Rehabilitation Outcomes for Patients With Severe Presentation of COVID-19: A Case Series

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ABSTRACT

Purpose: To provide an outline of the timeline from acute care admission to inpatient rehabilitation facility discharge and describe the functional progress and tolerance of 2 individuals who were hospitalized but not intubated because of COVID-19.

Method: Retrospective data were collected from the electronic medical record to describe the rehabilitation course of the first 2 consecutive patients admitted to the rehabilitation facility who were recovering from COVID-19. Both patients were octogenarian men who experienced functional decline while hospitalized for symptoms of COVID-19 and were recommended for further inpatient rehabilitation services. Progress during inpatient rehabilitation was tracked using the following outcome measures: Centers for Medicare & Medicaid Services Quality Indicators (QI), 6-Minute Walk Test, 10-Meter Walk Test, Timed Up and Go, and Berg Balance Scale.

Results: Patient 1 had an 18-day acute care stay, a 13-day inpatient rehabilitation facility stay, and was discharged to home. Patient 2 had an interrupted 19-day acute care stay, a 15-day inpatient rehabilitation facility stay, and was discharged to a skilled nursing facility. Patient 1 improved 160.98 m in the 6-Minute Walk Test, 0.08 m/s in self-selected walking speed, and 85 points in the total Quality Indicators score. Patient 2 improved 115.22 m in the 6-Minute Walk Test, 0.14 m/s in self-selected walking speed, and 39 points in the total Quality Indicators score.

Conclusion: The patients made clinically meaningful improvements in each outcome measure during their length of stay for inpatient rehabilitation. This reveals the positive rehabilitation potential of 2 older adult patients with COVID-19 and demonstrates the patients' ability to maintain inpatient rehabilitation facility level of activity. With individualized care and discharge planning, similar patients may make significant gains in function despite advanced age and comorbid conditions.

Novel coronavirus disease 2019 (COVID-19) is an infectious disease that has caused a global pandemic and has resulted in serious illness and mortality. On March 11, 2020, the World Health Organization declared the COVID-19 outbreak a global pandemic and the United States declared a national emergency on March 13, 2020.[1] COVID-19 is caused by the virus known as the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and is mainly spread through close contact and respiratory droplets.[2] COVID-19 symptoms typically appear 2 to 14 days after initial exposure. Individuals may experience a variety of symptoms such as fever, cough, shortness of breath, chills, muscle pain, headache, sore throat, loss of taste or smell, and/or repeated shakes with chills.[3] Individuals with COVID-19 have shown a spectrum of symptom severity with outcomes including independent recovery at home, hospitalization, mechanical ventilation, or even death.[3]

Initial reports from the Centers for Disease Control and Prevention indicated the highest incidence of hospitalization among cases in adults aged 65 years and older.[4] An estimated 14% of people who develop COVID-19 have an associated severe acute respiratory tract infection and may require hospitalization due to respiratory compromise, with 5% to 6% requiring care in an intensive care unit.[5,6] Those with severe symptoms require hospitalization and oxygen support due to associated dyspnea and respiratory compromise.[5,6] People with severe illness who do not require mechanical ventilation may also experience impaired physical and respiratory function.[5] Prolonged hospitalization with bed rest can result in a loss of up to 20% in muscle strength, an increase in fall risk, and a loss of functional capacity.[7,8] Older adults are at the highest risk of hospital-associated deconditioning resulting in functional difficulties and institutionalization.[8] People of older age and with

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underlying health conditions may have increased rehabilitation needs during recovery from severe COVID-19.[5] Initial acute care physical therapy (PT) recommendations endorsed by the American Physical Therapy Association advised that early mobilization was safe for individuals with COVID-19 but direct physiotherapy should be considered only for those demonstrating respiratory therapy needs and/or significant functional limitations.[6,9] Physical therapy access may be limited because of the highly contagious nature of the virus, the unconfirmed routes of transmission, and the limitations in personal protective equipment (PPE) supplies.[5,9] Decreased availability of rehabilitation services can result in a longer length of stay, preventable complications, and readmissions.[5]

