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Traumatic Brain Injury: Acute Care

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Amanda Acord-Vira, EdD, OTR/L, CBIS

Dr. Amanda Acord-Vira and is an Associate Professor in the Division of Occupational Therapy at West Virginia University. She is also the Principal Investigator on a Federal TBI State Grant Program with the Centers of Excellence and Disabilities with West Virginia University. She received her Master's of Occupational Therapy and Doctorate Degree in Educational Psychology from WVU and obtained her Graduate Certificate in Special Education and Traumatic Brain Injury from George Washington University. She has been involved in clinical occupational therapy practice, research and education for over 18 years focusing on traumatic brain injury. She has presented at several peer reviewed state and national conferences. She has also published several articles on brain injury and coauthored the Occupational Therapy Practice Guidelines for Traumatic Brain Injury. In addition, she serves as the editor for the American Occupational Therapy Special Interest Section for Work and Industry and is the co-chair of the WV TBI Advisory Board.

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- Content Disclosure: This learning event does not focus exclusively on any specific product or service.

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Learning Outcomes

After this course, participants will be able to:

- Identify common client factors and skills that are addressed in the acute care or LTAC setting.
- Identify evidence-based interventions to address BADLs, Communication, Neuro-behavioral deficits, and client factors in the Acute Care or LTAC
- Identify strategies to address challenging behaviors that often occur in the acute care setting
- Identify effective family/caregiver education to support the rehabilitation process and client function

Quick Background

- Per the CDC
  - 2.8 Million TBI's a year
  - 75% of those are mild
  - 288,000 Hospitalizations
  - 5.3 Million living with TBI disability
  - Falls #1 cause in those over 55
  - MVA #1 cause in those under 25
  - Males 2.2. times more likely

https://www.cdc.gov/traumaticbraininjury/data/index.html

Mike

- 26-year-old male
- Sustained a closed head injury in an MVA
- Facial fractures
- GCS on admission 5
- Coma for 3 weeks
- Ventilated for 3 weeks
- Supportive Parents


2005 5 17

General Principles

- Consistency
- Team Approach
- Addressing
  - Establish or Restore Function
  - Prevention of Disability
- Laying the groundwork for rehabilitation
- Family/caregiver education
- Documentation is key

Role of the SLP

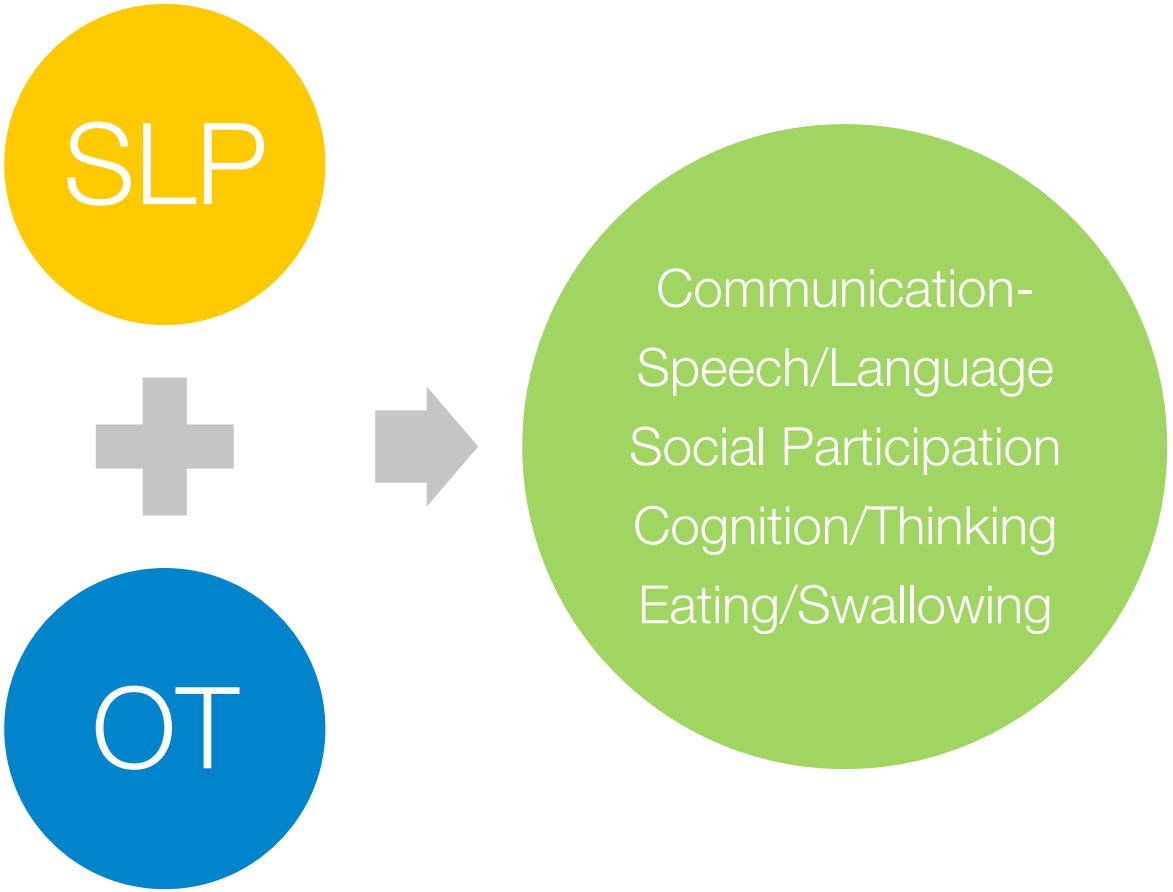
- Screening, evaluation, training in speech, language, cognitive-communication, & swallowing
- Training in use of augmentative communication for the patient and family
- Facilitating access to services
- Evidence maps on the ASHA website

https://www.asha.org/PRPSpecificTopic.aspx?folderid=8589935337&section=Roles_and_Responsibilities

Role of OT

- Evaluation of occupational performance and participation and the skills that underlie occupational performance
- Design of client centered intervention programs to address occupational performance and participation limitations and the performance skills and client factors that support performance
- Advocacy and education for the client and their caregivers to support performance and participation.
- AOTA Practice Guidelines for TBI (2016)

Similarities Between Professions



Rancho Los Amigos

- I No Response (Total Assistance)
- II Generalized Response (Total Assistance)
- III Localized Response (Total Assistance)
- IV Confused- Agitated (Maximal Assistance)
- V Confused Inappropriate Non agitated (Maximal Assistance)
- VI Confused Appropriate (Moderate Assistance)
- VII Automatic Appropriate- (Minimal Assistance for Daily Living Skills)
- VIII Purposeful and Appropriate (Standby Assistance)
- IX Purposeful/Appropriate (Standby on Request)
- X Purposeful/Appropriate (Modified Independent)

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Evaluation

- Occupational Performance Profile via family/caregiver
- Pre-morbid functioning
- Orientation toward understanding likes/dislikes, interests
- Response to stimulus
- Awareness and attention
- Direction following
- Expressive language and/or communication
- BADL's
- Oral motor and pre-swallowing

Mike

- Occupational performance profile provided by parents
  - Liked outdoor activities, hiking, 4 wheeling/ATV, hunting
  - Music- preferred alternative rock
  - Food- Liked sweets, and lemon flavors
  - Spent time making sure he looked good
- No response to pain, parents' voices, lights. No verbalizations, eye opening, or other forms of communication.
- Swelling of the cheeks, tongue, palate, and teeth intact, no spontaneous swallowing.

Level I – No Response: Total Assistance

- No noticeable change behavior or physiological status in response to visual, auditory, tactile, proprioceptive, vestibular or painful stimuli.

https://www.myshepherdconnection.org/docs/Rancho_Scale_English.pdf

Level II – Generalized Response: Total Assistance

- Reflexive response to pain
- Responds to auditory stimuli with a non-specific response, requires repetitions
- May demonstrate physiological changes or non-specific motor response to external stimuli
- Responses to auditory or other stimuli may be delayed or slowed.

https://www.myshepherdconnection.org/docs/Rancho_Scale_English.pdf

Intervention in Level I & II

- Prevention activities
  - ROM
  - Positioning
  - Hygiene
  - Sleep Hygiene (routine)
- Establish or Restore activities
  - Stimulation program
  - Hand over hand guiding in ADLs
  - Family education

Goals in Levels I and II

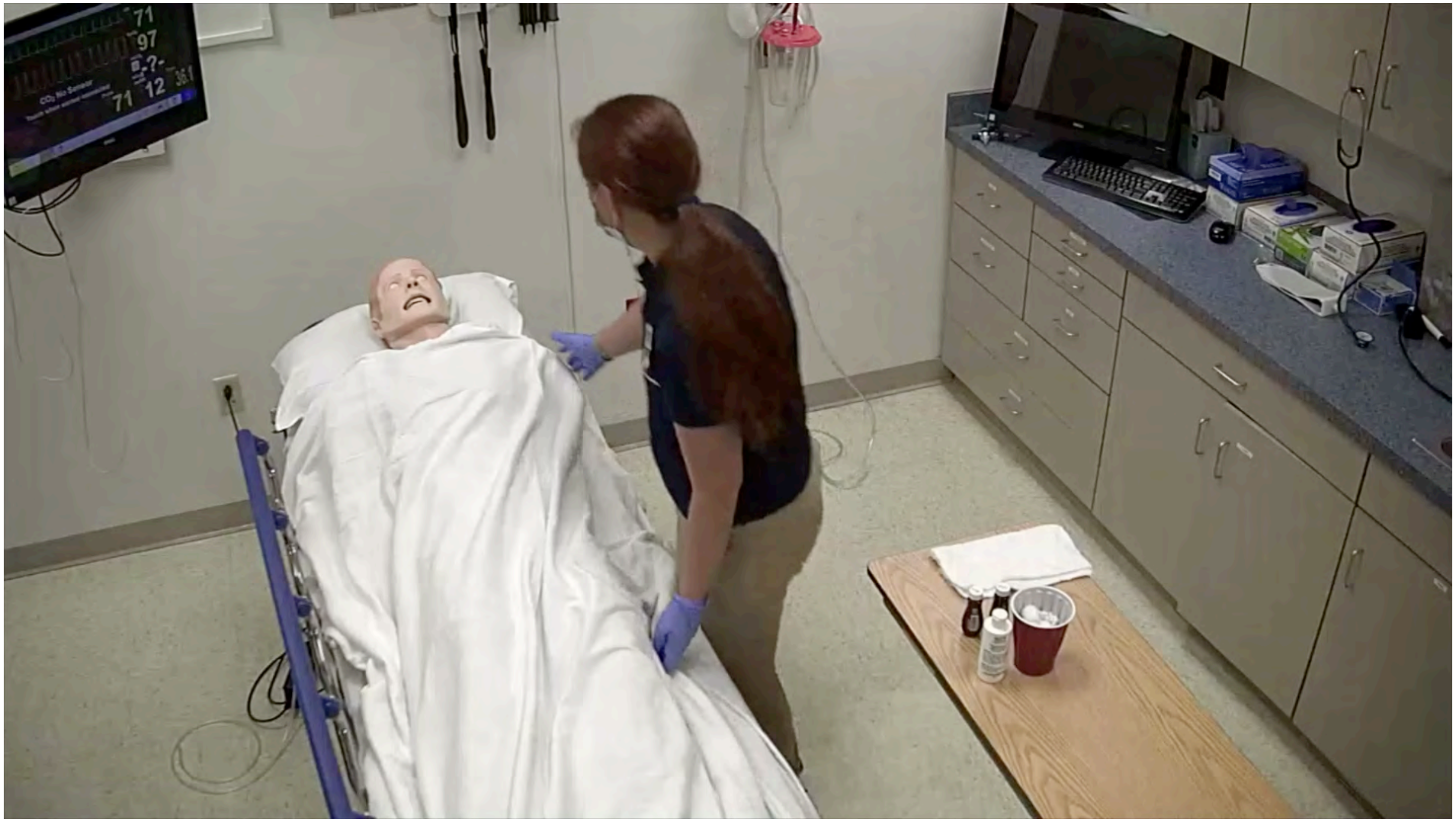
- Increase arousal and/or awareness
- Prevent complications
  - Respiratory infections
  - Loss of ROM
  - Skin breakdown
- Family & Caregiver education and support

Patient Cognitive Processing

- Processing time is greatly increased
- Accuracy of processing is not understood
- Speaking to the patient and offering simple explanations is encouraged
- Allow extra time
- Patients respond to familiar better (family, friends)

Interacting with the Patient

- Assume Awareness
  - Introduce yourself
  - Talk about what you are going to do
    - Allow extra time before initiation of action
  - Give some orientation information
  - Keep it short and simple
  - Say good-bye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Arousal

- Arousal is a physiological and psychological state of alertness.
- Coma Recovery Scale- Revised (CRS-R)
  - 6 scales of 23 items
  - Auditory, visual, motor, oral, communication, arousal
  - 25 minutes
  - (Seel et al., 2010)

Low Arousal: Stimulation

- Goal: increase responsiveness and increase time of awareness
- Types of stimulation
  - Olfactory
  - Gustatory
  - Tactile
  - Auditory
  - Proprioceptive/kinesthetic
  - Visual

Coma stim systematic review

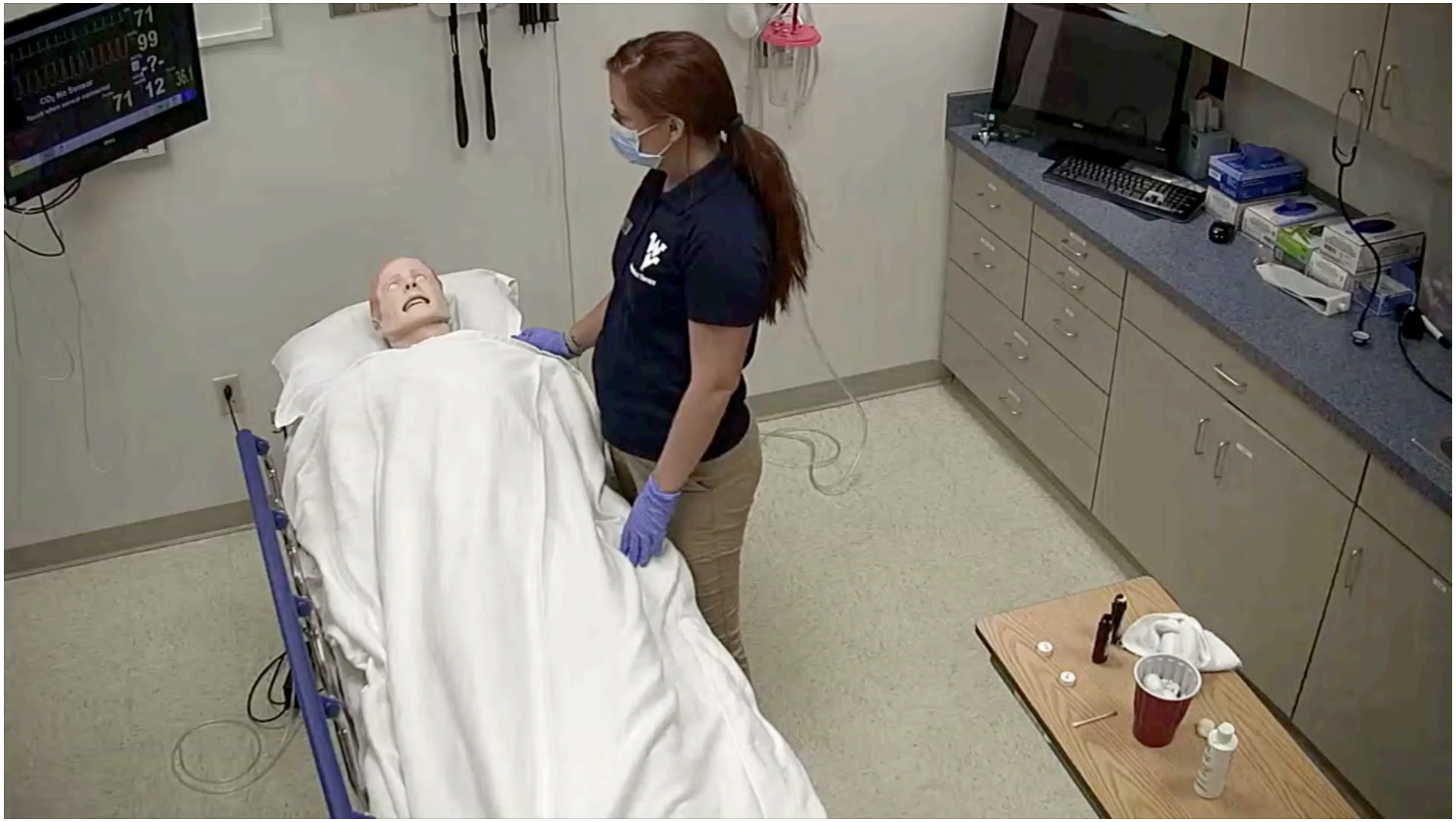
- Evidence supports (Padilla & Domina, 2016)
  - Multimodal
  - Personalized to premorbid preferences
  - Effective at improving clinical outcomes, physiological parameters and arousal behaviors.

ASHA's conclusion is that evidence neither supports or rules out coma stim.

https://www.asha.org/articlesummary.aspx?id=8589954819

Stim Program- Principles

- Occupational or patient profile
- Use both pleasant and aversive
- Monitor for physiological changes
- Family administered
- Allow for increased processing time
- Multi-modal
  - Auditory and tactile
  - Tactile and olfactory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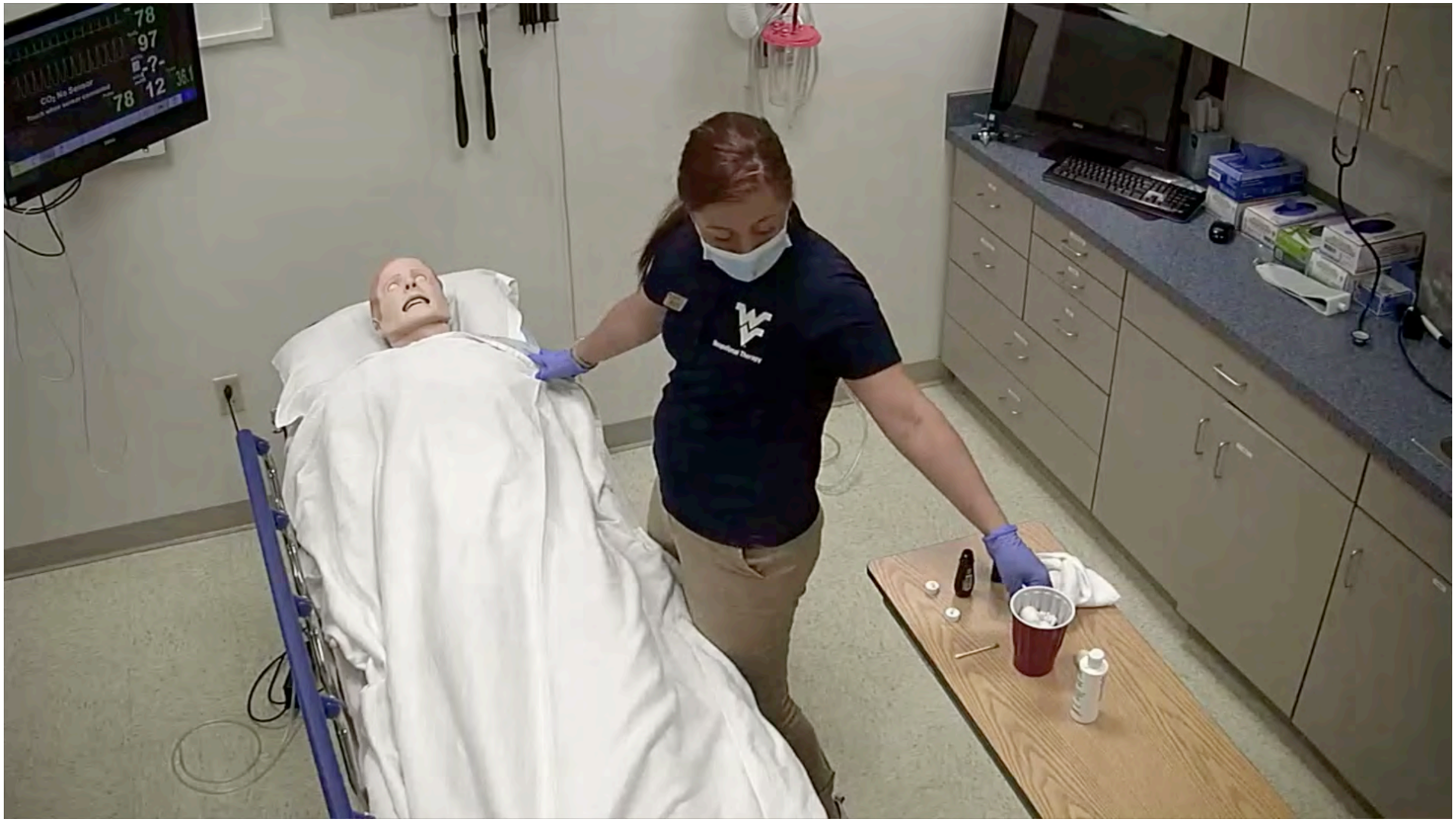
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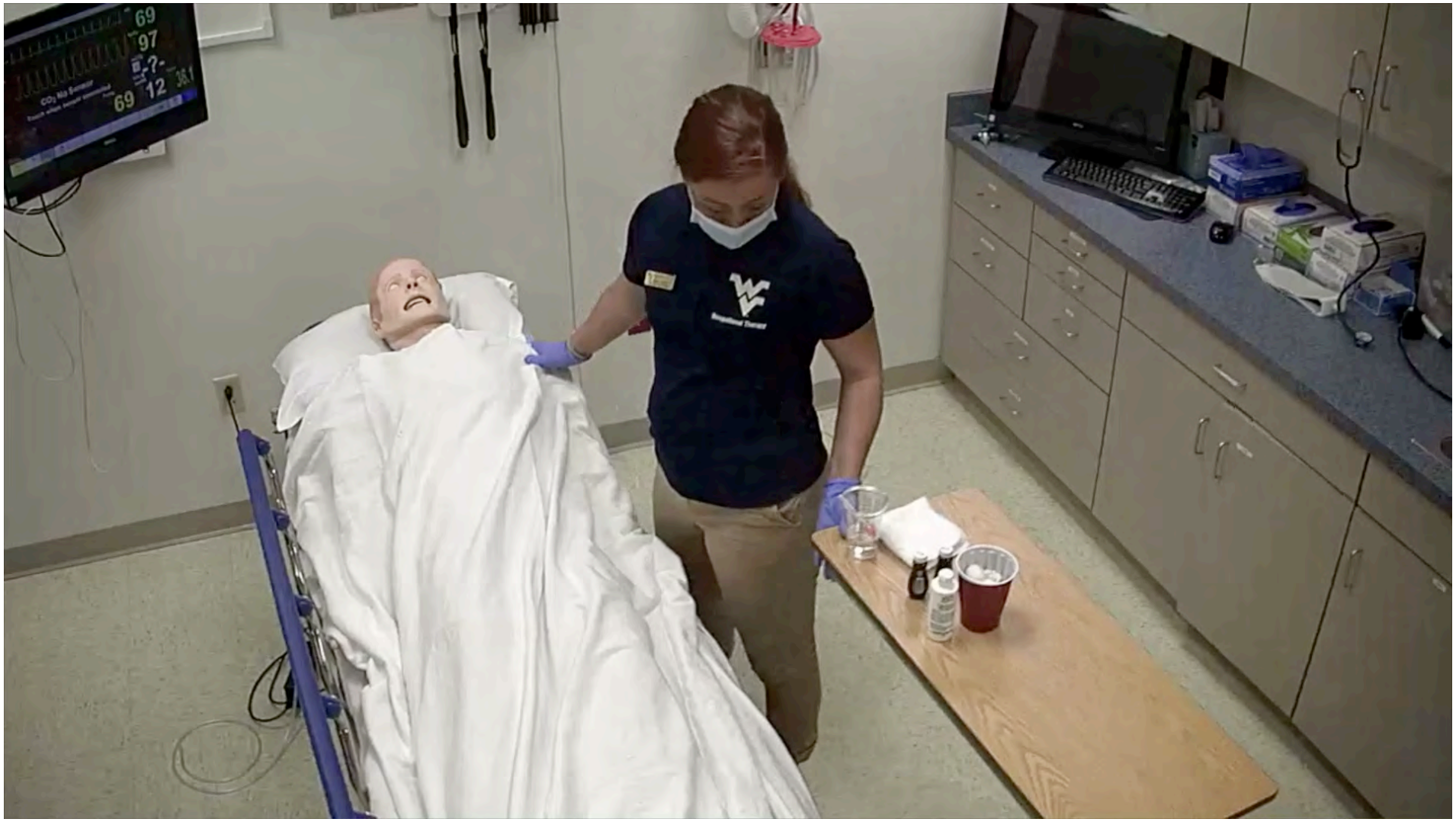
Paroxysmal Sympathetic Hyperactivity

- Previously known as “Storming”
- Loss of cortical suppression of sympathetic nervous activity
- Occurs in 33% of Individuals with severe brain injury
- Tachycardia, tachypenia, hyperthermia, hypertension, hyperhidrosis, & posturing
- Observed when sedatives and paralytics are being tapered
- Can be triggered by external stimulation
- (Meyer, 2014)

Oral Hygiene

- Good oral hygiene of ventilated patients is associated with decreased Ventilator Associated Pneumonia (Moir, Hirasawa, Oda, Shiga, Matsuda & Nakamura, 2006)
- Ventilation and NPO is associated with decreased natural oral hygiene processes
- Be aware of possible primitive bite reflex
- Use of suction to handle secretions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Establish Routines

- Biological routines such as sleep/wake are disrupted
- Re-establishment of routines is helpful
- Consistent out of bed schedule if tolerated
- Lights, daylight, noise and activities appropriate for time of day
- Consistent routines that approximate pre-morbid

Modifying the Hospital Environment

- Noise
  - Decreasing volume of alarms in the day-time
  - Silencing alarms in the room at night
  - Avoid constant auditory stimulation, music, TV, etc.
  - Group size reasonable
- Lighting
  - Lights on curtains open during day-time
  - Dim lights, close curtains at night-time
- Simplify the visual field of the patient
  - Curate the environment
    - Simple clear calendar
    - Clock
    - Pictures of known people
    - Familiar

Family Education

- Marathon vs. sprint
- Meet them where they are (Choustikova, Turunen, Tuominen-Salo, & Coco, 2020)
- Explain what they see
- Provide resources
- Educate to support care

Family Caregiver Education

- Supporting Care
  - Monitoring environment
  - Monitoring for changes
  - ROM programs
  - Positioning
  - Offering stimulation programs
  - Basic self care-hygiene and grooming

Rancho Los Amigos Revised Level III

- Localized Response: Total Assistance
  - Withdrawal or vocalization to stimuli that is unpleasant or painful
  - Pulls tubes or lines
  - Inconsistently follows simple commands
  - Vision-tracks and blinks with strong lights
  - Might respond to family and friends more consistently
  - Increased processing time

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Level III- Specific Response

- Prevention Activities
  - Hygiene
  - ROM
  - Positioning
  - Environment monitoring
- Restore activities
  - Simple ADLs, guiding
  - Dysphagia assessment
  - Communication assessment/intervention
  - Simple direction following
  - Active movement

Goals- Level III

- Attention to task
- Direction following
- Simple ADLs
- Eating/Swallowing
- Consistent communication of needs

Communication

- Assessment of communication in early Rancho III
- Inability to communicate increases frustration and/or agitation
- Introduction of simple augmentative communication devices as appropriate
- SLP and OT work together to identify most consistent access of communication assistance
- Broaden choices as patient tolerates

Eating/Swallowing

- High prevalence of swallowing disorders in severe brain injury
  - Oral, pharyngeal, and airway protection issues
- Bedside or clinical assessment of swallow
- Instrumental assessment:
  - When able to follow simple directions
  - FEES if able to tolerate procedure
- Environment:
  - Remove unnecessary food/drink items
- Family & caregiver education

Mike

- Mike experienced a broken mandible and other facial trauma as a result of his accident.
- This precluded him resuming feeding/eating when he entered Level III.
- Once the mandible healed and it was allowed, Mike completed a bedside evaluation followed by a FEES and resumed eating a soft diet with normal liquids.

Tube Pulling

- Begins at Rancho Level 3
- Specific response to stimuli
- Avoid restraints (if possible)
- Team consideration of removal of non-essential devices and lines
- Hiding or covering tubes, abdominal binders, ace wraps, neoprene sleeves
- Close monitoring (use of sitter)

Neuro behavioral difficulties

- Inappropriate behavior is often experienced Level III-V
- Although it is expected it should not be allowed without comment
- Appropriate feedback may need to be repeated
- At the lower levels of Rancho lengthy explanations not needed, just a statement to stop behavior

Documentation

- Documentation of acute care supports future care
- Clear description of limitations caused by changes in cognition and neurobehavior are critical to receiving appropriate care
- Physical independence in tasks does not reflect true independence if the client requires close supervision.
- Frequency of cueing, closeness of supervision, safety risks, impulsivity, inappropriate behavior, risk for future injury should be documented.

Special Considerations

- Medical stability
- Other significant injuries
- Physical presence of family
- Pre-morbid substance use
- Pandemic

Mike

- Moved to Inpatient Rehab Hospital at a Rancho Level III transitioning into IV following 4 weeks of hospitalization

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