



Defining a physiologic monitoring protocol for COVID-19-related inpatient rehabilitation – a quality improvement (QI) Perspective

A. E Fogarty, MD & J. J Cole, MD, C. Guay, MD, J. Tiu, MD and P. Grover, MD PhD MHA

Objectives: The clinical course of individuals with COVID-19-severe enough to require inpatient rehabilitation remains poorly described. The primary aim was to understand, from a process perspective, the acute-post acute course and physiologic parameters that require monitoring related to COVID-19 during inpatient rehabilitation.

Design: Forming the initial exploratory phase of a Quality Improvement (QI) project, retrospective electronic medical record review of 10 patients that received care related to COVID-19 at a tertiary academic center including both acute hospitalization and subsequent inpatient rehabilitation with a primary diagnosis of COVID-19 infection was conducted.

Results: The mean (standard deviation) age was 65.9 (9) years, with male predominance (Table 1). Acute LOS was 21.8 (8.8) days, with 80% requiring intensive care (mean ICU LOS 15.3 [8.1] days), and 60% requiring mechanical ventilation (Table 2). Rehabilitation LOS was 12.9 (5.5) days, with 70% discharge to home rate and 30% acute care transfer rate (Table 3).

Table 1: Demographic characteristics

Age; Mean (SD)	65.9 (9)
Gender	9 M, 1 F
Race	6 black, 4 white
BMI ; Mean (SD)	29.6 (4.8)
Hospitalization date range	4/20/20 - 5/20/20
Sample size	10 subjects

Table 2: Acute Care Trends

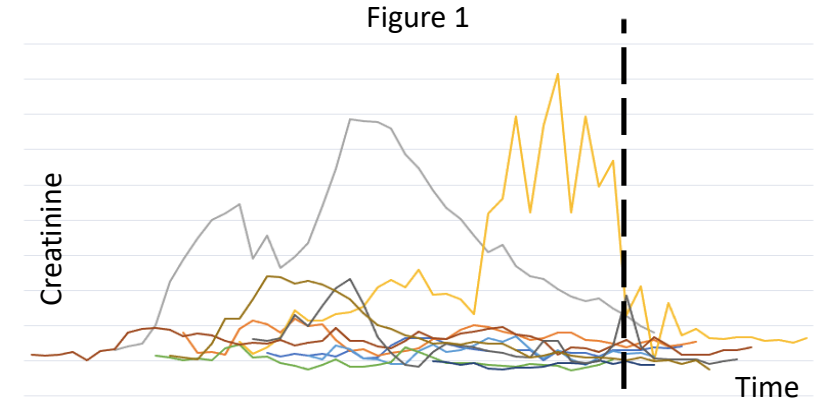
Acute LOS; Mean (SD)	21.8 (8.8) n=10
ICU LOS; Mean (SD)	15.3 (8.1) n=8
Ventilator days; Mean (SD)	15 (6.2) n=6
WHO Severity Scale	
4 (oxygen)	3
5 (NIPPV, HFNC)	1
6 (only ETT)	
7 (ETT + other)	6
Multiple Covid-19 Tests	4 retests (2 pos; 2 neg)

Table 3: Rehabilitation Trends

Rehab LOS; Mean (SD)	12.9 (5.5) n=10
Admission diagnosis	
Decreased Functional Status	10
Gait Instability	7
Deconditioning	5
Weakness	6
Critical Illness Myopathy	4
Amputation	0
Additional Dx: Stroke	1* (prior to Covid-19 positive)
Additional Dx: Neuropathy	1

Results (continued):

Laboratory data across the acute-post acute continuum showed improvement in all variable. D-dimer tracking was often discontinued in the acute hospital. See Figure 1 from Creatine trend.



Conclusion: Most patient requiring inpatient rehabilitation for COVID-19 infection were elderly and required long periods of intensive care. Nonetheless, most patients were discharged home without major complications. The small sample size and lack of specific laboratory monitoring limited further interpretation. From a process perspective, there is a need to develop standard monitoring with routine basic labs and shift-/therapy-based vital signs.