Because of the novelty of the virus, limited research was available on individuals affected by SARS-CoV-2 and their rehabilitation needs. Rehabilitation professionals relied on available information on a similar viral epidemic in 2003, severe acute respiratory syndrome (SARS). Severe acute respiratory syndrome is a disease characterized by a fever, lower respiratory tract symptoms, and history of travel to an area with documented transmission defined by the World Health Organization.[10] During the outbreak, rehabilitation programs were impacted by increased use of PPE and strict infection control measures, which limited multidisciplinary collaboration, patient-to-patient interactions, close physical contact during therapy, and restricted visitors.[11] Published research by Lau et al[12] indicated that the average length of stay of an individual hospitalized with SARS was 21.79 days ± 9.93 days. The values of the 6-Minute Walk Test (6MWT), predicted maximal oxygen consumption, proximal and distal muscle strength, and the score from all 36-Item Short Form Health Survey (SF-36) domains were significantly lower than normative data after hospitalization.[12] Because of illness severity and decreased rehabilitation during hospitalization, patients who recovered from SARS were found to have limitations in both cardiorespiratory and musculoskeletal performances.[13] Impaired aerobic capacity can limit participation in activities of daily living up to 12 months following critical illness.[14]

This retrospective case series provides an outline of the timeline from acute care admission to inpatient rehabilitation facility discharge and describes the functional progress and tolerance of 2 individuals who were admitted to MercyOne Clive Rehabilitation Hospital.

METHODS

Inclusion criteria for this case series were patients admitted to the rehabilitation facility with a confirmed diagnosis of COVID-19. At admission to the inpatient rehabilitation facility, the patients were considered negative for COVID-19 using the health system's nontest method. Nontest method was accepted if testing supply was limited with people required to have fever subsided for 3 days without antipyretics, improvement in respiratory symptoms (eg, cough, shortness of breath), and at least 7 days passed since symptoms first appeared. The first 2 consecutive cases were investigated using retrospective data in the electronic medical record from the acute care hospital and inpatient rehabilitation facility. In this facility, all patients are evaluated with the Centers for Medicare & Medicaid Services (CMS) Quality Indicators (QI), which are collected over the day of admission and the 2 days following to determine the usual performance.[15] The assessment is to identify baseline ability prior to benefiting from therapeutic interventions.[15] Once the patient's usual performance is determined, intervention is initiated, which may fall within the assessment period.[15] The QI is the standard rating scale for post-acute care in the Inpatient Rehabilitation Facility Quality Reporting Program (IRF QRP) developed and used by the CMS.[16] The QI collects information on 23 functional abilities, 7 self-care and 16 mobility, used in the inpatient rehabilitation facility prospective payment system.[15] Additional outcome measures used in the rehabilitation facility were 6MWT, 10-Meter Walk Test (10MWT), Timed Up and Go (TUG), and Berg Balance Scale (BBS).

Case Descriptions

Case 1

An 82-year-old White man (patient 1) was admitted to the hospital 5 days after testing positive for COVID-19 in March 2020 (Table 1). Patient 1 had an acute care length of stay of 18 days. Upon admission to the hospital, patient 1 was on 10 L/min of oxygen and was titrated within 24 hours to 6 L/min of oxygen via nasal cannula. Patient 1 received hydroxychloroquine and azithromycin for COVID-19 medical intervention. He was in the intensive care unit for 8 days and did not require mechanical ventilation.

Patient 1's pertinent comorbidities included hypertension, chronic back pain, osteoarthritis, and a remote history of tobacco use and testicular cancer. Prior to hospitalization, patient 1 had a body mass index of 32.7 kg/m^2 and no supplemental oxygen needs. Patient 1 was independent at home without use of an assistive device but reported limited community mobility due to back pain.

Acute rehabilitation was performed by PT with occupational therapy deferred to preserve PPE. The PT evaluation was initiated 6 days following acute care admission. During the initial evaluation, the patient required minimal assistance for bed-to-chair transfers and refused to ambulate. Throughout the acute care stay, 3 additional PT treatments occurred for a total of 78 minutes and patient 1 refused PT on 5 other occasions citing chronic back pain and depression. Physical therapy consisted of 2 evaluation units (22.2%), 6 therapeutic activity units (66.7%) consisting of bed mobility and transfers, and 1 neuro reeducation unit (11.1%) consisting of standing balance. Acute care case management was initiated on day 9 through electronic medical record

TABLE 1. Patient 1 and 2 Timeline

	Patient 1	Patient 2
Positive COVID-19 test day	0	0
Acute admit day	5	0
Last fever day	13	No fever
Acute discharge day	23	19[a]
IRF admit day	23	19
IRF discharge day	36	34

IRF, inpatient rehabilitation facility.

