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Role and impact of interdisciplinary rehabilitation in an acute COVID-19 recovery unit

INTRODUCTION

The ongoing coronavirus-2019 (COVID-19) pandemic has challenged healthcare systems to create innovative models of care to maximize bed availability and provide stepped-down care for patients who are medically stable with continued acute care needs. Older adults are disproportionately hospitalized and die from COVID-19.[1] As such, older adults are more vulnerable to greater hospital-associated declines in function, which hold implications for rehospitalizations, long-term disability, and community living.[2-4] To address these needs, the Minneapolis Veterans Affairs (VA) Healthcare System converted an inpatient unit into a 12–18 bed COVID-19 Rehabilitation Unit (CRU) similar to that described by Sohn et al.[5] The purpose of this letter is to expand upon the description provided elsewhere[5] to outline rehabilitation staffing and preliminary data on outcomes. Our facility's ability to rapidly address the needs of patients and the healthcare system demonstrates a model for innovative, future approaches to addressing healthcare challenges.

REHABILITATION STAFFING: STRUCTURES, RESPONSIBILITIES, AND IMPLICATIONS

The rehabilitation team consists of medical providers (two medical providers at a time [five total in the rotation], nurses [4–5 day/evening and 3–4 overnight]), physical therapists (PTs, two full-time and two alternates), occupational therapists (OTs, two full-time and two alternates), speech language pathologists (SLP, two), a respiratory therapist, a dietician, two psychologists, social workers

(two to three), and recreation therapists (two). Pharmacy, chaplaincy, or specialty medical team (e.g., Infectious Disease) services were provided as needed. An assistive technology coordinator in our facility acquired equipment for providers and patients to promote the remote delivery of services and patient contact with family/friends.

All patients admitted to CRU received at minimum PT, OT, SLP, respiratory, social work, psychology, dietary, recreation therapy, and medical evaluations and services (see Table S1). PTs and OTs provided treatment to patients 5 days a week for a total of one to 2 h/day. SLPs evaluated dysphagia, swallowing, and cognition, with typical follow-up occurring at least weekly for 30–60 min. The frequency of respiratory therapy varied based on patient needs. Psychologists, social workers, and a dietician typically provided care to all patients at least weekly with recreation therapy as needed. Medical providers completed daily in-person rounding and rehabilitation nurses were always present. PT, OT, SLP, and respiratory services are provided face to face. The social workers and dietician typically follow up with patients via phone. Psychologists and recreation therapists provide services via video telecommunication or in-person. To adjust for reduced staffing coverage of providers in the acute hospital wards, the provision of non-medical services switched from 7 days per week to 5 days per week (Monday through Friday). On weekends, non-medical services were available for emergent needs but were not assigned specifically to CRU. As such, PTs, OTs, and SLPs provided each patient an in-room exercise program, placed goals on the patient's in-room whiteboard, and provided nursing education on activity orders entered into the electronic medical chart (i.e., level of assistance needed for mobility and walking frequency) to facilitate ongoing engagement in rehabilitation on weekends.

REHABILITATION: PRELIMINARY DATA AND RESULTS

CRU initially opened in April 2020, was closed temporarily in June due to low census, and then reopened in November 2020 to accommodate the surge in COVID-19 hospitalizations. As of January 2021, the Minneapolis CRU has provided care for 63 patients. All data was collected for quality improvement purposes (Table 1 and Figure S1). The average CRU length of stay was 16 ± 7.6 days with 75% returning to the community. The average Functional Independence Measure (FIM)[6] score change from admission to discharge was 17 ± 11.0 points, which indicates the patient needs less support for functional tasks and can move to an outpatient or home health level of care.[4] On self-report measures of depression[7] and anxiety,[8] on

TABLE 1 Patient characteristics on the Minneapolis VA CRU

Characteristic[a]	Mean (*N*) ± SD median (range) or frequency (N)
Age, years	78 (48) ± 8.4 79 (61–96)
Sex	Male: 98% (47)
Race	White: 77% (37) African American/Black: 15% (7) American Indian: 4% (2) Native Hawaiian or Pacific Islander: 2% (1) Not stated: 2% (1)
Length of stay, days	16 (48) ± 7.6 16 (3–40)
Discharge disposition[b]	Community: 75% (36) Acute hospital readmission: 12.5% (6) Sub-acute care: 12.5% (6)
FIM at admission[c]	78 (48) ± 19.6 82 (25–110)
FIM at discharge[c]	96 (48) ± 18.8 98 (54–124)
FIM change[c] (discharge–admission)	17 (48) ± 11.0 18 (14–29)
PHQ-9 at admission[d]	7 (44) ± 5.1 5.5 (0–23)
PHQ-9 at discharge[d]	4 (44) ± 5.1 3 (0–21)
GAD-7 at admission[e]	4 (29) ± 4.1 3 (0–15)
GAD-7 at discharge[e]	3 (29) ± 3.7 2 (0–14)

Abbreviations: Functional Independence Measure (FIM); Patient Health Questionnaire-9 (PHQ-9); Generalized Anxiety Disorder 7-Item Scale (GAD-7).

[a]Data extracted from the electronic medical record.

[b]Community discharge was defined as home, independent living, or assisted living. Subacute care was defined as short term rehabilitation provided in an institutionalized setting.

