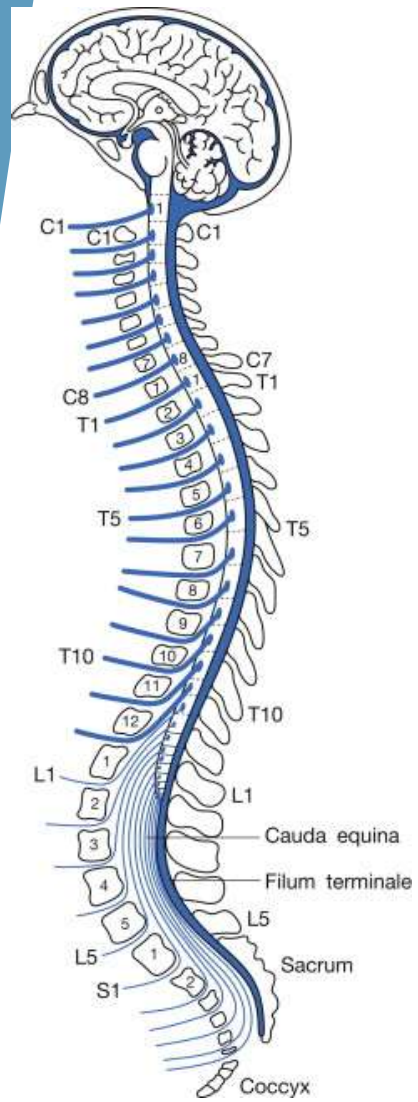
Health Care Decision Making after High Spinal Cord & Traumatic Brain Injury: A Team Approach

Palliative Medicine: Tonda Anderson PA-C, MCHS, CCRN

Psychiatry/Ethics: Susan Bentley, DO

Speech Language Pathology: Jasmine Christensen, MACCC-SLP

Rehab Medicine: Margaret Jones, MD, MPH

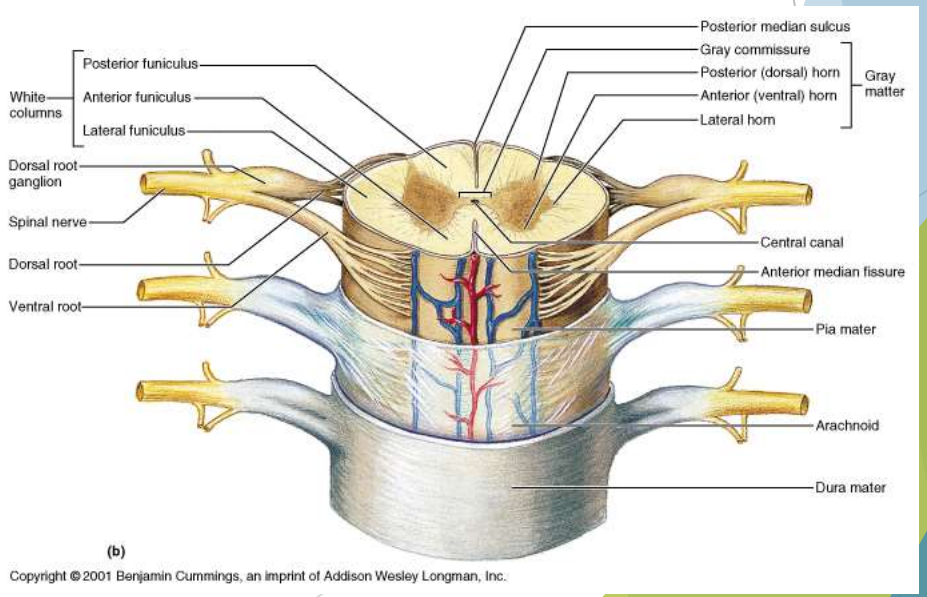


Prognosis and Severe Neurologic Injury

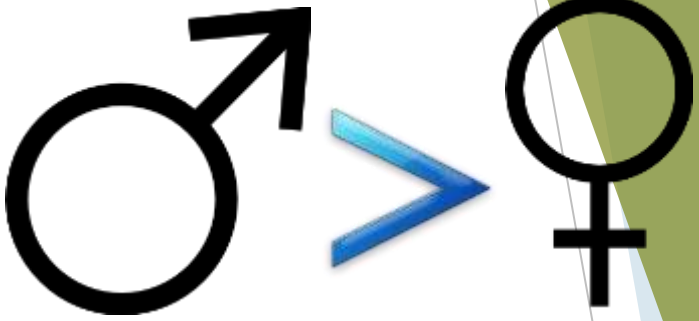
Cervical Spinal Cord Injury (SCI) and Traumatic Brain Injury (TBI)

Spinal Cord: Intro

- Major conduit through which motor and sensory information travels between brain and body
- 33 vertebrae
- Coverings of the spinal cord: dura, arachnoid, pia
- Grossly, spinal cord is continuous with the medulla and ends in the lumbar spine
  - Typically ends around L2



SCI: Epidemiology Facts



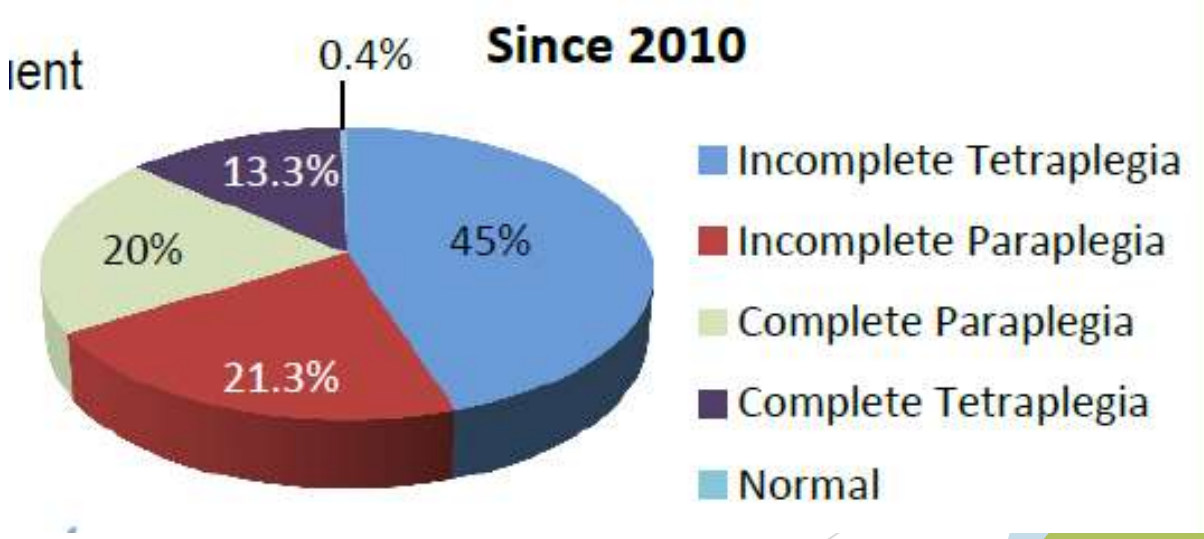
- Background Epi
  - The incidence of SCI is approximately 54 per one million people per year, or 17,000/year
  - Current prevalence in the US is somewhere between approximately 243,000-347,000
  - Men account for approximately 80% of injuries
    - Approximately 64% Caucasian but general race demographics are changing
  - 3 most common causes of SCI are MVC, falls and acts of violence

SCI Vocabulary

- Tetraplegia
  - Impairment or loss of motor or sensory function in the cervical segments of the spinal cord due to damage of neural elements within the spinal canal
  - "Tetraplegia" versus "quadriplegia"
- Paraplegia
  - Impairment of motor and/or sensory function in the thoracic, lumbar or sacral segments of the spinal cord secondary to damage of neural elements within the spinal cord
    - Upper extremities spared

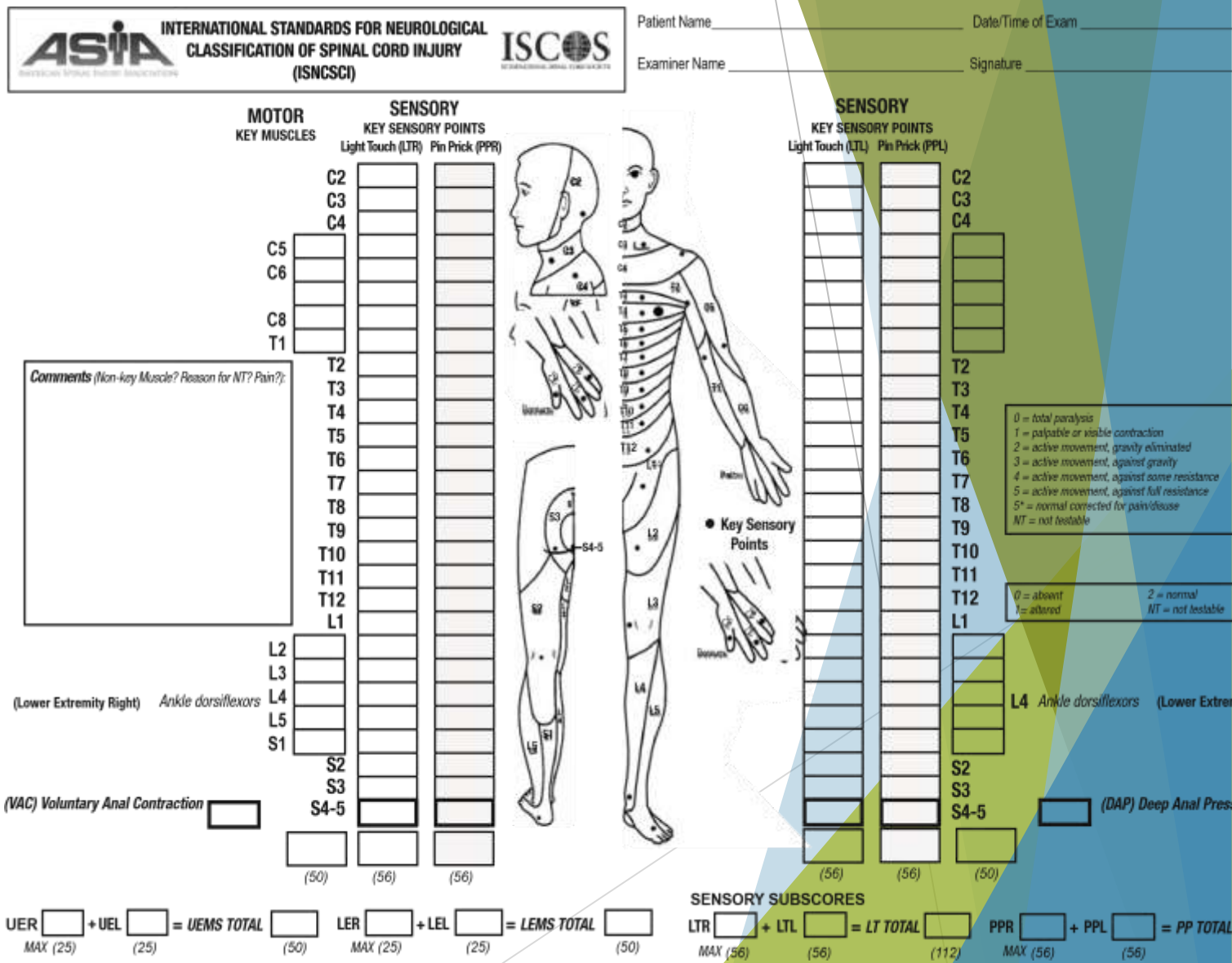
Neurological level and extent of lesion

45% incomplete tetraplegia
21.3% incomplete paraplegia
20% complete paraplegia
13.3% complete tetraplegia



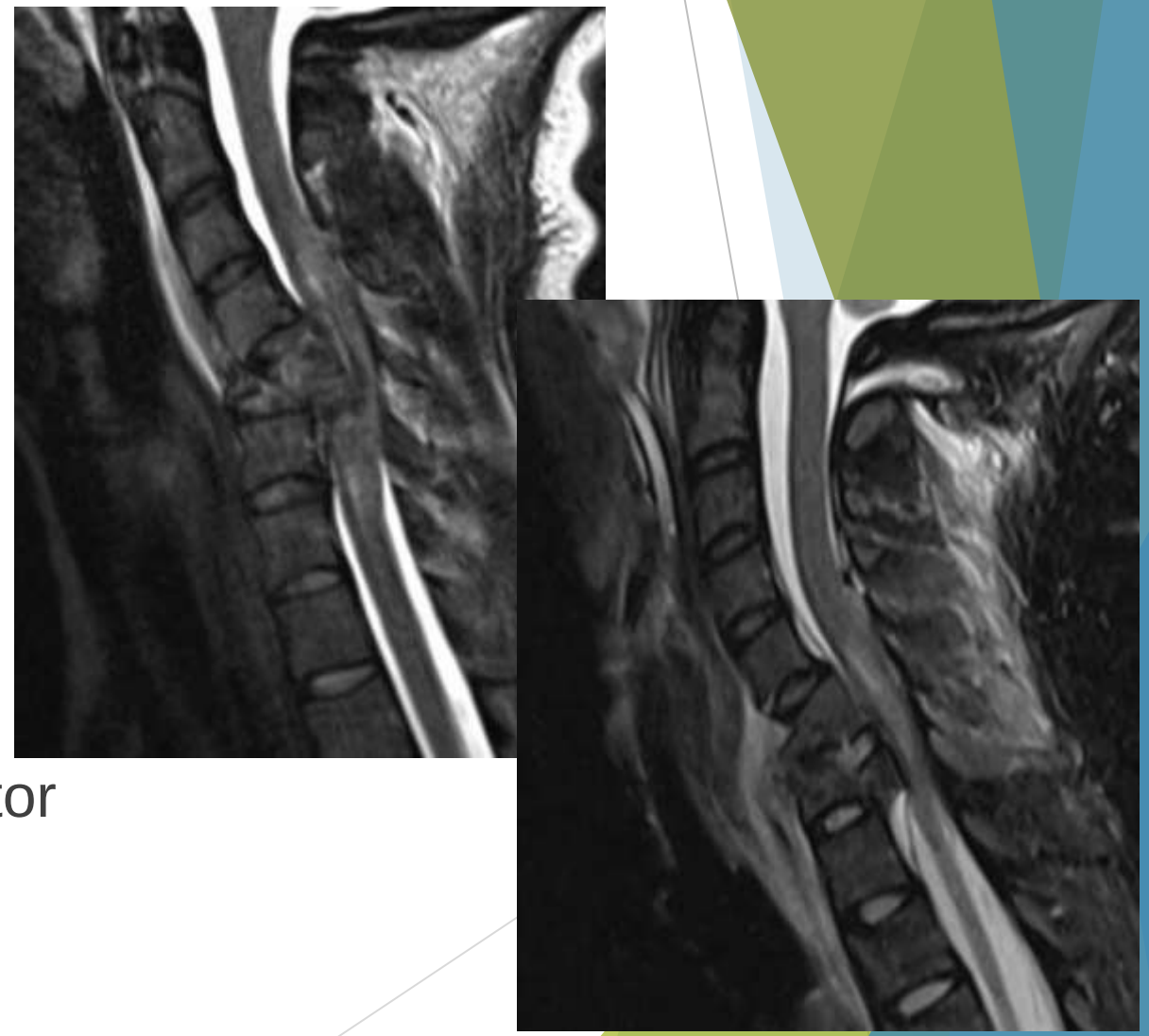
The ISNCSCI Exam: what is that?