[a]Patient 2 had an interrupted acute length of stay; acute discharge day includes number of days from acute admit to final discharge.

review and talking to patient 1 on the phone due to isolation restrictions. Referrals were initiated for post-acute inpatient rehabilitation at the recommendation of PT on day 10. Patient 1 demonstrated functional decline from acute care evaluation to last PT treatment during which patient 1 required maximal assist of 2 for sit to stand. Fifteen facilities declined the patient's admission before patient 1 was transferred to the rehabilitation facility on acute care stay day 18. Reasons for denial included facility at capacity, facilities not accepting patients who tested positive for COVID-19, and facility awaiting PPE.

Patient 1 was admitted to the rehabilitation facility 23 days after initial positive COVID-19 test with an admitting diagnosis of critical illness myopathy. Upon admission, patient 1 was on 1.5 L/min of oxygen and demonstrated general debility with strength testing. In addition to the required QI, patient 1 was evaluated on the 6MWT the second day of admission and the 10MWT on the third day of admission (Table 2). Throughout the IRF stay, patient 1 completed 86.0% of required minutes week 1 and 91.1% of required minutes week 2. Refusals were recorded as back pain, fatigue, and nausea. Interventions throughout the stay for patient 1 included 15 units of gait training (40.5%), 7 units of therapeutic activity (19%), and 15 units of therapeutic exercises (40.5%). Gait training focused on increasing gait distance and education on the use of an assistive device. Therapeutic activity focused on safety with transfers and adequate standing balance for activities of daily living. Therapeutic exercise included supine, seated, and standing lower extremity active range of motion and resistance exercises and aerobic training with the use of NuStep (NuStep LLC, Ann Arbor, Michigan) for the lower extremities. Patient 1 was discharged home alone (due to spouse being hospitalized) with home health services using a front wheeled walker (FWW) after 13 days at the rehabilitation facility.

TABLE 2. Patient 1 Outcome Measures

	Initial	Discharge
Quality Indicators—functional abilities		
Eating	05[a]	06[a]
Oral hygiene	02[a]	06[a]
Toileting hygiene	01[a]	06[a]
Shower/bathe self	02[a]	06[a]
Upper body dressing	03[a]	06[a]
Lower body dressing	01[a]	06[a]
Putting on/taking off footwear	02[a]	06[a]
Roll left and right	02[a]	06[a]
Sit to lying	03[a]	06[a]
Lying to sitting on side of bed	03[a]	06[a]
Sit to stand	01[a]	06[a]
Chair/bed-to-chair transfer	01[a]	06[a]
Toilet transfer	02[a]	06[a]
Car transfer	88[a,b]	06[a]
Walk 10 ft	01[a]	06[a]
Walk 50 ft with 2 turns	88[a,b]	06[a]
Walk 150 ft	88[a,b]	06[a]
Walking 10 ft on uneven surfaces	88[a,b]	06[a]
1 step (curb)	88[a,b]	06[a]
4 steps	09[a,b]	09[a]
12 steps	88[a,b]	09[a,b]
Picking up object	88[a,b]	06[a]
Total QI score	37	122
Outcome measures		
10-Meter Walk speed self-selected	0.47 m/s	0.55 m/s
10-Meter Walk speed fast	0.53 m/s	0.77 m/s
6-Minute Walk Test distance	3.00 m	163.98 m
Berg Balance Scale	Not tested	Not tested
Timed Up and Go	Not tested	Not tested

QI, Quality Indicators.

[a]06 = Independent; 05 = Set up or cleanup assistance; 03 = Partial/moderate assistance; 02 = Substantial/maximal assistance; 01 = Dependent; 88 = Not attempted because of medical condition or safety concerns; 09 = Not applicable.

[b]88 and 09 convert to 01 for total QI score.

Case 2

An 89-year-old Caucasian man (patient 2) was admitted to the hospital on the day of a positive COVID-19 test in March 2020 (Table 1). Patient 2 was discharged home 8 days later and was readmitted to the hospital 5 days later due to multiple falls at home. Seventeen days prior to the initial admission to the hospital, patient 2 had been seen in the emergency department due to a fall

in the shower. During his time in the hospital, patient 2 was on 3 L/min of oxygen by nasal cannula. Patient 2 received rocephin and azithromycin for COVID-19 medical intervention, and intensive care unit admission and mechanical ventilation were not required.

