Association *of* Academic Physiatrists

AAP MSC PHYSIATRY CLERKSHIP GUIDE

1st Edition

Created by Medical Student Council Members:
Ellese Lupori, Natalie Stagnone, Annie Du & Joel Kopcow
Contributions and Edits:
Dr. Jennifer Russo MD, Dr. Shane Stone MD & Dr. Ravi Kasi MD

Table of Contents

Introduction to the Guide

Whether you're entering your first Physical Medicine and Rehabilitation (PM&R) elective or you are on an away rotation exploring potential residency programs, congratulations on making it to the best times of medical school!

This guide has been created as a quick reference to support you during your PM&R clerkships. It is designed to familiarize you with common terminology, definitions, and scales used in the field of physiatry, as well as introduce you to foundational principles of the diagnoses you may encounter while on your rotation. You may notice overlap between rehabilitation concepts throughout the sections of this guide.

Please note that this guide is not reflective of any grading or expectations that you may encounter on your respective rotations. Medicine is constantly evolving, and practices can vary between institutions and clinicians, and therefore you may notice differences between the content here and what you encounter in other resources or clinical settings.

Disclaimer: This guide is not an official publication of the Association of Academic Physiatrist (AAP). It is an independently compiled collection of educational material and reference points gathered from external available resources. While every effort has been made to ensure accuracy and relevance, this guide should be used as a supplemental tool, not as a definitive source of information.

We hope this guide helps you feel more confident, informed and prepared for your clinical experiences in PM&R!

Basics of Excelling on a PM&R Rotation

- **Embrace the interdisciplinary nature of rehab and stay curious.**
    - Introduce yourself to all members of the staff and team.
    - Be mindful of their workflow, but don't be afraid to ask therapists and nurses questions and learn from their perspectives.

- **Know your patients well and take ownership of them.**
    - It's important to know medical details about your patient. However, part of being a physiatrist is understanding your patient on a personal level. This will help you understand their goals for rehabilitation and the ways you can help achieve them.
        - Examples of general questions to consider asking patients:
            - *When you picture yourself at home again, what are you hoping to be able to do independently?*
            - *What's the most important thing you want to get back to doing?*
            - *What did a typical day at home look like for you?*
            - *What do you think you'll need to feel ready to go home?*
            - *What's been your biggest motivation throughout this rehab process?*
    - Pre-chart every morning before rounding with the team.
    - Attend your patients' therapy sessions to understand what barriers or challenges they are facing.
    - Read about your patients and their rehabilitation conditions.

- **Be a team player**
    - Find ways to be proactive without being overbearing. If you say you'll do something, make sure to follow up on that task.
        - Examples of tasks to offer to do:
            - *Write a patient note (admission, daily progress, or discharge) if you have not been already assigned to.*
            - *Call family members for collateral history, home environment, caretaking availability, and functional goals.*
            - *Conduct a medication reconciliation, especially for patients with a long list of pre-existing medications.*
    - Build up your fellow medical students and help everyone on the team look good.
    - Show up early and prepared.

- **Stay open and have fun**
    - No one expects you to be perfect, but they do expect you to be teachable. Seek feedback and be open to teaching moments.
    - Don't forget to have fun with the process!

Typical Day on an Inpatient PM&R Rotation

Mornings

- Pre-round on assigned patients:
    - Review charts.
    - Check therapy notes for progress and assess for potential barriers.
    - Complete a focused history and exam.
- Team rounds with attending and residents:
    - Present your patient, and your medical and rehab plan for them.
        - Making recommendations shows you are critically thinking about your patients, and it's okay if you don't get it perfect.
    - Following rounds, write notes and follow up on orders discussed during rounds.
    - If time allows, check in with residents/attendings after you complete your tasks to offer help on anything else that might need to be done.
- Participate in interdisciplinary team meetings. These meetings are a chance for the entire interdisciplinary team (medical, nursing, physical therapy, occupational therapy, speech therapy, social work, case management and more) to provide updates on patients and bring up any questions or concerns regarding patients' progress in inpatient rehabilitation.

