



Introduction

- Dexamethasone (DEX) is a mainstay of COVID-19 treatment.
- In hospitalized COVID-19 patients receiving oxygen:
 - 6mg of DEX daily reduced mortality
 - 12mg of DEX daily did not increase days alive without life support compared to 6mg of DEX daily
- Despite the above evidence, clinicians often prescribe >6mg of DEX daily.

Purpose

- To compare outcomes of ventilated COVID-19 patients who received standard dose (SD) versus high dose (HD) DEX.

Outcomes

Primary

- All-cause mortality during hospital admission.

Secondary

- Average blood glucose (BG), number of BG readings >200, incidence of bacterial nosocomial infection, ventilator-free days, length of stay (LOS), ICU LOS.

Methods

Design

- Multisite, retrospective, observational study conducted at Ascension St. John (ASJ) and Ascension Macomb-Oakland Hospitals.
- Sample size was calculated based on a 3:1 high: standard-dose prescribing pattern ratio.
- Two defined groups:
 - SD: average daily DEX dose \leq 6mg
 - HD: average daily DEX dose >10mg
- Approved by the ASJH Institutional Review Board

Statistical Analysis

- Categorical variables: chi-square test
- Continuous variables: t-test, Mann-Whitney test, Spearman correlation test
 - Multiple logistic regression: mortality as dependent variable

Inclusion Criteria

- COVID-19 positive status
- Ventilated
- Received at least 3 days of DEX between June 1, 2020 and January 31, 2022

Exclusion Criteria

- 6mg < average daily DEX dose \leq 10mg
- Discharged within 72 hours of admission
- Hospice enrollment