[c]The Functional Independence Measure (FIM) as assessed at evaluation and discharge from CRU. The FIM is an 18-item measure that grades a person's functional status based on the level of assist they require for motor and cognitive tasks.[6] Scores range from 18–126 with higher scores indicating greater independence with functional tasks.

[d]The Patient Health Questionnaire-9 (PHQ-9) is a 9-item self-report screening questionnaire that measures depression severity, assessing for symptoms within the past 2 weeks.[7] It uses a 4-point Likert scale with responses ranging from 0 (not at all) to 3 (nearly every day). Total scores range from 0 to 27 with the following categories of severity: minimal (0–4), mild (5–9), moderate (10–14), moderately severe (15–19), and severe (20–27) depressive symptoms.

[e]The Generalized Anxiety Disorder 7-Item Scale (GAD-7) is a self-report screening questionnaire that assesses anxiety symptom severity within the past 2 weeks.[8] It uses a 4-point Likert scale with responses ranging from 0 (not at all) to 3 (nearly every day). Total scores range from 0 to 21 with the following categories of severity: minimal (0–4), mild (5–9), moderate (10–14), and severe (15–21) anxiety symptoms.

average patients demonstrated minimal to mild depressive symptoms and minimal symptoms of anxiety.

IMPLICATIONS FOR COVID-19 AND BEYOND

The COVID-19 pandemic has challenged healthcare systems to quickly adapt as new information on innovative care delivery models emerge. We sought to supplement the article by Sohn et al.[5] by describing the contribution and value of integrating an interdisciplinary rehabilitation team into models of care for survivors of COVID-19. Our efforts in designing, rapidly implementing, and evaluating CRU have demonstrated our facility's ability to quickly adapt and leverage an infrastructure (e.g., space, workloads) to rapidly apply innovative models of care that address a patient and system-level problem. Retaining and advancing these skills and interdisciplinary teams will be critical for quickly employing solutions to future problems faced by our healthcare system, both as the pandemic evolves and after it ends.

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CONFLICT OF INTEREST

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AUTHORS CONTRIBUTIONS

All authors had a role in conceptualization of the manuscript and preparing the manuscript for submission.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.

Data S1: Outline of a patient's typical CRU schedule during weekdays and a comparison of Functional Independence Measure (FIM) scores at CRU admission and discharge by patient.

Table S1. Typical weekday schedule for a patient at the Minneapolis CRU. Services are in-person unless otherwise indicated. Medical, dietary, and recreation therapy services are integrated into the patient's day on a more variable schedule.

Figure S1. Comparison of FIM scores at CRU admission and discharge by patient. Higher scores indicate more independent function. Solid lines indicate scores at admission and dotted lines indicate scores at discharge.

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Comment on: Virtual funerals: A feasible and safer option during the COVID-19 pandemic

To the Editor: The commentary that discusses the feasibility and safety of virtual funerals during the COVID-19 pandemic omits the time-honored approaches that physicians have used for centuries to communicate with, console, and help the relatives of our deceased patients with their bereavement process.[1] Lest we forget, physicians have used the telephone to call and posted handwritten condolence notes to the next of kin, and joined family and friends at their patient's funerals and memorial services as part of our responsibility to help the bereaved.[2,3] As far back as 1875, William Osler, then a 26-year-old practicing internist, sent a transatlantic condolence note to a father in England whose son died of smallpox in Montreal.[4] Thirty years later the boy's sister met a doctor named Osler in England who had cared for her younger brother during a fatal illness. She recalled that his sympathetic letter had been the greatest solace to her parents.[5]

Besides expressing my sympathies and relating some memories of my deceased patient, the main purpose of both my personal conversations and telephone calls and my personal condolence notes, was to assuage any guilt feelings the survivors had about healthcare decisions they made with or on behalf of their relative. Recognizing that guilt feelings can last a lifetime, I told them that their advice and counsel was always in the best interest of their relative and that their devotion to their relative was exceptional.

Before and during the COVID-19 pandemic and in the future, we may have the option of virtually attending our patient's funeral and post funeral gatherings and listening to eulogies and testimonials of what our patient meant to their relatives, colleagues and community, developing an appreciation and understanding far beyond the problem list and social history in our electronic medical record.[6,7] For example, three daughters gave eloquent eulogies lauding their father's humor and business savvy, traits that never poked through his profound dementia and hepatic encephalopathy when I cared for him. His octogenarian buddies then rose to tell of their regular beatings at the strong hand of his squash racket. As their memories of his muscles tried to bulge throw my memories of his stooped, sarcopenic frame, I imaged his athletic prowess and competitive spirit. Or there was the bedbound, old doctor whose fecal impaction and anticoagulation regimen were the focus of my care. At his funeral, I learned that he had devoted his medical career to improving the health of the poor and underprivileged directing the largest urban healthcare system in the country. In awe of him, I felt privileged that his wife, a nurse, had chosen me as her husband's doctor.

The mere presence of the physician or a member of the healthcare team at the virtual funeral, even if they choose not to speak, sends a message to the mourners of how much they cared about their patient. While hospitalists may be uniquely positioned to provide needed psychosocial support to the bereaved family member immediately after death from COVID-19, the primary care physician has and will remain critical to the successful, long term management of bereavement in the survivors whether in person or in a virtual forum. The physician who has known the patient and her family for years, if not decades, is uniquely positioned to communicate compassionately, assess risk, educate about bereavement resources and refer surviving relatives for mental health counseling when appropriate.[8]