Afternoons

- Follow up on any tasks brought up during morning rounds (such as ordering or reviewing labs and imaging, ordering consults, etc).
- Observe or participate in therapy sessions (PT, OT, SLP) to see your patients' functional progress.
- Prepare for new admissions, including prepping H&P notes.
- Read about your patient's conditions, review anatomy/physiology related to rehabilitation conditions.
- Before you leave, always check with your team to see if there's anything they need from you before you go.

Physiatry 101 Definitions

Physical Medicine and Rehabilitation, also known as **Physiatry,** is a field of medicine aimed at maximizing function and quality of life for patients. Physiatrists lead an interdisciplinary team of healthcare professionals including physical therapist, occupational therapist, speech therapist, counselors, nurses, case managers and more to guide patients to regain optimal function after disability.

Helpful definitions[1]:

Impairment: Loss of psychological, physiological or anatomical structure or function (i.e. weakness, limited ROM, pain).

Activity Limitations: Restriction resulting from an impairment of normal ability for a human being (i.e. inability to walk, run, cook).

Participation Restriction: A disadvantage for a given individual resulting from an impairment. A problem at a societal limitation (i.e. unable to return to work, difficulty caring for children).

Disability Contexts

Definitions of Disability

Intrinsic to all parts of healthcare, but especially PM&R, is the concept of disability. Disability is a complex construct that has been, and continues to be, understood and defined in many different ways. Several models offer frameworks for conceptualizing disability, each highlighting different aspects of the experience:

- The biopsychosocial model, used by the World Health Organization, defines disability as the result of a dynamic interaction between an individual's health condition (biological), personal and emotional factors (psychological), and the surrounding environment (social).
- The medical model of disability views disability primarily as a problem located within the individual — a physical or mental challenge that causes clear disadvantages to someone's life and should be treated or cured.
- The social model of disability shifts the focus from the individual to the environment. It defines disability as highly contextualized and complex phenomena that occurs because of the interactions with one's impairments.

Disability Language Suggestions

Disability is referred to using both person-first language ("person with a disability") and identity-first language ("disabled person"). Both are appropriate ways to refer to patients, however, it is commonly recommended to use the same language that your patient uses (i.e. if they refer to themselves as a disabled person, you should use identity-first language).

If you are unsure of what language to use, you can ask the patient using phrases such as "How do you refer to your condition?" or "How would you prefer that I talk about your condition?"

Additionally, there are some a number of suggestions for language around disability:

Incorrect Language	Preferable Language
Mental R*, Feeble Minded	Intellectual/Developmental Disability
Wheelchair Bound, Confined to a Wheelchair	Wheelchair User
Special Needs, Differently Abled	Be comfortable using the word "Disability!" You could also just state specific needs of the person.
Patient who suffers from XX, is afflicted by XX, Victim of XX	Patient with/who has [Name of Diagnosis or specific disability]

Language is constantly changing, so we recommend continuing to learn from your patients and using the language that they prefer.

Medical Student Allyship & Advocacy

Ableism is the act of discrimination against someone because of their status or perceived status as a disabled person. There are many ways in which medical students can counteract ableism through allying with and advocating for patients with disabilities. Examples of ways you can practice allyship include:

- Listening to the stories of your patients and other people with disabilities
- Educating yourself on current issues related to disability, including pertinent laws
- Making sure to include disabled voices in the conversation
- Making all informational materials accessible to people with disabilities (e.g., large print, color contrasts).

Additional Helpful Resources:

1. Disability Education Network
2. Disability Inclusive Language Guide

Physical Exam Scales and Grading Systems

Muscle Stretch Reflexes

4 +	Hyperreflexic/very brisk
3+	Brisk response
2+	Normal response
1+	Diminished response
0	No response

Muscle Strength Testing

Grade 5	Full range of motion against resistance
Grade 4	Full range of motion against some resistance
Grade 3	Full range of motion against gravity
Grade 2	Full range of motion with gravity eliminated (action of the arm movement perpendicular to pull of gravity)
Grade 1	Trace contractions of muscle is visualized or palpated
Grade 0	No muscle contraction

Section GG Scores

Uses a six point scale to track a patient's functional status and progress from admission to discharge during inpatient rehabilitation.

Areas of assessment:

- Activities & Participation
- Bodily Functions
- Movement

6	Independent (no assistance needed)
5	Setup or cleanup assistance needed (patient does the task, but needs help setting up or with cleanup)
4	Supervision or touching assistance or contact guard (patient needs supervision or minimal physical help)
3	Partial/moderate assistance (patient needs <50% help to complete the task)
2	Substantial/maximal assistance (patient needs significant (>50%) help)
1	Dependent (patient cannot perform the task and needs significant help)

Modified Ashworth Scale for Spasticity

Spasticity is a velocity dependent increase in tonic stretch reflex.

Grade 0	No increase in muscle tone
Grade 1	Slight increase in muscle tone manifested by a catch and release or by minimal resistance at the end of range of motion when the affected part is moved in flexion and extension
Grade 1+	Slight increase in muscle tone, manifested by catch, followed by minimal resistance (<50%) throughout the remainder of the range of motion
Grade 2	More marked increase in muscle tone through most of range of motion (>50%), but affected part is easily moved
Grade 3	Considerable increase in muscle tone, passive movement is difficult
Grade 4	Affected part is rigid in flexion and extension

Additional Helpful Resources:

1. Shirley Ryan's Rehabilitation Measures Database

Common Rehab Diagnoses and Their Overviews

Spinal Cord Injury

Spinal Cord Injury (SCI): Injury resulting in disruption of the spinal cord. It is commonly thought to be caused by trauma, however a SCI may be from non-traumatic sources including vascular malformations and bleeding, multiple sclerosis, tumors, transverse myelitis, etc[1].

Important Definitions:

- **Tetraplegia:** Injury within the cervical segments of the spinal cord resulting in loss of motor and/or sensory function in the arms, trunk, legs and pelvic organs.
- **Paraplegia:** Injury within the spinal cord segments not including the cervical region therefore the loss of motor and/or sensory function spares the arms.

Important Spinal Levels to Consider:

- Injury at the level of **C7 level and below** may correlate with a higher chance of a patient achieving independence.
- Injury at the level of **T6 and above** places the patient at higher risk for autonomic dysfunction and orthostatic hypotension.
- Injury at the level of **T8 and above** places the patient at higher risk for an inability to maintain temperature control.

Management Basics

Bladder Function in Spinal Cord Injury

Spinal cord injury can result in neurogenic bladder with subsequent issues of retention and/or incontinence. Inpatient rehabilitation is an important time to work on a bladder regimen the patient will complete independently or with the assistance of caregivers when they are discharged.

- Questions to ask about your patient's bladder function:
    - *What was their pre-injury bladder function?*
    - *What is their current ability to sense bladder fullness?*
    - *What is their current ability to urinate volitionally?*
- Management on the wards:
    - Note whether your patient is on a foley, and consider what the long term plan is for that (consider outpatient follow-up appointments/timing, caretaker availability, interest/ability to self-catheterize, etc).
    - Monitor intake/output volumes.

- Monitor intermittent clean catheterization volumes → Goal is to have patient and/or nursing complete this every q4-6hrs to keep bladder volumes < 500 mL
    - Assess whether they are leaking in between caths
- Monitor post-voiding residuals: if high, may indicate urinary retention.

Bowel Function in Spinal Cord Injury

Depending on the location of the injury, patients with spinal cord injury may have areflexic bowel or hyperreflexic bowel in which incontinence and constipation predominate respectively. Establishing a bowel regimen can help patients have predictable and timed bowel movements, and avoid triggering medical complications such as worsened spasticity or autonomic dysreflexia.

- Management on the wards:
    - During pre-rounding, check the time of the patient's last bowel movement, and when bowel medications were given. The goal is a consistent bowel movement that occurs at relatively the same time(s) of day.
    - Review their medication lists for anything that may be constipating (Opioids, TCAs, Anticholinergics, etc.)
    - If needed, consider medications, enemas, or digital stimulation to help establish a daily bowel movement schedule for your patient.
    - ***Rotation Tip**: It may be helpful to read up on the differences between UMN bowel programs and LMN bowel programs.*

Managing Spasticity in Spinal Cord Injury

Patients with spinal cord injury may experience increased tone as a result of damage to upper motor neurons. During examination, spasticity is appreciated by a **velocity-dependent** increase in tone in response to range of motion. In managing spasticity, it is important to understand how the increased tone may either hinder or help function. Please see the '*Modified Ashworth Scale*' above.

- Questions to ask about a patient's spasticity:
    - *Is having the increased tone helpful for mobility, transfers and function?*
    - *Is the increased tone causing any pain, trouble sleeping, or trouble with hygiene or skin breakdown?*
    - *In what extremities is it helpful to have more tone and in which extremities less?*
- Management of spasticity:
    - Mitigate noxious stimuli that could worsen tone. If a patient has increased tone without clear cause, evaluate for possible triggers including UTI, pain, constipation, etc.

- Manage prevention of contractures through range of motion exercises, serial casting, orthotics, etc.
- Targeted management of spastic muscles includes chemodenervation and/or neurolysis (botulinum toxin, phenol injections).

Managing the Cardiovascular System in Spinal Cord Injury
Disruption of the autonomic nervous system from spinal cord injury can impact patients' cardiovascular system. Depending on the location of the injury, blood pressure control may be a predominant barrier to therapy during inpatient rehabilitation.

- Management of orthostatic hypotension on the wards:
  - Monitor vitals consistently and repeat vitals if a patient experiences new symptoms or changes.
  - Review medication lists for any agents that may impact blood pressure and heart rate.
  - In addition to typical vitals, it may be necessary to track intake/output volumes.
  - Consider abdominal binders and salt tabs.
  - Medications, including alpha-1 agonists and minerocorticoids, may be required as a last resort.
- Management of autonomic dysreflexia (AD):
  - Autonomic dysreflexia is a life-threatening response to stimuli by the sympathetic nervous system, therefore management is focused on *prevention* of the syndrome from occurring.
  - Avoid triggering stimuli, most commonly pain, constipation, bladder retention, infection, etc.
  - If an AD event occurs, sit patient up, remove tight garments, and alleviate the triggering stimuli, and administer antihypertensive medications if needed.

Brain Injury

Brain Injury: Direct disruption of the brain parenchyma which occurs immediately, followed by a cascade of biochemical, cellular, and molecular events, which include both endogenous cerebral damage as well as extra-cerebral damage that come with trauma[1]. Clinically, patients may experience *posttraumatic amnesia*, in which they have an inability to retain memory after traumatic brain injury[2].

Head Injury Prognosis Scales:
Several grading scales are used for prognosis of head injury in both clinical practice and research settings.

Glasgow Coma Scale

Eyes (4)	Verbal (5) (Rate as 1T if patient has a tracheostomy)	Motor (6)
1 = Not open	1 = No verbalization	1 = No motor response
2 = Open to noxious stimuli	2 = Unintelligible	2 = Decerebrate (extension to pain)
3 = Open to voice	3 = Says inappropriate words	3 = Decorticate (flexion to pain)
4 = Open spontaneously	4 = Able to converse but confused	4 = Noxious stimuli
	5 = Able to converse, and alert and oriented	5 = Localization to pain
		6 = Follows command

Rancho Los Amigos Levels of Cognitive Function Scale (Rancho or LCFS):
Describes level of function in TBI patients and tracks their emergence from posttraumatic amnesia.

Level	Description
I	No response
II	Generalized response to stimulation
III	Localized response to stimuli
IV	Confused and agitated behavior
V	Confused with inappropriate behavior (non agitated)
VI	Confused but appropriate behavior
VII	Automatic and appropriate behavior
VIII	Purposeful and appropriate behavior

Management Basics

Managing Sleep Disturbances in Brain Injury

Disturbances in the sleep–wake cycle are common after brain injury and may interfere with recovery. To support optimal healing, aim to create an environment that promotes wakefulness during the day and restful sleep at night for your patient.

