Preventing the Acute-to-Chronic Pain Transition

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Webinar Goals

- Identify the risk of developing chronic pain following a critical illness
- Apply interventions to manage pain in the ICU and reduce the risk of transition to chronic pain

Session Topics

- Acute and Chronic Pain: Definitions and Transition
- Chronic Pain, Post Intensive Care Syndrome, and Quality of Life
- Preventing Acute-to-Chronic Pain Through ICU Interventions: Multimodal Analgesia
Acute pain in ICU: How do we know?

They told us...in multiple studies about ICU stressors

We asked them...using validated self-report pain scales

They demonstrated it...through validated pain behavior scales
Consequences of Pain

ACUTE  PAIN  CHRONIC

INCREASED PHYSIOLOGIC STRESS  NEGATIVE IMPACT ON QUALITY OF LIFE
Acute Pain and Chronic Pain Are Different

**Acute Pain**

“An unpleasant sensory and emotional experience associated with **actual or potential tissue damage**, or described in terms of such damage”

**Chronic Pain**

Pain “that has **persisted beyond** the normal tissue healing time”

- Typically defined as >3–6 months
- A **disease** of the nervous system
Pain: The “Good” and the “Bad”

**Good pain (acute)**
- Nociceptive pain  
  (from tissue injury)
- Adaptive pain
- Fundamental protective mechanism
- Evolutionary warning system; warns of actual/potential tissue injury

**Bad pain (chronic)**
- Neuropathic pain  
  (an expression of pathological changes in the nervous system)
- Maladaptive pain
- Causes persistent suffering for millions of people
- Substantial cost to society
Clinical (Chronic, Persistent) Pain
Inflammation or Low-Intensity Stimulus

Central nervous system “wound up”
- Structural remodeling
- Spontaneous activity
- Hyperexcitable

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The Prevalence and Severity of Post-ICU Chronic Pain
Acute-to-Chronic Pain Transition in Post-ICU Patients

- Approximate prevalence of pain in post-ICU patients: **40%–50%**
- Many ICU follow-up studies ask about pain
  - Persistent pain difficult to quantify
  - Questions asked not specific enough

References:
Example 1: Ongoing Pain Since Discharge

Are you experiencing any ongoing pain since discharge from the ICU? (Only new pains since ICU admission)

- Chronic pain reported by 44% of 196 patients 6 months to 1 year after ICU discharge
- 32% sought help for chronic pain
- Risk factors include severe sepsis and increasing patient age
Example 2: Pain in Last Week That Was New Since Hospitalization

- 236 French-speaking post-ICU patients who had undergone procedures in ICU
- Patients who could remember recalled procedural pain intensity (n=56) and pain distress (n=43), with pain higher than that reported during procedure
- 14% had current pain
  - They recalled even greater procedural pain than others
  - They had higher degree of traumatic stress than others
Example 3: Post-Op Pain (Cardiac Surgery)

Have you experienced persistent postoperative pain not related to preoperative pain (eg, angina) for ≥3 months?

- 1247 patients at four Canadian University-affiliated hospitals
- Pain measurements
  - Pre-op in clinic
  - Post-op days 1, 2, 3, 7
  - Follow-up months 3, 6, 12, 24
Example 3: Post-Op Pain (Cardiac Surgery)

Have you experienced **persistent postoperative pain** not related to pre-op pain (eg, angina) for ≥3 months?
Chronic Pain,
Post Intensive Care Syndrome (PICS)
and Quality of Life
Impact of Chronic Pain and PICS: Interference with Daily Activities and Quality of Life

- PHYSICAL
  - General activity
  - Normal work
  - Walking

- COGNITIVE
  - Sleep
  - Normal work

- MENTAL HEALTH
  - Relation with others
  - Enjoyment of life
  - Mood


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Strategies to Decrease PICS

- Early progressive mobility programs
- Implementation of the ABCDEF bundle
  http://www.iculiberation.org

Find tools on PICS, early mobility, and supporting families using the ABCDEF bundle at www.aacn.org/webinars
- Post-Intensive Care Syndrome: ICU Interventions Matter
- Executing Evidence-Based Progressive Mobility in the ICU
- Adding “F”, Integrating Family Throughout the ABCDE Bundle
Risk Factors for Acute-to-Chronic Pain Transition
Risk Factors for Acute-to-Chronic Pain

- Limited data from ICU studies
- Chronic postsurgical pain (CPSP)
  - Persistence of pain ≥3 months after surgical procedure (pain of malignancy or infection not included)
- **40% of 2043 patients** had **persistent pain** in area of surgery
- **18%** had **moderate or severe** pain

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Risk Factors for Acute-to-Chronic Postsurgical Pain: Some Modifiable in ICU; Some Not