Results

Figure 1. Enrollment Flow Diagram

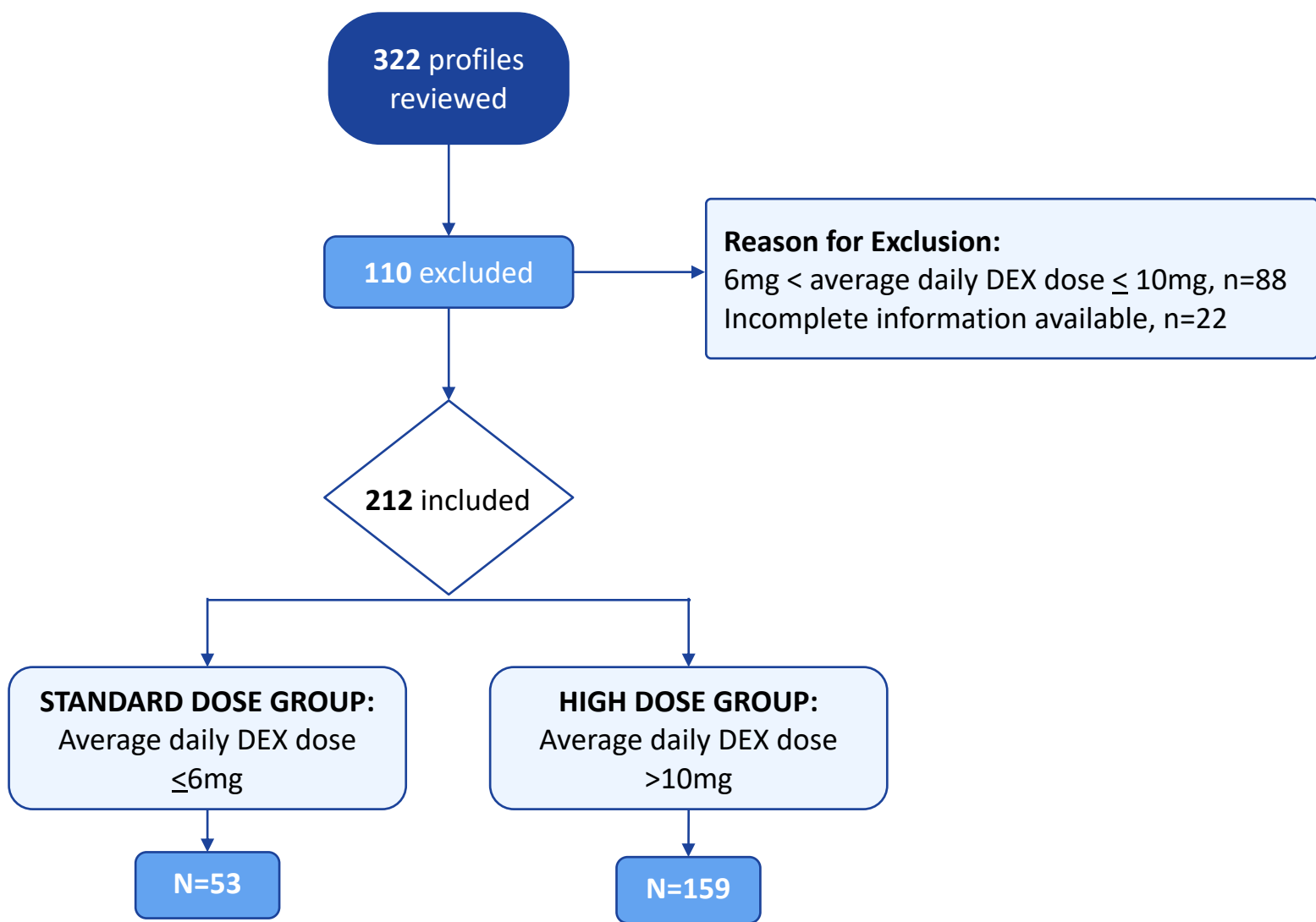


Table 1. Patient Characteristics

	Standard Dose	High Dose	p-value
Female (%)	18 (34)	65 (41)	0.37
Age (years)	66	64	0.31
Baseline SOFA	7.43	6.90	0.10
Baseline CCMI	2.42	2.06	0.20
Comorbid bacterial infection upon admission (%)	26 (49)	60 (38)	0.15
Days from admission to initiation of DEX	1.43	0.85	0.58
Admission to ICU (%)	53 (100)	158 (99)	0.56
Received corticosteroid other than DEX (%)	29 (55)	76 (48)	0.38
Received mAb (%)	5 (9.4)	36 (23)	0.04

SOFA: Sequential Organ Failure Assessment score; CCMI: Charlson Comorbidity Index score; ICU: intensive care unit; mAb: monoclonal antibody (bamlanivimab, tazilizumab, tocilizumab)

Figure 2. Unadjusted Incidence of Mortality and Nosocomial Infection

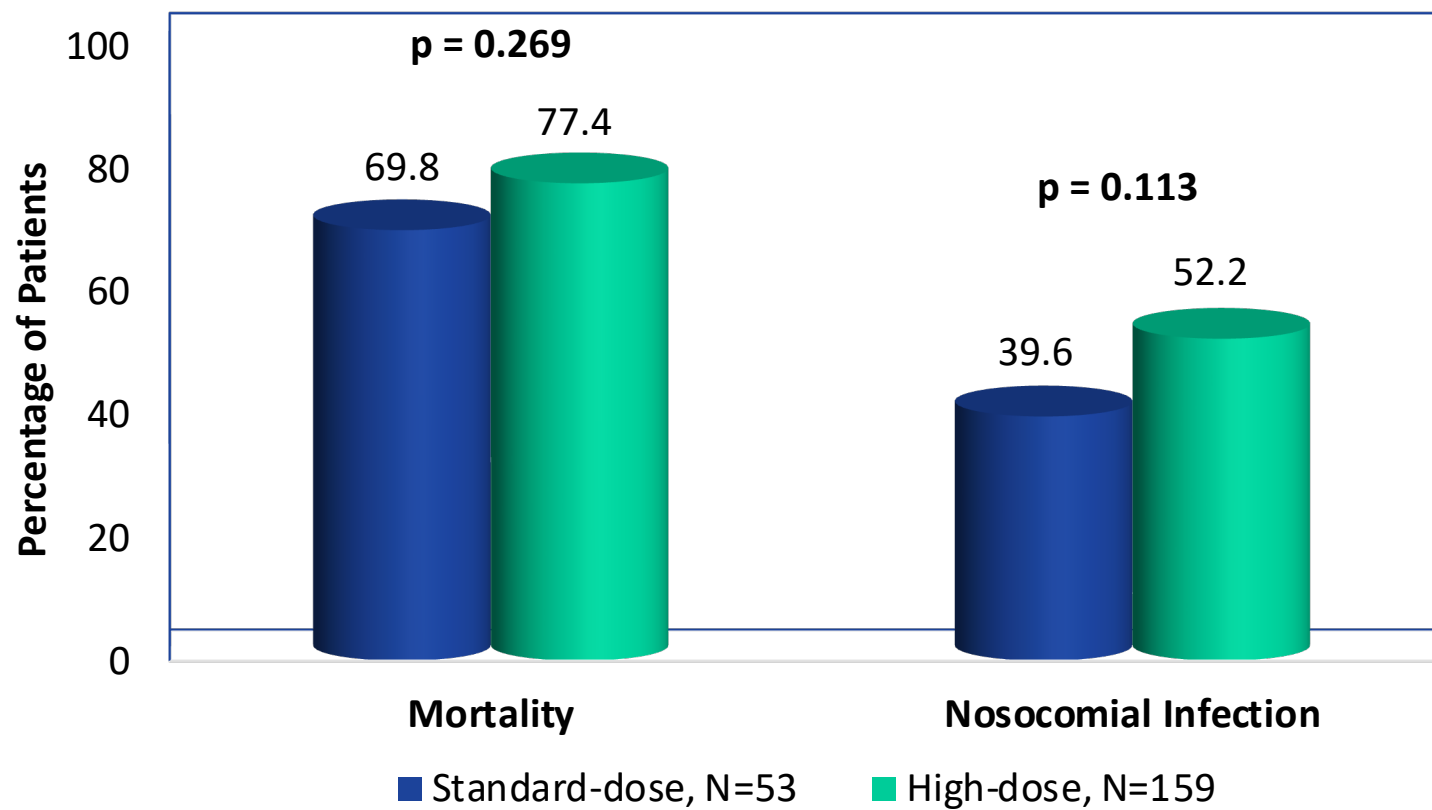


Table 2. Secondary Outcomes

	Standard Dose	High Dose	p-value
Average daily BG	161.26	185.28	0.003
Number of BG>200	21.91	29.58	0.07
LOS (days)	19.92	22.12	0.27
ICU LOS (days)	10.06	13.82	0.02
Average ventilator-free days	9.2	9.5	0.13

BG: blood glucose; LOS: length of stay

Table 3. Regression Analysis

	OR	95% CI	p-value
Mortality: SD vs HD	1.45	0.66-3.20	0.36
BMI	0.99	0.97-1.02	0.65
CCMI	1.19	0.97-1.46	0.10
SOFA	1.03	0.88-1.20	0.76
Remdesivir	1.81	0.86-3.80	0.12
mAb	1.32	0.54-3.23	0.54
Days since onset of symptoms	1.00	0.99-1.01	0.59
Chronic steroid use	2.55	0.30-21.43	0.39
D-Dimer, baseline	1.00	1.00-1.00	0.42

Summary

- There was no significant effect of DEX dose on:
 - Mortality
 - Number of BG readings >200
 - Incidence of bacterial nosocomial infection
 - LOS
 - Ventilator-free days
- After controlling for confounding factors, no difference in mortality persisted.
- Compared to the SD group, patients who received HD DEX demonstrated:
 - Significantly higher average daily BG
 - Significantly longer ICU LOS

Conclusions

- There is no association between HD DEX and mortality among ventilated COVID-19 patients compared to SD DEX.
- HD DEX is associated with detrimental effects.
- This study supports the use of \leq 6mg of DEX daily among ventilated COVID-19 patients.

Limitations

- Retrospective chart review
- Limited sample size
- Changes to COVID-19 treatment guidelines over the course of the study
- Greater utilization of mAb therapy among the HD group

Future Directions

- Further research is needed to investigate prescriber compliance with evidence-based COVID-19 treatment guidelines and the role that pharmacists may have in increasing compliance with best practice guidelines.

References

- Agarwal A, Rochwerf B, Lamontagne F, et al. A living WHO guideline on drugs for COVID-19. BMJ. 2020;370:m3379. PMID: 32887691.
- RECOVERY Collaborative Group. Dexamethasone in hospitalized patients with COVID-19. N Engl J Med. 2021;384(8):693-704. PMID: 32678530.
- COVID STEROID 2 Trial Group. Effect of 12 mg vs 6 mg of dexamethasone on the number of days alive without life support in adults with COVID-19 and severe hypoxemia: The COVID STEROID 2 Randomized Trial. JAMA. 2021;326(18):1807-1817. PMID: 34673895.