SCOREBUILDERS

SPOTLIGHT *Series*

Clinical Decision Making in Acute Care

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Objectives

Define the role of physical therapy in the acute care setting

Consider general safety guidelines for physical therapy in the hospital setting

Explain clinical decisions based on information obtained through chart review and through observation of patient response

Describe patient criteria for discharge destinations along the continuum of care

What is Acute Care Physical Therapy?

- Hospital-based
- Medically complex
- Consultant
- Prevention
- Rehabilitation
- Discharge planning
- Inter-disciplinary
- Communication

Safety in acute care

- Emergency procedures
- Knowledge of alarm systems / Security
- Infection Control
- Accidental chemical, waste, or sharps exposure
- Employee health
- Confirm patient identity
- Safe equipment / environment
- Body mechanics
- Fall prevention
- Restraints
- Adverse drug reactions

Emergency Procedures: Calling a Code

Hospital emergency codes are used to alert staff to different types of emergencies

Recognize medical emergencies and time dependent situations

Be aware of emergency procedures

Know your patient’s code status (full code, DNR, DNI)

To call a code or not to call a code

Let's make a decision!

Calling a code

You are working with a patient in the cardiac critical care ICU who is s/p CABG. His vital signs are being monitored at bedside. The patient currently requires 4L O2 delivered through a nasal cannula. After performing a bed to chair transfer, you notice that SpO2 has decreased to 74%. The patient appears well, with no SOB. What is the first thing you should do?

1) Call a code
2) Reposition the pulse oximeter probe
3) Return the patient to the bed
4) Contact the RN

Chart Review

- HPI
- Consults
- Imaging / Diagnostic tests
- Medications
- Lab Values
- Infection Control
- Activity Restrictions / Precautions / Code status
- Lines / Tubes / Equipment

Activity Restrictions / Precautions

- Weight Bearing (FWB, WBAT, TTWB, PWB, NWB)
- ROM precautions
- Infection Control
- Vital Signs (BP parameters)
- Restrictions related to lines / tubes / equipment
- Bedrest

Weight Bearing Precautions

- FWB
  - There is no restriction on weight bearing. AD may be indicated for pain or balance.
- WBAT
  - As much weight as the patient can tolerate. AD may be indicated for pain or balance (Cane, Crutches, Walker)
- TTWB
  - Weight through the toe only for balance. (Walker, crutches, slide board, wheelchair)
- PWB
  - % of body weight or pounds of weight. (Walker or crutches)
- NWB
  - No weight can be placed through the involved extremity. (Walker, crutches, slide board, wheelchair)

Activity precautions

Let's make some decisions!

Case 1

Your patient is an 86-year-old female s/p fall resulting in a comminuted femur fracture requiring ORIF. She is POD #1. Her weight bearing status is TTWB. The nurse reports that she is alert, cognitively intact and that her pain is controlled with the use of her PCA. She was previously independent at home, using a cane to ambulate. What assistive device will you choose to try first based on her weight bearing restrictions?

1) Rolling walker
2) Axillary Crutches
3) Slide Board
4) Lofstrand crutches

Infection Control Procedures Review

Standard precautions

- Hand washing, gloves, masks, gown, sanitization of patient care equipment
- Performed with ALL patients regardless of infection of diagnosis

Transmission-based Precautions

- Contact precautions
  - Private room (may share room with patient with same infection), gloves and gown for close contact, dedicated patient equipment
- Droplet precautions
  - Private room (may share with patient with same infection), maintain 3 feet of distance, wear a mask when within three feet
- Airborne precautions
  - Private negative air pressure room, respiratory protection

Neutropenic precautions

- Staff should wash hands before entering room, wear gown, gloves, mask. Positive pressure room.

Infection Control

Let's make some decisions!

Infection Control #1

You are about to enter the room of a patient who is on contact precautions with a diagnosis of Cdiff. What will you do before you enter the room?

1) Donn gown and gloves
2) Donn gloves if in contact with bodily fluids
3) Donn N95 respirator
4) No PPE is indicated if close contact with the patient does not occur

Infection Control #2

Your next patient is being ruled out for TB. As a result, they are on airborne precautions. What steps will you take before entering the room?

1) Donn gown and gloves
2) Donn gloves if in contact with bodily fluids
3) Donn N95 respirator
4) Donn a surgical mask if within 3 feet of the patient

Infection Control #3

You are treating a patient with a diagnosis of lymphoma who is awaiting a stem cell transplant. They are on neutropenic precautions. What steps will you take prior to entering the room to keep this patient safe?

1) No steps are necessary if the patient remains in the room
2) Wash hands, donn gown, gloves, and a mask
3) Donn N95 respirator
4) Instruct the patient to donn gown, gloves, and a mask

Lab Values Review

- Arterial Blood Gas
- Cardiac Biomarkers
- Complete Blood Count
  - Hematocrit
  - Hemoglobin
  - WBC differential
  - Platelets
- Coagulation
  - Partial Thromboplastin Time (PTT), Prothrombin Time (PT), INR, D Dimer

Arterial Blood Gases

- Evaluate acid-base status (pH)
- Ventilation (PaCo2)
- Oxygenation of arterial blood (PaO2)

Normal values:

pH: 7.4 (7.35-7.45)

paCO2: 40 mm Hg (35-45 mm Hg)

PaO2: 97 mm Hg (80-100 mm Hg)

HCO3: 24 mEq/L (22-26 mEq/L)

SaO2: 95-98%

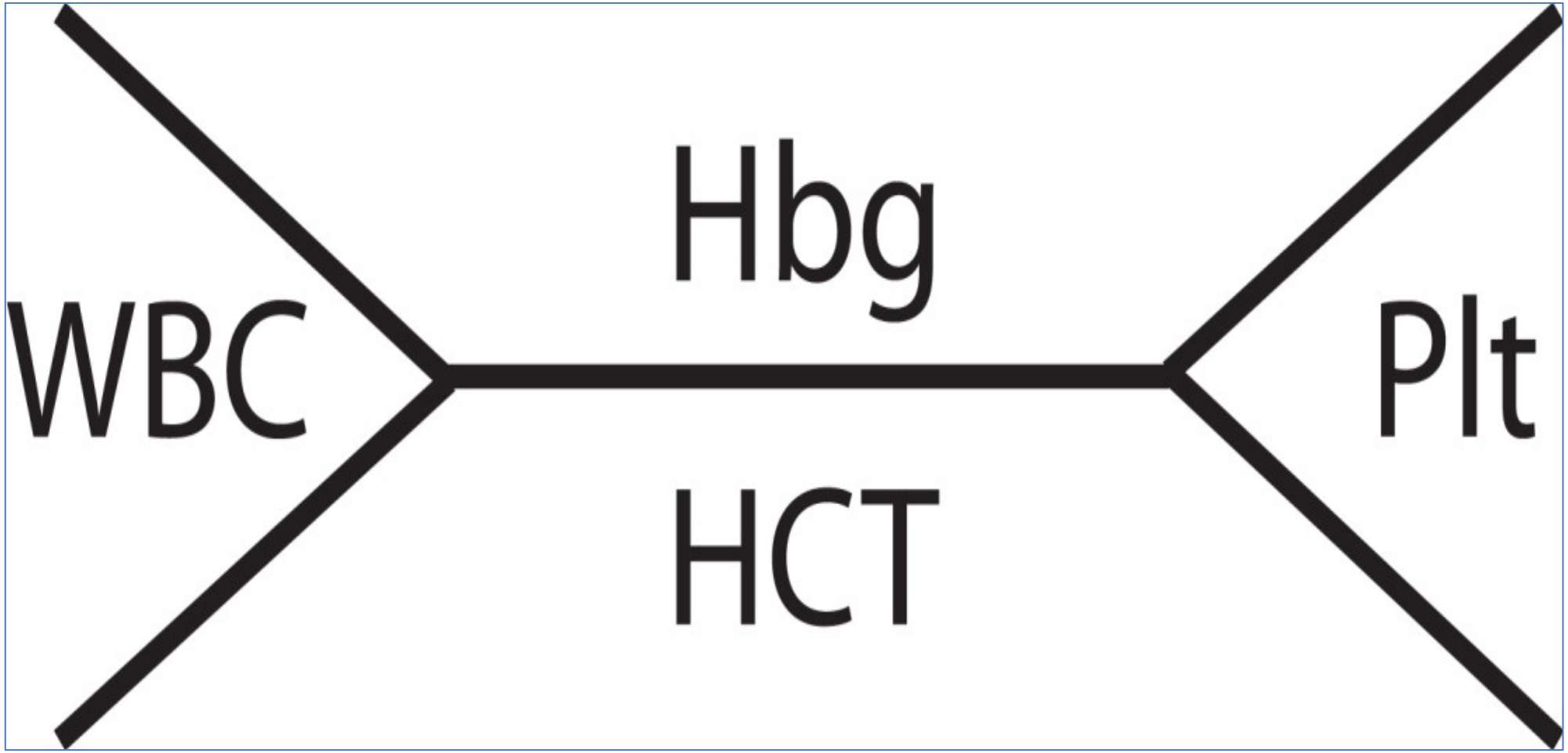
General guidelines for activity:

- Maintain >88% during activity
- Use of relaxation techniques (PLB/DB) for hyperventilation
- Deep breathing exercises for hypoventilation
- Positioning

Cardiac Biomarkers

- Creatinine phosphokinase (CK, CK-MB)
  - CK-MB will be present in the blood 4 hours post-infarction
  - Peak – 12-24 hours
  - Declines – 48-72 hours
- Troponin-1
  - Remains elevated for 5-7 days following infarction

Complete Blood Count



Hematocrit

Normal values:

Men: 42-52%

Women: 37-47%

General guidelines for activity:

<25% essential activities of daily living, assistance as needed for safety, light ROM exercises, isometrics, avoid aerobic exercise

<25-35% essential activities of daily living; assistance as needed for safety; light aerobics, light weights (1-2 lbs.)

>35% ambulation and self care as tolerated; resistance and aerobic exercises

Decreased Hematocrit (Anemia)

10% below normal values of hematocrit and hemoglobin is considered anemia.

Causes:

- Acute or chronic blood loss, destruction of RBC, decreased production of RBC, molecular defects in proteins (sickle cell disease), leukemia, cirrhosis, RA

HCT may be falsely low secondary to fluid overload

Patient presentation:

- Decreased activity tolerance, dyspnea on exertion, palpitations or tachycardia, may note paleness in palm and nail beds, exacerbation of angina, chills

PT implications:

- Allow rest frequent rest breaks, monitor vitals throughout

Increased hematocrit (polycythemia)

Causes:

- Polycythemia vera, secondary polycythemia (hypoxia at the tissue level), acclimating to altitudes (normal), heavy tobacco smoking, COPD, CHF

May be falsely elevated secondary to dehydration

Patient presentation:

- Headache, dizziness, blurred vision, decreased cognition, sensory changes in hands and feet, bruising/bleeding

PT implications:

- Increased risk for stroke and thrombosis, monitor symptoms

H+H #1

History: 85-year-old female admitted to hospital with bright red blood per rectum, lightheadedness, and a feeling of fatigue.

Social: Lives alone, active in the community

PLOF: Independent with all aspects of functional mobility (ADLs / IADL)

Diagnosis: Gastro-intestinal bleed (acute blood loss), anemia

Labs: Hematocrit below normal levels, 20%

What are the implications for PT?

Hemoglobin (Hb or Hgb)

Normal values:

Male: 14.0-17.4 (Gm/dL)

Female: 12.0-16.0 (Gm/dL)

Patient Presentation:

- Weakness, fatigue, pallor, shortness of breath, tachycardia or irregular heartbeat

General guidelines for activity:

- < 8 gm/dL: essential daily activities, light ROM, isometrics, avoid aerobic exercise
- 8-10 gm/dL: essential activities of daily living, assistance as needed for safety; light aerobics, light weights (1-2 lbs.)
- > 10 gm/dL, ambulation and self care as tolerated; resistance exercises

H+H #2

History: Pt is a 65-year-old male s/p total hip arthroplasty. Pt has decreased hemoglobin post-operatively.
Hgb: 8gm/dL

Implications for PT?

H+H in summary

- Consider trends!
- Low at baseline = patient may have acclimated, can tolerate activity
- Acute levels = may not tolerate
- Is the patient symptomatic?
- Be aware of signs and symptoms of hypoxia to major organs

WBCs

Normal:

Men: 4,500-11,000 (cells/mm3) / 4.5-11.0

Female: 3,900-10,700 (cells/mm3) / 3.9 - 10.7

> 11,000: Leukocytosis

< 4,000: Leukopenia

< 1,500: Neutropenia

WBC differentials (neutrophils, monocytes, lymphocytes)

General guidelines for activity:

- <5000 with fever – no exercise permitted
- >5000 – light exercise progress to resisted exercise permitted

Leukocytosis

> 11,000 cells/mm3

Causes:

- infection, leukemia, pregnancy, neoplasms, pneumonia, inflammation, tissue necrosis, trauma, surgery
- can be increased at birth

Possible patient presentation:

- fever, symptoms of localized or systemic infections, symptoms of inflammation or trauma to tissue

PT implications:

- Monitor vital signs (tachycardia)
- I.V. antibiotics

Leukopenia and Neutropenia

< 4,000 cells/mm3

<1,500 cells/mm3

Causes:

- bone marrow failure, radiation, chemotherapy, HIV infection, and viral disorders

Patient presentation:

- immunosuppression can cause sore throat, fever, chills, ulceration of mucous membranes, weakness, fatigue

PT implications (neutropenic precautions);

- HAND WASHING, infection control procedures, mask, energy conservation techniques, follow facility guidelines

WBC Differential

% of different types of WBC (out of 100 cells)

- Neutrophils: 55%-70%
- Lymphocytes: 20-40%
- Monocytes: 2-8%
- Eosinophils: 1-4%
- Basophils: 0.5%-1%

Indications:

- Presence of infectious states
- Detect and classify leukemia

Platelets

Normal values:

140,000 – 400,000 micro liters

> 450,000 micro liters - thrombocytosis

< 150,000 micro liters - thrombocytopenia

General guidelines for activity:

- < 10,000 and / or fever > 100.5 degrees – no exercise/hold therapy
- 10,000-20,000 Light exercise / bike without resistance
- > 20,000 Therapeutic exercise / bike with or without resistance

Thrombocytosis

> 450,000 micro liters

Causes:

- iron deficiency, polycythemia vera, cancer, inflammation or infection, splenectomy, strenuous exercise, trauma

Patient presentation:

- weakness, headache, dizziness, chest pain, tingling hands/feet
- decreased tolerance to activity
- risk for falls

Thrombocytopenia

< 150,000 micro liters

Causes:

- bone marrow infiltration by malignant cells, malignant CA, radiation, chemo, viral infections, malnutrition, drugs, aplastic anemia, HIV, splenomegaly

Possible patient presentation:

- mucosal bleeding, menorrhagia, spontaneous bleeding, bruising, purpora spots, petechiae (LEs), fatigue

- PT implications:
  - bleeding
  - fall risk awareness
  - impaired wound healing

Blood Transfusion

- Indicated for:
  - ✓ Replenish blood volume
  - ✓ Maintain oxygen delivery
  - ✓ Proper coagulation
- Based on patient symptoms
- Autologous or Allogenic (homologous)

Blood Transfusion

Assess for signs and symptoms of transfusion reaction

Does not necessarily limit mobility / assess patient's symptoms

- Defer for first 15 minutes until greatest risk for transfusion reaction is over
- Vitals taken every 15-30 minutes by nursing
- Post infusion, it takes 12-24 hours for H+H to increase
- Be cautious with line!

Coagulation

- INR
- PT
- PTT
- D Dimer

PT (prothrombin or protime)

Normal values: 11-12.5 seconds

PT implications:

- Intervene with caution with patients on anti-coagulation.
- Low PT can place patient at risk to clot, be aware of signs and symptoms of DVT/PE (high risk: arrhythmias and valve conditions / stasis of blood)

- Typically, PT/PTT used only if INR is not available

PTT (Partial Thromboplastin Time)

Normal values: varies from 60-70 seconds

General guidelines for activity:

- Consult with MD for ranges in the caution and hold zones
- Caution: 100-150 seconds
- Hold: >150 seconds

INR

Normal: 0.8-1.2 (not on anti-coagulation)

Therapeutic range: determined by MD and pharmacist, document parameters

- DVT prophylaxis: 1.5-2.0
- +DVT/PE/afib: 2-3
- Heart Valve: 2.5-3.5
- >4: increase risk for bleeding, consult MD
- >5 hold

D Dimer

- General guidelines for activity:
  - Negative (normal): low likelihood of DVT
  - Elevated: need to r/o blood clot with other testing (Doppler)
  - Could also be elevated with infection, inflammation, liver disease, pregnancy, pulmonary embolism, increased age, COVID-19
- PT implications: consult with MD

Lab Values

Let's make some decisions!

Lab Values #1

You have a consult for a patient with end stage renal disease who is receiving hemodialysis. Upon performing the chart review, you notice that their K levels are currently >5. What do you do?

1) Treat the patient with no precautions
2) Treat the patient, but closely monitor BP
3) Defer therapy
4) Treat the patient, but defer aerobic exercise

Lab Values #2

Your patient is s/p MI, troponin values trending down and there are activity orders to ambulate. What do you do?

1) Treat the patient
2) Defer therapy

Diagnostic tests

- Arteriography/Venography
- Arthrography
- Electroencephalography
- Electromyography
- Fluoroscopy
- MRI
- Myelography
- X-ray
- Bone Scan
- Computed tomography
- Doppler ultrasonography
- Electrocardiography

Vital Signs

- Consider trends
- Take resting, activity, and recovery vitals signs
- Consider precautions related to equipment when taking vital signs

Vital Signs

Let's make a decision!

Vital Signs #1

You are treating a patient s/p ischemic CVA with BP parameters ordered to maintain > 140/80. Resting BP was 142/86 in supine. Upon sitting at the edge of the bed BP drops to 82/46. The patient is reporting lightheadedness and changes in vision. What do you do?

1) Return the patient to supine and reassess BP
2) Maintain the position and take BP in three minutes
3) Attempt to stand
4) Call a code

Medication Review – Implications for PT

Be aware of what medications your patient is taking

Know what the medication is intended to do

Be aware of side effects

Consider the impact on PT

Communicate with the team regarding patient’s response and ability to participate in therapy

Medications

Let's make some decisions!

Meds #1

Your patient is a 75-year-old diagnosed with Parkinson's Disease who recently starting taking Levodopa. Considering common side effects of Levodopa, what precautions will you take when mobilizing this patient?

1) Move slowly during transitions and monitor BP
2) Provide supplemental oxygen and monitor SpO2
3) Maintain close proximity to the restroom
4) Use RPE to measure exercise intensity

Meds #2

While reviewing your patients for the day, you read the most recent nursing note that states that the patient received a sleeping medication, Ambien (zolpidem tartrate) overnight due to difficulty falling asleep. When do you schedule this patient?

