# **Clinical Pathways**

# Sickle Cell: Management of Acute Pain Crisis

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# What is a Clinical Pathway?



An evidence-based guideline that decreases unnecessary variation and helps promote safe, effective, and consistent patient care.

# Background/Why is Pathway Necessary?



- Sickle Cell Disease (SCD) is the most common genetic disease in the U.S. It is caused by a mutation in the hemoglobin beta chain in which glutamic acid is substituted with valine. The CDC (2019) estimates that over 100,000 Americans are affected by SCD. The disease can affect multiple organ systems and decrease life expectancy.
- Lack of standardized national guidelines for acute pain management in patients with Sickle Cell Disease
- No standardized approach to inpatient Sickle Cell Acute Pain Management at Connecticut Children's which leads to inconsistency in care
- High readmission rates
- Prolonged IV opioid management
- Opioid Crisis
- Opioid induced hypersensitivity
- National goal to reduce the use of long-acting opioids for patients with non-cancer pain (increased side effects and risks; decreased efficacy)

# **Objectives of Pathway**



- Standardize sickle cell acute pain treatment
- Decrease LOS and readmission rates
- Decrease the time patients receive intravenous opioids
- Improve timely consultation of the Pain Team (if needed)
- Improve timely administration of multi-modal treatments
- Encourage early mobilization
- Increase us of the Acute Pain Admission comprehensive order set

This is the Sickle Cell with Acute Pain Clinical Pathway.

We will be reviewing each component in the following slides.

#### **CLINICAL PATHWAY:**

### Sickle Cell: Management of Acute Pain Crisis

THIS PATHWAY SERVES AS A GUIDE AND DOES NOT REPLACE CLINICAL HIDGMENT

Inclusion Criteria: 27 years old with Sickle Cell Disease during an acute painful crisis that failed outpatient home management Exclusion Criteria: Patients with Sickle Cell Disease that are <7 years old, have neurological symptoms, or concern for acute chest. If febrile, please refer to Sickle Cell Disease with Fewer Pathway.

