



# READMISSIONS AND THE USE OF A DISCHARGE PATHWAY IN HOSPITALIZED PATIENTS WITH COVID-19



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## BACKGROUND

As hospitals worldwide remain burdened by high numbers of patients with coronavirus disease 2019 (COVID-19), guidance is needed regarding criteria for the safe discharge of these patients. We implemented a COVID-19 discharge pathway that included assessment of several clinical variables (age, comorbidities, inflammatory markers, oxygen requirement) in the decision-making process (Figure 1). We evaluated the unplanned healthcare encounters (emergency department (ED) visits and hospital readmissions) after the index hospitalization for COVID-19 to better characterize the reasons for readmissions related to COVID-19, improve the discharge pathway and potentially reduce COVID-19 readmissions.

## METHODS

The COVID-19 discharge pathway was implemented on April 2, 2020. We included all patients 18 years of age or older who were admitted to the University of Colorado Hospital – Anschutz Medical Campus between March 1, 2020 and June 18, 2020 with a new COVID-19 diagnosis. We reviewed electronic medical records of all patients who presented to the ED or were readmitted within 30 days from initial discharge. Data recorded included patient demographics, medical history including presence of immunosuppression or comorbidities, labs, discharge pathway compliance during the index admission, anticoagulation at time of discharge, time to unplanned healthcare encounter after discharge, reason for readmission or presentation to the ED, and whether it was related to COVID-19. COVID-19 related reasons included any known disease manifestations or complications. Data was abstracted using manual chart review by two co-authors (TW and CB). Data was double entered on initial 17 patients, until satisfactory inter-rater reliability was achieved. Disagreements were resolved by the senior author (AB). The study protocol was reviewed by the local institutional review board, and exempt status was granted given quality improvement nature of the study (COMIRB 20-1814).

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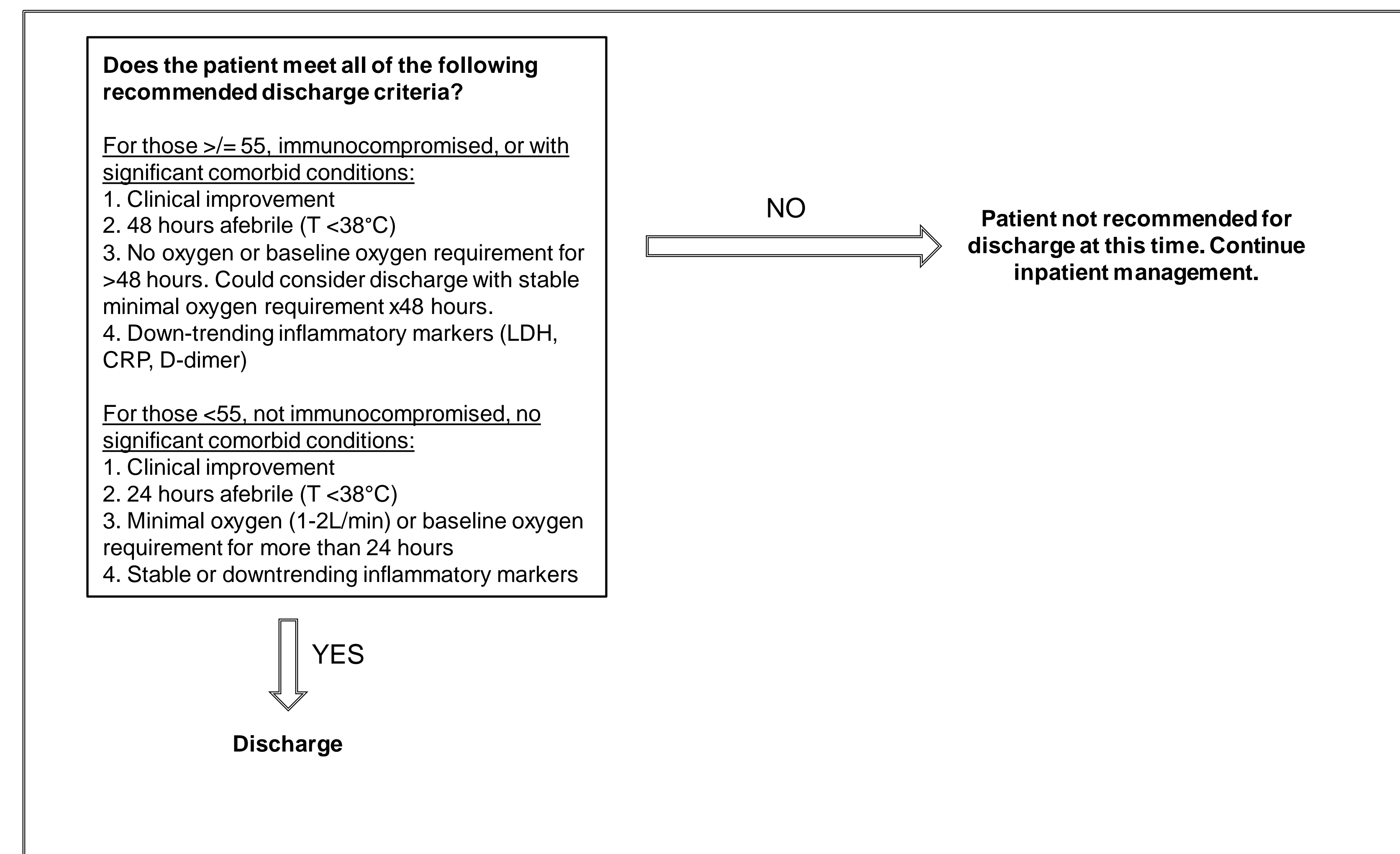


