Individualized Pain Plans Can Improve Pain Management for Children

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Understanding Pediatric Pain
Pediatric Pain

• OLIGOANALGESIA

  • Who?
    • ALL pediatric patients vs. adults
      • Very young
      • Cognitively impaired
      • Children with chronic illness

  • Why?
    • Fear of medication side effects
    • Fear of drug dependence
    • Misconceptions about pain perception in different age groups
    • Lack of knowledge/evidenced-based practice
Pediatric Pain

Consequences of Poorly Controlled Pain

- Restriction in physical and social activities
- Poor coping skills
- Emotional disturbance
- Heightened pain response
- Sleeping difficulties

WHO Guidelines 2012
Pediatric Pain

WHO guidelines on the pharmacological treatment of persisting pain in children with medical illnesses

• Major Principles
  – Two-step strategy
  – Dosing at regular intervals
  – Using the appropriate route of administration
  – Adapting treatment to the individual child
Stakeholders in Pediatric Pain?

• The Joint Commission
• Hospitals
• Providers & Nurses
• Patients and Families!!!
## Common Causes of Pediatric Pain

<table>
<thead>
<tr>
<th>Acute Pain</th>
<th>Acute on Chronic Pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgery</td>
<td>Sickle Cell Disease</td>
</tr>
<tr>
<td>Trauma</td>
<td>Cancer</td>
</tr>
<tr>
<td>Fractures</td>
<td>Rheumatologic diseases (JIA)</td>
</tr>
<tr>
<td>Burns</td>
<td>Inflammatory Bowel Disease</td>
</tr>
<tr>
<td>Others</td>
<td>HIV</td>
</tr>
<tr>
<td></td>
<td>Others</td>
</tr>
</tbody>
</table>
Sickle Cell Pain

Sickling → Occlusion → Damage → PAIN!
## Treatment Guidelines: VOC

### Pain

<table>
<thead>
<tr>
<th></th>
<th>2002 Guidelines</th>
<th>2014 Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Pain</strong></td>
<td><strong>Pain</strong></td>
</tr>
<tr>
<td></td>
<td>Mild: NSAIDS</td>
<td>Mild: NSAIDS</td>
</tr>
<tr>
<td></td>
<td><strong>Mild to Moderate:</strong> + low dose opioid</td>
<td><strong>Mild to Moderate:</strong> + low dose opioid</td>
</tr>
<tr>
<td></td>
<td><strong>Moderate to Severe:</strong> + higher dose opioid</td>
<td><strong>Moderate to Severe:</strong> + higher dose opioid</td>
</tr>
<tr>
<td></td>
<td><strong>Severe:</strong> IV opioids “around the clock”</td>
<td><strong>Severe:</strong> IV opioids “around the clock” via PCA or scheduled doses</td>
</tr>
</tbody>
</table>

**Opioid selection:**
- PATIENT knowledge of effective agent/dose
- Analgesic history
- Pain type and intensity
- Provider comfort with analgesic modalities

**Timing:** Rapid administration of analgesics (15 to 20 min from assessment)

**HYDRATION**
D5W-1/2NS + 20 mEq KCl/L at rate of 1.5x Maintenance

**HYDRATION**
Only if dehydrated or unable to drink fluids
No more than maintenance rate
Project Conception & Implementation
Our Setting

• Tertiary Pediatric Hospital within a larger academic medical center
• 13 bed pediatric emergency room
• 61 acute care inpatient pediatric beds
At CHoR…

The Problem

- VOC admissions: 400 inpatient days per year
- 57% admission rate in 2014
- LOS 4.7 days

AIM Statement

- To decrease the admission rate for pediatric sickle cell patients seen in our emergency department by 20% within 6 months of implementation of IPPs
Our Strategy

• Develop a multidisciplinary team

• Goal:

  Safe & Rapid Pain Relief
  Decrease Hospitalizations
  Increase Patient Satisfaction and QOL

• Target the highest ED and inpatient utilizers

• Establish audience for Individualized Pain Plans
Individualized Pain Plans

- Identified 3 opportunities for intervention
  - Outpatient
  - Emergency Department (ED)
  - Inpatient

- Reviewed ED and inpatient encounters in previous 1 year

- Determined optimal analgesic plan based on previous successful and failed therapies for each patient
  - Verified medication doses and pharmacokinetics
Individualized Pain Plan Example

Outpatient Management Plan:

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose</th>
<th>Route</th>
<th>Frequency</th>
<th>Last Updated</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ibuprofen</td>
<td>10mg/kg</td>
<td>PO</td>
<td>Every 6 Hours</td>
<td></td>
<td>Minor Pain</td>
</tr>
<tr>
<td>Tramadol</td>
<td>50mg</td>
<td>PO</td>
<td>Every 6 Hours</td>
<td></td>
<td>Moderate Pain</td>
</tr>
<tr>
<td>Oxycodone 5 mg tablets</td>
<td>5 mg</td>
<td>PO</td>
<td>PRN every 4 hours</td>
<td></td>
<td>Severe Pain</td>
</tr>
<tr>
<td>Morphine</td>
<td>2mg</td>
<td>IV</td>
<td>Once</td>
<td></td>
<td>Initial Pain</td>
</tr>
<tr>
<td>Morphine</td>
<td>1mg</td>
<td>IV</td>
<td>Every 30 Min</td>
<td></td>
<td>Cont’d Pain</td>
</tr>
<tr>
<td>Normal Saline</td>
<td>10 to 20 mL/kg</td>
<td>IV</td>
<td>Once</td>
<td></td>
<td>ONLY if dehydrated</td>
</tr>
</tbody>
</table>

ED Management Plan:

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose</th>
<th>Route</th>
<th>Frequency</th>
<th>Last Updated</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ketorolac</td>
<td>0.5mg/kg</td>
<td>IV</td>
<td>Every 6 Hours</td>
<td></td>
<td>Initial Pain</td>
</tr>
<tr>
<td>Morphine</td>
<td>2mg</td>
<td>IV</td>
<td>Once</td>
<td></td>
<td>Initial Pain</td>
</tr>
<tr>
<td>Morphine</td>
<td>1mg</td>
<td>IV</td>
<td>Every 30 Min</td>
<td></td>
<td>Cont’d Pain</td>
</tr>
<tr>
<td>Normal Saline</td>
<td>10 to 20 mL/kg</td>
<td>IV</td>
<td>Once</td>
<td></td>
<td>ONLY if dehydrated</td>
</tr>
</tbody>
</table>

Inpatient Management Plan:

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose</th>
<th>Route</th>
<th>Frequency</th>
<th>Last Updated</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ketorolac</td>
<td>0.5mg/kg</td>
<td>IV</td>
<td>Every 6 Hours</td>
<td></td>
<td>Max 30mg</td>
</tr>
<tr>
<td>Morphine PCA</td>
<td>Continuous Rate 1.5 mg/hr, PCA dose 0.3 mg q10 min</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IV Fluids</td>
<td>If Dehydrated or Poor PO Intake</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incentive Spirometry</td>
<td>10 breaths inhaled</td>
<td>Every hour</td>
<td></td>
<td>While awake</td>
<td></td>
</tr>
<tr>
<td>Physical Therapy</td>
<td>Consult</td>
<td></td>
<td>Once</td>
<td></td>
<td>On Admission</td>
</tr>
</tbody>
</table>

Additional Comments:
Implementation

Unique folder in the EHR for accessibility

Education
  Lectures
  Just in time
  Email reminders

EHR roll-out

Continuous revision
Outcomes, Barriers, & Next Steps
## Outcomes: Process Measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain Plan Available</td>
<td>79%</td>
</tr>
<tr>
<td>Pain Plan Followed</td>
<td>86%</td>
</tr>
<tr>
<td>Time to 1\textsuperscript{st} Opiate</td>
<td>34 minutes</td>
</tr>
<tr>
<td>Time from 1\textsuperscript{st} to 2\textsuperscript{nd} Opiate</td>
<td>89 minutes</td>
</tr>
<tr>
<td>NSAID Use</td>
<td>94%</td>
</tr>
</tbody>
</table>
Outcomes: Outcome Measures

4 Month Rolling Admission Rate

- Formal Provider Education
- IPP implementation
- Desired Direction of Change
- IPPs expanded to most patients