#### Emergency Room Initial Management: Goal of care: initial assessment and first dose of opioid given within 1 hour of presentation Level of Care: ESI 2 Obtain thorough history and comprehensive physical examination History should include Obtain IV access (see Venous Access - Emergency Department Care Pathway). If unable to obtain IV access, notify attending to consider alternate opioid route (intranasal, PO, subQ) Labs and imaging: obtain CBC w/diff and reticulocyte count: if chest pain, consider CXR Review most recent creatinine and do not administer Ketorolac if above normal range Analgesics used for Review Pain Plan in "Letters" section of Care Navigator Allergies Emergency Room Pain Management: <sup>1</sup>Physical Exam should Ketorolac IV 0.5 mg/kg/dose (max 15 mg/dose) x1 dose AND/OR Acetaminophen PO/IV 15 mg/kg/dose (max 1 g/dose) x1 dose If patient failed PO opioid at home; give IV opioid per Pain Plan If patient does not have Pain Plan: morphine IV 0.1 mg/kg/dose (max 5 mg/dose) or morphine PO 0.3 mg/kg/dose (max 15 mg/dose)at Hydration status attending's discretion If unable to obtain IV access, consider intranasal fentanyl 1-2 moz/kz/dose Patential infection IVFs at the discretion of the provider and/or patient with signs of dehydration Penis (priapism Reassess 30 minutes after opioid dose: o If insufficient improvement in 30 minutes, give 2<sup>nd</sup> dose of opioid PO/IV per Pain Plan. If no Pain Plan, repeat IV morphine 0.05 mg/ Neurological Other potential kg/dose (max 2.5 mg/dose) OR PO morphine 0.15 mg/kg/dose (max 7.5 mg/dose) at attending's discretion etiology of pair If insufficient improvement in 30 minutes after 2<sup>nd</sup> dose of opioid, give 3<sup>rd</sup> dose PO/IV per Pain Plan, If no Pain Plan, IV morphine other than Sickle 0.05 mg/kg/dose (max 2.5 mg/dose) OR PO morphine 0.15 mg/kg/dose (max 7.5 mg/dose) at attending's discretion Cell related pain See "Adjuvant Medications" below for GI, pruntus, and nausea management Call on-call Heme/Onc attending to notify of discharge or admission ED Discharge criteria: Pain relief after 1-3 doses of IV opioids and no other complications of sickle cell disease Admission criteria: Pain insufficiently controlled after 3 opioid doses Admit to Inpatient Services (Heme/Onc) Consider in thating inpatient pain plan below prior to transfer to avoid delays in analysis administration Non-Opioid Adjuvant Pain Offer Lidoderm patches for regional pain in patients >6 Encourage Order opioids ASAP upon admission. functional plan years of age (12 hours on, 12 hours off) q24 hours [may teview Pain Plan in "Letters" section of Care mg/kg/dose (max 1. (Appendix A) take several days to reach full effect] mg/dose) q6hrs up Notify Sickle Cell to 20 doses Social Worker home regimen includes PO long-acting opioid Further Considerations: Max: no more If patient previous insufficient pain control within the first 24 hours, may consider eg, Methadone, oxyContin, or MS contin): than 20 doses used TENS, dding the following to the opioid + non-opioid plan: Continue home long-acting regimen per in 30 day Ketamine 2 mog/kg/min, escalating by 2 mog/kg/min every encourage use 8-12 hours as needed (max 6 mcg/kg/min) AND add bolus-only PCA (no continuous). Consult: For Connecticut Children's Employees, 20<sup>th</sup> dose: Massage therapy patient has isolated limb pain, may consider regional please refer to Connecticut Children's PCA change to PO obtain consent on Ibuprofen: 10 admission. HOLD PO immediate release opioid mg/kg/dose Integrative Medicine Other Considerations: (max 600 mg/ Child Life dose) q6hr ATC Case Management Famotidine PO while on NSAIDS: 0.5-1 mg/kg/day divided Schedule their immediate release opioid ATC as per Pain Plan daily or BID (max 40 mg daily) Considerations: AND add bolus only PCA (no continuous). Start bowel regimen while on opioids with goal of one stoo PO: 15 mg/kg/dose Pain Team consult i Connecticut Children's PCA Policy. (max 1000 mg/dose pain not improved Do not start a long-acting opioid Miralax 8.5 g-17 g daily or 4 g/day) q6hr ATC after 24 hours, or +/- Senna: 1-2 tabs BID (Colace not recommended) for 2-3 days with hx of chronic If apiaid naive, do not use continuous PCA f on long-acting opioids or PCA with continuous opioid infusion Psych consult if infusion or ATC PO opioids onsider the following: existing relationship If ≤7 yrs old: consider intermittent IV Low dose naloxone infusion: 0.25 mcg/kg/hr with psychology or opioids PRN or authorized agent Nalbuphine IV PRN: presents with controlled analgesia (AACA) <50 kg: 0.1 mg/kg/dose (max 2.5 mg/dose) q6hr PRN emotional/ If >7 yrs old: consider PCA ≥ 50 kg: 2.5-5 mg/dose (max 5 mg/dose) q6hr PRN behavioral issues (i

Discharge Criteria and Instructions

pruritus

Ondansetron PO/IV: 0.15 mg/kg/dose g8hr PRN (max 8 mg/

Ondansetron PO/IV: 0.15 mg/kg/dose qShr PRN (max 8 mg/

Diphenhydramine is contraindicated for opioid-induced

Pain well-controlled on PO Pain Plan, return to baseline functionality

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seen by Hem/Onc

psych, please note i

consult comments)

inpatient >24 hrs

PT +/- TENS if

with little/no

improvement

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If not tolerating PO: may utilize PCA +

ntinued monitoring per primary team with

oal of transitioning to PO pain regimen within ays if clinically appropriate

continuous infusion. Connecticut

Children's PCA Policy.

- This pathway is for patients >7
   years, as most sickle cell patients
   that are admitted are over the age
   of 7, as well as the PCA cut off for
   nurse controlled vs independent
   control is 7 years.
- Pain Plan each patient will have a pain plan from Hem/Onc in the "Chart Review" section, under "Letters".
- Reviewing the H&P is critical, not all pain is SCD pain. For example, you would not want to miss an appendicitis.