- Management on the wards:
    - In the morning, assess the patient's overnight sleep. Depending on the situation, this may involve reviewing the sleep log, consulting night nursing staff, or asking the patient directly.
    - Environmental management:
        - Encourage lights on and window shades open during the day
        - Limit noise, stimulation, and light exposure in the evening and overnight
    - Review the medication list for agents that may cause daytime drowsiness or interfere with nighttime sleep. Assess both the necessity of each medication and the timing of administration to optimize therapeutic effect while minimizing side effects.
        - I.e. Consider moving sedating medications (anti-epileptics, beta-blockers) towards the evening and stimulants (modafinil, ritalin, etc.) towards morning
        - ***Rotation Tip** Ask if you can help place an order on the EMR. If you don't know how to, you can ask to learn, so that during your 4th-year Acting Internship, you are ready!*

Managing Agitation in Brain Injury

Agitation is a subtype of delirium that may occur during posttraumatic amnesia following brain injury[1]. Management should focus on identifying and addressing the underlying cause rather than solely treating the agitation itself.

- Management on the wards:
    - Medical assessment:
        - Evaluate for signs/symptoms of infections, hypoxia, medication side effects, metabolic derangements, etc.
    - Environmental modifications:
        - Ensure a safe and low-stimulus environment.
        - Reduce patient's cognitive overstimulation and consider alterations to their environment in order to promote safety.
        - Avoid physical constraints unless the patient is a danger to self or others.
    - Objectively measure agitation.
        - A commonly used scale is the Agitated Behavior Scale (ABS).
    - If environmental adjustments have not controlled agitation safely, consider pharmacological agents.

        - *Please Note: Medication selection should be determined on a case-by-case basis based on the patient's overall health status and guidelines can vary depending on clinical guidelines at different institutions.*

Managing Cognition Effects of Brain Injury

With brain injury, patients may experience variable degrees of cognitive issues, including arousal, attention, wakefulness (especially with disorders of consciousness), executive control, and recall and formation of memory. Starting in inpatient rehabilitation, patients work on cognitive skills with their occupational and speech therapists.

- Management on the wards:
    - Evaluate and treat medical problems that may be interfering with therapies or exacerbating cognitive concerns (infections, uncontrolled pain, constipation, SIADH, etc.)
    - Monitor patients' emergence from posttraumatic amnesia. The O-Log and GOAT are commonly used scales to monitor this.
    - Pharmacologic interventions for cognitive defects can be considered
        - Start low and go slow and provide continuous therapeutic reassessment

Managing Spasticity in Brain Injury

Similar to spinal cord injuries, damage to the central nervous system from brain injury results in loss of descending inhibition and hypersensitivity in the reflex arc in the central nervous system leading to increased tone.

- Management on the wards:
    - See *'Modified Ashworth Scale'* for grading spasticity in patients
    - See *'Managing Spasticity'* in the Spinal Cord Injury section for basics of management
    - In patients with brain injury, it's especially important to consider the central-acting effects of systemic medications used to manage spasticity, as these drugs may have a greater impact on cognition in this population.

Stroke

Stroke: A cerebrovascular accident (CVA) resulting in clinical signs of focal or global disturbances in cerebral function that last longer than 24 hours.

Important Definitions[1]:

- **Ischemic stroke:** Cerebrovascular event caused by thrombotic, embolic or small vessel disease. Ischemic strokes account for approximately 85% of CVAs. The neurologic deficits vary depending on the anatomical territory affected, and commonly are characterized by the following:

- Cortical signs: Aphasia, Neglect, Vision changes
- Subcortical signs: Pure motor hemiplegia, pure sensory, dysarthria & hemiataxia[2] (2)

- **Hemorrhagic stroke:** Cerebrovascular event secondary to hypertension, ruptured aneurysms, arteriovenous malformations (AVM), angiopathies, etc. Hemorrhagic strokes account for approximately 15% of CVAs[2].
  - The most common areas for hypertensive hemorrhagic strokes include: thalamus, basal ganglia, pons and cerebellum.
  - Lobar hemorrhages are commonly caused by cerebral amyloid angiopathy or vascular malformations (AVMs).

