



Physical Therapy Considerations of COVID-19 in the Post-Acute Setting

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Presenters: Kenneth Miller, Pamela Bartlo, Morgan Johanson, Talia Pollok

Panelists: Chris Chimenti, Rachel Botkin

Presenters

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Housekeeping

- All microphones are muted upon entrance
- Host will record your questions & comments
- Audience questions & comments will be shared after all speakers present
- Recording will be available on websites by Monday, April 20
- Certificate awarded upon completion of post-webinar survey
- Thank you to HPA the Catalyst for supplying the platform for this webinar.

Brief Overview of COVID-19

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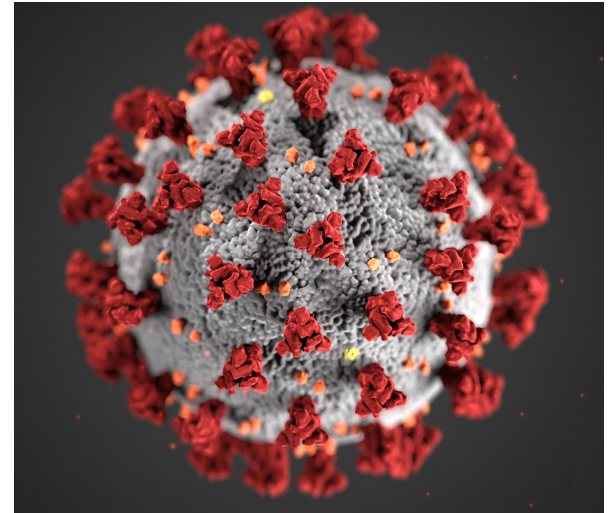


chatham
UNIVERSITY



Coronavirus Disease 2019 (COVID-19)

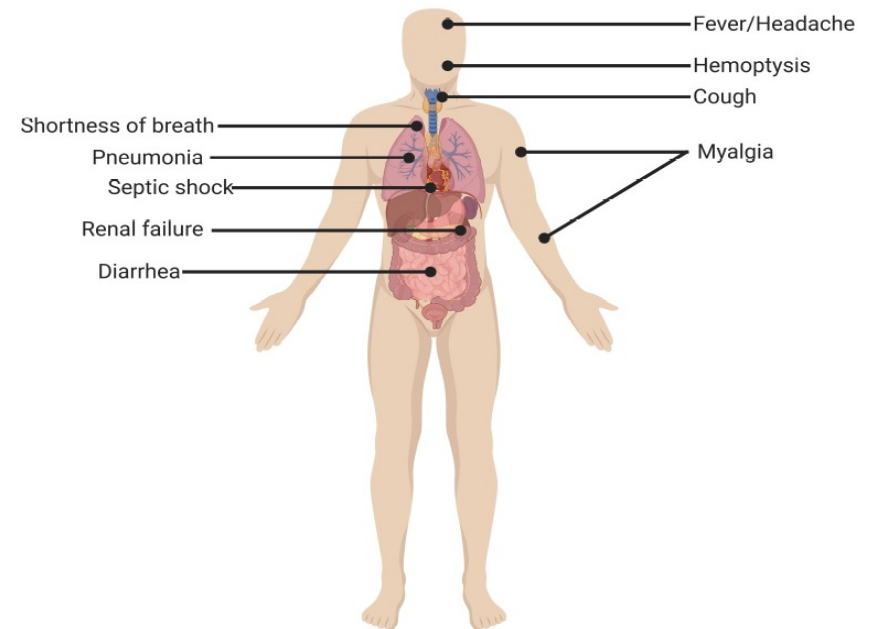
- Caused by coronavirus SARS-CoV-2
- Positive-stranded RNA virus with spike glycoproteins on the envelope that give it a crown-like appearance (*coronam*)
- Transmission through respiratory droplets through coughing, sneezing
- Infection is capable of generating an excessive immune response – ‘cytokine storm’
- Interleukin-6 (IL-6)
 - Produced by activated leukocytes
 - Connection to multi-system effects



Signs and Symptoms

- Signs and symptoms typically develop 5-6 days after infection
 - **Range of 1-14 days**
- Fever (87.9%)
- Dry cough (67.7%)
- Fatigue (38.1%)
- Sputum Production (33.4%)
- Shortness of breath (18.6%)
- Myalgia/arthralgia (14.8%)
- Sore throat (13.9%)
- Headache (13.6%)
- Chills, nausea/vomiting, nasal congestion, diarrhea, hemoptysis, conjunctival congestion

Clinical presentation of patients with CoVID-19



<https://www.ncbi.nlm.nih.gov/books/NBK554776/>

[https://www.who.int/publications-detail/report-of-the-who-china-joint-mission-on-coronavirus-disease-2019-\(covid-19\)](https://www.who.int/publications-detail/report-of-the-who-china-joint-mission-on-coronavirus-disease-2019-(covid-19))

Disease Presentation



ASYMPTOMATIC
??

MILD to MODERATE
80%

PNA
Non-PNA

SEVERE
13.8%

Dyspnea
RR \geq 30/min
SpO₂ \leq 93%
PaO₂/FiO₂ <300
Lung infiltrates >50% of lung
field in 24-48 hours

CRITICAL
6.1%

Respiratory failure
Septic shock
Multiple organ
dysfunction/failure

[https://www.who.int/publications-detail/report-of-the-who-china-joint-mission-on-coronavirus-disease-2019-\(covid-19\)](https://www.who.int/publications-detail/report-of-the-who-china-joint-mission-on-coronavirus-disease-2019-(covid-19))

References

- <https://www.cdc.gov/coronavirus/2019-ncov/faq.html#Coronavirus-Disease-2019-Basics> Accessed 4/16/2020.
- Cascella M, Rajnik M, Cuomo A, Dulebohn SC, Di Napoli R. Features, Evaluation and Treatment Coronavirus (COVID-19). StatPearls. <https://www.ncbi.nlm.nih.gov/books/NBK554776/> Accessed 4/17/2020.
- [https://www.who.int/publications-detail/report-of-the-who-china-joint-mission-on-coronavirus-disease-2019-\(covid-19\)](https://www.who.int/publications-detail/report-of-the-who-china-joint-mission-on-coronavirus-disease-2019-(covid-19)) Accessed 4/16/2020.

Decision Making: Who to visit?

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Decision Making Factors



RULES/INSURANCE



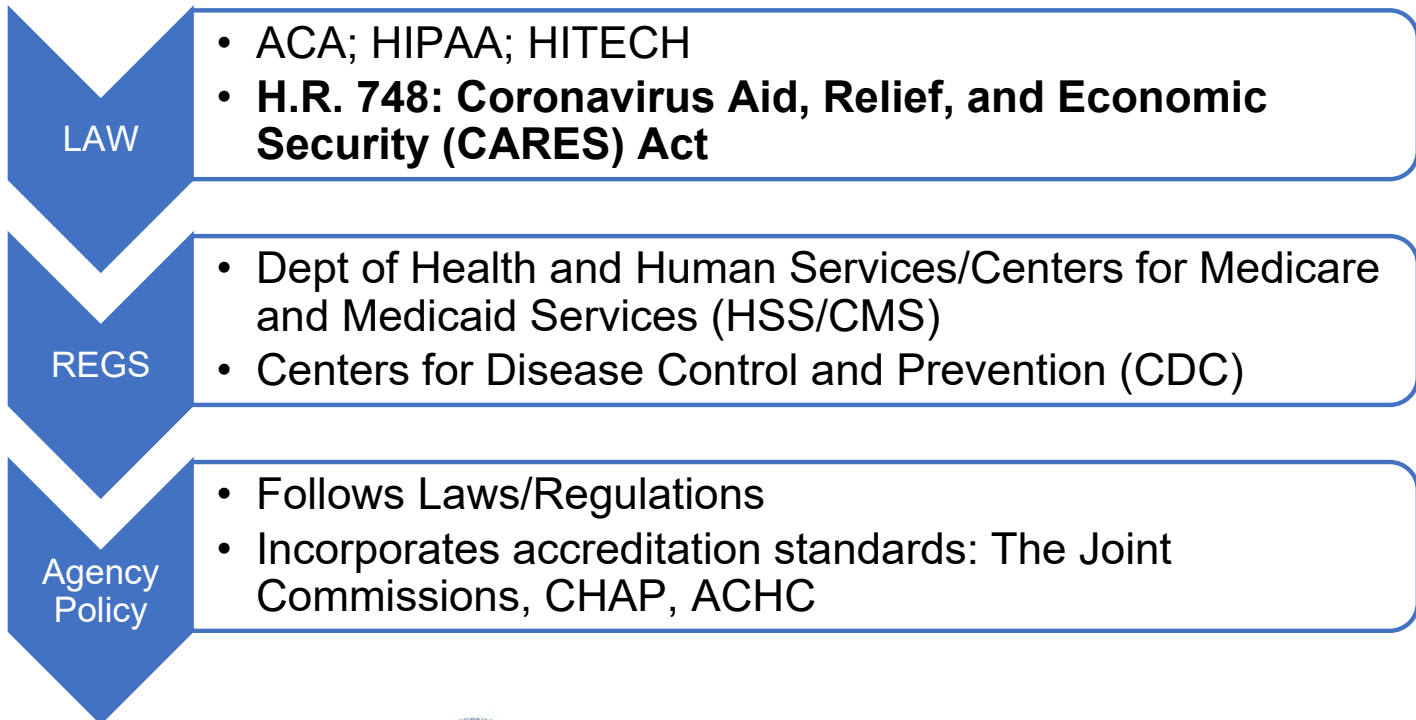
HEALTH/CLINICAL

Triaging in the COVID-19 Era: THE RULES/INSURANCE

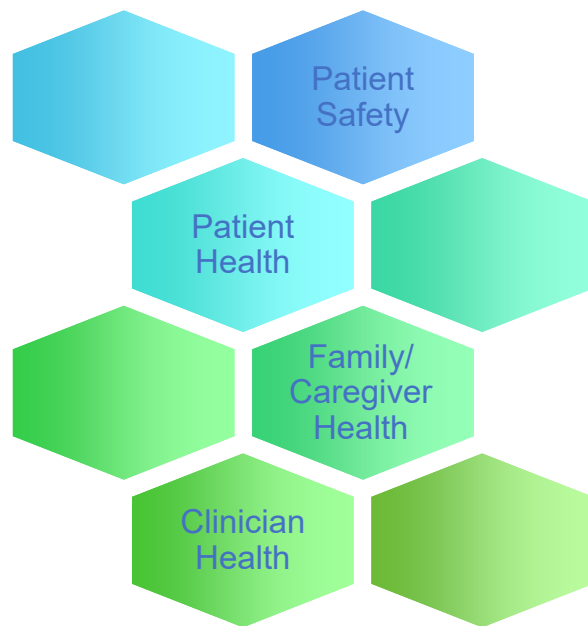


World Health Organization (WHO)

Association for Professionals in Infection Control and Epidemiology (APIC)



Triaging in the COVID-19 Era: CLINICAL/HEALTH FACTORS



Social Distancing

- Stay at least 6 feet (2 meters) from other people & do not gather in groups
- Stay out of crowded places and avoid mass gatherings
- Cover your mouth and nose with a [cloth face cover](#) when around others, including when you have to go out in public, for example to the grocery store.

Self-Monitoring

Be alert for symptoms. Watch for **fever,* cough, or shortness of breath**. Take your temperature if symptoms develop.

Quarantine

Purpose: keep someone who *might* have been exposed to COVID-19 away from others. Someone in self-quarantine stays separated from others, and they limit movement outside of their home or current place.

Isolation

Isolation is used to **separate sick people from healthy people**. People who are in isolation should stay home. In the home, anyone sick should separate themselves from others by staying in a specific "sick" bedroom or space and using a different bathroom (if possible).

Team Assignments and Scheduling Considerations

- Assignment Teams (COVID-19 vs NON-COVID-19)
 - Must decide on dedicated teams or specific personnel within teams to see infected individuals
- All staff – must self-monitor using CDC guidelines
 - Use of telephonic check in by staff
 - (+) screen – follow up with physician – COVID-19 Testing when appropriate/available
- Scheduling
 - Frequency of visits (physical and electronic)
 - Telephonic follow up
 - Telehealth visits
 - Co-visits with RN or other discipline – donning/doffing assistance, maintain infection control standards
 - See high risk (most vulnerable) patients first (regarding immune status, multi-comorbidity, older adults)
 - Patients with any communicable disease (in particular COVID-19 infection) seen last

Screening Questions – Ask: Pt, Family/Caregiver, visitors to home.

1. International travel within the **last 14 days** to countries with sustained community transmission. For updated information on affected countries visit: <https://www.cdc.gov/coronavirus/2019-ncov/travelers/index.html>
2. Signs or symptoms of a respiratory infection, such as a **fever**, cough, and sore throat.
3. In the **last 14 days**, has had contact with someone with or under investigation for COVID19, or are ill with respiratory illness.
4. Residing in a community where community-based spread of COVID-19 is occurring.

Temperature monitoring

Responses that determine who is appropriate to treat

If (-) screen, follow standard precautions and CDC guidelines

<https://www.cdc.gov/coronavirus/2019-ncov/hcp/guidance-home-care.html>

Decision Makers

- Intake staff - starts with Administration (such as Director of Patient Services)
 - Census – Agency capacity to meet needs of those admitted
 - Number of field staff/Supplies (including PPE)
 - Competency –clinician ability to safely perform duties required to meet patient needs
- Admitting staff (RN, PT, SLP)
 - Patient meets eligibility (COP)
 - Diagnosis, functional level – OASIS Comprehensive Assessment
- Field staff (PT, OT, SLP, RN, LPN, MSW)

Let's revisit: Self-Monitor, Self-Quarantine & Self-Isolation

If you or someone in your home might have been exposed

Self-Monitor

Be alert for symptoms. Watch for **fever,* cough, or shortness of breath.**

- Take your temperature if symptoms develop.
- Practice social distancing. Maintain 6 feet of distance from others, and stay out of crowded places.
- Follow [CDC guidance](#) if symptoms develop.

If you feel healthy but:

Self-Quarantine

- [Recently had close contact](#) with a person with COVID-19, or
- Recently [traveled](#) from somewhere outside the U.S. or on a cruise ship or river boat

- Check your temperature twice a day and watch for symptoms.
- Stay home for 14 days **and** self-monitor.
- If possible, stay away from people who are [high-risk](#) for getting very sick from COVID-19.

If you:

Self-Isolate

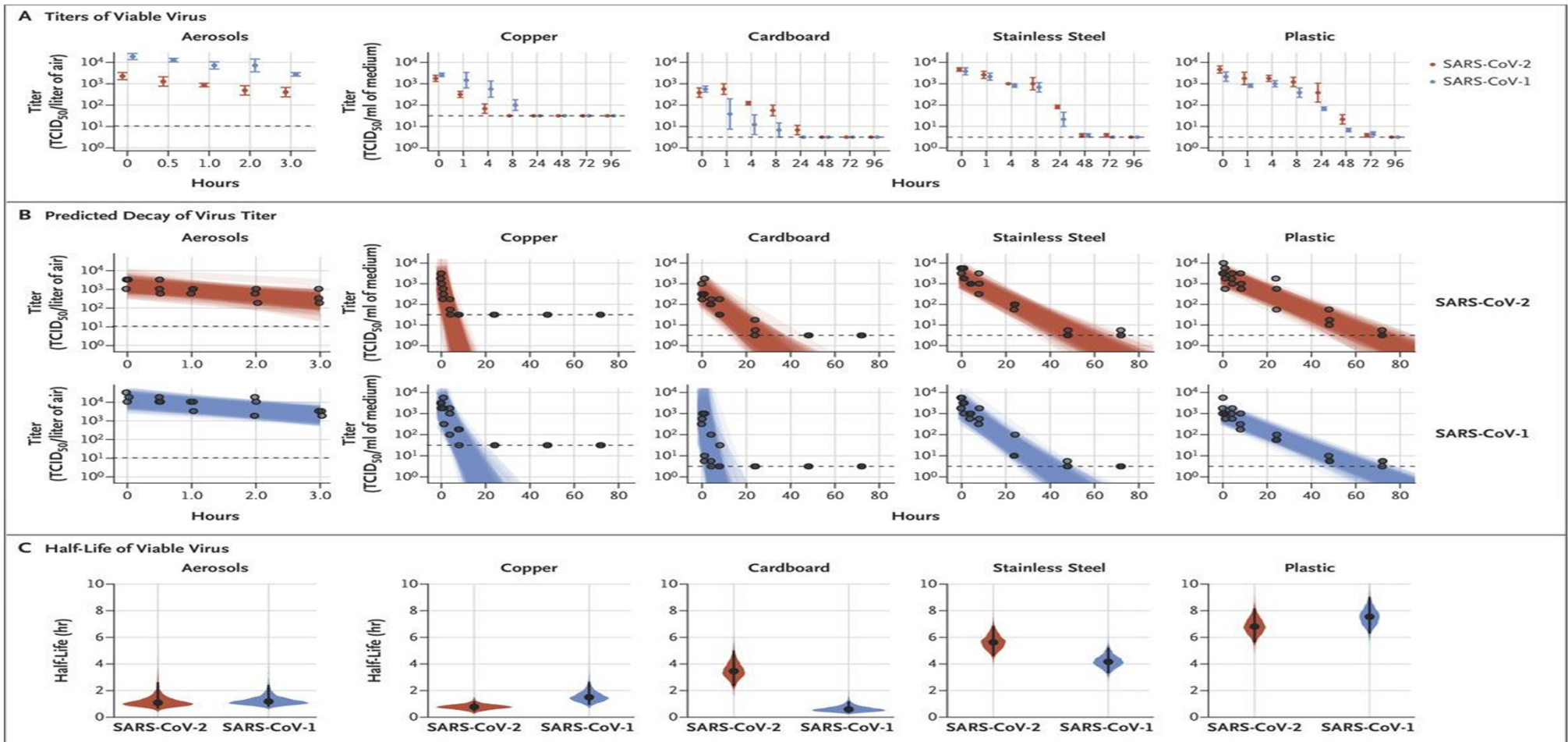
- Have been diagnosed with COVID-19, or
 - Are waiting for test results, or
 - Have symptoms such as cough, fever, or shortness of breath
- Stay in a specific "sick room" or area and away from other people or animals, including pets. If possible, use a separate bathroom.
 - Read important information about [caring for yourself](#) or [someone else who is sick](#).

Infection Control Practices - Educate patients/caregivers.

- How to clean and disinfect
 - Wear disposable gloves to clean and disinfect
- Clean surfaces using soap and water
 - High touch surfaces: tables, doorknobs, light switches, countertops, handles, desks, phones, keyboards, toilets, faucets, sinks, etc.
- Disinfect
 - Clean the area or item with soap and water or another detergent if it is dirty. Then use a recommended EPA household disinfectant (follow labeling)
- Wash hands often with soap and water for 20 seconds.
- Hand sanitizer
- Avoid touching your eyes, nose and mouth with unwashed hands
- Shared bathroom - person who is sick should clean and disinfect after each use.
- Food – person sick should not eat with others in house
- Trash – dedicated lined trash cans (use gloves when removing)- wash hands afterwards.

<https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/disinfecting-your-home.html>

Viability of SARS-CoV-1 and SARS-CoV-2 in Aerosols and on Various Surfaces.



References

- van Doremalen N, Morris DH, Holbrook MG, et al. Aerosol and Surface Stability of SARS-COV-2 as Compared with SARS-COV-1. *N Engl J Med*. 2020;382(12):1177-1179. doi:10.1056/NEJMc2001737
- Centers for Medicare and Medicaid Services. Available at: <https://www.cms.gov/files/document/qso-20-18-hha.pdf>. Accessed 4.15.2020
- Centers for Disease Control and Prevention. Available at: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/guidance-risk-assesment-hcp.html>. Accessed 4.15.2020
- Centers for Disease Control and Prevention. Available at: <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/social-distancing.html>. Accessed 4.15.2020
- Centers for Disease Control and Prevention. Available at: <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/disinfecting-your-home.html>. Accessed 4.15.2020

Infection Control & Basic Exercise Recommendations

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Review of Types of Isolation Precautions

Contact Precautions

• Infections, diseases, or germs spread by touching the patient or items in the room

• Examples: MRSA, VRE, diarrheal illnesses, open wounds, RSV

• PPE:

- Gloves
- Maybe gown: if risk of splash/contact

Droplet Precaution

• Diseases or germs spread in tiny droplets caused by coughing or sneezing

• Examples: pneumonia, influenza, whooping cough, bacterial meningitis

• PPE

- Gloves
- Gown: water-proof
- Surgical mask
- Maybe glasses: if risk of splash to the eyes

Airborne Precaution

• Diseases or very small germs that are spread through the air from one person to another

• Examples: tuberculosis, measles, chickenpox

• PPE

- Gloves
- Gown
- Fit-tested N95 or higher-level respirator
- Face shield or goggles/glasses

COVID-19 is Droplet/Airborne

- Being treated as an airborne pathology for the most part.
- It's actually spread by droplet contact.
- However, when patient coughs, sneezes, or exhales droplets they go into the air.
 - COVID-19 particles can stay in the air for a while: studies say it hovers around 1-3 hrs., but that is in closed spaces and the viral count does decrease in concentration.
 - Usually though, the expelled droplet will land on something then a person touches that surface and then they touch their face/eyes/mouth/etc.
- So, it's being treated as airborne with regards to PPE, but the patient may not be in a negative pressure room in acute care and obviously won't at home or sub-acute/SNF/LTAC.

Guidelines for social distancing when treating a patient with (+) COVID-19

- Maintain social distancing with all family members/caregivers of patient.
 - Maintain 6' from family members. Preferably they should leave the room.
- Don't be a vector: odds are family member has already had contact with the pt, but you don't need to ensure that happens.
- Try not to touch any surface entering/leaving the house without gloves or other protective barrier in place. (Includes pushing door open with arm, moving something aside with leg, etc.)

Contact with patient with (+) COVID-19

When can they go outside/leave house?

- Contact with pt should be in full droplet/airborne PPE for as long as your agency/facility recommends. This may vary or change as we learn more about how long the patient is contagious. This point, there's just not enough data.
- These are guidelines for pt going out of their house or for us to D/C use of PPE...
- If the pt won't be re-tested, then
 - At a minimum, it should be at least 14 days after symptoms first appeared (PPE probably for longer still)
 - **AND** at least 72 hours (that is three full days of no fever without the use medicine that reduces fevers)
- If the pt will be re-tested, then
 - Once they no longer have a fever (without the use medicine that reduces fevers)
 - **AND** other symptoms have improved (for example, when their cough or shortness of breath have improved)
 - **AND** they received two negative tests in a row, 24 hours apart.
- ***No definite answer on when pt is no longer contagious.***
 - Studies show pt can shed virus for up to 30 days.
 - Some sources saying patient may be a carrier for up to 6-8 weeks

PPE

- Country is in surge capacity strategy
- Here is a resource for your agency/facility to use in order to see how much PPE they'll need and how long it will last them.
- PPE burn rate calculator: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/burn-calculator.html>
- General reminder for everyone regarding use of PPE
- RE-ADJUSTMENT of PPE once on = HAND HYGIENE
- ONE OF THE BIGGEST PPE MISTAKES!!!!!!

Don/Doff PPE

- Don and Doff PPE away from the patient environment.
 - HH: outside if possible. Otherwise, just inside pt's door at least 6-10' from pt
 - Rehab setting: outside pt's room or designated area
- Follow procedures
 - Key points when donning PPE: all skin at wrists is covered, N95 mask seal is intact (take a couple breaths in/out to seal it), ensure gown is tied tight enough
 - Key points when doffing PPE: take gown down from shoulders first, gloves inside out, hand hygiene A LOT t/o, store mask correctly if re-using
 - Mask storage: make sure straps do NOT touch the inside of the mask, store in a clean open container (possibly a paper bag), record length of use and discard after recommended wear time
- Greatest risk of spread of disease is during doffing process

- Use your agency/facility's procedure.
- JCAHO standards mandate that the agencies/facilities have policies and procedures for PPE donning/doffing for droplet and airborne transmission.
- Those have probably been modified for COVID-19.
- Make yourself aware of those and FOLLOW them.
- If you don't have any, use CDC's.

Use Personal Protective Equipment (PPE) When Caring for Patients with Confirmed or Suspected COVID-19

Before caring for patients with confirmed or suspected COVID-19, healthcare personnel (HCP) must:

- Receive comprehensive training on when and what PPE is necessary, how to don (put on) and doff (take off) PPE, limitations of PPE, and proper care, maintenance, and disposal of PPE.
- Demonstrate competency in performing appropriate infection control practices and procedures.

Remember:

- PPE must be donned correctly before entering the patient area (e.g., isolation room, unit if cohabiting).
- PPE must remain in place and be worn correctly for the duration of work in potentially contaminated areas. PPE should not be adjusted (e.g., retying gown, adjusting respirator/face mask) during patient care.
- PPE must be removed slowly and deliberately in a sequence that prevents self-contamination. A step-by-step process should be developed and used during training and patient care.

Preferred PPE – Use N95 or Higher Respirator



Acceptable Alternative PPE – Use Facemask



Donning (putting on the gear):

More than one donning method may be acceptable. Training and practice using your healthcare facility's procedure is critical. Below is one example of donning.

1. Identify and gather the proper PPE to don. Ensure choice of gown size is correct. (Based on training).
2. Perform hand hygiene using hand sanitizer.
3. Put on isolation gown. Tie all of the ties on the gown. Assistance may be needed by another HCP.
4. Put on NIOSH-approved N95 filtering facemask respirator or higher (use a facemask if a respirator is not available). If the respirator has a nosepiece, it should be fitted to the nose with both hands, not bent or tugged. Do not pinch the nosepiece with one hand. Respirator/facemask should be extended under chin. Both your mouth and nose should be protected. Do not wear respirator/facemask under your chin or secure in scrubs pocket between patients.*
 - Respirator: Respirator straps should be placed on crown of head (top strap) and base of neck (bottom strap). Perform a user seal check each time you put on the respirator.
 - Facemask: Mask ties should be secured on crown of head (top ties) and base of neck (bottom ties). If mask has loops, hook them appropriately around your ears.
5. Put on face shield or goggles. Face shields provide full face coverage. Goggles also provide excellent protection for eyes, but fogging is common.
6. Perform hand hygiene before putting on gloves. Gloves should cover the cuff (wrists) of gown.
7. HCP may now enter patient room.

Doffing (taking off the gear):

More than one doffing method may be acceptable. Training and practice using your healthcare facility's procedure is critical. Below is one example of doffing.

1. Remove gloves. Ensure glove removal does not cause additional contamination of hands. (Gloves can be removed using more than one technique (e.g., glove-in-glove or bird beak).)
2. Remove gown. Untie all ties (or unsnap all buttons). Some gown ties can be broken rather than untied. Do so in gentle manner, avoiding a forced movement. Reach up to the shoulders and carefully pull gown down and away from the body. Rolling the gown down to an acceptable approach. Dispose in trash receptacle.*
3. HCP may now exit patient room.
4. Perform hand hygiene.
5. Remove face shield or goggles. Carefully remove face shield or goggles by grabbing the strap and pulling upwards and away from head. Do not touch the front of face shield or goggles.
6. Remove and discard respirator (or facemask if used instead of respirator).* Do not touch the front of the respirator or facemask.
 - Respirator: Remove the bottom strap by touching only the strap and bring it carefully over the head. Grasp the top strap and bring it carefully over the head, and then pull the respirator away from the face without touching the front of the respirator.
 - Facemask: Carefully untie (or unhook from the ears) and pull away from face without touching the front.
7. Perform hand hygiene after removing the respirator/facemask and before putting it on again if your workplace is practicing reuse.



*Facilities implementing reuse or extended use of PPE will need to adjust their donning and doffing procedures to accommodate these practices.

www.cdc.gov/coronavirus

One caveat:

- If you're **re-using** your N95 mask...
- Put on gloves to put it on, then take those gloves off and throw them out. Put on clean gloves to treat pt.

SEQUENCE FOR PUTTING ON PERSONAL PROTECTIVE EQUIPMENT (PPE)

The type of PPE used will vary based on the level of precautions required, such as standard and contact, droplet or airborne infection isolation precautions. The procedure for putting on and removing PPE should be tailored to the specific type of PPE.

1. GOWN

- Fully cover torso from neck to knees, arms to end of wrists, and wrap around the back
- Fasten in back of neck and waist



2. MASK OR RESPIRATOR

- Secure ties or elastic bands at middle of head and neck
- Fit flexible band to nose bridge
- Fit snug to face and below chin
- Fit-check respirator



3. GOGGLES OR FACE SHIELD

- Place over face and eyes and adjust to fit



4. GLOVES

- Extend to cover wrist of isolation gown



USE SAFE WORK PRACTICES TO PROTECT YOURSELF AND LIMIT THE SPREAD OF CONTAMINATION

- Keep hands away from face
- Limit surfaces touched
- Change gloves when torn or heavily contaminated
- Perform hand hygiene



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Eyewear



- Obtain eyewear (goggles, glasses, face shield) from your agency/facility
 - Single use vs. Re-usable (re-usable recommended due to PPE shortage)
- Ensure appropriate cleaning and disinfection between uses if goggles or reusable face shields are used.
 - Clean inside of lenses first, then outside, then rest of the frame.
 - Make sure to let disinfectant dry completely first.
 - Then run water over lenses and dry with cloth to eliminate streaks
- Throw out any goggles, glasses, or face shield that becomes damaged even if it was re-usable

Gowns



- Single use gowns preferred as most re-usable ones aren't waterproof. *However, if shortage continues, this may have to change.*
- May use surgical gowns if they're waterproof. Then wash as per regular recommendations for that gown.
- Make sure gown is tied tight enough it won't slip off while in physical contact with the pt
- During doffing, make sure to start at the shoulders and wrap it into itself as you take it off
 - Do NOT shake the gown out at all during doffing
- Only as a last resort, if you're agency/facility runs out of gowns should you consider the use of coveralls or lab coat.

Masks



- Surgical mask is fine for pts that aren't COVID-19 (+) or to wear over an N95 mask, but they are **NOT** good enough on their own for a pt with (+) COVID-19.
- When treating a pt that is COVID-19 (+), you NEED an N95 or higher barrier mask during contagious/viral shedding period.**
- You must be fit tested for N95 mask. Make sure you get a good seal every time.
- Almost all places re-using masks now. Know your agency/facility's protocol
- Throw out mask once it reaches your agency/facility's protocol or if it gets soiled, damaged, or hard to breathe through.

- Remember do NOT touch the facemask while wearing it. If you do, perform hand hygiene. This goes for surgical and N95 masks.

Equipment Management

Bags, Weights, Computers, Equipment

- **Leave anything in your car that you can.**
- Bags, equipment: bring something with you to set things down on
 - Piece of tarp, newspaper, plastic.
 - Have a bag to put that tarp in as you leave or dispose of newspaper at pt's house
 - Wrap tarp/plastic with "dirty" side into itself and then place in the bag
 - At home: take it out and clean/disinfect it then leave for several hrs. or days as able
- Sanitize anything else used with agency approved cleaner (bleach/alcohol)
- Pulse ox: mixed info depending on your pulse ox.
- Soft surfaces – virus lives shorter..... Hard surfaces – easier to clean

Exercise Tolerance Monitoring

- Not going to go over specific ex. You can use your judgment for fatigue and endurance issues based on info that Ken, Talia, and Morgan discuss.
- Reminder that vitals and subjective symptoms will be your best guide.
- COVID-19 pts desaturate quickly, so really important to track pulse ox and SOB scale.
 - Modified Borg is still our recommendation although it may not prove to be the best.
 - The early pts out of acute care so far are showing that Borg SOB scale may underrepresent their desaturation level, so you may have to use the scales with variance for some pts.

References

- Centers for Disease Control (CDC): info on transmission of COVID-19 virus, symptoms, PPE recommendations, PPE burn rate calculator, and other COVID-19 related information. <https://www.cdc.gov/coronavirus/2019-ncov/index.html>. Accessed between 3/2/20 - 3/10/2020.
- Christensen L, Rasmussen CS, Benfield T, Franc JM. A Randomized Trial of Instructor-Led Training Versus Video Lesson in Training Health Care Providers in Proper Donning and Doffing of Personal Protective Equipment. *Disaster Med Public Health Prep*. March 2020:1-15.
- Phan LT, Maita D, Mortiz DC, et al. Personal protective equipment doffing practices of healthcare workers. *J Occup Environ Hyg*. 2019;16(8):575-581.
- Sayburn A. Covid-19: PHE upgrades PPE advice for all patient contacts with risk of infection. *BMJ (Clinical research ed)*. 2020;369:m1391.
- Young BE, Ong SWX, Kalimuddin S, et al. Epidemiologic Features and Clinical Course of Patients Infected With SARS-CoV-2 in Singapore. *JAMA*. March 2020.
- World Health Organization (WHO): info on transmission of COVID-19 and length of disease presentation. <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>. Accessed between 3/2/20 - 3/10/20.
- Zhou F, Yu T, Du R, et al. Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. *Lancet (London, England)*. 2020;395(10229):1054-1062.

Oxygenation: Monitoring and Delivery Methods

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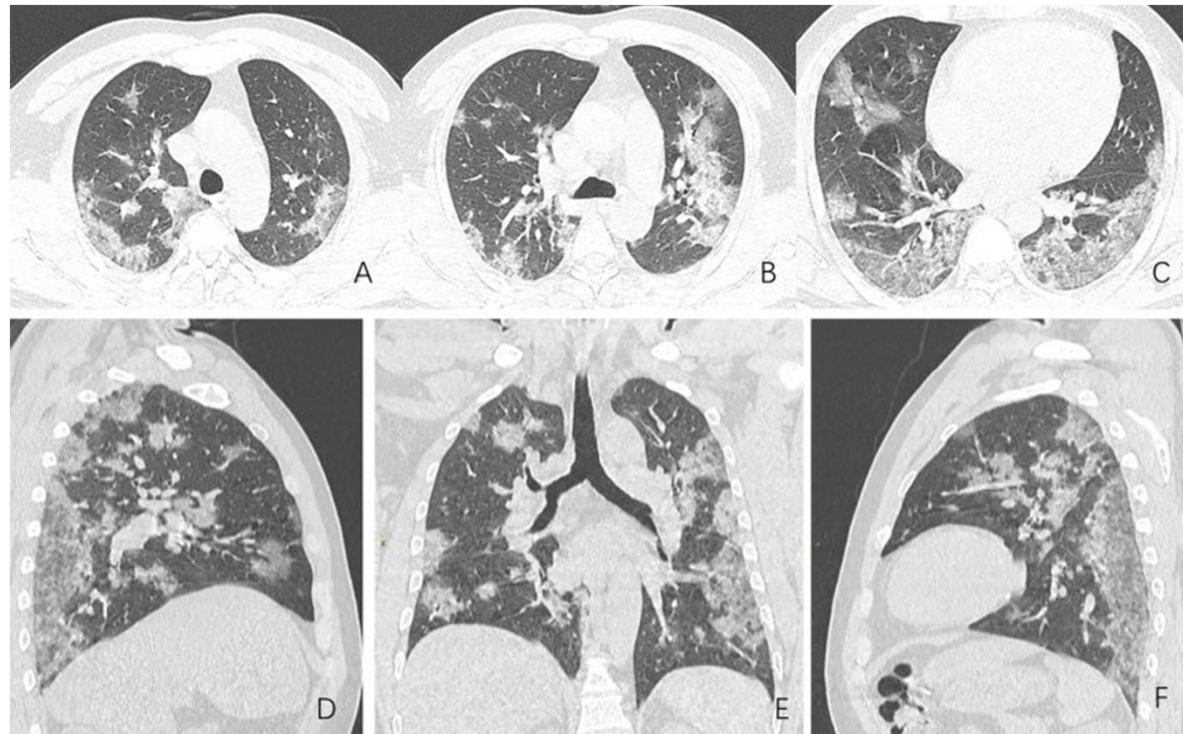


Good Heart Education



Restrictive Lung Disease (RLD)

- Pathophysiology of COVID-19
 - Pneumonia
 - ARDS
- Characteristics of RLD
 - Dry non-productive cough
 - Low lung volumes
 - Increased respiratory rate
 - Shortness of breath
- Consequences of RLD
 - V/Q mismatch
 - Increased work of breathing
 - Desaturation



Quian L et.al. Radiology 2020

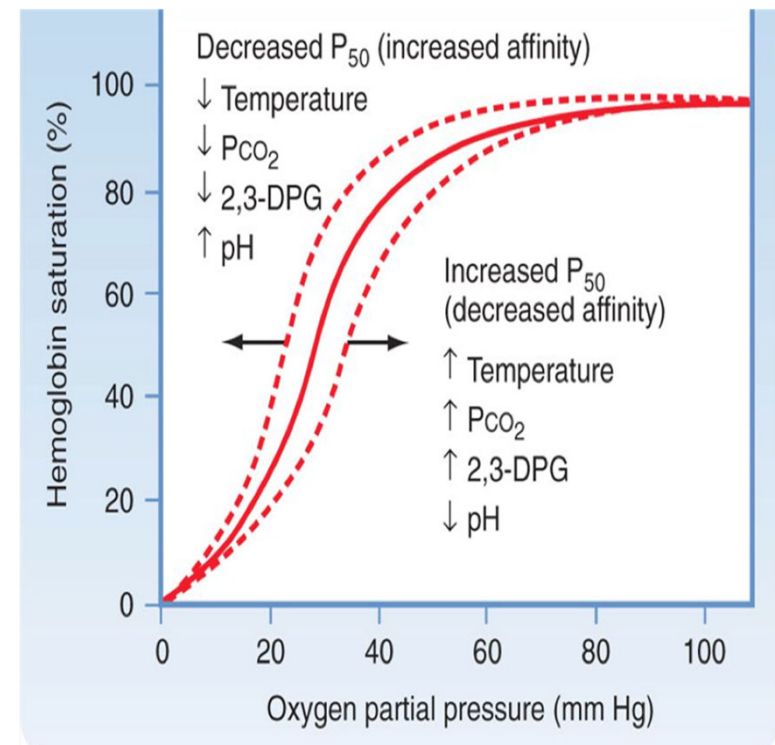
Reported Acute Care Discharge Challenges

- High oxygen requirements at rest and oxygen desaturation with activity
- Weakness and decreased functional mobility
- Many SNF are not taking these patients

Thus, we anticipate that these patients will be discharged home potentially on high flow rates and are likely to desaturate with functional mobility

Why is it Important to Prevent Desaturation?

- Oxyhemoglobin desaturation curve
- Difference between what you see on the pulse oximeter versus what is happening in the blood
- Ramifications of desaturation
 - Decreased O_2 supply for the heart, brain, and working body
 - Increased respiratory rate
 - Shortness of breath
 - Decreased activity tolerance



SpO₂ Monitoring

- Pulse oximeters
 - Patients might already own one; or be in the home with telehealth equipment
- Cleaning pulse oximeter
 - Follow manufacturers instructions
- No evidence yet that dyspnea scales correlate with saturation/desaturation rates in COVID-19 patients
- When to monitor
 - Rest
 - During activities (each time a new activity is introduced)
 - Recovery



Non-verbal Signs of Potential Desaturation

- Increased respiratory rate
- Complaints of shortness of breath/difficulty breathing
- Assuming rescue breathing positions/tripoding
- Over recruitment of accessory respiratory muscles
- Pursed lip breathing
- Increasing anxiety

Strategies for Managing Desaturation

- Pacing of activities
- Energy conservation DME
 - 4-wheel walker
 - Shower/tub chair
- Selecting appropriate intensity
 - Seated versus standing exercise
- Utilizing tripod positioning
- Breathing exercises (patient should work on these on their own)
 - Inspiratory holds, stacked breathing, segmental breathing, paired breathing
- Switching airway delivery devices

Main goal is to keep the patient at home!