### CLINICAL PATHWAY:

# Sickle Cell: Management of Acute Pain Crisis

THIS PATHWAY
SERVES AS A GUID
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Exclusion Criteria: Patients with Sickle Cell Disease that are <7 years old, have neurological symptoms, or concern for acute chest. If febrile,

please refer to Sickle Cell Disease with Fever Pathway.

#### **Emergency Room Initial Management:**

Goal of care: initial assessment and first dose of opioid given within 1 hour of presentation.

Level of Care: ESI 2

- Obtain thorough history and comprehensive physical examination<sup>1</sup>
- Obtain IV access (see Venous Access Emergency Department Care Pathway). If unable to obtain IV access, notify attending to consider alternate opioid route (intranasal, PO, subQ)
- Labs and imaging: obtain CBC w/diff and reticulocyte count; if chest pain, consider CXR
- Review most recent creatinine and do not administer Ketorolac if above normal range
- Review Pain Plan in "Letters" section of Care Navigator

#### **Emergency Room Pain Management:**

- Ketorolac IV 0.5 mg/kg/dose (max 15 mg/dose) x1 dose AND/OR Acetaminophen PO/IV 15 mg/kg/dose (max 1 g/dose) x1 dose
- If patient failed PO opioid at home: give IV opioid per Pain Plan
- If patient does not have Pain Plan: morphine IV 0.1 mg/kg/dose (max 5 mg/dose) or morphine PO 0.3 mg/kg/dose (max 15 mg/dose)at attending's discretion
- If unable to obtain IV access, consider intranasal fentanyl 1-2 mcg/kg/dose
- IVFs at the discretion of the provider and/or patient with signs of dehydration
- Reass ess 30 minutes after opioid dose:

<sup>1</sup>History should include:

previous sickle cell

Analgesics used for

Similarity to

this episode

inclu de:

Vitals, O2 sat

Spleen size

Neurological Other potential

Hydration status

Potential infection

Penis (priapism)

etiology of pain

other than Sickle

Cell related pain

Allergies

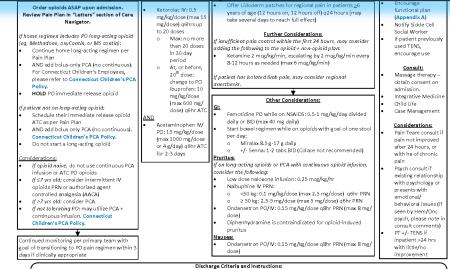
Physical Exam should

Pall or

crisis

- o If insufficient improvement in 30 minutes, give 2<sup>nd</sup> dose of opioid PO/IV per Pain Plan. If no Pain Plan, repeat IV morphine 0.05 mg/kg/dose (max 2.5 mg/dose) *OR* PO morphine 0.15 mg/kg/dose (max 7.5 mg/dose) at attending's discretion
- o If insufficient improvement in 30 minutes after 2<sup>nd</sup> dose of opioid, give 3<sup>rd</sup> dose PO/IV per Pain Plan. If no Pain Plan, IV morphine 0.05 mg/kg/dose (max 2.5 mg/dose) *OR* PO morphine 0.15 mg/kg/dose (max 7.5 mg/dose) at attending's discretion

See "Adjuvant Medications" below for GI, pruritus, and nausea management



Pain well-controlled on PO Pain Plan, return to baseline functionalit

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- If pain is still uncontrolled after 3 doses of opioids in the ED, the patient will be admitted.
- Further care will be then broken down into opioids, no-opioids, adjuvant medications, and adjuvant therapies.

#### **CLINICAL PATHWAY:**

## Sickle Cell: Management of Acute Pain Crisis



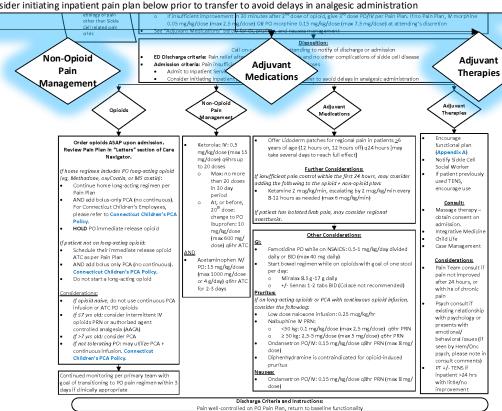
#### Disposition:

Call on-call Heme/Onc attending to notify of discharge or admission

- ED Discharge criteria: Pain relief after 1-3 doses of IV opioids and no other complications of sickle cell disease
- Admission criteria: Pain insufficiently controlled after 3 opioid doses
  - Admit to Inpatient Services (Heme/Onc)

Opioids

Consider initiating inpatient pain plan below prior to transfer to avoid delays in analgesic administration



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- Opioids should be ordered ASAP upon admission.
- Specific opioid management is based on each patient's Pain Plan.

