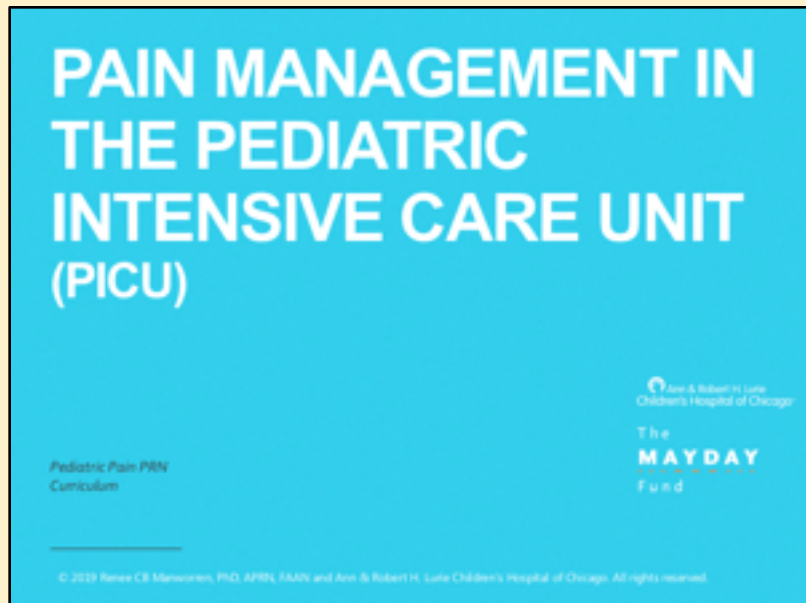


PRN Program: PICU



Materials: Flip chart or whiteboard and Markers

Room Setup: In tables of 4 or 6-8 depending on number of participants

- Display slide as participants walk in
- This session is **45 minutes**


Welcome and Introductions: *Introduce facilitator if necessary*

READ: The learning objectives for this module are to:

- Describe the prevalence of pain in PICU
- Identify pain assessment and management challenges in PICU
- Differentiate pain, agitation, delirium, and iatrogenic withdrawal
- Describe strategies to assess and manage pain and non-pain related distress in critically ill children


PRN Program: PICU

Prevalence of pain in PICUs



Most patients in the PICU experience pain

- Past prevalence studies suggest that **nearly half** of the children in PICUs experience pain on a given day.
- Most experience pain while admitted to the PICU.



READ:

When compared to pain in children in general medical surgical floors, critically ill children have significantly more cases of moderate to severe pain and have higher pain scores.

- Significantly more moderate to severe pain
- Pain scores 2.2 to 3.5 points higher

PRN Program: PICU



What is the criteria for a child to be hospitalized in the PICU?

What are the patient-related barriers to effective pain management in the PICU?

What are the unit-related barriers to effective pain management in the PICU?

READ:

For this 5 minute activity, discuss these 3 questions with other participants at your table and be prepared to report back.

Walk and eavesdrop on each table, coaching if necessary

[Limit discussion to 5 minutes]

Select participants from each group willing to share their answers

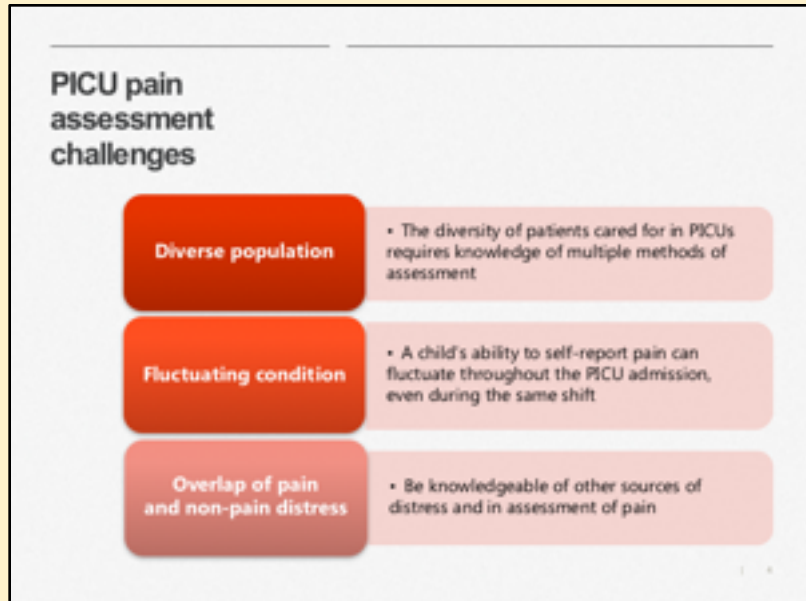
Write on flipchart or whiteboard

[Limit discussion to 2 minutes]