- Also known as **the ASIA exam**
- Systematic Classification
- Means of prognosis and communication between providers
  - Standardized exam, performed supine
  - Testing 28 dermatomes bilaterally, 10 myotomes
  - Total of 112 sensory points and 20 muscle groups, PLUS…



Prognosis and SCI

- The Neuro exam, ISNCSCI exam aka the “ASIA” exam helps to give an idea to prognosis
  - Neurologic level of injury
  - Complete versus incomplete
- Based on clinical findings
- **NOT based on imaging**
- Consider other injuries or comorbidities
- Respiratory
  - Vital Capacity or NIF
  - Need for prolonged wean from ventilator
- Functional prognosis



Spinal Cord Injury…and other injuries

- If you are experiencing a force hard enough to disrupt your spine and cause spinal cord injury there is a high likelihood of other injuries at the time as well
  - Fractures
  - Peripheral Nerve Injury
  - **Traumatic Brain Injury**
    - Dual Diagnosis of SCI/TBI may reach up to **74%**
    - Cognitive issues may affect treatment plan

SCI and Respiratory issues

Why?

- Weakness of inspiratory and expiratory musculature
  - Diaphragm: C3-5
  - T1-T5: intercostal innervation
  - T5-T12: progressive loss of abdominal motor function, impairing expiration/cough
- Difficulty to take a deep breath, ineffective cough, inability to clear secretions
- Common Disorders
  - PNA
  - Ventilatory failure or insufficiency
  - Sleep-disordered Breathing
    - Sleep apnea
  - VTE disease

Spirometry, SCI and vent weaning

- Vital Capacity and NIF the best indicators for weaning
- Tidal volumes for pts with SCI on the vent:
  - Often patients have more “healthy” lungs so can consider volumes higher than those with acute pulmonary disease
  - Range but typically up to 12 mL/kg for TV. Some centers 15-20
  - Work to decrease atelectasis
    - Improve surfactant production, prevent collapse, promote recruitment
- When can you initiate weaning
  - NIF <20
  - VC > 10cc/kg

Traumatic Brain Injury

- Incident and prevalence higher than that of SCI
  - Approximately 1.7 million/year in the US
  - 52,000 result in death, 1.3mil considered “mild”
  - Approximately 275,00 with mod to severe TBI with associated complications and medical costs
- TBI severity: Based on Glasgow Coma Scale (GCS) and imaging findings
  - Mild (GCS 13-15)
  - Mild Complicated (GCS 13-15 + imaging findings)
  - Moderate (9-12)
  - Severe (GCS ≤8)

Glasgow Coma Scale (GCS)

Eyes	Open spontaneously	**4**
	Open to verbal command	**3**
	Open to painful stimuli	**2**
	No response	**1**
Verbal Response	Oriented and converses	**5**
	Disoriented and converses	**4**
	Inappropriate words	**3**
	Incomprehensible sounds	**2**
	No response	**1**
Motor Response	Obeys verbal commands	**6**
	Responds to painful stimuli by:	
	purposeful localization	**5**
	withdrawal	**4**
	flexor posturing	**3**
	extensor, posturing	**2**
	no response	**1**
GCS Score		**3 to 15**

TBI: Disorders of Consciousness

- Coma
- Vegetative State
- Minimally Conscious State

TBI: Prognosis

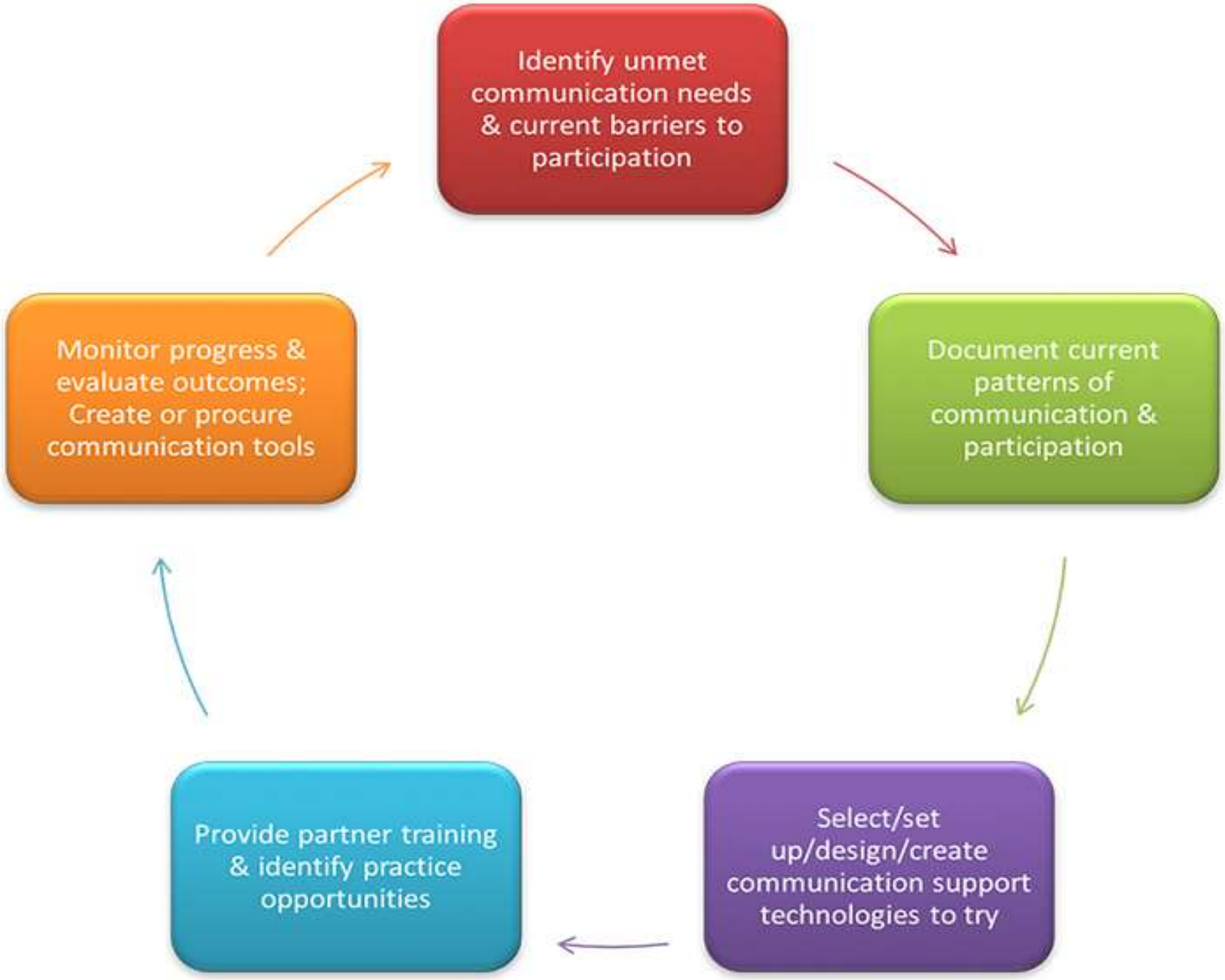
- How someone will do depends on how they are doing
  - NOT always imaging-related
- Consider co-morbidities
- Time in Post-Traumatic Amnesia (PTA)
  - GOAT or O-Log
- Long-term prognosis: Glasgow Outcome Scale
  - Dead
  - Vegetative State
  - Severe disability
  - Moderate Disability
  - “Good recovery”