CLINICAL PATHWAY: **Management of Acute Pain Crisis** 

Exclusion Criteria: Patients with Sickle Cell Disease that are <7 years old, have neurological symptoms, or concern for acute chest. If febrile please refer to Sickle Cell Disease with Fever Path Emergency Room Initial Management

Goal of care; initial assessment and first dose of opioid given within 1 hour of presentation

#### Level of Care: ESI 2

Inclusion Criteria: ≥7 years old with Sickle Cell Disease during an acute painful crisis that failed outpatient home managemen

comprehensive physical examination

us Access - Emergency Department Care Pathway). If unable to obtain IV access, notify attending to conside ranasal, PO, subQ)

BC w/diff and reticulocyte count: if chest pain, consider CXR ne and do not administer Ketorolac if above normal range

#### rs" section of Care Navigator

Emergency Room Pain Management:

se (max 15 mg/dose) x1 dose <u>AND/OR</u> Acetaminophen PO/IV 15 mg/kg/dose (max 1 g/dose) x1 dose at home: give IV opioid per Pain Plan

.consider intranasal fentanyl 1-2 mog/kg/dose

e provider and/or patient with signs of dehydration

ment in 30 minutes, give 2<sup>nd</sup> dose of opioid PO/IV per Pain Plan. If no Pain Plan, repeat IV morphine 0.05 mg/ v/dose) OR PO morphine 0.15 mg/kg/dose (max 7.5 mg/dose) at attending's discretion

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#### <u>Disposition</u>

Call on-call Heme/Onc attending to notify of discharge or admission elief after 1-3 doses of IV opioids and no other complications of sickle cell disease

ufficiently controlled after 3 opioid doses rvices (Heme/Onc)

functional plan

(Appendix A)

Social Worker

If patient previ

encourage use

Consult:

Child Life Case Management

Massage therapy -

obtain consent on admission. Integrative Medicin

Considerations:

Pain Team consult

pain not improved

after 24 hours, or

with hx of chronic

existing relationship

with psychology o

behavioral issues (

seen by Hem/Onc psych, please note

consult comments]

PT +/- TENS if inpatient >24 hrs

with little/no

Psych consult if

presents with

emotional/

used TENS.

Notify Sickle Cell

If patient not on long-acting opioid:

Schedule their immediate release opioid ATC as per Pain Plan

**HOLD** PO immediate release opioid

**Opioids** 

Order opioids ASAP upon admission.

Review Pain Plan in "Letters" section of Care

Navigator.

If home regimen includes PO long-acting opioid

Continue home long-acting regimen per

AND add bolus-only PCA (no continuous).

please refer to Connecticut Children's PCA

For Connecticut Children's Employees,

(eg, Methadone, oxyContin, or MS contin):

- AND add bolus only PCA (no continuous). Connecticut Children's PCA Policy.
- Do not start a long-acting opioid

### Considerations:

Pain Plan

Policy.

- If opioid naïve, do not use continuous PCA infusion or ATC PO opioids
- If ≤7 yrs old: consider intermittent IV opioids PRN or AACA
- If >7 yrs old: consider PCA
- If not tolerating PO: may utilize PCA + continuous infusion. Connecticut Children's PCA Policy.

ange to PO

ng/kg/dose 00 mg/dose ay) q6hr AT

#### years of age (12 hours on, 12 hours off) q24 hours [may take several days to reach full effect] Further Considerations:

sufficient pain control within the first 24 hours, may consider

Iffer Lidoderm patches for regional pain in patients <a>E</a>

Ketamine 2 mcg/kg/min, escalating by 2 mcg/kg/min every 8-12 hours as needed (max 6 mcg/kg/min)