Place a ✓ by those items that are repeated by the groups.

[10 MINUTES of 45 minute session is complete]

PRN Program: PICU




READ:

Pain Assessment is one of the patient and unit-related barriers to effective pain management in the PICU

This graphic highlights the dynamic condition of critically ill children and challenges for pain assessment.

PRN Program: PICU



Jazmine

Jazmine is an 18-month old ventilator-dependent toddler admitted to the PICU after surgery. She is receiving nurse-controlled analgesia of fentanyl for pain.

- Her nurse hears the ventilator alarming and sees that Jazmine is grimacing.
- Her nurse pushes the NCA button many times with no change in Jazmine's behavior and facial expression.

What would a thorough pain assessment of Jazmine include?

What should the nurse do next?

READ: Jazmine is an 18-month old ventilator-dependent toddler admitted to the PICU after surgery. Her nurse pushes the Nurse controlled analgesia button many times with no change in Jazmine's behavior and facial expression.

With your **table** discuss your answers to the questions on this slide. Be prepared to share with the group. This is a 5 minute case.

[Give groups 4 minutes to discuss case & 1 minute to share their answers]

Select a participant willing to share their groups' answers.

[Limit discussion to 1 minute]

READ: these Key points (**if not included by participants**):

Assessment question: Think hierarchy of pain assessment: Jazmine can't self-report but has cause for pain – she just had surgery

You would probably also like to know about:

- Underlying conditions that may cause pain or influence Jazmine's ability to demonstrate pain behaviors such as neuro/musculoskeletal issues, developmental level, and illness acuity
- Therapies/treatments that may impede her ability to display pain behaviors such as sedatives? Neuromuscular blockade?
- We know she has a tracheostomy – has she had other surgeries as well? How did she communicate pain with those procedures? She may have increased need for opioids due to these past experiences.
- Jazmine's pain history and behaviors her parents report indicate pain may help supplement use of a validated objective pain assessment tool.

Treatment question: A larger bolus dose is likely needed.

- Discuss adding continuous infusion, or non-opioid – but time it takes for these analgesics to work, evaluate bio-behavioral strategies.

PRN Program: PICU

Pain Assessment Strategies

ASK:

What pain assessment tools do you use for mechanically ventilated children? And do you find it is sufficient to assess pain in your patients requiring mechanical ventilation?

Select participants willing to share their answers to this question

Write on flipchart or board


[Limit discussion to 2 minutes]

READ: these Key points (***if not included by participants***):

Some pain assessment tools validated in some children requiring mechanical ventilation are:
COMFORT/COMFORT B; modified FLACC, rFLACC may be helpful if cognitive impairment exists

[20 MINUTES of 45 minute session is complete]

PRN Program: PICU



Jazmine

Why did the nurse recommend dexmedetomidine?

How do you assess pain on a patient receiving sedatives?

How do you assess pain on a patient receiving neuromuscular blockade?

A continuous drip of fentanyl is added to Jazmine's pain management plan. Although her nurse felt Jazmine received some relief after the continuous drip was added, she then suggested dexmedetomidine.

Dexmedetomidine was started and the Jazmine appeared comfortable shortly afterwards

READ: Although her nurse felt Jazmine received some relief after the continuous drip was added, she then suggested dexmedetomidine.

With your **table** discuss your answers to the questions on this slide. Be prepared to share with the group. This is a 5 minute case.

[Give groups 4 minutes to discuss case & 1 minute to share their answers]



Select a participant willing to share their groups' answers.

[Limit to 1 minute]

[25 MINUTES of 45 minute session is complete]

PRN Program: PICU

What about vital signs?



