Acute Care Physical Therapy and COVID-19: How Can We Add the Greatest Value?

Part 2

APRIL 11, 2020

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HPA THE CATALYST
“We do not have to become heroes overnight. Just a step at a time, meeting each thing that comes up... Discovering we have the strength to stare it down.”

~Eleanor Roosevelt

Outline and Agenda

1. Introduction
2. COVID19 Pandemic & General Clinical Overview
3. Guiding Principles and Approach
4. Operational Considerations: Targeting Resources via the Right Questions
5. COVID Team Construction
6. Clinical Considerations: Floor, ICU, Mechanical Ventilation
7. Lessons Learned: The Director’s Perspective
8. Lessons Learned: The Clinician's Perspective
9. Discussion, Q&A, Summary
Important Resources

• COVID19 Resources: Public Google Doc curated by Kyle Ridgeway
  https://docs.google.com/document/d/16UrBoE0YLiKwaXgdUpm001oO2NTo5fr-._kN3EyDvr0/edit?ts=5e751903#heading=h.phszscnq02r7

• UpToDate: COVID-19

• Clinical practice guidelines for (respiratory) physiotherapy management of COVID-19 patients in the acute hospital
Introduction

• Focus: Strategies and Principles
  • Use current state and lessons learned to explain
  • Examples of tactics to illustrate

• Not going to discuss the *specifics* of PPE
  • Refer to institution and professional organizations
  • May discuss PPE considerations for treatment

• Ethical Resources
• March 11, 2020, the WHO declared the COVID-19 outbreak a pandemic. [https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200311-sitrep-51-covid19.pdf?sfvrsn=1ba62e57_10]

• Approximately 20-25% of the hospitalized COVID-19 patients ultimately need care in the ICU, typically for a prolonged period.

• Most common reasons for admission to the ICU are hypoxemic respiratory failure leading to mechanical ventilation, hypotension requiring vasopressor treatment, or both. [https://www.ncbi.nlm.nih.gov/pubmed/32227758]


• About 75-80% of the hospitalized COVID-19 patients have prolonged ward stays (±21 days). [https://www.ncbi.nlm.nih.gov/pubmed/32240670]

• Active mobilization of the critically ill COVID-19 patient is recommended by WHO when safe to do so. [https://www.who.int/publications-detail/clinical-management-of-severe-acute-respiratory-infectionwhen-novel-coronavirus-(ncov)-infection-is-suspected]
Trends in COVID-19 Coronavirus Cases & Deaths

Source: Johns Hopkins University (JHU) Coronavirus Resource Center; last updated with data from April 9, 2020. Notes: Cumulative case totals include both laboratory confirmed and clinically diagnosed cases; prior to February 14, 2020, totals include only laboratory confirmed cases. Japan’s totals include cases that have been identified on the Diamond Princess cruise ship (except in cases that have been re-categorized by a reporting country). "Country" includes both countries and territories.
COVID-19 Cases and Deaths Trend Data


COVID-19 Cases and Deaths Trend Data (excluding NY and NJ)

Source: Johns Hopkins University, Coronavirus COVID-19 Global Cases by the Center for Systems Science and Engineering (CSSE).
https://coronavirus.jhu.edu/map.html

COVID19 Pandemic

• Pandemic Principles

• Pandemic Considerations
  • Surge: ED, ICU, Vents, Hospital
  • Bottlenecks: ED, ICU, Vents, Hospital Discharge
  • Human vs. Equipment Resources

• PT Demand and Need? “The Second (rehab) Wave”
  • PT surge may be some time after ICU/surge as survivors need significant PT
  • Ripple effect of any infection and ICU waves “Rehab Ripple”
COVID-19 projections assuming full social distancing through May 2020

1 day until peak resource use on April 11, 2020

Hospital resource use

Resources needed for COVID-19 patients on peak date

- All beds needed: 94,249 beds
- ICU beds needed: 19,438 beds
- Invasive ventilators needed: 16,524 ventilators

Bed Shortage: 15,852 beds
ICU Bed Shortage: 9,047 beds

Pandemic Healthcare Waves

Survivors (and others) may have significant rehabilitation needs which could cause “rehab surge” at various levels of care.