Figure 1. COVID-19 discharge pathway

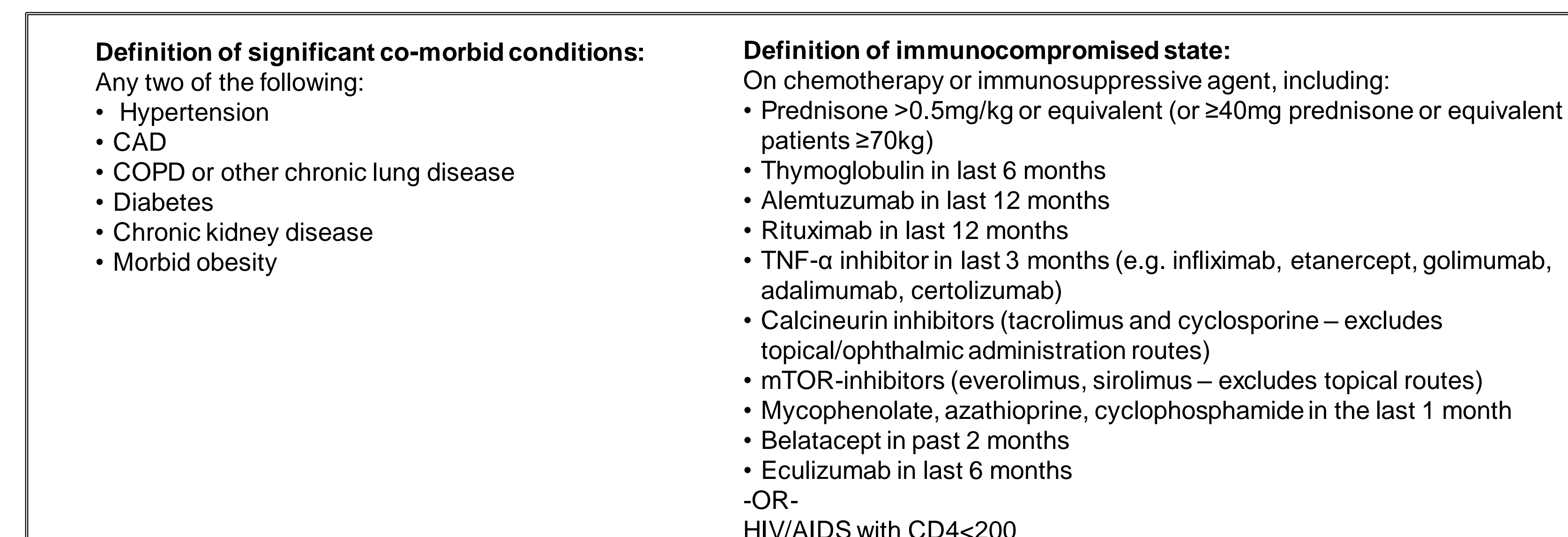


Figure 2. Definitions for significant co-morbid conditions and immunocompromised state used in COVID-19 discharge pathway.

## RESULTS AND DISCUSSION

Table 1: Reasons for ED encounters or hospital readmissions 30 days after the index discharge\*

Reasons for 30-day re-encounter	Hospital readmissions (%)	ED encounters (%)
Total	46	56
Total COVID-19 related	22 (48)	14 (25)
Discharge pathway followed <sup>#</sup>	13	12
Not followed	9	2
Medical, non-COVID-19 related	17 (37)	23 (41)
Non-medical	7 (15)	19 (34)

\*701 patients were discharged from index hospitalization for symptomatic COVID-19  
<sup>#</sup>during the index admission  
 ED = emergency department

## RESULTS AND DISCUSSION CONT'D

Table 2: Reasons for COVID-19 readmissions and ED encounters

Indication for readmission	Number of patients
Progression of COVID-19 pneumonia	12
Aspiration pneumonia	3*
VTE	2
Pneumothorax	2
Encephalopathy	1
Hyponatremia	1
Pulmonary edema	1
Deconditioning	1
<b>Reason for ED encounter</b>	
Respiratory symptoms	9
VTE	2
Microvascular complication ("COVID toes")	1
Pneumatocele	1
Hypervolemia	1

\*one patient was readmitted twice with the same diagnosis  
 ED = emergency department  
 VTE = venous thromboembolism

Among 701 patients discharged with a COVID-19 diagnosis, 46 patients (6.5%) were readmitted to the hospital and 56 returned to the ED (7.9%) (Table 1). This is consistent with that reported in other published reviews of COVID-19 readmissions<sup>1-4</sup>. Approximately half of these readmissions (22 readmissions, 48%) were potentially COVID-19 related, the most common indication for admission being progressive respiratory disease with other notable indications including venous thromboembolism (VTE) and pneumothorax (Table 2). Both patients readmitted with VTE had an underlying hypercoagulable state (CLL and Factor V Leiden) and were not discharged on anticoagulation. Only 24/56 of the ED encounters after initial discharge were related to COVID-19. Nine of these were for respiratory symptoms and 2 were for VTE.

After reviewing these discharges, the discharge pathway was adjusted to include the recommendation that patients with an underlying hypercoagulable state be discharged with temporary prophylactic anticoagulation.

## REFERENCES

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