#### Other Considerations:

- Famotidine PO while on NSAIDS: 0.5-1 mg/kg/day divided daily or BID (max 40 mg daily) Start bowel regimen while on opioids with goal of one stoo
- Miralax 8.5 e-17 e daily
- +/- Senna: 1-2 tabs BID (Colace not recommended)

#### f on long-acting opioids or PCA with continuous opioid infusion nsider the following:

- Low dose naloxone infusion: 0.25 mcg/kg/h Nalbuphine IV PRN:
- <50 kg: 0.1 mg/kg/dose (max 2.5 mg/dose) q6hr PRN ≥ 50 kg: 2.5-5 mg/dose (max 5 mg/dose) q6hr PRN Ondansetron PO/IV: 0.15 mg/kg/dose g8hr PRN (max 8 mg
- Diphenhydramine is contraindicated for opioid-induced pruritus

### Ondansetron PO/IV: 0.15 mg/kg/dose q8hr PRN (max 8 mg/

Discharge Criteria and Instructions trolled on PO Pain Plan, return to baseline functionali

Y, MD | NATALIE BEZLER, MD



Continued monitoring per primary team with goal of transitioning to PO pain regimen within 3 days if clinically appropriate

 Non-opioid pain management can include ketorolac and acetaminophen. CLINICAL PATHWAY:

### Sickle Cell: Management of Acute Pain Crisis

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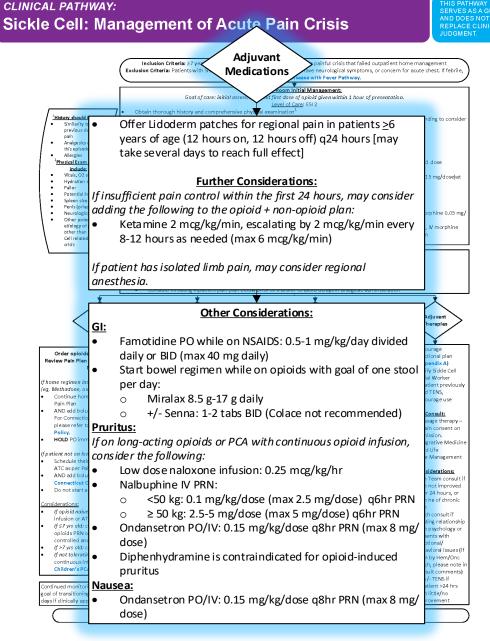
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- Adjuvant medications can help with pain, but also can help with side effects of the medications.
- Considerations should include scheduled lidoderm patches or ketamine for additional pain support.
- Gl considerations should include a bowel regimen, ranitidine or famotidine, and/or ondansetron.
- Treatment of pruritus, if present, should also be considered.



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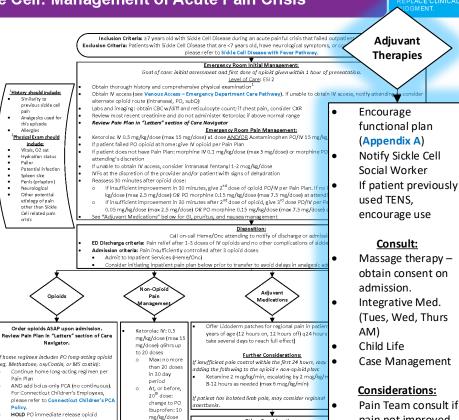


- All patients should be encouraged to follow a functional plan.
- Consults to be considered include massage therapy, integrative medicine, child life, and case management.
- If the patient has a history of chronic pain, or the patient's pain is not improving after 24 hours, the Pain Team can be consulted.