Oxygen Delivery Principles

- Oxygen therapy is the administration of oxygen at concentrations greater than room air
 - Room air: 78% Nitrogen, 21% Oxygen, 1% trace gases
- Indication: arterial hypoxemia with a PaO₂ of less than 60 mm Hg
- Flow rate is the liters of oxygen delivered per minute
- FiO₂ is the percentage of oxygen in the inspired gas
- Goal is to deliver the amount of supplemental oxygen required to maintain SpO₂ at the MD ordered level **both** at rest and with exercise/mobility

Airway Delivery Devices

- Standard nasal cannula
 - Typical airway delivery device that patients are DC'd home with
 - Typical maximum flow rate is 6L
- High flow delivery devices
 - High flow nasal cannula and oxymizer
 - Venturi mask and non-rebreather mask
 - Often used in critical care but also used in outpatient PR clinics
 - Debate exists whether these devices should be used in the treatment of COVID-19 due to aerosolization of virus (evidence is mixed)



Resources for Airway Delivery Devices

- Post-Acute COVID-19 Exercise and Rehabilitation (PACER) Project
 - An initiative of multiple APTA Sections & Academies to be a resource to increase practitioner proficiency in cardiovascular and pulmonary (CVP) physical therapy
 - Free to all members and non-members on the APTA Learning Center (also on the APTA Cardiopulmonary Section YouTube page and Cardiovascular and Pulmonary Section of the APTA Facebook page)
- Vital Signs, Oxygen and Exercise Prescription by Ellen Hillegass
 - <https://www.facebook.com/APTAcvp/videos/2602474650079121/>



Guidelines for Supplemental Oxygen

- Supplemental Oxygen Utilization During Physical Therapy Interventions
 - http://cardiopt.org/pdf/pubs/Supplemental_Oxygen.pdf

Official Guidelines from the Cardiovascular and Pulmonary Section

Supplemental Oxygen Utilization During Physical Therapy Interventions

*Task Force on Supplemental Oxygen: Ellen Hillegass, PT, EdD, CCS, FAACVPR, FAPTA;
Ann Fick, PT, DPT, MS, CCS; Amy Pawlik, PT, DPT, CCS; Rebecca Crouch, PT, DPT, CCS, FAACVPR;
Christiane Perme, PT, CCS; Rohini Chandrashekar, PT, DPT, CCS;
Susan Butler McNamara, PT, MMSc, CCS; Lawrence P. Cahalin, PT, PhD, CCS*

Discharge Orders for Oxygen

- Patient's may or may not be DC'd home on supplemental O₂
- If they are desaturating and do not have supplemental O₂, you will need to call the MD immediately
- If they are DC'd home on supplemental O₂ then you must follow the MD's order
- Oxygen prescriptions should contain
 - Flow rate for rest, exercise and sleep
 - Best if you can get the order to say: "titrate oxygen to maintain SpO₂ \leq *fill in level*"
 - Often you just get a continuous flow rate
 - If they are desaturating on this flow rate, and your order does not say you can titrate oxygen then you need to call the MD
 - If they only have a nasal cannula and they aren't stable with activity on 6L then you need to call the MD for BOTH a new airway delivery device and a new oxygen order

2 Sets of Orders for Oxygen

DME

- Order – device, route, flow rate, continuous/intermittent
- Purpose and benefit for titration orders - oxygen is considered a medication

HH agency

- Do not need an order to take pulse ox readings
- Need to see order for Oxygen on POC

G576

§484.60(a)(3) All patient care orders, including verbal orders, must be recorded in the plan of care.

Interpretive Guidelines: §484.60(a)(3)

All patient care orders, including verbal orders are part of the plan of care. The plan should be revised to reflect any verbal order received during the 60 day certification period so that all HHA staff are working from a current plan. It is not necessary for the physician to sign an updated plan of care until the patient is recertified to continue care and the plan of care is updated to reflect all current ongoing orders including any verbal orders received during the 60 day period.

Note: Pulse oximetry is a ubiquitous assessment tool, often used as a part of routine vital signs across health care providers. Routine monitoring of vital signs, including pulse oximetry, do not require a physician order.

<https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/SurveyCertificationGenInfo/Downloads/QSO18-25-HHA.pdf>

References

1. Qian L et.al. Severe Acute Respiratory Disease in a Hunan Seafood Market Worker: Images of an early Casualty. Radiol. Feb 2020. DOI:10.1148/RYCT.20202000033.
2. Hodler, J. et.al. Diseases of the Heart, Chest & Breast: Diagnostic Imaging and Interventional Techniques. Berlin/Heidelberg. Springer. P.95. ISBN 9788847006331.
3. Drake MG. High-Flow Nasal Cannula Oxygen in Adults: An Evidence-based Assessment. Ann Am Thorac Soc 2018;15(2):145-155. DOI: 10.1513/AnnalsATS.201707-548FR.
4. Bateman NT and Leach RM. ABC of Oxygen, Acute Oxygen Therapy. Br Med J. 1998;317:798-881.
5. Gloeckl R et.al. Benefits of a reservoir nasal cannula (oxymizer) versus a conventional nasal cannula during exercise in hypoxemic COPD patients: A Crossover Trial. Respir. 2014;88:399–405. DOI: 10.1159/000368165.
6. Hillegass E et.al. Supplemental Oxygen Utilization During Physical Therapy Interventions. Cardiopulm Phys Ther J. 2014;25(2):38-49.
7. Hillegass EA. Essentials of Cardiopulmonary Physical Therapy. 4th Edition. Elsevier. 2017.

ICU Acquired Weakness (ICUAW) and Post Intensive Care Syndrome (PICS): Recognizing the Signs and Taking Action in the Post Acute Environment

Talia Pollok PT, DPT

Board Certified Cardiovascular and Pulmonary Clinical Specialist
Education Chair, APTA Cardiovascular and Pulmonary Section



Disclaimer

- The information presented about ICUAW and PICS during this presentation was gathered from people who have not had the COVID-19 infection, but were treated in general, medical, surgical, cardiac, respiratory, trauma, and neurologic ICUS. While we suspect people recovering from critical illness due to Covid-19 will experience similar physical, mental health, and cognitive problems during recovery, we just don't have the evidence yet.



Total Confirmed

2,023,663

Confirmed Cases by Country/Region/Sovereignty

- 614,482 US
- 177,633 Spain
- 165,155 Italy
- 133,209 Germany
- 131,365 France
- 99,455 United Kingdom
- 83,356 China
- 76,389 Iran
- 69,392 Turkey
- 33,573 Belgium
- 28,315 Netherlands
- 27,095 Canada

Admin0

Last Updated at (M/D/YYYY)

4/15/2020, 2:24:19 PM

185

countries/regions

Lancet Inf Dis Article: [Here](#). Mobile Version: [Here](#).

Lead by JHU CSSE. Automation Support: [Esri Living Atlas team](#) and [JHU APL](#). [Contact US](#). [FAQ](#).

Data sources: [WHO](#), [CDC](#), [ECDC](#), [NHC](#), [DXY](#), [1point3acres](#), [Worldometers.info](#), [BNO](#), [the COVID](#)



Total Recovered

507,330

78,311 recovered

China

72,600 recovered

Germany

70,853 recovered

Spain

50,107 recovered

US

49,933 recovered

Iran

38,092 recovered

Deaths

Recovered

Total Tested in the US

3,138,413

499,143 tested

New York US

215,400 tested

California US

205,322 tested

Florida US

146,467 tested

Texas US

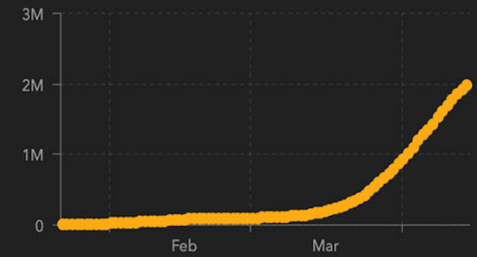
139,774 tested

New Jersey US

133,631 tested

Pennsylvania US

US Tested



Confirmed

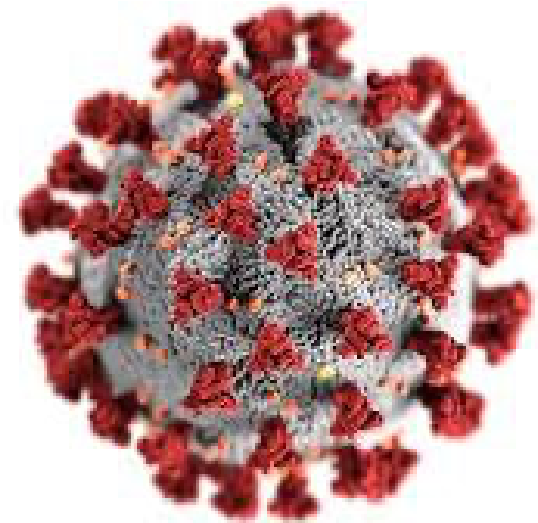
Logarithmic

Daily Cases

Rehabilitation and Infectious Disease

As movement experts, physical therapists are in a unique position to offer interventions which will improve quality of life in the survivors of infectious diseases.