Vital sign changes and physiologic indicators are NOT valid indicators of pain in critically ill children. There is high inter-individual variability.

Vital sign changes

- Usually reflect stress response
- Inconsistent across patients
- Inconsistent during observations
- Some PICU patients lack ability to exhibit some vital sign changes

Physiologic indicators

- Changes in vital signs
- Diaphoresis
- Pupil dilation
- Processed electroencephalography

READ: There is insufficient evidence to support using vital signs or other physiologic indicators to assess pain. Other physiologic indicators of pain have been proposed but none have been validated for clinical use.

ASK: Any questions about vital signs and pain?

READ: *these Key points (if participants have questions about these **indicators**):*

Pupillary dilation may indicate inadequate analgesia. Like vital signs, pupil dilation is **NOT** specific for pain and pupils can be constricted with severe pain.

Processed electroencephalography, such as **Bispectral Index (BIS)**, may be used when patients are sedated and/or muscle-relaxed. BIS values are subject to artifact from clinical conditions and medical devices and therefore, are **NOT** recommended for monitoring pain.

- Studies that compare patients with and without muscle relaxants report differences for these two populations
- No relationship has been demonstrated between vital signs, pain/sedation scales, and other measures such as BIS
- No change in vital signs, sedation, pain, skin conductance, BIS) during painful procedures

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READ:

- Review the patient's clinical condition. Are there any problems or diagnoses that commonly cause pain? If so, assume pain is present and treat it.
- Anticipate and treat pain caused by procedures.
- Rule out other conditions such as constipation or infection. Be sure the patient is dry, warm or cool enough, positioned in a comfortable way, and that other basic needs are met.
- Attempts should first be made to obtain self-report from all patients, even if it's a simple "yes/no." It may be possible to obtain a self-report from patients with intellectual disabilities and those who are critically ill.
- Be vigilant for subtle behavioral changes; remember that behavioral changes do not translate to a pain intensity rating, but should raise suspicion of the presence of pain.
- Ask others (surrogate reporting), if the child is in pain. Those who know a patient best can help identify specific behaviors that indicate pain for this individual.

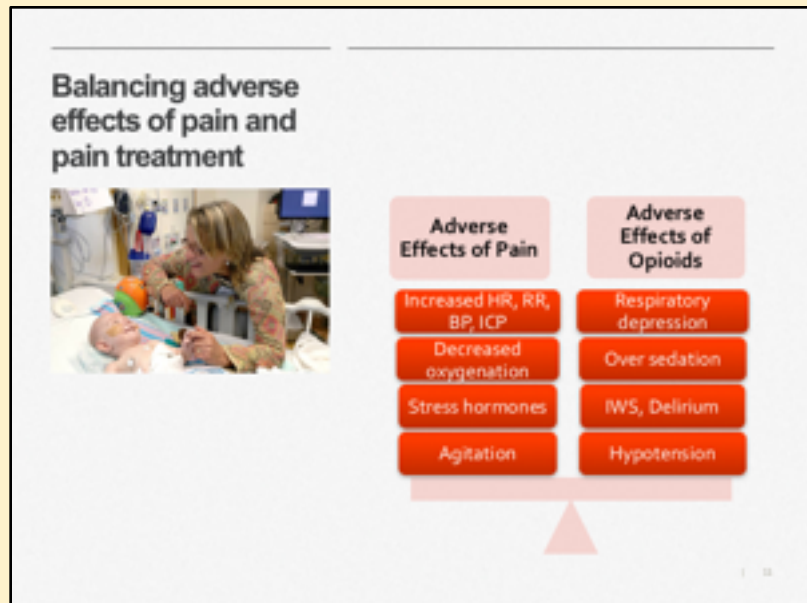
PRN Program: PICU

**Managing Pain
during
Critical Illness**

READ:

If pain is likely, attempt an analgesic trial and look for changes in behavior or other signs of improvement.

PRN Program: PICU




READ: Managing pain during critical illness is a true balancing act – providing treatment to avoid the adverse effects of pain while also minimizing the risk of pain treatment-related complications, such as respiratory depression from opioids.

