

BACKGROUND

- The United States has emerged as an epicenter of the COVID-19 pandemic, with more than 7.3 million cases and over 200,000 deaths reported through September 23rd, 2020¹
- Of the 5 New York City boroughs, the Bronx was the most seriously affected by COVID-19²
- At 1,781 per 100,000, Bronx County has the highest prevalence of HIV in the United States³

OBJECTIVE

- We describe a cohort of persons living with HIV hospitalized at our institution with COVID-19

METHODS

- Retrospective review of all patients admitted to Montefiore Medical Center from January 1, 2020 to May 1, 2020
- Patients with HIV and COVID-19 were identified by diagnostic codes.
- Patient charts were reviewed to confirm a positive nasopharyngeal PCR for SARS-CoV-2, identify co-morbidities and abstract laboratory results.
- Most recent HIV viral load and CD4 T-lymphocyte count were recorded within 6 months of admission or during admission

ENDPOINTS

PRIMARY	SECONDARY
Survival to end of study period	Need for mechanical ventilation

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DEFINITIONS

Disease Severity

- Mild disease**
 - no supplemental oxygen
- Moderate disease** (one of the following)
 - nasal cannula or non-rebreather oxygen at any point during their hospitalization
 - no supplemental oxygen with acute kidney injury and/or acute liver injury and/or acute myocardial injury (definitions below)
- Severe disease** (one of the following)
 - required non-invasive positive pressure ventilation
 - mechanical ventilation with abnormal chest radiograph findings
 - nasal cannula or non-rebreather with end organ damage

Acute kidney injury - an increase in serum creatinine by ≥ 0.3 mg/dL within 48 hours, or an increase in serum creatinine ≥ 1.5 times the baseline value within 7 days

Acute liver injury - alanine transaminase 5 times the upper limit of normal)

Acute myocardial injury - troponin raised over the 99th percentile of the upper reference limit for the normal range

STATISTICS

- Chi-square, t-test, or Mann-Whitney U test as indicated

RESULTS

72 patients HIV+ with positive SARS-CoV-2 PCR tests

- 28 female patients (39%)
- Median [IQR] age was 62 [-/+16] years
- Median CD4+ count was 235 cells/uL
- 11 (15%) had an HIV viral load >200 copies/mL
- Median length of stay was 5 days

6 Discharged

- 6 Patients were discharged directly from ED

66 Admitted

- Fifteen patients (20.8%) required mechanical ventilation (MV)
- Compared to patients that did not need MV, patients that required MV were more likely to be:
 - Male ($p=0.01$)
 - Obese ($p<0.01$)
 - Higher absolute neutrophil counts ($p=0.01$)
- Patients with lower CD4+ counts (<200 cells/uL) did not require more mechanical ventilation ($p=0.04$)