Admission Rate

30% 40% 50% 60% 70% 80%

Month


Goal Admission Rate

Outcomes: Secondary Outcomes

Relationship Between Timing of 2nd Opiate Dose and Admission Rate

Admission Rate

- 90%
- 80%
- 70%
- 60%
- 50%
- 40%
- 30%
- 20%

Time to Second Opiate Dose

- <50 min
- <60 min
- <75 min
- <90 min
- >90 min

## Outcomes: Cost Savings

<table>
<thead>
<tr>
<th></th>
<th>Decrease in Patient Charges</th>
<th>Hospital Cost Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per Inpatient Admission</td>
<td>$1997</td>
<td>$676</td>
</tr>
<tr>
<td>Annualized Inpatient Admissions</td>
<td>$251,562</td>
<td>$85,156</td>
</tr>
<tr>
<td>Annual Prevented Admissions</td>
<td>$711,003</td>
<td>$240,020</td>
</tr>
<tr>
<td>(49)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual Total</td>
<td>$962,565</td>
<td>$325,176</td>
</tr>
</tbody>
</table>
Outcomes: Balancing Measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>Pre-Implementation</th>
<th>Post-Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of Stay*</td>
<td>4.7 days</td>
<td>3.7 days</td>
</tr>
<tr>
<td>72-Hour Return to ED Rate*</td>
<td>20%</td>
<td>24%</td>
</tr>
<tr>
<td>30-Day Readmission Rate*</td>
<td>32%</td>
<td>30%</td>
</tr>
</tbody>
</table>

*p-values 0.29, 0.68, and 0.49 respectively*
Barriers

• Initial Effort To Create Pain Plans
• Identification of new high utilizers
• Continuous revision process
• EHR challenges
Translating it to your hospital

- Understanding your data
- Creation of a multi-disciplinary team
- Create a User-Friendly, EHR-friendly tool
- Identify who will create and update plans
- Real-time tracking
Next Steps

- Comprehensive EHR-integrated pathway
- Nasal Fentanyl to minimize time to second opiate
- Address gaps in care (admission transfer)
- Finding more prominent place in the EHR
- Outpatient tool to decrease ER visits
Thank You

India Sisler MD
Jennifer Newlin PA
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Robin Foster MD
Ann & Robert H. Lurie Children’s Hospital of Chicago

• Free-standing children’s hospital

• Serves children from 49 states and 34 countries

• Ranked in the top 10 children’s hospitals nationally (U.S. News & World Report)
  – Ranked in all 10 specialties

• Fourth Magnet re-designation received in 2015
Facility Facts

- 288 private rooms with plans to expand
- 1.25 million square feet
- 400+ feet tall
- 23 stories
- Rooftop heliport
- Amenities for families
- Healing environment
- LEED Gold certified
Learning Objectives

Learning Objective 1:
• Discuss a multidisciplinary approach to partnering with patients and families in the pain management process.

Learning Objective 2:
• Explain how the use of patient/family engagement and technology drive improved pain management satisfaction.
Project Drivers

• Engage patients/families and staff to improve partnership between patients/families and the care team

• Improve outcomes related to pain management as measured through patient experience survey question

• Shift culture around pain management to begin the conversation upon admission
Project Background

• Built out Pain Pathway on two inpatient units
  – Hematology/Oncology/Stem Cell Transplant
  – Pediatric surgery/Transplant
• Solicited input from front line staff
• Involvement from multi-disciplinary teams
• Vetting process ~9-12 months
• Build/implementation ~4-6 months
• Went live end of August 2014
• Core project team met on a bi-monthly basis to review utilization data, identify issues, and discuss staff feedback
Original Two-Part Process

Part I: Admission Screening Tool (AST) and Education Pathway

- Questions added to AST

- *Education pathway used to trigger video 30 minutes later*
  - Caregiver asked to answer ‘partnering on pain’ question after video
  - Response documented in Epic
  - Completion rate low

- Video added to mandatory education upon admission
Original Two-Part Process

Part II: Interactive Patient Care – Pain Pathway

• Need for pain medication identified

• PRN Pain med pulled from Pyxis

• 45 minutes later, pain reassessment prompt appears on-screen (Remains on screen for 15 minutes)
  – Response documented in Epic
  – This is *separate* from Nurse’s reassessment in Epic
Pain Management Process

1. Patient is admitted
2. Patient views pain management video
3. RN assesses patient's pain
4. RN administers Rx if needed
5. RN reassesses patient's pain
6. Automated EHR documentation
7. After set period of time, patient selects pain rating
8. HIT systems interface

How is your pain?
Enhance Partnership

- Enhance partnership with patients/families in pain management process
  - Engage families through daily leadership rounding
  - Nurse’s partnership with families
  - Work with multi-disciplinary team members, like Child Life, to engage with patients/families consistently around pain management
Nursing Feedback regarding Incorporation into Daily Workflow

• “The Pain Pathway is a conversation between the nurse and the patient – it gets the family thinking that no pain may not be an option but there are various ways other than medications in which we can help.”

• “Pain is always a topic whether I am in charge on the floor. I like to address pain during the AST.”

• “I communicate with the parents and/or the patient to notify them of what I’m doing ‘behind the scenes.’”
Data and Outcomes
Sustain Improvement

• Sustain improved patient pain management scores
  
  – Documented patient experience scores over a 3-year period (pre-implementation and post-implementation)

  – Constant communication with staff and leaders

  – Engage families through daily leadership rounding
Improved Outcomes
Building Multidisciplinary Partnerships

• Build additional partnerships with multidisciplinary team members, including providers

  – Cultivate partnerships with providers who will champion pain management using non-traditional approaches/techniques

  – Engage Child Life team early on (upon admission if possible)

  – Raise general awareness around resources for pain management across medical team
Keeping it Patient-Specific

- Utilize patient-specific qualitative data to populate Pain Plan on White Board in patient room

- Utilize Child Life as integral part of drafting pain plans
Patient-Family Centered

• Involving multi-disciplinary team members to address pain management
  - Pain team
  - Art Therapy
  - Music Therapy
  - Pet Therapy
  - Child Life

• Keeping patient/family at the center of conversation, and involved in making decisions
Expanding the Pain Pathway

• Expand use of Pain Pathway to remaining inpatient units

  – Acute care units
    • Neurology, Neurosurgery, Endocrine, Epilepsy, Orthopedic Unit
    • Pulmonary, Infectious Diseases, General Medicine Unit

  – Critical Care units –
    • Cardiac Care Unit
    • Pediatric ICU
Expansion

- Similar process to original implementation
  - Testing of interfaces
  - Staff education
  - Go-live April 19, 2016

7 Easy Steps for the Pain Pathway

1. Two PAIN Questions were added to the AST, both must be answered.
   1. At Lurie Children’s we want to do all that we can to provide comfort and relieve pain for our patients. Have you discussed pain management with the patient or caregiver?
      a. Yes
      b. Caregiver not available
   2. What things have helped with your or your child’s pain management in the past?
      a. Free text to document answers
      b. Put answers on Whiteboard/make part of Team Plan
      c. Answer will pull into EPIC (in the AST)

2. A short video will automatically be added to iWN that all families are required to watch after the Welcome Video.

3. Explain to Families
   Example of how to introduce fan.
   “At Lurie Children’s we want to do all that we can to provide comfort and relieve pain for One way we do this is by using the fan on your TV. We have a very short video to watch about pain management. If you have pain, 45 minutes after receiving there will be a message on the screen rating your or your child’s pain. The next time you rate your pain after receiving medication.”

4. Patient reports pain:
   • PIN pain med pulled from Pyxis
     - (Not scheduled pain meds or PCA’s)
   • Patient/Family prompted on screen 45 minutes later to rate pain with FACES
   • The pain assessment question will remain on the screen for 35 minutes.

5. Patient/Family response documented in Epic Flow Sheet
   - Separate from nurse’s documentation
   - Nurses must continue to document patient response to pain medication within 60 minutes of medication administration

6. If the TV is off during a pain medication administration, GWN starts the timer to prompt the patient for the pain assessment pathway 45 minutes later.
   - If the TV is turned off, the prompt will not be viewed.
   - If the TV is turned on within an hour of medication administration, the prompt should be visible (i.e., 45 minutes for prompt to appear, and prompt remains on the screen for 15 minutes).
   - After 60 minutes the prompt cannot be viewed on the screen.

7. If 2 separate instances of a pain medication from the Pyxis is administered to a patient, the patient will only receive one pain assessment prompt.
   - Only one instance of the pain pathway is allowed at one time.
   - So, if two pain meds were dispensed around the same time, you will only receive one prompt (45 minutes after the first pain med was dispensed).
Lessons Learned

• Resources, resources, resources!
• Competing priorities at the time of go-live
• Need for adequate staffing
• Protected time for education is essential
• Pain Partnership video included as part of Mandatory education
• Ongoing reinforcement of education with all staff
Challenges and Next Steps

• With two pilot units, difficult to have full staff collaboration
  – Floats/Resource Team are not always aware of/engaged with the pilot

• Involve additional multi-disciplinary teams in partnering with patients/families, as well as unit staff
  – Maximizing resources to improve the patient’s experience across care continuum

• Incorporate new perspectives into how teams partner with patients/families

• Sustain improved outcomes
Acknowledgements

…it takes a village!

- Core Team: Lisa Tieman, David Kruger, Lonna Leak
- Administrative leadership
- Nursing: leadership, champions and frontline staff
- Education
- IM
- Pharmacy
- Nursing Informatics
- GetWellNetwork team
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