• HR 0.63 (95% CI: 0.45-0.88) • Other PPI or H2RA have no difference
Steroids		Limited evidence suggests avoiding[4] ↓ all-cause mortality and disease progression, but not with an increase in serious adverse events[6.]	• Still useful in the treatment of asthma, COPD, septic shock, and ARDS[4] • May predispose patients to secondary infections • Reducing inflammatory storm and maintaining epithelial barrier integrity[6]
NSAIDs	Aspirin	No convincing evidence increased risk of contracting COVID-19 or worsening clinical course[4] Conflicting evidence in the rate of mortality in patients with COVID-19[7,8]	• Theoretical weak evidence indicated NSAIDs may cause higher rate of complications, i.e. pneumonia, and prolonged illness... [i.e. upregulate ACE2 (angiotensin converting enzyme 2)][4]
Other	Alcohol[10]	Chronic use may contribute to systemic inflammation, which worsen the patient's response to COVID-19 infection and expedite the onset of respiratory and multi-organ failure.	• Chronic alcohol consumption might augment the disease progression and potentially lead to poorer outcomes. • Caution against alcohol consumption since there is a rise of binge drinking in age group 50 and older.

Discussion/Key Findings

- Despite recent advances in vaccinations, the treatment choices for COVID-19 remain uncertain.
- There are many conflicting reports on various treatment options.
- Pharmacologic interactions from other acute disease management therapies are not fully elucidated.
- Our study identified four drug classes that are indicated for other acute conditions that may potentially alter the risk and severity of COVID-19.
- This study may provide guidance to clinicians in making well-informed decisions during patient care.

Conclusion

Opioids, acid suppressants, steroids, and NSAIDS have potential to alter the severity of COVID-19 infection. Further studies are needed to address the mechanisms of action for drug that increase or reduce risks for COVID-19 infection.

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