1) Early morning
2) Mid Morning
3) Afternoon
4) PT should be deferred

Meds #3

Your patient is being treated for an acute DVT with anticoagulation therapy including IV heparin with bridge to warfarin. The most recent INR value is >5. Is therapy appropriate?

1) Yes
2) No

Review of lines/tubes/ equipment

- PIV
- PICC line
- Foley Catheter
- Arterial line
- Oxygen tubing
- Central Line
- AV fistula
- Chest tube
- Telemetry

Equipment

Let’s make a decision!

Equipment #1

Your patient has a PICC line. Which AD should you avoid?

1) Rolling Walker
2) Axillary Crutches
3) Standard Walker with platform attachment
4) Wheelchair

Meet the Patient / Observation

- Lines / tubes / equipment
- You walk in that room…..What next?

Determine readiness for participation

- Cognition
- Consent
- Vitals
- Pain

Subjective

- Determine how their acute medical status has changed their functional status
- How are they presenting compared to baseline?
- What was their functional status / social support status?
- What is their home environment like?
- What do they need to do to get back to their functional baseline?
- What are their goals for discharge?

Discharge planning starts NOW (considering their prognosis for return to functional baseline for discharge to pre-admission destination)

If prognosis is not good, what are your options?

Discharge Planning How do we decide?

Patient goals

Social support

Functional status / prognosis

Insurance

Discharge Planning: Review discharge destinations

- Home
- Home with Outpatient PT
- Home with Assistance
- Home with Home PT services
- Inpatient Rehabilitation
- Subacute rehabilitation / Skilled Nursing Facility
- Long Term Acute Care

Discharge Planning

Let's make some decisions!

D/C # 1

Your patient is an 18-year-old s/p MVA resulting in a T1 SCI. Pt was previously independent with all aspects of ADLs / IADLS and is in his senior year of high school. He currently requires moderate assistance for all aspects of mobility and has PT and OT needs. He is able to tolerate at least 3 hours of therapy daily. What is the MOST appropriate setting for this patient?

1) SNF
2) Subacute
3) Inpatient Rehabilitation
4) Home

D/C # 2

Pt is a 56-year-old male with ESLD awaiting transplant. He was admitted to the hospital for worsening ascites and hepatic encephalopathy. As an inpatient, his ascites was medically managed with paracentesis and he is medically ready for discharge. He is able to ambulate household distances with supervision, ascend/descend the two stairs that he has to enter his one level home with contact guard assistance. He lives with his wife, a retired RN who can provide 24-hour care. He was previously receiving Home PT services for endurance and strengthening. Given the information that you have available, what is the MOST appropriate discharge plan for this patient?

D/C # 2

1) Home with assistance and home PT
2) SNF
3) Subacute rehab
4) Inpatient rehab

D/C # 3

Your patient is an 86-year-old female admitted to the hospital with a CHF exacerbation. She is motivated to participate with therapy with the goal of eventually return to home where she lives alone. Currently she is requiring minimal assistance for all aspects of mobility using a RW for ambulation. She is limited by her aerobic capacity and activity tolerance. What is the MOST appropriate discharge destination at this point?

D/C # 3

1) Home with Home PT
2) Subacute rehabilitation
3) Inpatient rehabilitation
4) Home with outpatient PT

Take home….

- Understand that Physical Therapists play a crucial role in the care of the acute care patient including roles in consultation, prevention, rehabilitation and discharge planning.
- Acute Care PT involves a complex process of understanding how the acute change in medical status can affect a person's function and mobility.
- Physical Therapists must have a knowledge of the possible complications that could affect a patient's safety and performance in PT and take appropriate precautions.
- Expect the unexpected and be ready with the appropriate equipment and response.
- We must recognize the positive contributions the interdisciplinary team can have and how effective communication can facilitate effective clinical decision making. Use your team!!

APTA Acute Care Section Resources

Acute Care Competencies

Lab Value Resource

SPOTLIGHT *Series*

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