Patient 2's pertinent comorbidities included dementia, stage 3 chronic renal failure, hypertension, atrial fibrillation, coronary artery disease, diabetes mellitus, hyperlipidemia, stented coronary artery, and remote history of tobacco use. Prior to hospitalization, patient 2's body mass index was 26.5 kg/m^2 and he had no supplemental oxygen needs. Prior to onset of COVID-19, patient 2 was independent with FWW for household functional mobility but had a history of falls. Patient 2 ambulated with supervision and assistance for safety awareness during community mobility with FWW.

Acute care PT and occupational therapy cotreated to evaluate the patient on the second day after readmission to acute care, 14 days after initial admission to the hospital. During the evaluation, patient 2 required minimal assistance to transfer from the bed to chair using an FWW and to ambulate 20 ft with FWW. Throughout the acute care stay, 2 additional PT treatments were completed for a total of 50 minutes with no refusals of rehabilitation. Physical therapy consisted of 1 evaluation unit (14.3%), 3 therapeutic activity units (42.9%) consisting of bed mobility and transfers, and 3 gait training units (42.9%) consisting of ambulation trials with FWW. Acute care case management was initiated care on day 8 when patient 2 was initially discharged home. Referrals were initiated for post-acute inpatient rehabilitation at the request of the family and the recommendation of home health care services on day 9 due to falling at home. Placement to inpatient rehabilitation was delayed because of facilities not accepting patients who had tested positive for COVID-19, facilities awaiting PPE, and/or facilities requiring follow-up on negative tests before acceptance.

Patient 2 was admitted to the rehabilitation facility 19 days after initial positive COVID-19 test with the admitting diagnosis of critical illness myopathy. Patient 2 was on room air upon admission and demonstrated general debility with strength testing. In addition to the required QI, patient 2 was evaluated with the 6MWT, 10MWT, TUG, and BBS on the second day at the rehabilitation facility (Table 3). Throughout the IRF stay, patient 2 completed 100.0% of required minutes each week. Interventions throughout the stay for patient 2 included 21 units of gait training (33.9%), 13 units of therapeutic activity (21.0%), 18 units of therapeutic exercises (29.0%), and 10 units of neuromuscular reeducation (16.1%). Gait training focused on increasing gait distance and safety with assistive device. Therapeutic activity was initiated to focus on safety with transfers due to history of falls. Therapeutic exercise emphasized supine and seated lower extremity active range of motion and resistance

TABLE 3. Patient 2 Outcome Measures

	Initial	Discharge
Quality Indicators—functional abilities		
Eating	04[a]	06[a]
Oral hygiene	04[a]	05[a]
Toileting hygiene	02[a]	04[a]
Shower/bathe self	01[a]	04[a]
Upper body dressing	05[a]	05[a]
Lower body dressing	04[a]	05[a]
Putting on/taking off footwear	04[a]	05[a]
Roll left and right	04[a]	06[a]
Sit to lying	04[a]	06[a]
Lying to sitting on side of bed	04[a]	06[a]
Sit to stand	03[a]	06[a]
Chair/bed-to-chair transfer	03[a]	06[a]
Toilet transfer	03[a]	04[a]
Car transfer	04[a]	06[a]
Walk 10 ft	04[a]	06[a]
Walk 50 ft with 2 turns	04[a]	06[a]
Walk 150 ft	88[a,b]	04[a]
Walking 10 ft on uneven surfaces	03[a]	04[a]
1 step (curb)	03[a]	04[a]
4 steps	01[a]	04[a]
12 steps	09[a,b]	09[a,b]
Picking up object	04[a]	06[a]
Total QI score	70	109
Outcome measures		
10-Meter Walk speed self-selected	0.59 m/s	0.73 m/s
10-Meter Walk speed fast	0.63 m/s	0.80 m/s
6-Minute Walk Test distance	22.55 m	137.77 m
Berg Balance Scale	18/56	26/56
Timed Up and Go	31.61 s	20.48 s

QI, Quality Indicators.

[a]06= Independent; 05 = Set up or cleanup assistance; 04 = Supervision or touching assistance; 03 = Partial/moderate assistance; 02 = Substantial/maximal assistance; 01 = Dependent; 88 = Not attempted because of medical condition or safety concerns; 09 = Not applicable.

[b]88 and 09 convert to 01 for total QI score.

exercises and aerobic capacity training with use of the NuStep for upper and lower extremities. Neuromuscular reeducation was completed with attention focused on dynamic standing balance to reduce fall risk. Patient 2 was discharged using an FWW to a skilled nursing facility after 15 days at the rehabilitation facility with plans to transition to long-term care.