CLINICAL PATHWAY:

### Sickle Cell: Management of Acute Pain Crisis

AND DOES NOT REPLACE CLINICA



(max 600 mg/ dose) q6hr ATG

PO: 15 mg/kg/dose

(max 1000 mg/dose

or 4 g/day) q6hr ATG

# Other Considerations:

- Famotidine PO while on NSAIDS: 0.5-1 mg/kg/da daily or BID (max 40 mg daily) Start bowel regimen while on opioids with goal
- Miralax 8.5 e-17 e daily +/- Senna: 1-2 tabs BID (Colace not reco
- on long-acting opioids or PCA with continuous opio nsider the following:
- Low dose naloxone infusion: 0.25 mcg/kg/hr Nalbuphine IV PRN: <50 kg: 0.1 mg/kg/dose (max 2.5 mg/dose
- ≥ 50 kg: 2.5-5 mg/dose (max 5 mg/dose) q6 Ondansetron PO/IV: 0.15 mg/kg/dose g8hr PRN Diphenhydramine is contraindicated for opioid-
- pruritus Ondansetron PO/IV: 0.15 mg/kg/dose g8hr PRN

Discharge Criteria and Instructions

Pain well-controlled on PO Pain Plan, return to baseline functionality

Encourage functional plan (Appendix A)

Adjuvant

Therapies

Notify Sickle Cell Social Worker If patient previously used TENS, encourage use

#### Consult:

Massage therapy – obtain consent on admission.

- Integrative Med. (Tues. Wed. Thurs AM)
- Child Life
- Case Management

### **Considerations:**

pain not improved after 24 hours, or with hx of chronic pain Psychology consult if existing relationship with psychology (in Pain Plan), or presents with emotional/ behavioral issues PT +/- TENS if inpatient >24 hrs

with little/no

improvement

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Schedule their immediate release opioid ATC as per Pain Plan

AND add bolus only PCA (no continuous).

If opioid naive, do not use continuous PCA

If ≤7 yrs old: consider intermittent IV

If not tolerating PO: may utilize PCA +

ntinued monitoring per primary team with

al of transitioning to PO pain regimen withi s if clinically appropriate

opioids PRN or authorized agent

continuous infusion, Connecticu Children's PCA Policy

Connecticut Children's PCA Policy

Do not start a long-acting opioid

infusion or ATC PO opioids

controlled analgesia (AACA)

If >7 yrs old: consider PCA



Appendix A is the functional plan that should be encouraged early on.

**CLINICAL PATHWAY:** 

**Sickle Cell: Management of Acute Pain Crisis** 

Appendix A: Functional Plan for Patients with Sickle Cell

### Appendix A: Functional Plan for Patients with Sickle Cell

- 1.) Regulate sleep/wake cycle Lights on/blinds open 0900, lights off/electronics off 2200.
- 2.) Changing for bed into "night clothes" and getting dressed in clothes in AM (if able).
- 3.) Daily or every other day shower.
- 4.) Complete activities of daily living (ADL's) independently as tolerated.
- 5.) Out of bed (OOB) for meals/during meal times if not eating. As admission progresses, OOB more than exclusively for meals (after day one or two) with a rest break in bed in the morning and in the afternoon for up to 1 hour only.
- 6.) Participation in floor activities. Out of bed, preferably in play room rather than bed side, for special Child Life events, Hole in the Wall Gang Camp activities and art/play projects.
- 7.) For frequent flyers: school work.
- 8.) Walks around med/surg unit per PT and/or Primary Team

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 Discharge criteria includes pain being wellcontrolled on a PO pain plan and the patient has returned to their baseline functionality.