Source: https://twitter.com/VectorSting/status/1244671755781898241?s=20
Pandemic Healthcare Waves

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COVID 19: General Clinical Overview

• Disease Process

• Mild, Severe, Critical
  • Some discuss mild, moderate, severe

• 4 Tracks
  • Not hospitalized (mild)
  • Hospitalized: General Floor or Ward only (moderate)
  • Hospitalized: Intensive/Critical Care (severe)
    • Most require mechanical ventilation
  • Hospitalized: General Floor followed by ICU

• Clinical Course: Generally
  • ICU: 2-3 weeks
  • Vent: ~2 weeks

**Exceptions and ranges of courses and presentations**
COVID Classification

“Pneumonia appears to be the most frequent serious manifestation of infection, characterized primarily by fever, cough, dyspnea, and bilateral infiltrates on chest imaging”

- **Mild (80%)**: No or mild pneumonia. No hospitalization

- **Severe (15%)**: Dyspnea, hypoxia, or >50 percent lung involvement on imaging within 24 to 48 hours

- **Critical (5%)**: Respiratory failure, shock, or multiorgan dysfunction
  - 80 percent of deaths occurring in those aged ≥65 years

Clinical Course

5-14 days intubation

10-24 days ICU

**data and reports on LOS, time on vent, mortality are widely variable

**based upon published case series, observations, and communications [https://jamanetwork.com/journals/jama/fullarticle/2764365](https://jamanetwork.com/journals/jama/fullarticle/2764365)


Figure 1. Clinical courses of major symptoms and outcomes and duration of viral shedding from illness onset in patients hospitalised with COVID-19.
Clinical Course

Ramy J. Rahmé
@RamyRahme

The whole population (100%)

No symptoms
30%

Mild/moderate symptoms
55%

Severe symptoms
10%

Critical symptoms
5%

Contagion

Immune

Contagious

0%

Death rates

0%

15%

50%

Days → 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

References:
Targeting Resources: The right questions to focus on value. “Get ‘em out, keep ‘em away!” - Kyle

- Think outside the normal acute care PT paradigm to ask what problems patients, other clinicians, the hospital, and the healthcare system are currently facing (and likely to face) during and after the pandemic?
- What can physical therapists do to address these issues and decrease their negative effect?
- What strategies, tactics, methods, and operations will accomplish these aims? What novel solutions must we consider?
- Where are the bottlenecks/constraints and how can PTs improve throughput?
  - Emergency Department
  - Ventilator Liberation
  - ICU Liberation
  - Hospital Length of Stay
- How can PTs progress patients to home efficiently and effectively?
- If a patient will receive limited (or no) post-acute care what can and should you do within the hospital?
- If a patient can not discharge anywhere but home, how do we maximize rehabilitation in order to progress to home and decrease length of stay?
- Will COVID rule outs/positives become a significant portion of hospital admits?
  - Burn through PPE, decrease throughput, and slow down, freeze care processes
COVID Team Construction-Brian

1. All Steps Should be well thought out, based on evidence/best practice, decisive and efficient. Avoid “analysis until paralysis”!

2. Designate COVID team as local expert and COVID practitioners.

3. Create basic process for scheduling all COVID and PUI each morning.

4. Education on “telehealth” and decision process for in room care.

5. Communicate plan and interventions with key physicians, RNs.

6. Daily communication to reassess effectiveness and pivot as needed.
COVID Team-what is the goal?

Maximize recovery and prevent harm or decompensation.

- **Physical Therapy (PT)** - Early and continued mobility, activity prescription, strengthening, endurance, positioning, expedited safe discharge readiness, home exercise program-hospital and home. This included emergency department to home discharges.