RESULTS

Outcome measures were used to identify initial deficits for establishing the plan of care, aid in initial prognosis, track patient progress, and quantify changes made during the rehabilitation facility stay. The primary method of functional outcome assessment was the QI. The CMS uses risk-adjusted expected values to create target discharge goals and outcomes for individual patients based on particular patient characteristics.[17] Patient 1 exceeded the CMS QI discharge goal of 83.40 by 38.6 points (Table 2). Patient 2 surpassed the CMS QI discharge goal of 91.55 by 17.45 points (Table 3).

Both patients improved in walking performance and endurance capacity. Patient 1 demonstrated a 160.98-m improvement in the 6MWT, exceeding the substantial clinical meaningful change threshold of 50 m,[18] and progressed from an assist of 2 with ambulation using an FWW to independent with FWW. Patient 2 also more than doubled the substantial clinical meaningful change distance with a 115.22-m improvement in the 6MWT and progressed from minimal assistance of 1 with an FWW to supervision with an FWW. For the 10MWT, patient 1 demonstrated increases of 0.08 m/s in self-selected walking speed and 0.24 m/s in fast walking speed, surpassing the small meaningful change threshold of 0.05 m/s in self-selected walking speed and the substantial meaningful change threshold of 0.10 m/s in fast walking speed.[18] Patient 2 demonstrated increases of 0.14 m/s in self-selected walking speed and 0.17 m/s in fast walking speed indicating substantial meaningful changes at both walking speeds. Patient 2 improved 11.13 s on the TUG, which more than doubled the minimum detectable change value at 90% confidence (MDC_{90} [minimum detectable change]) for older adults with dementia of 4.09 s.[19] Patient 2's BBS improved 8 points, which exceeds the MDC_{95} of 4.6 points for older adults initially scoring 0 to 24 points on the BBS.[20] Despite improvement in BBS, patient 2 remains a fall risk.[20]

DISCUSSION

These cases exhibited severe presentations of COVID-19 in older adults. They were not considered critical due to not requiring mechanical ventilation, not exhibiting delirium or new cognitive impairments, and their respiratory symptoms resolved. Patient 1 had an acute care length of stay of 18 days and patient 2 had an acute care length of stay of 19 days. The length of acute care stay was comparable to patients hospitalized with SARS.[12] Similar to the SARS outbreak of 2003, patient care was altered by the use of PPE for safety, which caused communication and hearing challenges and eliminated group therapy.[11] The rehabilitation facility environment was also modified by the elimination of communal dining and gathering spaces. Family members had limited involvement in care due to visitor restrictions.

These cases were the first 2 consecutive patients recovering from their COVID-19 hospitalizations at the rehabilitation facility and were treated prior to the release of professional educational resources and guidelines for care.[2,5,6,9,21-25] The present guidelines for COVID-19 inpatient rehabilitation units were created using experience from China, Italy, and the prior SARS epidemic.[25] These cases aligned with recommendations for the elimination of group therapy, decontamination of shared equipment and single-use options where possible, planned therapeutic activity to minimize the number of personnel involved, walking practice performed in parts of the facility not commonly used, surgical masks being worn by patients and therapists, and patients being kept at least 2 m apart.[6,25] These cases did not align with recommendations for a dedicated unit in the facil to keep patients only in their room, to discharge patients to home sooner than usual, to use pulmonary rehabilitation to address residual lung impairments, nor to admit patients from acute care earlier than typically done.[6,25]

Recent publication endorses a thorough assessment with an individualized and progressive treatment plan as was implemented in these 2 cases.[23,25] Using multiple outcome measures for these adults provided additional guidance with decisions regarding functional status, progress, and discharge location.[18] In addition to the required QI, the treating clinicians chose applicable tests and measures on a case-by-case basis including the 6MWT for cardiorespiratory fitness, 10MWT for walking speed, and the TUG and the BBS for fall risk assessment.

The target discharge goal created by the CMS was based on admission QI scores and various patient characteristics. Published research showed that only 52% of patient stays met or exceeded expected self-care scores and only 24% of patient stays exceeded expected total discharge scores.[26] Patients 1 and 2 surpassed the CMS goals by an average of 31.3%, which demonstrates their significant rehabilitation progress and suggests that some patients may have ample rehabilitation potential after recovery from COVID-19.