TBI: Functional Impact

- Centers for Disease Control and Prevention estimates that at least 5.3 million Americans currently need long-term or lifelong assistance with activities of daily living (ADLs) as a result of TBI
- Loss comes in many forms: medical care, loss of productivity, societal or indirect loss, financial cost
- In the acute phase, sometimes challenging to know how much impact a TBI will have

Cognitive-Communication Evaluation

The Role of the Speech-Language-Pathologist in this Process


Identify unmet communication needs & current barriers to participation
Document current patterns of communication & participation
Select/set up/design/create communication support technologies to try
Provide partner training & identify practice opportunities
Monitor progress & evaluate outcomes; Create or procure communication tools

Questions the SLP Will Consider in their Assessment:

- How is the patient able to communicate
- Is the patient alert?
- How quickly do they fatigue?
- Is there a “best” time of day to assess
- What mode of communication can we trial
  - Eye Gaze
  - Partner Assisted Communication
  - Yes/No (using eyes)
- Which methods work best for the patient

Evaluation

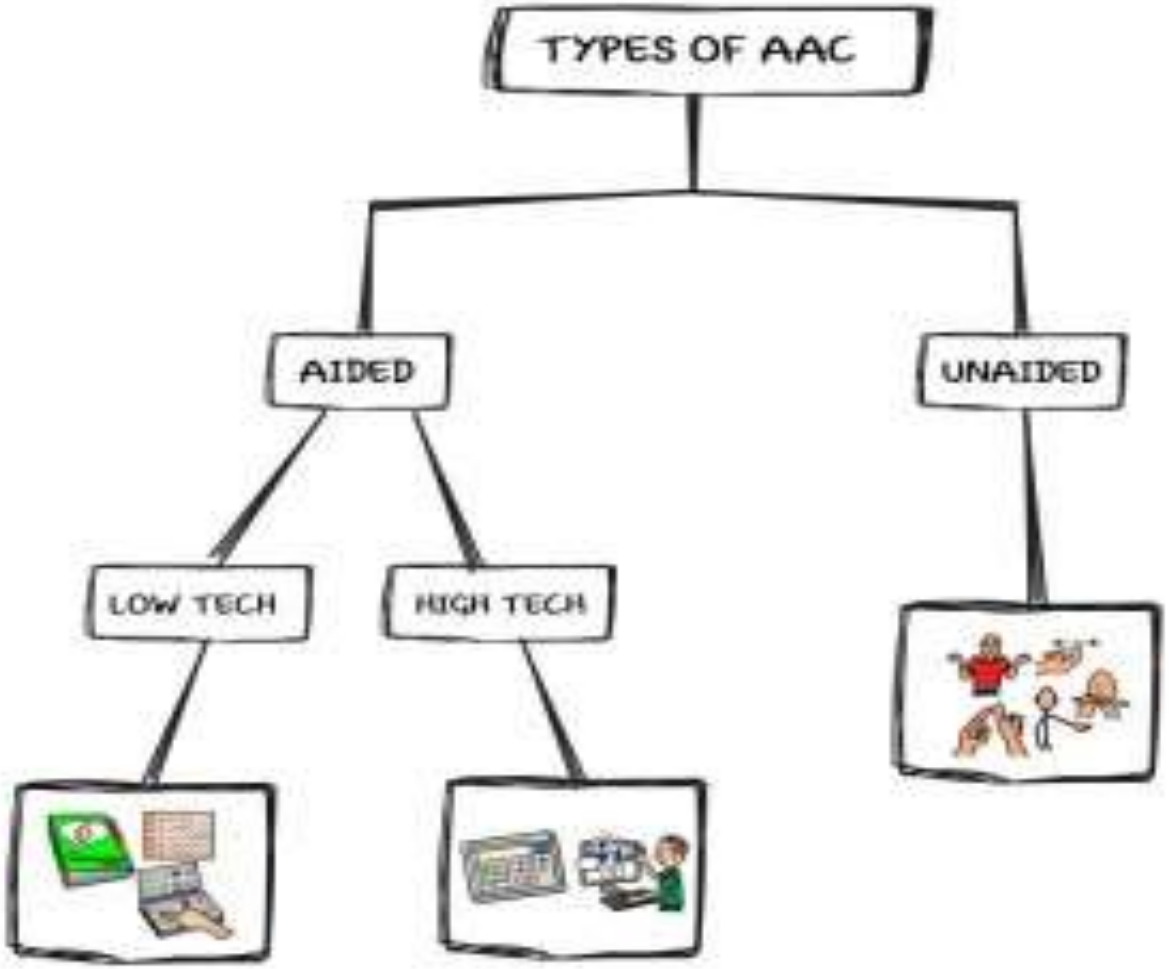
Unreliable

- Egocentric & Nonegocentric Yes/No Question responses not accurate
- Comprehension is poor
- Pt's responses and ability to follow commands is not consistent and cannot be replicated
- Pt is unable to sustain adequate LOA

Reliable

- Yes/No response has been established and person is consistently responding accurately
- Other members of the team can replicate and responses don't change
- Pt can consistently follow commands.
- Pt can maintain LOA

Types of Augmentative Alternative Communication (AAC)



Reminders

- Leave out your bias
- Do not lead patient's response
  - How you formulate a question can lead the patient's response
- Do not ask the patient to do things that are reflexive responses, i.e. hand squeeze
- Make sure the patient has a way to answer both "Yes" and "No"
- Demonstrate use of communication systems, provide instruction and consider the energy it takes for the patient to use a communication system
  - The cognitive demand to respond to use an alternative communication system is high and can be tiring

If patient is reliable with his/her answers and we establish a functional, consistently reliable mode of communication without bias then we demonstrate function, teach it to other members in the assessment team so that we can utilize the “same” system.

Psychiatry

The Role of Psychiatry in this Process

Decisional Capacity

1. Exhibit understanding of the medical condition, treatments and alternatives offered
2. Understand the significance of the consequences of the decisions and the possible outcomes
3. Consistently express wishes
4. Demonstrate rational thought processes leading to decision.

Appelbaum PS. Assessment of Patients' Competence to Consent to Treatment. New England Journal of Medicine 2007;357:1834-1840.

Table 1. Legally Relevant Criteria for Decision-Making Capacity and Approaches to Assessment of the Patient.

Criterion	Patient's Task	Physician's Assessment Approach	Questions for Clinical Assessment*	Comments
Communicate a choice	Clearly indicate preferred treatment option	Ask patient to indicate a treatment choice	Have you decided whether to follow your doctor's [or my] recommendation for treatment? Can you tell me what that decision is? [If no decision] What is making it hard for you to decide?	Frequent reversals of choice because of psychiatric or neurologic conditions may indicate lack of capacity
Understand the relevant information	Grasp the fundamental meaning of information communicated by physician	Encourage patient to paraphrase disclosed information regarding medical condition and treatment	Please tell me in your own words what your doctor [or I] told you about: The problem with your health now The recommended treatment The possible benefits and risks (or discomforts) of the treatment Any alternative treatments and their risks and benefits The risks and benefits of no treatment	Information to be understood includes nature of patient's condition, nature and purpose of proposed treatment, possible benefits and risks of that treatment, and alternative approaches (including no treatment) and their benefits and risks
Appreciate the situation and its consequences	Acknowledge medical condition and likely consequences of treatment options	Ask patient to describe views of medical condition, proposed treatment, and likely outcomes	What do you believe is wrong with your health now? Do you believe that you need some kind of treatment? What is treatment likely to do for you? What makes you believe it will have that effect? What do you believe will happen if you are not treated? Why do you think your doctor has [or I have] recommended this treatment?	Courts have recognized that patients who do not acknowledge their illnesses (often referred to as "lack of insight") cannot make valid decisions about treatment Delusions or pathologic levels of distortion or denial are the most common causes of impairment
Reason about treatment options	Engage in a rational process of manipulating the relevant information	Ask patient to compare treatment options and consequences and to offer reasons for selection of option	How did you decide to accept or reject the recommended treatment? What makes [chosen option] better than [alternative option]?	This criterion focuses on the process by which a decision is reached, not the outcome of the patient's choice, since patients have the right to make "unreasonable" choices

* Questions are adapted from Grisso and Appelbaum.[31] Patients' responses to these questions need not be verbal.

Psychiatric Diagnostic Considerations

Major Depressive Disorder

- Symptoms/dx prior to injury
- Recent course
- Focus on mood/cognitive symptom criteria

(depressed mood, loss of interest/pleasure, worthlessness/guilt, decreased concentration, recurrent thoughts of death/suicidal ideation)

Depressive Disorder Due to Another Medical Condition

- Persistently depressed or irritable mood

or

- Diminished interest or pleasure in most activities
- Work up indicates medical condition is causal
- Significant distress/ impairment of psychosocial functioning
- Onset usually 1st month of illness
- Consider substance induced mood changes (SIMD)

Adjustment Disorder with Depressed Mood

- Trauma and stressor-related disorders
- Residual Dx : not diagnosed if meets criteria for another specific disorder /bereavement
- Occurs in response to an identifiable stressor
- Low mood/ tearfulness/hopelessness
- Significant distress that exceeds what would be expected and/or impairs functional status
- Occurs within 3 months of stressor onset/resolves within 6 months after stressor/consequences have ended

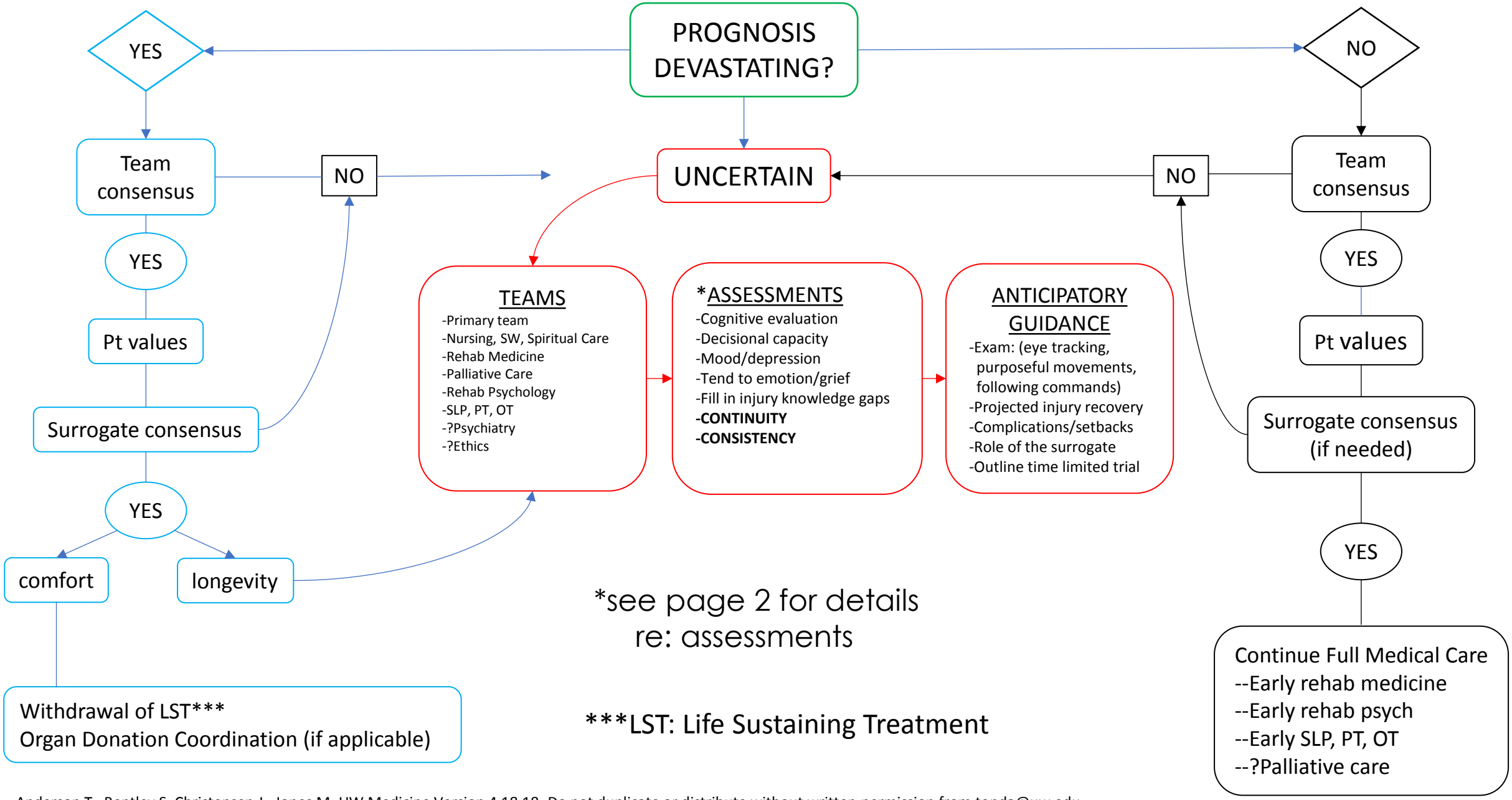
Palliative Medicine

The Role of Palliative Care in this Process

Palliative Care

- Values Triad: Longevity, Independence, Comfort
- Anticipatory Guidance:
  - Physical Exam
  - Projected Injury Recovery
  - Complications/Setbacks
  - Role of the Surrogate
  - Outline time limited trial