- **Occupational Therapy (OT)** - Early and independent ADLs, activity prescription, energy conservation, and dyspnea, psychosocial stress and health, psychosis and delirium, occupation and identity, journaling.

- **Speech Language Pathology (SLP)** - Many COVID-19 patients, especially those requiring invasive respiratory support during the critical phase of their disease, are at increased risk for dysphagia. Dysphagia in a patient population with underlying lung disease is a significant health risk and requires SLPs to collaborate with the medical team for best management.
“Telehealth” into isolation rooms

1. Core COVID team oversees and coordinates.
2. Everyone must know their state rules and guidelines:
   • https://www.youtube.com/watch?v=bdb9NKtybzo
3. Establish a compliant and best practice oriented process
   • https://www.ncbi.nlm.nih.gov/pubmed/29238450
   • https://telerehab.pitt.edu/ojs/index.php/Telerehab/article/view/6063
   • https://www.ahajournals.org/doi/full/10.1161/STROKEAHA.111.645861
   • http://www.apta.org/Telehealth/
4. Establish a decision making criteria to escalate “telehealth” intervention to in-room intervention.
   • Patient criteria, risk benefit, discussion with physician and RN team
Method of Therapy Service Delivery for COVID-19+ Patients

A Tiered Model for determining when to utilize Telehealth and Direct Therapeutic Intervention

**TIER 1**
HIGH CONSIDERATION FOR DIRECT THERAPY

**PRIMARY DIAGNOSIS (COVID SECONDARY)**
- CVA
- TRI
- Fracture
- Polytrauma
- Orthopedic
- SCI
- Other Neurological (PD, MS, GBS)
- Mechanical Circulatory Support
- Transplants (New, Recent)

**COVID PRIMARY**
- Severe Deconditioning: Extensive levels of assist (Moderate-Maximum Assist) for Mobility and ADLs. Moderate to Severe Dyspnea at rest and with minimal exertion

Tier 1 Primary Diagnoses are diagnoses which receive direct therapy evaluation and treatment regardless of COVID status.

**TIER 2**
CONSIDER FOR TELEHEALTH, DIRECT THERAPY SERVICES, OR MIXED DELIVERY

**PRIMARY DIAGNOSIS (COVID SECONDARY)**
- CHF Exacerbation
- COPD Exacerbation
- MI
- Cancer (CA acquired weakness, immunodeficiency)

**COVID PRIMARY**
- Moderate Deconditioning: Minimal Assist for Mobility and ADLs (within RNS ability to provide). Mild to Moderate Dyspnea with exertion

Tier 2 Primary Diagnoses are diagnoses which are susceptible to rapid decline and ARDS given what is currently known about the COVID-19 presentation.

**TIER 3**
CONSIDER FOR TELEHEALTH

**PRIMARY DIAGNOSIS (COVID SECONDARY)**
- General Medical
- General Cardiac

**COVID PRIMARY**
- Mild Deconditioning: Independent to Supervision for Mobility and ADLs. Mild dyspnea

Tier 3 Diagnoses are general medical or cardiac diagnoses which may require monitoring, but have the lowest potential for direct therapeutic intervention.

Created by Emilee Exun, DPT
Clinical Considerations:

When are we adding value and mitigating harm while influencing recovery, and when are we just becoming additional disease vectors consuming PPE?

Determining in room intervention: **Floor Status Patients**

**Evaluation Escalation:** At each time point consider "Do I have enough information to make necessary recommendations and sign off?"

“Early physical therapy and active mobility is not about time, it’s about *timing.*"
Evaluation Escalation

“How can I contribute to this case without entering the room?”
“Do I have enough information to make necessary recommendations and sign off?”