- While not specific or sensitive indicators of pain, responses to pain and stress include increases in intracranial pressure, heart rate, respiratory rate, blood pressure, blood glucose, and stress hormones and decreases in oxygen saturation
- Pain can also induce agitation
- Pain events in critically ill children can be life-threatening
- Respiratory depression occurs more often in PICUs
- Over-sedation with analgesics and sedatives can lead to negative outcomes
- Iatrogenic withdrawal syndrome (IWS) and delirium can result from prolonged analgesia and sedation
- Histamine release and subsequent vasodilation from some opioids (e.g. morphine), can lead to hypotension

PRN Program: PICU

Preventing adverse effects of PICU hospitalization



Strategies to reduce pain

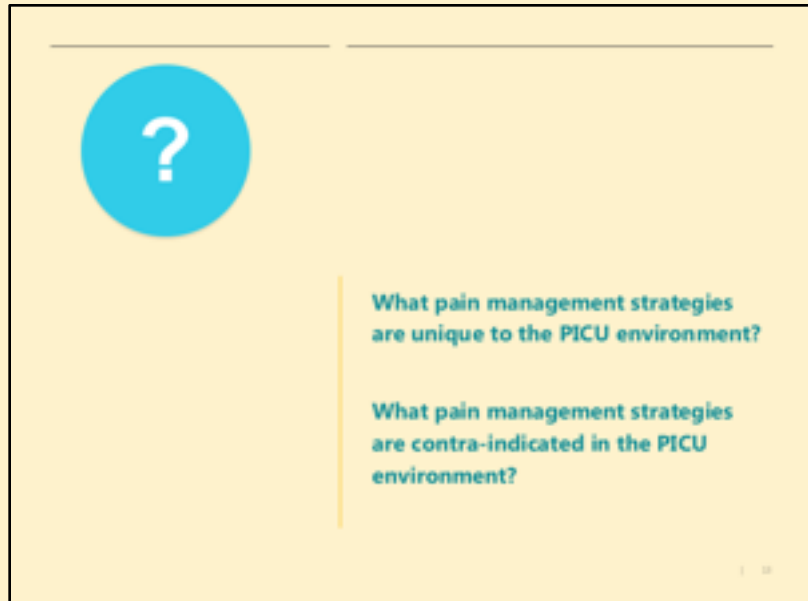
- Identify painful events that can be eliminated or reduced
- Use developmentally-appropriate pharmacological and biobehavioral approaches for painful procedures
- Ensure adequate analgesia if pain identified or likely
- Incorporate multi-modal analgesia
- Balance needs for analgesia and sedation
- Address sources of non-pain related distress

READ:

Appropriate sedation and analgesia can lessen the stress response, hasten recovery, and prevent patient safety issues

[30 MINUTES of 45 minute session is complete]

PRN Program: PICU



READ:

Pair up for this “Pair and share activity.” You have 2 minutes to list pain management strategies that are unique to the PICU environment and pain management strategies that are contra-indicated in the PICU environment.

[Limit discussion to 2 minutes]

Select participants from each group willing to share their answers

Write on flipchart or whiteboard


[Limit discussion to 2 minute]

Place a ✓ by those items that are repeated by the groups.

[35 MINUTES of 45 minute session is complete]

PRN Program: PICU

Managing distress in critically-ill children



1. Address environmental stressors, such as noise, light, temperature.
2. Identify potential sources of discomfort.
3. Evaluate clinical context for presence of pain and treat accordingly.
4. Include caregivers in assessment.
5. Re-evaluate after intervention.