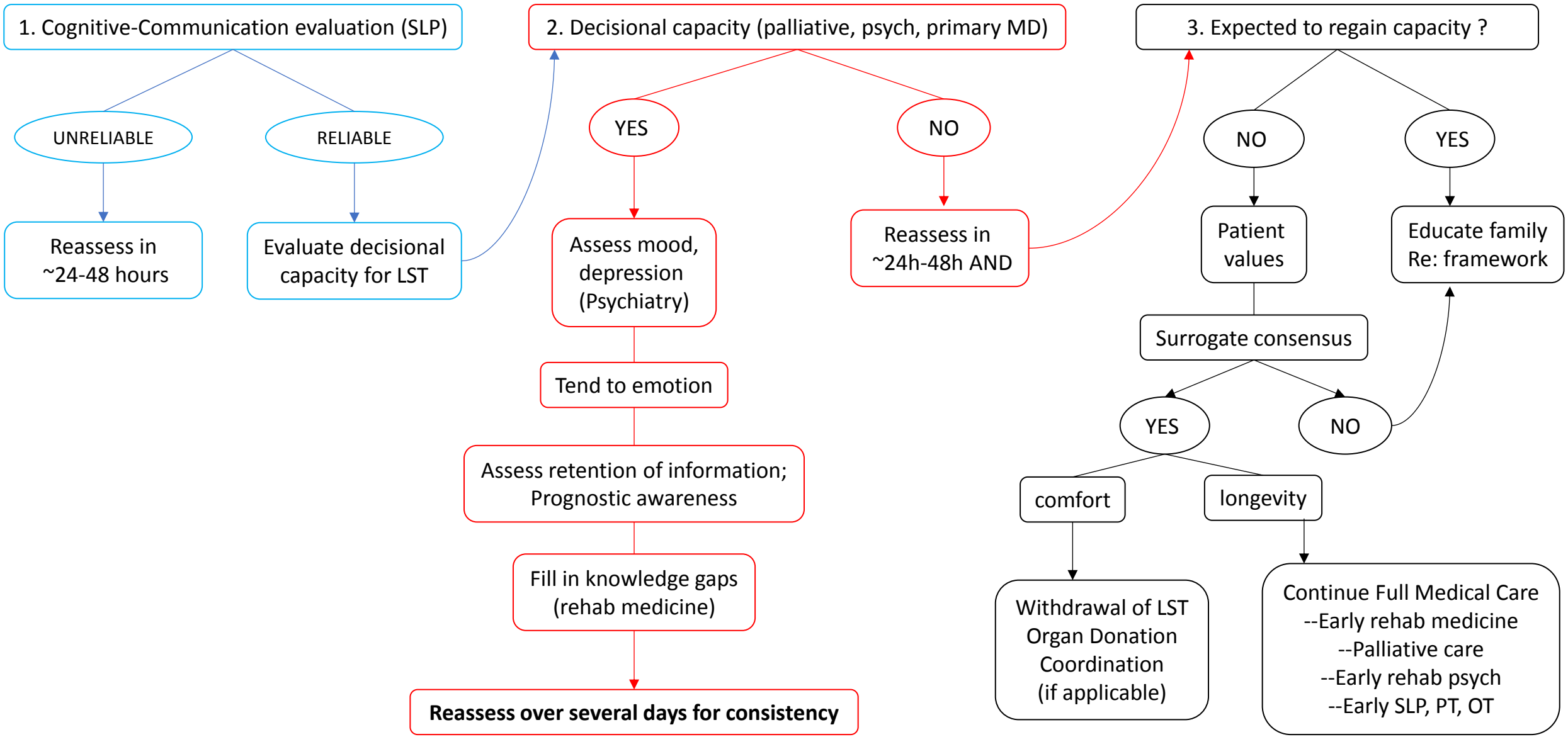
FRAMEWORK FOR DECISION MAKING IN HIGH SPINAL CORD & TRAUMATIC BRAIN INJURY



*see page 2 for details re: assessments

***LST: Life Sustaining Treatment

Detailed Capacity Assessments



Case study #1

ADMISSION NOTE:

- 47yo woman transferred from OSH while intoxicated in her hotel room & sustained a C5-6 fracture-dislocation w/complete SCI. She had immediate pain in her neck & loss of sensation of everything from her costal margin down as well as in her RUE. She was stuck waiting for 6 hours until EMS found her and took her to OSH.
- She arrived at HMC w/VSS & [paraplegia] of BLEs & RUEs & minimal movement of her LUE. She was place in C-Spine traction & underwent an anterior left sided C5-6 ACDF w/JP drain placement with ortho spine. She is in stable condition w/pain well-controlled and plan to return to the OR tomorrow for PSIF.

- **She is in an emotional state & states, "I want to die."**
- Physical Exam:
- AAOx3, conversing appropriately**, in emotional distress**
- Neuro: CN II-XII intact, complete [paraplegia] of BLEs, minimal movement of LUE, 3/5 strength in LUE.
- Sensation: Left: 5/5 @C5, 3/5 @ C6, 0/5 @ C7

  Right: 1/5 @ C5, 0/6 @ C6

Case Study #2

- 37yo woman presents with weeks of significant back and neck pain, fevers and chills, some leg symptoms and multiple trips to multiple emergency rooms
- Presented to our hospital, still ambulatory at the time
- MRI performed, found cervical epidural fluid collection suggestive of abscess
- Prepared by ortho team for emergent surgical intervention
- Subsequently suffered cardiac arrest with prolonged ROSC
- Surgery delayed secondary to medical issues

Case study #2 (continued)

- Still intubated without tracheostomy or feeding tube
- Physiatry involved post-op to perform clinical exam
- Patient still quite delirious, source control of infection difficult with significant involvement/direction from ID team
- Spouse is at bedside stating that patient would not want to live “like this”
- Challenges in getting reliable source of communication

Pitfalls

- Anyone asking “do you want to live, do you want a breathing machine…”
- Different teams/family/nurses asking at times outside of formal evaluation
- Indicating that family has surrogate decision making from beginning
- Not being explicit about timelines

PEARLS

- Consistency in providers
- Assess over days to a week or two
- Refrain staff/family from engaging in assessment questions when not in formal evaluation to avoid confusion
- Ensure colleagues are observing with you; use your IDT team
- Invite family to observe assessments: Set ground rules!