CHRONIC PAIN RISK FACTORS

GENETIC AND PATIENT-RELATED PREDISPOSITION
- Cathepsin G
- Younger age
- Female gender
- Pain syndrome

PSYCHOSOCIAL FACTORS
- Anxiety
- Depression
- Catastrophization
- Chronic stress

PREOPERATIVE PAIN
- Ischemic pain
- Preoperative opioid use
- Endogenous analgesia system

INTRAOPERATIVE VARIABLES
- Surgical procedures
- Surgical technique
- Nerve ligation/injury
- Anesthetic modality

POSTOPERATIVE PAIN
- Uncontrolled high-intensity pain
- Longer duration of pain


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Risk Factors for CPSP:
Preoperative Pain, Opioid Use

- Preoperative pain may have negatively affected pain neurological system
- Preoperative opioid use may have established opioid tolerance or dependence in patients
- Patient may have opioid use disorder
Risk Factors for CPSP:
High Pain Intensity, Long Duration

Number of Patients

24 Hours 48 Hours 72 Hours 1 Week

Worst Pain Average Pain


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Risk Factors for Persistent Pain

Presence
- Age 21–55 (vs >76)
- Nonanginal pain pre-op
- Average pain moderate-severe post-op day 3
- Worst pain moderate-severe post-op day 3
- Pain interference post-op day 7

Intensity: moderate to severe
- Average post-op pain moderate-severe day 3
- Pain interference post-op day 7
- Female sex
- Time in ICU
- Time in hospital after ICU

- Modifiable
A Multimodal Approach to Control Pain in the ICU
Multimodal Analgesia to Control ICU Patients’ Pain

- Techniques that employ opioids, nonopioids and/or nonpharmacological interventions for pain relief
- Recommended to reduce opioid requirements, prevent adverse effects of large doses of opioids, and enhance pain relief
- Can address chronic as well as acute pain and chronic opioid use
Guidelines for Analgesic Use

Recommend
- Non-neuropathic pain: **IV opioids** be considered as the **first-line drug class of choice** to treat in critically ill patients
- Neuropathic pain: either enterally **administered** **gabapentin or carbamazepine** in addition to IV opioids

Suggest
- **Nonopioid analgesics** be considered to **decrease amount of opioids administered** (or to eliminate the need for IV opioids altogether) and to decrease opioid-related side effects
Pharmacological Interventions

Peripheral nervous system
- NSAIDS

Central nervous system
- Oral/IV
  - Systemic opioids
  - Systemic NMDA receptor antagonists
    - Ketamine
    - Methadone
  - Antidepressants
  - Intrathecal/epidural opioids

Non-pain fiber → Peripheral nervous system → Central sensitization → Brain

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Nonpharmacological Interventions

Peripheral nervous system
- Heat, cold, massage

Central nervous system
- Music
- Relaxation techniques
- Alleviating anxiety
- Distraction (visits from family)

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Nursing Interventions:
Target What is Modifiable

- Decrease acute pain
- Advocate for multimodal analgesia
- Apply nonpharmacological interventions such as music, massage, relaxation techniques, and information which may decrease anxiety as well as pain
- Promote rehabilitation and post-ICU quality of life, not just treatment of acute pain and prevention of chronic pain
Summary

- Acute or “good” pain results from actual or potential tissue damage, while chronic or “bad” pain persists beyond normal tissue healing time
- Chronic pain impacts quality of life and may be part of PICS
- Nurses play an active role in understanding and reducing PICS
- Managing post-op pain through use of balanced and multimodal analgesic interventions can reduce the likelihood of acute pain transitioning to chronic pain
Questions?
AACN Implementation
Tools and Resources

Designed to help you apply these practices in your environment

- **Tools and Tactics**: Blueprint for Preventing the Acute-to-Chronic Pain Transition
- **Bridging the Gap**: A Gap Analysis to Manage Acute Pain and Prevent the Acute-to-Chronic Pain Transition
- Critical-Care Pain Observation Tool (CPOT)
- Observational Pain Scales in Critically Ill Adults
- Risk Factors for Acute-to-Chronic Pain Transition
- Acute Pain Management Interventions
- ABCDEF Bundle at ICUDelirium.org
- Practice Alert and evidence-based articles

Find these tools on the Preventing the Acute-to-Chronic Pain Transition webinar information page at [www.aacn.org/webinars](http://www.aacn.org/webinars)

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Implement Strategies to Prevent Acute-to-Chronic Pain Transition
Improve Patient Outcomes

1. Download the Implementation Tools. Find them on the Preventing the Acute-to-Chronic Pain Transition webinar information page at www.aacn.org/webinars
2. Discuss the tools and recommended practices with your colleagues
3. Implement practices that are suitable for your unit
References


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