The 6MWT is used to measure exercise tolerance and endurance. Upon initial 6MWT evaluation, patient 1 ambulated with the assistance of 2 people and patient 2 ambulated with minimal assistance of 1 person. Patients 1 and 2 completed 1 bout of ambulation and required a seated rest break the remainder of the time. The mean distance of the 6MWT of people 80 to 89 years of age with a device is 196.6 m (95% confidence interval:

135.9-257.3 m).[27] Patients 1 and 2 demonstrated substantial improvements in the 6MWT and were within the expected range of those 80 to 89 years of age with device at discharge.[27] These results were not anticipated, given the patients' advanced age and extended hospitalization period, but did align with research done in 2003 following the SARS outbreak.[13] Lau et al[13] completed a single-blinded, controlled study to investigate a 6-week physical rehabilitation program with patients recovering from SARS. The participants showed greater improvement in cardiorespiratory fitness assessed with the 6MWT than patients with chronic obstructive pulmonary disease and acute respiratory distress syndrome.

The 10MWT test was used to measure walking speed. Walking speed incorporates several physiological processes, is considered a universal measure, and has been highly investigated as the sixth vital sign.[28] Patients 1 and 2 required minimal assistance to complete the initial evaluation of the 10MWT. Patients 1 and 2 demonstrated substantial improvement in their 10MWT walking speeds, which speaks to their physiological recovery. Walking speeds for individuals who use an assistive device are typically 0.3 to 0.4 m/s slower than for age-matched peers who do not use an assistive device.[26] The normative range of age-matched peers for comfortable walking speed is 1.06 m/s to 1.36 m/s.[29] At IRF discharge, the self-selected gait speed of patients 1 and 2 aligned with a limited community ambulator.[28] Despite improvements, patients 1 and 2 remained below the normative range, which justifies their continued rehabilitation needs.[29]

Patient 2's case was unusual as he was admitted with a history of falls and family concern about his spouse's ability to care for him. With visitor restrictions limiting family education and training, the recommendation of supervision, and the spouse's experiences with caregiving between the 2 acute care stays, the family chose long-term placement over discharge to home. The Pan American Health Organization anticipated that some people may face challenges returning to their previous living situation after experiencing severe COVID-19, especially the older population with comorbidities.[5]

These cases were treated prior to the release of professional education resources and guidelines for care. Since that time, guidance has begun to be released to clinicians in the field primarily in the form of webinars.[21] Patients with COVID-19 present similar to those with acute respiratory distress syndrome and demonstrate a decrease in physiological reserve and impaired functional activity performance.[21] Professional resources recommend outcome measures for post-acute settings including 6MWT, seated and standing step tests, TUG, and gait speed assessment.[21] This case series used 3 of the 4 recommended measures. Newly released treatment recommendations for post-acute settings emphasize that long-term reconditioning and strength training will be essential and that mobility is a priority.[21] Interventions in the subacute phase should aim to promote independence with activities of daily living and discharge planning.[5] Patients should be monitored closely for dyspnea, desaturation, hypotension, hypertension, tachycardia, and medical complaints.[23,25] Interventions may need to start with simple graded functional and strengthening exercises such as progressive weight training, weight-bearing calisthenics, and stair climbing.[6,21] The treatments used in this case series align with the exercise recommendations and would be recommended for future clinicians to achieve meaningful outcomes.

Patients 1 and 2 presented with reduced functional ability, impaired cardiorespiratory fitness, decreased walking speed, and increased fall risk. Their rehabilitation course followed the traditional parameters of CMS length of stay as determined by initial IRF QRP scores. Both patients tolerated the typical intensity of the required 3 hours of therapy for 5 days per week, which supports that individuals recovering from COVID-19 should be given consideration for this level of care. Overall, patients 1 and 2 made clinically meaningful improvements in each outcome measure used, demonstrating positive results of rehabilitation. This information may be useful for rehabilitation professionals and interdisciplinary care team members to assist in decisions for post-acute care needs for patients following COVID-19 infection.

CONCLUSION

Rehabilitation professionals need to become aware of the various presentations of patients who have tested positive for COVID-19. This case series reveals that despite the advanced age and multiple comorbidities of these 2 elderly adults, patients may demonstrate considerable rehabilitation potential following recovery from COVID-19. With an interprofessional approach to individualized care and discharge planning, these patients made rapid progress with significant gains in function despite adjusted acute and IRF care. This information is beneficial to acute care therapists and admitting IRF team members to guide appropriate decisions for post-acute care and to determine whether hospitalized patients can tolerate the 3 hours of therapy required for inpatient rehabilitation. Further investigation is needed on rehabilitation tolerance and potential outcomes for individuals who experience critical illness from COVID-19.

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