1) Chart review Discussion with team "what is clinical question or concern?"
2) Discussion with nurse: function and mobility status. RN concerns?
3) Call into room to talk with patient (call family/social support as needed)
4) Call into room while nurse or other clinician is in room to guide assessment
5) Evaluate and treat at bedside
   • Determine frequency of case follow up (non-bedside) and bedside follow up (if required)

https://docs.google.com/document/d/1LCO_0X6YzEw424ao9D5f92f82vdzSikeGOXn4Ay25_c/edit?usp=sharing
Clinical Considerations: ICU and Mechanical Ventilation

Generally, consider PT consultation when: stable vent settings, RASS consistently -2 to +1, hemodynamically tolerating spontaneous awakening trial, and hemodynamically tolerating routine care (turning, oral care, suction, coughing, chair position)

- ABCDEF Bundle, ICU Liberation, and Post Intensive Care Syndrome as guiding constructs
- Use what you know! ARDS, mobility guidelines, published research, and institution specific protocols

- **Respiratory**: Stable vent settings/oxygen demand
- **Cardiovascular**: At MAP goal on stable dose of vasoactives
- **Hemodynamically** appropriate and tolerating awakening
- **Cognition**: RASS consistently -2 to +1
- **Other considerations**
  - Significant physical weakness in awake and cooperative patient
  - Inability or difficulty weaning mechanical ventilation
  - ICU LOS and/or mechanical ventilation > 7 days
  - Nursing unable to progress mobility post extubation

https://docs.google.com/document/d/1VC8mIdO5aHFmIL0g9qLP4WtxzMj-vNgkpWMOdo9ZBgw/edit?usp=sharing
Clinical Considerations: ICU and Mechanical Ventilation

**Consider Holding Consultation:** Early in course, deep sedation, poor prognosis, likely to progress with nurse led mobility

- **Respiratory:** High settings, up-trending, decompensation with routine care/coughing
- **Cardiovascular:** Not at MAP goal, increasing vasoactives, decompensation with routine care
- **Hemodynamically** inappropriate for awakening or ordered for deep sedation RASS −4 to -5
- **Cognition:** RASS consistently −3 to -4 or +2 to +4
- **Poor or unknown prognosis**
- **Older age with high likelihood of poor outcome or death**
- **Other considerations**
  - Adequate physical strength
  - ICU LOS/Intubation < 4 days
  - Nursing able to progress mobility successfully

https://docs.google.com/document/d/1VC8mIdO5aHFmIL0g9qLP4WtzxMj-vNgkpWMOdo9ZBgw/edit?usp=sharing
Lessons Learned: The Directors Perspective

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Lessons Learned: The Clinician’s Perspective

• Symptoms, impairments, patient reports
• Case reviews
• Challenges in delivering care in context of pandemic
  • Population health vs. patient centered
• Rationing and Triage
• Less is best (is hard)
• Survivorship burden
• The upside of crisis teamwork
• Moment to moment problem solving
Group Discussion, Q&A

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• University of Virginia: COVID-19 Surveillance Dashboard https://nssac.bii.virginia.edu/covid-19/dashboard/
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Guiding Principles and Approach

- Pandemic
- Environmental Scan: Current State vs. Potential State
  - Surge/Crisis vs. Not
  - Hospital Census and Capacity
  - PT Census and Capacity
  - Staffing
  - Bottlenecks: Hospital and Therapy
- Surge and Crisis Planning
- Collaboration and Communication: Bedside to the Boardroom
- Check in and support yourself and staff
Questions We Should Consider
Beyond Acute Care

1. Where are the potential “rehab ripples?” and operational bottlenecks?
2. What post-acute care resources are and will be available?
3. What can and should we be doing in acute care operationally and clinically?
4. Are we prepared for an increased demand for PT/rehab in the hospital and after?
5. How can we and should we think about potential redeployment of therapists across the continuum of care and various settings?
6. Is telehealth actually a viable option for certain populations?
Ethical Considerations and Resources

Patient Centered vs. Population Centered

PPE Utilization and Shortages


• Preparing Workplaces: https://www.osha.gov/Publications/OSHA3990.pdf