Recognition of the cluster of impairments which comprise ICUAW and PICS allow physical therapists an active role in the restoration of physical, mental and emotional quality of life in survivors of infectious disease.



ICU Acquired Weakness

- ICUAW refers to “clinically detectable muscle weakness in critically ill patients, in the absence of weakness caused by factors other than critical illness.”
- Possible etiologies may include muscle atrophy/wasting, critical illness myopathy, critical illness polyneuropathy or a combination of these factors.
- High prevalence of ICUAW in patients with ARDS due to prolonged periods of bedrest, need for mechanical ventilation and systemic inflammation.
- Associated with higher 1 year mortality, impaired physical function and poor health-related quality of life up to 24 months after d/c

Hashem MD, Parker AM, Needham DM. Early Mobilization and Rehabilitation of Patients Who Are Critically Ill. *Chest*. 2016;150(3):722–731.
doi:10.1016/j.chest.2016.03.003

Risk Factors: ICUAW

- >48 hours of mechanical ventilation
- Prolonged immobility
- Persistent systemic inflammation
- Sepsis
- Multiorgan system failure

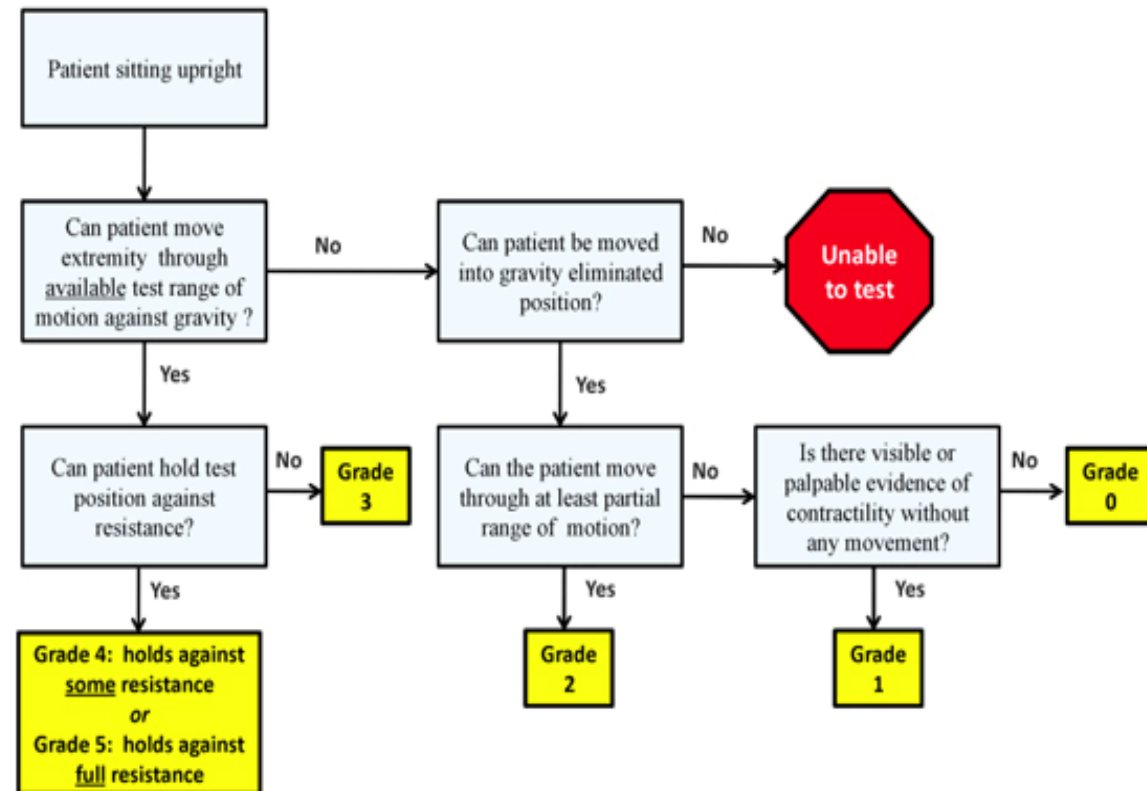


Ann Med Surg (2016) 6:1-5

Hashem MD, Parker AM, Needham DM. Early Mobilization and Rehabilitation of Patients Who Are Critically Ill. *Chest*. 2016;150(3):722-731. doi:10.1016/i.chest.2016.03.003

MRC Sum Scale: MMT

- Upper Extremity: shoulder ABD, elbow flexion, wrist extension
- Lower Extremity: hip flexion, knee extension and ankle dorsiflexion
- Max score 60
- Score of 48 or less is consistent with ICUAW
 - MMT score of 4 or less in the 6 muscle groups bilaterally in a critically ill patient qualifies as ICUAW



Ciesla N, Dinglas V, Fan E, Kho M, Kuramoto J, Needham D. Manual muscle testing: a method of measuring extremity muscle strength applied to critically ill patients. J Vis Exp. 2011;(50):2632. Published 2011 Apr 12. doi:10.3791/2632

Post Intensive Care Syndrome (PICS)

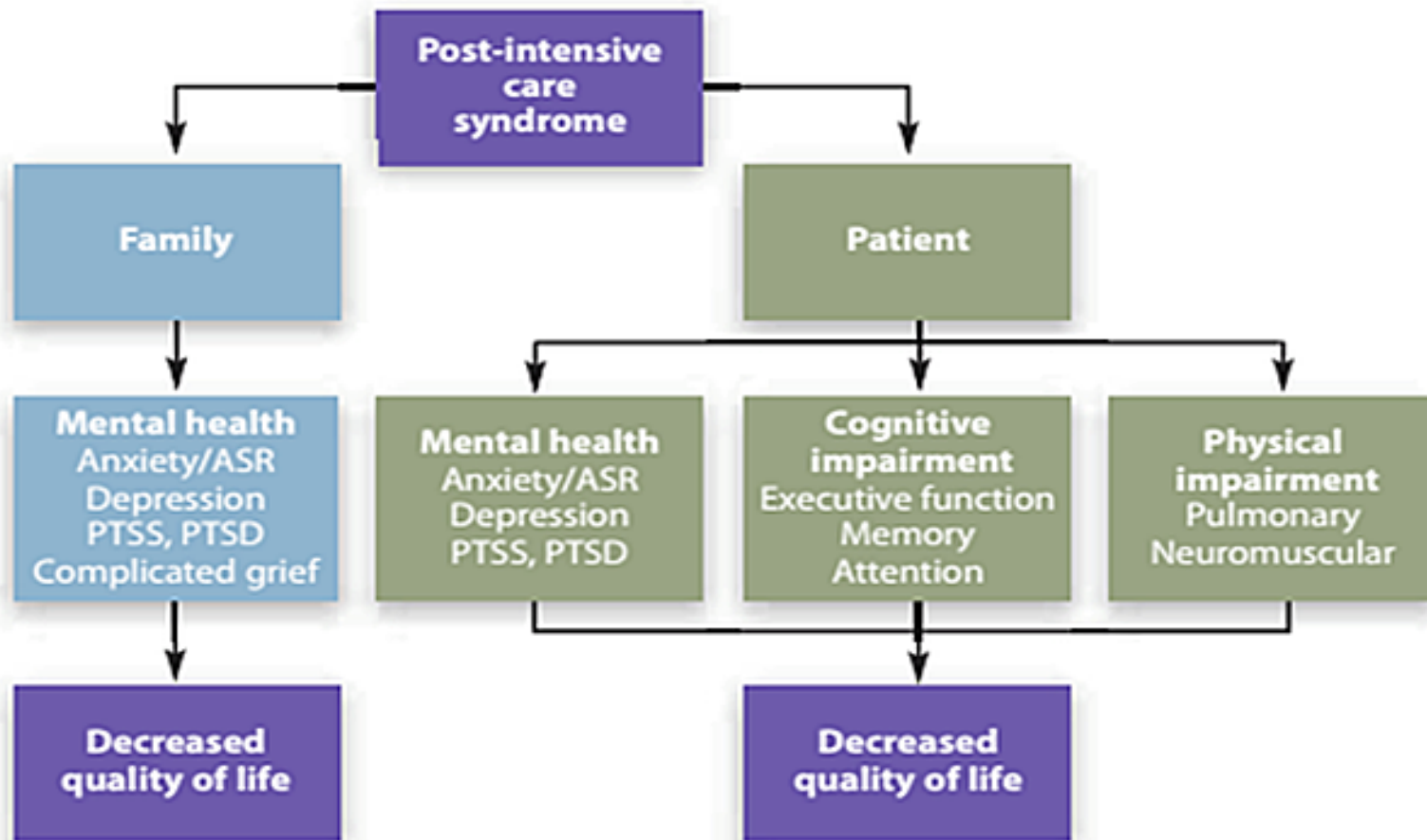
- A constellation of new or worsening impairments in physical, cognitive, or mental health status arising after critical illness and persisting beyond acute care hospitalization.
- The PICS term was created to stimulate screening and treatment for specific impairments, commonly occurring, but **unrecognized after critical illness**.