Management Basics

Management of patients in the inpatient rehabilitation setting focuses on addressing medical conditions while supporting recovery from motor and cognitive impairments through various therapy services. This guide does not cover the acute management of stroke or guidelines for stroke prevention.

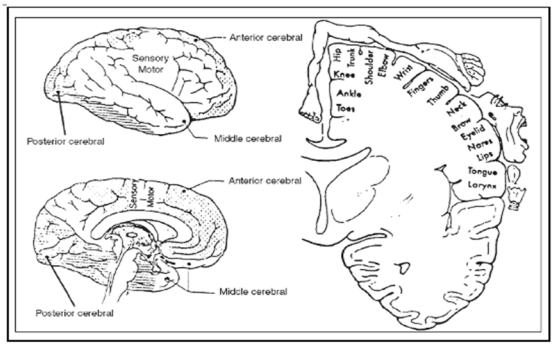

Figure 1a. Vascular supply and functional diagram of motor strip. Pulled from Cuccurrullo[1].

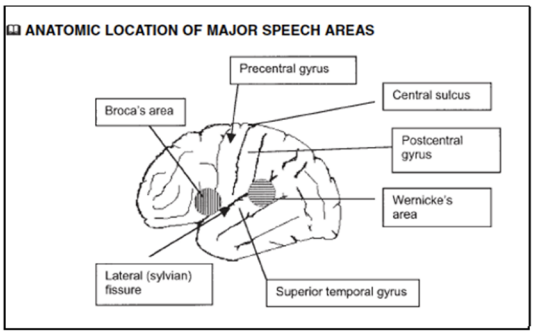

Figure 1b and neuroanatomic areas of language centers. Pulled from Cuccurrullo[1].

Understanding motor and cognitive deficits in stroke

Understanding the neuroanatomical location of a stroke helps predict the deficits a patient may experience. Study neuroanatomy when you are working on a stroke service.

- Management basics:
  - **Motor:**
    - Patients may experience limb hemiparesis or spasticity, or both. Work with physical therapy to understand what assistive devices may help limb function.
      - ***Rotation Tip** During your rotation, ask for the opportunity to observe Physical Therapists working with patients in the gym. If possible, also try to attend Team Huddles (group meetings with PM&R, PT/OT, Social Work, Case Managers, for example)!*

        - If spasticity is a limiting factor in function, apply similar concepts addressed in SCI and BI sections for spasticity.
    - **Cognitive:**
        - Aphasia/Apraxia: Learn from the speech-language pathologist (SLP) communication strategies with your patients.
        - Spatial Neglect: Consider how a patient's neglect may impact their interactions. Learn from therapists on how they address neglect in therapies.

Managing dysphagia/aspiration concerns in stroke

Damage to regions of the brain responsible for swallowing may impact a patient's ability to eat and drink safely.

- Management basics:
    - Most stroke patients will undergo an initial SLP evaluation to determine swallowing risk.
        - ***Rotation Tip** If possible, watch a videofluoroscopic swallowing study (VFSS). This test determines whether a patient is experiencing penetration/aspiration during their swallowing phase. It's a great opportunity as a student to learn and visualize this process.*
    - Collaborate with the SLP to understand the most appropriate diet for the patient and to develop a plan for advancing the diet as therapy progresses.
    - Learn compensatory strategies for patients with dysphagia (chin tuck, head rotation, head tilt, etc.).

Managing Post-Stroke Shoulder Pain

Post-stroke shoulder pain is a common complication. While its causes are varied, patients with hemiparetic upper limbs are particularly prone to shoulder subluxation and soft tissue injuries.

- Management basics:
    - Conduct thorough shoulder musculoskeletal exam in order to guide management
        - ***Rotation Tip** On an MSK rotation, students should feel comfortable understanding the muscle and their primary functions, nerves, and special tests associated with a thorough shoulder exam.*
    - Work with physical therapists to incorporate range of motion and strengthening exercises into therapy sessions, and consider assistive devices to help with shoulder stability.
    - Consider further diagnostic evaluation with imaging (XR, Ultrasound, etc.), especially if not improving.
    - Topical and systemic pharmacological medications can be used to address pain.
    - If not improving, consider intra-articular, subacromial, tendon sheath injections.