Common pain treatments used in PICUs

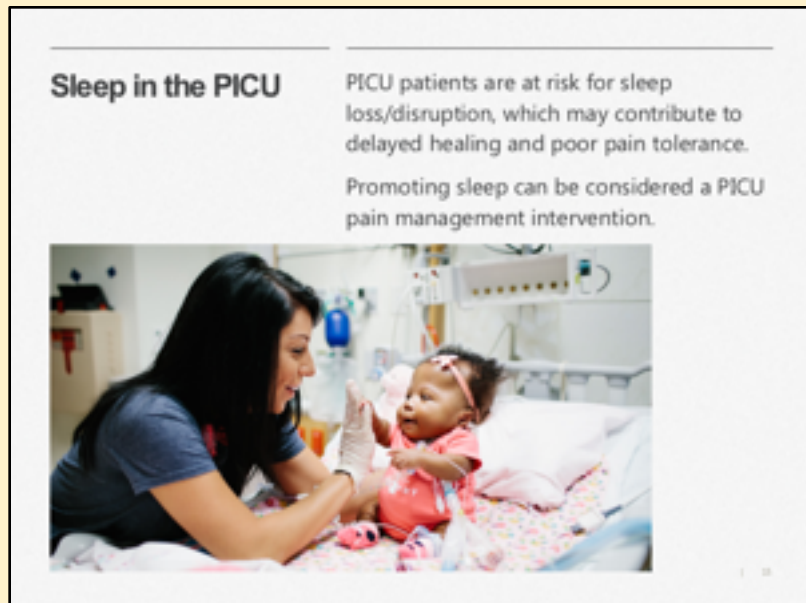
- Continuous morphine or fentanyl
- Acetaminophen
- Opioids; multi-modal analgesia

READ:

Always try to communicate with the patient and learn the source of distress. Even when it isn't clear if the patient is experiencing pain or non-pain related distress, be vigilant for sources of distress.

- There is no consensus regarding best drug or route for managing pain in critically ill children.
- There is also little research on the effectiveness of biobehavioral interventions in PICU. Most research focuses on neonates or adults.

PRN Program: PICU



READ: Noise in PICU research is consistently over 45dB, reaching >75 dB at times, even during the night. Noise at 70-80 dB is equivalent to a vacuum cleaner running 10 feet away or a lawn mower at 100 feet away.

ASK: What disrupts sleep in the PICU?

Select participants willing to share their answers to this question.

Write on flipchart or whiteboard [Limit discussion to 2 minutes]

READ: these Key points (**if not included by participants**):

- Noise
- Light
- Analgesics/sedatives
- Mechanical ventilation
- Nursing care/procedures
- Post-traumatic stress (pain from trauma/burn)

ASK: What can you do to minimize sleep disruptions and promote rest in the PICU?

Select participants willing to share their answers to this question.

Write on flipchart or whiteboard [Limit discussion to 2 minutes]

READ: these Key points (**if not included by participants**):

- Decrease noise < 45 dB
- Cluster care/ minimize night-time interruptions
- Family presence
- Promote day/night rhythm
- Daylight

PRN Program: PICU


Over-sedation

Over-sedation with analgesics and sedatives can lead to negative outcomes, including:

- prolonged ICU stays,
- longer ventilation times,
- drug tolerance and dependence

Recommendations

- Adopt goal-directed analgesia and sedation
- Identify the minimum effective dose
- Incorporate multi-modal pain interventions



READ:

Remember that sedation and neuromuscular blockade are not the same as sleep; but there are also negative effects of over sedation in PICU.

[40 MINUTES of 45 minute session is complete]

PRN Program: PICU



ASK:

What else should be considered to manage Jazmine's pain and distress in the PICU after surgery?

Select participants from each group willing to share their answers

[Limit discussion to 2 minutes]

PRN Program: PICU



How do you balance clustering care to prevent patients' from associating any care with pain?

In other words, is the only touch the patient experiences always associated with the pain of turning, or suctioning, or even the squeeze of the blood pressure cuff?

ASK:

How do you balance clustering care to prevent patients' from associating any care with pain? In other words, is the only touch the patient experiences always associated with the pain of turning, or suctioning, or even the squeeze of the blood pressure cuff?


ONLY DISCUSS IF THERE IS REMAINING CLASS TIME

Select participants willing to share their answers to this question.

[Limit discussion to 2 minutes]

PRN Program: PICU

Key Points



Pain and painful procedures are common in PICU.

Pain and hospitalization in the PICU have serious short and long-term adverse effects for children.

Patient distress may be related to their critical condition, pain, agitation, withdrawal, and/or delirium.

The Hierarchy of Pain assessments and standardized tools can help to differentiate pain from other types of distress.

Management strategies should be multi-modal.

ASK: Are there any questions?

[45 MINUTE SESSION COMPLETE]