<https://www.aftertheicu.org/what-is-pics>
Smith JM et al., PTJ 2020.

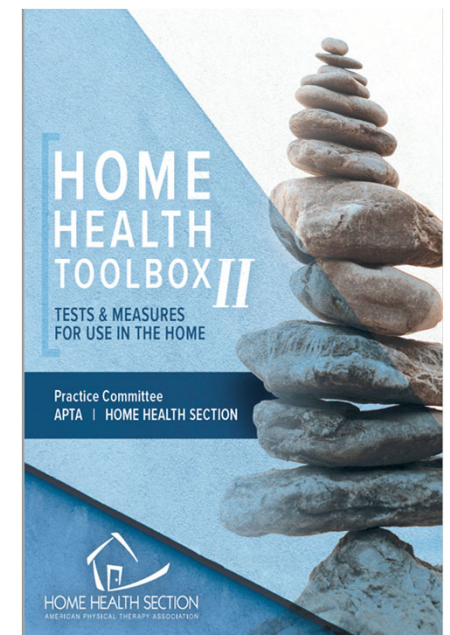


PICS model



Examination: Components and Outcome Measures

Exam Component	Outcome Measure
Pulmonary Function	PFTs; inspiratory muscle trainer
Muscle Strength	MMT and/or dynamometry
Exercise Capacity	6MWT (MID for ARDS survivors 20-30 M)
Gait Speed	4M Walk Test
Balance	Berg Balance, Functional Gait Assessment
ADL	Katz Index of Independence in ADL
IADL	Lawton IADL
Return to Driving	Discuss return to driving; possible referral to OT or driving evaluation center
Return to Work	OT or Occupational Medicine for assessment



Smith JM et al., PTJ 2020.

Screening for Cognitive and Mental Impairment

Screening Questions:

“During the past month have you often been bothered by feeling down, depressed, or hopeless?”

“During the past month, have you often been bothered by little interest or pleasure in doing things?”

Impairment	Outcome Measure
Cognition	MoCA (Montreal Cognitive Assessment)
Depression/Anxiety	Hospital Anxiety and Depression Scale (HADS)
PTSD	Impact of Events Scale-Revised (IES-R)

Intervention Strategies

- **Compensatory strategies to address difficulty performing basic mobility and ADL + Task-specific exercise**
 - Assistive devices, adaptive equipment and energy conservation strategies
 - Repeated performance of sit to stand and other functional activities to improve motor learning, strength and confidence performing activity
- **Patient and family education**
 - Focus on coping with prolonged recovery process, strategies to prioritize activities and participation in setting of fatigue or reduced stamina; use multiple formats, prevention/wellness for patient and family members
- **Restorative Strategies**
 - Exercise to improve strength, function, endurance (HIIT, circuit), balance
- **Coordination of Resources**
 - Advocate for team-based care, refer to other specialists, connect with support groups and community-based services



“I have had problems associated with PICS since 2008. I have had issues in all areas: physical, mental and cognitive in one way or another. I have always found it striking when talking to my fellow **survivors how much variability there is in how people cope with the problems associated with PICS.**”

“One person can still function and work, while another patient who was only hospitalized for three days in the intensive care unit (icu) will not leave her home.”

“Some people’s entire life may be destroyed by fear. Based upon my own and others’ experiences, **I advocate for early physical therapy and humanizing the ICU as much as possible.** “



Patient, Family and Practitioner Resources

- **THRIVE Initiative: Redefining Recovery**

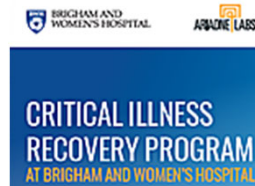
<https://www.sccm.org/MyICUCare/THRIVE/Post-intensive-Care-Syndrome>

- **After the ICU: PICS Online Library**

<https://www.aftertheicu.org/what-is-pics>

- **American Thoracic Society**

<https://www.thoracic.org/patients> – ARDS



Panelist: Chris Chimenti, MSPT

Senior Director of Clinical Innovation at HCR Home Care

Vice President of the Home Health Section of APTA

Education

- Focus on the facts
- Acknowledge what we don't know
- Environment of trust
- Infection Control Team
- Policies & Procedures
- Team Meetings
- Agency wide updates

Equipment & Supplies

- Challenge for all health care providers
- “Burn rates”
- Order strategies
- COVID designated staff
- Fit testing and COVID kits
- Education

Communication & Support

- Staff and patient screening
- Dashboard monitoring
- Transparency & communication
- COVID Hotline
- Patient engagement

Panelist: Rachel Botkin, PT, MPT

Advanced Competency in Home Health

Owner, Botkin Rehab Services

Adjunct Faculty, Clark State Community College

Home Health Practice Committee Member

Date	Ohio	Botkin Rehab
3/9	First positive case. Declared state of emergency	
3/12	Schools closed starting 3/14 through 4/6	
3/14	limit mass gatherings and visitors to nursing homes	<p>Established policy for in-person HH visits d/t COVID with guidance from CMS HH</p> <ol style="list-style-type: none"> 1. Ask screening questions at every visit. They are listed on page 2 of the memo. Document in "additional observations" section of daily note that the pt was screened and they answered in the positive or negative to which questions. 2. If you believe you have a patient that meets the criteria for a PUI (person under investigation), please notify me immediately. I will be the liaison between you and the agency, MD, and Health Department. 3. If you have signs/symptoms of a respiratory infection or fever (greater than 100.0 degrees F), do NOT see patients. Notify me immediately. <p>If you need to purchase additional hand sanitizer, gloves, thermometers, wipes, etc in order to be in compliance, please do so and submit the receipts to me for reimbursement. I am happy to discuss other options for supply procurement on an individual basis (just call or email me).</p>

3/17	Closed polls for primary, suspension of non-essential surgery	
3/18		Instituted reporting of daily temperatures of staff prior to doing visits
3/19	PT/OT/ST included in Ohio Medicaid Telehealth but unclear about role of HH	
3/22	Statewide stay at home	Patient by patient decision making re in-person visits vs telephone/video calls. Initiated FaceTime Telehealth visits with pts who requested no in-person visits and those who were determined to be appropriate for Telehealth.
3/30	Schools extended closing through 5/1	
4/2	Extended stay at home through 5/1	Added mask and gloves to every visit.
4/15	Ohio Medicaid Telehealth final rule includes HH therapy	
4/16	1212 cases, 220 hospitalizations, with 19 deaths in our county; 25 active cases in long term care facilities county (residents and HCW)	Caseload dropped from 50 to 33. Only PT. 6 new referrals in April- 2 from nursing homes not tested. 4 from hospitals (3 negative COVID-19 per testing, 1 not tested)

PPE Procurement for a Contract Therapy Company

- Contracted agencies have shared N95 and surgical masks with us
- A local pharmacy/DME store has reserved PPE for sale ONLY to health care providers (homemade sanitizer, shoe covers, N95s (at \$18 each) and gloves)
- Ohio Council for Home Care and Hospice (of which we are a member) placed order for 50,000 N95 masks at \$4 each and we purchased 40. Will arrive next week.



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CALM
AND
WAIT**

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**WASH
YOUR
HANDS!**

Questions???



Physical Therapy Considerations of COVID-19 in the Post-Acute Setting

Host: Melissa Bednarek

Presenters: Kenneth Miller, Pamela Bartlo, Morgan Johanson, Talia Pollok

Panelists: Chris Chimenti, Rachel Botkin