Prosthetics & Orthotics/Limb Loss

Important Definitions [2]:

- Prosthetic: Artificial substitute for a missing body part
- Orthotic: External device designed to provide support/stability, improve function, reduce pain, or limit range of motion. Common types include limb orthoses (ankle-foot, knee foots, etc.), splints, and spinal braces and cervical collars.

Important Grading Scale:

- **K- Level:** classification system used to determine mobility potential and activity level of amputees with the grading having an impact on medicare eligibility for prosthetic devices.

K0	*Nonambulatory*	No ability or potential to ambulate or transfer, a prosthesis will not enhance quality of life
K1	*Limited to transfers or a limited household ambulator*	Potential or ability to transfer or ambulate on level surface at a fixed cadence
K2	*Limited community ambulator, unlimited household ambulator*	Potential or ability to transfer or ambulate on low level barriers
K3	*Unlimited community ambulator*	Potential or ability to transfer or ambulate with variable cadence and can navigate most environmental barriers
K4	*Active adult, athlete or child*	Potential or ability to ambulate at a level that exceeds basic skills

Management Basics of Amputation

Physiatrists work as part of a multidisciplinary team to rehabilitate patients with limb amputation throughout the peri-operative period (pre- and post- amputation). Overall goals of the team include maximizing independent mobility and self care, preparing patients for successful prosthetic fitting and use, and preventing complications of contractures and skin issues.

Managing Rehabilitation Plan for Amputation:

Rehabilitation following amputation will be focused on stretching and strengthening of muscles involved in mobility, as well as maintenance of range of motion in key areas of contracture risk.

- Management basics:
    - Evaluate hip and knee range of motion periodically as these are frequent locations of contractures.
    - Work with therapist teams to learn techniques to educate patients on including prone time, pillow placement and mobilization techniques.

- Work with a therapist team to understand the critical muscles in the upper limb and lower limb used to progress through prosthetic training.

Managing Pain Associated with Amputation:
Pain following amputation is multifactorial, and may be related to surgical site pain, phantom pain or from other sources. The specific management of pain will largely be determined by its etiology.

- Management Basics:
  - Evaluate for etiologies of pain outside of the residual limb (skin infection, vascular disease, radiculopathy, etc).
  - Desensitization techniques (tapping, massage, soft dressing).
  - Additional non-medication techniques (procedural interventions, nerve stimulation, imagery techniques) and medications targeting specific pain etiology should be considered.

Managing Skin in Amputation Care:
Preparation for prosthetic fitting may be impacted by issues related to the residual limb and skin in the surrounding area.

- Management basics:
  - For edema control post-operatively, compression dressing and wraps are utilized as well as elevation of residual limb to avoid dependent edema.
  - Monitor residual limb and surgical sites for development of skin breakdown, wound healing and signs of infection.
  - In the outpatient setting, long-term prosthetic users should be considered for prosthetic refitting if they experience skin or tissue breakdown.

Additional Helpful Resources:

1. AAP Essential Articles
2. AAP Virtual Didactics
3. Stanford 25
4. *Physical Medicine and Rehabilitation Pocketpedia* (4th ed.)
5. *Physical Medicine and Rehabilitation Board Review* (2nd ed.)

References

1. Cuccurullo, S. J. (Ed.). (2009). *Physical Medicine and Rehabilitation Board Review* (2nd ed.). New York, NY: Springer Publishing Company. ISBN 978-1935281665.
2. Rydberg, L., & Hwang, S. (Eds.). (2022). *Physical Medicine and Rehabilitation Pocketpedia* (4th ed.). New York, NY: Springer Publishing Company. https://doi.org/10.1891/9780826156280
3. Stagnone, N. (2021). Thurston County Inclusion Volunteer Manual, Edition 2. Self-Published.