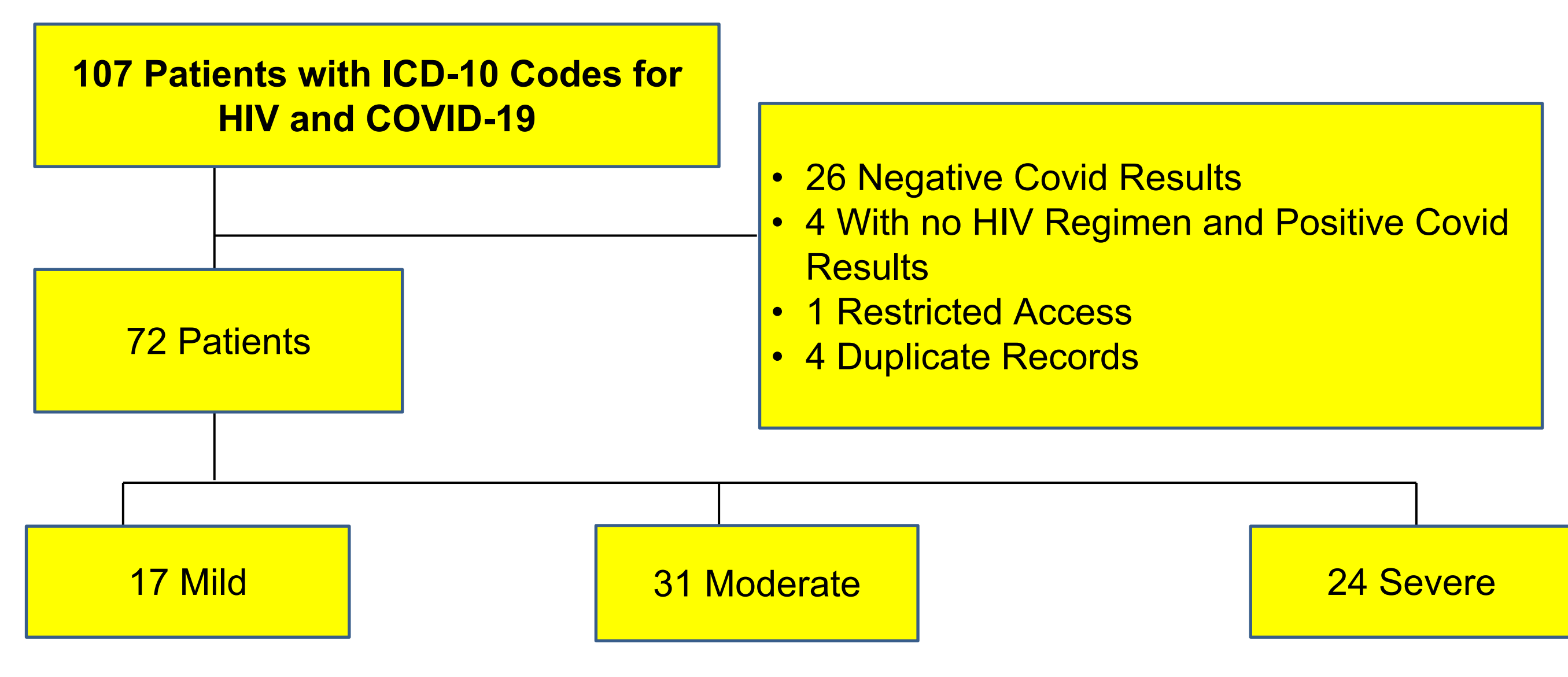
46 Discharged

- Of 11 patients with unsuppressed HIV viral loads at the start of the study period, all survived ($p=0.02$)
- 3 patients (4.1%) requiring MV survived

20 Expired

- Twenty patients (27.8%) have expired
- All non-survivors had an undetectable HIV viral load (0%, $p=0.02$)
- Compared to survivors, non-survivors were more likely to have:
 - Chronic kidney disease ($p<0.01$)
 - Acute kidney injury ($p<0.01$)
 - Higher absolute neutrophils ($p<0.01$)
 - Elevated IL-6 levels ($p<0.01$)

INCLUSION CRITERIA



DISCUSSION

- We expected that patients with controlled HIV infection would have improved survival rates in the setting of COVID-19.
 - Contrary to this hypothesis, the study data demonstrate that all non-surviving patients had suppressed HIV viral loads with CD4 counts ranging from 27–1,111 cells/uL.
- No difference in mortality among patients who received antiretroviral therapy that included a boosted protease inhibitor or hydroxychloroquine (see results table)
- Higher levels of CRP and IL-6 in non-survivors supports the hypothesized role of inflammation in the pathogenesis of COVID-19 which had higher mortality (see results table)
 - PLWH may be protected from COVID-19 because of a blunted immune response to SARS-CoV-2, which may mitigate the risk of severe cytokine mediated disease⁴

CONCLUSION

- PLWH in the United States are a diverse and heterogeneous population with varied demographic, social, and clinical characteristics.
- Comorbidities that have been associated with poor COVID-19 outcomes are common among PLWH
- Larger studies examining PLWH and their experiences with COVID-19 are needed to further describe patient characteristics that may portend an unfavorable prognosis

LIMITATIONS

- Single-center, retrospective study
- HIV viral load and CD4 count fluctuate over time.
- CD4 count may be lower due to acute infection
- Small sample size

REFERENCES

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- Mehta P, McAuley DF, Brown M, Sanchez E, Tattersall RS, Manson JJ, Collaboration HAS. COVID-19: consider cytokine storm syndromes and immunosuppression. Lancet (London, England) 2020; 395: 1033.

DISCLOSURES

The authors have NOTHING TO DISCLOSE concerning possible or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation