Post Intensive Care Syndrome, Delirium, and Cognition

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Course Description

With increased prevalence of symptoms following ICU stay, more patients are being diagnosed with post-intensive care syndrome. Occupational Therapists are uniquely suited to assist with prevention and management of post-intensive care syndrome due to the holistic and occupation-based nature of the profession. In addition, recent research has found increasing incidence of long-term cognitive deficits following critical illness. This course will inform attendees about risk factors, symptoms, and treatments of PICS and delirium/cognitive deficits in a critically ill population.
Learning Objectives

Following completion of this session, participants will be able to:

• Define post-intensive care syndrome and describe common signs and symptoms
• List risk factors of developing PICS and describe the potential long-term effects of PICS
• Describe potential roles an occupational therapist can have in preventing/treating PICS
• Describe common signs and symptoms of delirium/cognitive deficits in the intensive care unit
• List and describe cognitive assessments/screening tools and interventions for use in the intensive care unit
• Identify appropriate use of activity/distraction aprons within the intensive care unit
Introduction
~ 5.7 million patients admitted to intensive care units (ICUs) each year in the US, ⅓ of whom need a machine to help them breathe

Critically ill patients may develop health problems related to their illness, injury, ventilator or other treatments

Improving survival rates create need to prepare patients for life after the ICU, including how to cope with deficits, complications

Some problems/complications cannot be totally prevented, can continue after the patient leaves the hospital

Delirium, acute respiratory distress syndrome, and sepsis increase the chances of these problems occurring

http://www.sccm.org/Communications/Pages/CriticalCareStats.aspx
Please close your eyes, and use your five senses as we try to simulate the ICU experience.
I nearly ended my life a few times.

I was so, SO consumed by anxiety.

My physical recovery once I was home moved forward very quickly, but inside I was in meltdown.

Oh well, I survived Hell on earth, that’s for sure.

I just hope one day I will be normal again, and this is temporary.

I nearly ended my life a few times.

To me, it was like the slow rebooting of a computer.

The wit, the comprehension, the concentration. It’s all haphazard at best. To most, it is unrecognizable. The best way to describe it is mental disorganization, like there is a connection missing or a synapse not firing. It has been 10 months, and I just keep waiting for it to straighten itself out. Is this it?

http://www.icudelirium.org/testimonials.html
Redefining Recovery
Post Intensive Care Syndrome

• *Post-intensive care syndrome*, or PICS, is made up of health problems that remain after critical illness
• Present when the patient is in the ICU, may persist after the patient returns home
• Can involve the patient’s body, thoughts, feelings, or mind and may affect the family
What does PICS look like?
3 Domains of PICS

Adapted from Davidson JE, et al11
Physical

- ICU-acquired weakness (ICUAW) is muscle weakness that develops during an ICU stay. This is a common problem of being critically ill and occurs in:
  - 33% of all patients on ventilators
  - 50% of all patients admitted with severe infection, which is known as sepsis
  - Up to 50% of patients who stay in the ICU for at least one week
- Signs of ICUAW
  - Weakness in withdrawal to noxious stimuli
  - Decreased spontaneous movements
  - Diffuse wasting
- Patients who develop ICUAW may take more than a year to recover fully
- ICUAW can impact both ADLs & IADLs

Cognition

- Deficits with memory, attention, problem solving, and organizing and working on complex tasks
- After leaving the ICU, 30% to 80% of patients may have these kinds of problems
- Some people improve during the first year after discharge from the hospital; other people may never fully recover
- Cognitive dysfunction may affect whether the patient can return to work, balance a checkbook, or perform other tasks that involve organization and concentration

Psychological

- May develop problems with falling or staying asleep, nightmares and unwanted memories
- Reminders of their illness may produce intense feelings or strong, clear images in their mind - reactions to these feelings may be physical or emotional
- Patients may also feel depressed and anxious and may have symptoms of posttraumatic stress disorder (PTSD) - and can report feeling “keyed up,” wanting to avoid thinking or talking about their stay in the ICU
- May not remember their ICU stay - and this can be difficult to cope with
Co-occurring Symptoms of PICS

No PICS Symptoms 44% (n=125)

Physical
- 7% (n=19)

Cognitive
- 16% (n=46)

Mental Health
- 13% (n=36)

- 4% (n=12)
- 10% (n=28)

Brummel Crit Care Med 2014;A1446
Risk Factors for PICS

- Delirium/Anxiety/Pain
- Hypoxemia
  - Hypoglycemia
  - Hyperglycemia
- Pre-existing disease
- Prolonged mechanical ventilation
- Sedation
- Sepsis, ARDS, MOF, immobility, NMB drugs

PICS Domain:
- Cognitive Impairment
- Mental Impairment
- Physical Impairment
Long Term Implications

• How Does PICS Affect Recovery?
  – Up to 50% of patients may return to work within the first year, some may not be able to return to the jobs they had before their illness
  – Patients may need help with activities after leaving the hospital

http://www.icudelirium.org/testimonials.html
PBS clip on PICS

What is Delirium?

Abrupt onset of inattention and other cognitive symptoms

Develops over hours to days with fluctuation during day

Often missed or misdiagnosed

Most often assessed using the CAM-ICU
Delirium Diagnostic Criteria

- Inattention/inability to direct, sustain & shift attention
- Decreased awareness of environment/disorientation
- Change in cognition and/or perception
- Short-term memory, language, and/or speech abnormalities
- Hallucinations or delusions
  - visual, auditory, or tactile [not a requirement]
- Emotional lability including significant anxiety
- Sleep-wake disturbance

Adapted from DSM-5 American Psychiatric Association. 2013
Delirium Types

**HYPERACTIVE DELIRIUM**

- ~1% of cases
- Agitated or aggressive
- Increased motor activity
- "Picky-Pully"

**HYPOACTIVE DELIRIUM**

- ~44% of cases
- Sleepy, inattentive, low arousal
- Decreased motor activity

**Mixed Delirium:**

- ~55% of cases
- Alternating between symptoms of hyperactive and hypoactive
Delirium & Brain Atrophy

(A) 46 year old with no delirium
(B) 42 year old with 12 days delirium

Prevalence

20 - 80% of ICU patients develop delirium at any point
- 50% of ARDS pts delirious at ICU discharge
- 10% of ARDS pts delirious at hospital discharge

Independently associated with increased risk of death
Increased ICU length of stay
Increased hospital length of stay
Estimated national cost $4-16 billion per year

Delirium duration proportionally related to level of long term cognitive impairment

- 1/3 had cognitive scores consistent with moderate TBI at 1 year follow-up
- 1/4 had cognitive scores consistent with mild Alzheimer's
- Affected both older and younger patients
Embedded Therapy Project
Barriers in Acute Care

- Prolonged hospital course prior to early mobility, early activity
- Critical illness
- Sedation/Delirium
- Poor sleep hygiene
- Inadequate equipment
- Lack of staffing
- Prioritization of patient populations
- Limited staff knowledge & concerns for safety of patients
What is our Role?
Occupational Therapy

- Cognition
- Dysphagia
- Communication
- Functional tasks
- Functional transfers
- Functional mobility
Role of Occupational Therapy

PREVENTION

Delirium prevention
  - Early mobility and activity

Family education
  - PICS education folders for patient and family members

TREATMENT/INTERVENTION

Cognitive screening and assessment tools
Considerations
Environmental Adaptations
Communication
Prevention and Treatment

• Delirium Prevention
  – PAD guidelines
  – ABCDEF Bundle

[Image of ABCDEF Bundle]

http://www.sccm.org/Communications/Critical-Connections/Archives/Pages/Critically-Ill-Patients-and-Families-Thrive-through-ABCDEF.aspx
Delirium Screening

Say YES to ASSESS!!

Confusion Assessment Method for the ICU (CAM-ICU) Flowsheet

1. Acute Change or Fluctuating Course of Mental Status:
   - Is there an acute change from mental status baseline?  OR
   - Has the patient's mental status fluctuated during the past 24 hours?

2. Inattention:
   - "Squeeze my hand when I say the letter 'A'."
   - Read the following sequence of letters: SAVE A H A R T
   - ERRORS: No squeeze with 'A' & squeeze on letter other than 'A'.
   - If unable to complete Letters -> Pictures

3. Altered Level of Consciousness
   - Current RASS level
   - RASS = zero
   - > 2 Errors

4. Disorganized Thinking:
   - 1. Will a stone float on water?
   - 2. Are there fish in the sea?
   - 3. Does one pound weigh more than two?
   - 4. Can you use a hammer to pound a nail?
   - Command: "Hold up this many fingers" (hold up 2 fingers) "Now do the same thing with the other hand" (Do not demonstrate)
   - OR "Add one more finger" (if patient unable to move both arms)

[Flowchart diagram showing decision points and outcomes for CAM-ICU screening]
• 30% of family members may experience their own mental health problems (i.e. depression, anxiety and PTSD)

• During ICU stay:
  – Taking Care of Yourself While a Loved One is in the ICU
  – Why Do ICU Patients Look and Act That Way
  – Post ICU Support Group Flyer
  – Post-Intensive Care Syndrome
  – My Journal
  – Family Involvement “Menu”
Family Education on Delirium

- Agitation, aggression
- Confusion
- Inability to pay attention, follow directions, express needs
- Disorientation
- Hallucinations
- Changes in sleeping habits
- Labile
- Abnormal movement (i.e. tremors, picking, etc.)
- Memory deficits
- Hypoactive
# Role of Occupational Therapy

## PREVENTION

Delirium prevention
- Early mobility and activity

Family education
- PICS education folders for patient and family members

## TREATMENT/INTERVENTION

Cognitive screening and assessment tools

Considerations

Environmental Adaptations

Communication
Cognitive Assessment & Screening Tools

• MOCA
• O-Log
• Cog-Log
• JFK
Break Out Session
Role of Occupational Therapy

**PREVENTION**

Delirium prevention
- Early mobility and activity

Family education
- PICS education folders for patient and family members

**TREATMENT/INTERVENTION**

Cognitive screening and assessment tools

Considerations

Environmental Adaptations

Communication
Considerations for Treatment

Provide patient-centered interventions

Minimize distractions

Make interventions situationally appropriate
Pre-Mobility Check

Inspect lines, tubes, and drains pre/post mobility:
- Check for any active bleeding
- Check sensitivity of flow
- Ensure lines are secure

Evaluate:
- What can be moved? Disconnected? Made portable?
- What lines/tubes are shortest?

Treatment:
- Group lines to one side of body
- Mobilize towards ventilator, shortest line
Environmental Adaptations

- Appropriate balance of sensory input
  - Overstimulation vs. understimulation
- Environmental modifications
  - Familiar objects, scents, etc.
- Ensure proper sleep schedule
- Promote family interaction
  - Read aloud at the bedside including local, current news
  - Maintain diary or journal
Distraction Aprons

Made by volunteers

Found to be safe, feasible to use as adjunct to standard care

Patients at risk of unintentional self-harm
  - Encephalopathy, delirium, dementia
  - 1:1 supervision, restraints
  - Picky/pully

May reduce or eliminate behaviors that result in self-harm
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<th>Hospital Resources</th>
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<td>Library</td>
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<td>Etc.</td>
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Post ICU Stay

Continued plan of care, intervention
Review of education, including PICS
Continuation of ICU Diary
Support Groups

Online & In Person

Mayo Connect
Case Studies
Case Study 1

• 68-year-old female admitted to hospital for cholecystectomy complicated by small bowel enterotomy and sepsis
• History of anxiety and depression with symptom intensification during hospitalization
• Patient complaining of “foggy” thinking
• Known history of PICS
• Retired pastor
• Very supportive family
Case Study 2

• 65 year old male with acute myelogenous leukemia, s/p bone marrow transplant with graft-versus-host disease of gut
• Recurrent gastrointestinal bleeding, mass transfusions, intubated ~2 weeks
• Posterior reversible encephalopathy syndrome
• Developing critical illness myopathy
• Retired veterinarian, several hours from home
• Hospitalized 98+ days
Case Study 3

- 63 year old male, 60+ day hospital stay
- Was in ICU for 30+ days prior to project starting, edge of bed only
  - Day 1: RN asking for distraction apron
- Prior liver, kidney transplant – end stage renal disease, HD, ERCP, septic shock
- Intubation, mechanical vent, CRRT, persistent debilitated state
- Married with children
Case Study 4

• 56 year old female admitted with acute hypoxemic respiratory failure, shock, encephalopathy
• Multiple RRTs due to desaturations on the floor
• NSTEMI, malnutrition, new R frontal infarct
• No history of anxiety or depression
• Married to retired RN
Case Study 5

• 32 year old male with acute myelogenous leukemia, s/p 2 umbilical scts
• Severe graft-versus-host disease of lungs, requiring intubation approximately 5 times (multiple lasting over a week)
• Married with 2 year old daughter
• No history of anxiety or depression, developing severe anxiety during this hospitalization
Questions?
Thank you!
Contact Information

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Resources

Reference List is Available

Frequently Referenced Resources:

- International Mobilization Network (www.mobilization-network.org)
- ICU Liberation (www.iculiberation.org)
- Helping ICUs Implement ABCDE Bundle (www.hopkinsmedicine.org/armstrong/mvp)
- Society of Critical Care Medicine (www.sccm.org)
- ICU Delirium (www.icudelirium.org)
Information Continued
Risk for dysphagia in the ICU

Patients intubated >48 hours more likely to exhibit mod/severe dysphagia
  ◦ Mod/severe dysphagia was found to increase the risk of in hospital mortality and pneumonia
Duration of endotracheal tube was positively correlated with dysphagia severity
Patients with CABG more likely to have absent cough reflex, and thus higher rates of silent aspiration
Generally, patient’s with dysphagia post-cardiac surgery had high incidence of silent aspiration and increased risk of pneumonia
Patients with abnormal phonation at risk for dysphagia and aspiration
Patients not oriented to person, place, or time are at 31% increased risk for liquid aspiration

Malandraki, 2016; Kim, 2016; Daly, 2016; Kallesen, 2015; Leder et. al., 2009
Dysphagia Updates

Educate nursing on proper referrals

No significant difference in dysphagia evaluation results whether performed less than 24 hours after extubation versus greater than 24 hours

It is safe to evaluate patients on high-flow nasal cannula
  ◦ This mode of ventilation does not increase risk of dysphagia/aspiration

Breathing interventions may improve swallowing
  ◦ Increase force generating capacity of the respiratory muscles → improve cough effectiveness → improve airway protection

Plowman, 2016; Leder, 2015; Scheel, 2016
Communication Updates

The inability to communicate via speech places a great amount of stress on an already critically ill patient.

Patients with tracheostomies report feelings of frustration, fear, anxiety, and powerlessness related to the loss of voice.

The experience of being non-vocal was described as one of the worst consequences of the endotracheal intubation.

Return of voice was associated with significant improvement in patient reported self-esteem, particularly in being understood by others and in cheerfulness.

Freeman-Sanderson et al., Journal of Critical Care 2016; 33: 186-191
Holm et al., British Association of Critical Care Nurses 2015; 1-8.
Communication Updates

COMMUNICATION OPTIONS

Facial Expressions
Gestures
Augmentation and alternative communication boards
Writing
IPAD
Eye gaze options (high or low tech)

COMMUNICATION WITH TRACH

One way speaking valve
Leak speech “take down the cuff”
Digital occlusion
Talking tracheostomy
In-Line Passy Muir Valve
Role of Rehab Psychologist

Assess cognitive function & impact on recovery
Assessment of mood and coping in ICU
Patient engagement in medical care & rehab
Education and support for family

Stucky, K et al. 2016; Rehabilitationpsychology, 61(2), 201.
Role of Medical Team

Need to understand what PT, OT, and SLP do and when it is appropriate to consult

Need to address issues that may interfere with rehab/mobility:
  ◦ Sedation
  ◦ Delirium
  ◦ Sleep
  ◦ Vent weaning
  ◦ Line access
Role of Nursing

“Culture of mobility” (Early mobility does not always have to include rehab services)

Coordination for optimal treatment scheduling with rehab staff

Optimizing the patient’s condition for rehab sessions (pain meds, discontinuing lines/tubes as able, sleep, etc.)

Provide up-to-date info to therapists on the patient’s condition

Frequent assessment of sedation RASS

Frequent assessment for delirium CAM-ICU

Carryover mobility and activity tasks

May serve as “2nd set of hands” to assist with mobility and line/equipment management
Role of RT

Manages changes in vent settings to allow for optimal oxygenation & ventilation during mobilization and rehab activities

Assist with use of portable ventilators or use of ambu bag