#### CLINICAL PATHWAY:

### Sickle Cell: Management of Acute Pain Crisis

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If unable to obtain IV access, notify attending to conside alternate opioid route (intranasal, PO, subQ) Labs and imaging: obtain CBC w/diff and reticulocyte count: if chest pain, consider CXR Review most recent creatinine and do not administer Ketorolac if above normal range Analgesics used for Review Pain Plan in "Letters" section of Care Navigator Allergies Emergency Room Pain Management: Ketorolac IV 0.5 mg/kg/dose (max 15 mg/dose) x1 dose AND/OR Acetaminophen PO/IV 15 mg/kg/dose (max 1 g/dose) x1 dose <sup>1</sup>Physical Exam should If patient failed PO opioid at home; give IV opioid per Pain Plan If patient does not have Pain Plan: morphine IV 0.1 mg/kg/dose (max 5 mg/dose) or morphine PO 0.3 mg/kg/dose (max 15 mg/dose) at Hydration status attending's discretion If unable to obtain IV access, consider intranasal fentanyl 1-2 mog/kg/dose Patential infection IVFs at the discretion of the provider and/or patient with signs of dehydration Penis (priapism Reassess 30 minutes after opioid dose: o If insufficient improvement in 30 minutes, give 2<sup>nd</sup> dose of opioid PO/IV per Pain Plan. If no Pain Plan, repeat IV morphine 0.05 mg/ Neurological Other potential kg/dose (max 2.5 mg/dose) OR PO morphine 0.15 mg/kg/dose (max 7.5 mg/dose) at attending's discretion etiology of pair If insufficient improvement in 30 minutes after 2<sup>nd</sup> dose of opioid, give 3<sup>rd</sup> dose PO/IV per Pain Plan, If no Pain Plan, IV morphine other than Sickle 0.05 mg/kg/dose (max 2.5 mg/dose) OR PO morphine 0.15 mg/kg/dose (max 7.5 mg/dose) at attending's discretion Cell related pain See "Adjuvant Medications" below for GI, pruntus, and nausea management Call on-call Heme/Onc attending to notify of discharge or admission ED Discharge criteria: Pain relief after 1-3 doses of IV opioids and no other complications of sickle cell disease Admission criteria: Pain insufficiently controlled after 3 opioid doses Admit to Inpatient Services (Heme/Onc) Consider initiating inpatient pain plan below prior to transfer to avoid delays in analysis administration Non-Opioi Pain Offer Lidoderm patches for regional pain in patients <u>></u>6 Order opioids ASAP upon admission. functional plan years of age (12 hours on, 12 hours off) q24 hours [may teview Pain Plan in "Letters" section of Care mg/kg/dose (max 1. (Appendix A) take several days to reach full effect] Navigator mg/dose) q6hrs up Notify Sickle Cell to 20 doses Social Worker Further Considerations: home reaimen includes PO Iona-actina opioid Max: no mor If patient previous insufficient pain control within the first 24 hours, may consider eg, Methadone, oxyContin, or MS contin): than 20 doses used TENS, dding the following to the opioid + non-opioid plan: Continue home long-acting regimen per in 30 day Ketamine 2 mog/kg/min, escalating by 2 mog/kg/min every encourage use 8-12 hours as needed (max 6 mcg/kg/min) AND add bolus-only PCA (no continuous). Consult: For Connecticut Children's Employees, 20<sup>th</sup> dose: patient has isolated limb pain, may consider regiona. Massage therapy please refer to Connecticut Children's PCA change to PO obtain consent on Ibuprofen: 10 admission. HOLD PO immediate release opioid mg/kg/dose Integrative Medicin Other Considerations: (max 600 mg/ Child Life dose) q6hr AT Case Management Famotidine PO while on NSAIDS: 0.5-1 mg/kg/day divided Schedule their immediate release opioid ATC as per Pain Plan daily or BID (max 40 mg daily) Considerations: AND add bolus only PCA (no continuous). Start bowel regimen while on opioids with goal of one stoo PO: 15 mg/kg/dose Pain Team consult i Connecticut Children's PCA Policy. (max 1000 mg/dose pain not improved Do not start a long-acting opioid Miralax 8.5 e-17 e daily or 4 g/day) q6hr ATC after 24 hours, or +/- Senna: 1-2 tabs BID (Colace not recommended) for 2-3 days with hx of chronic If opioid naive, do not use continuous PCA f on long-acting opioids or PCA with continuous opioid infusion Psych consult if infusion or ATC PO opioids onsider the following: existing relationship If ≤7 yrs old: consider intermittent IV Low dose naloxone infusion: 0.25 mcg/kg/hr with psychology or opioids PRN or authorized agent Nalbuphine IV PRN: presents with controlled analgesia (AACA) <50 kg: 0.1 mg/kg/dose (max 2.5 mg/dose) q6hr PRN emotional/ If >7 yrs old: consider PCA ≥ 50 kg: 2.5-5 mg/dose (max 5 mg/dose) q6hr PRN behavioral issues (i If not tolerating PO: may utilize PCA + Ondansetron PO/IV: 0.15 mg/kg/dose g8hr PRN (max 8 mg/ seen by Hem/Onc continuous infusion. Connecticul psych, please note Children's PCA Policy Diphenhydramine is contraindicated for opioid-induced consult comments] pruritus PT +/- TENS if ntinued monitoring per primary team with inpatient >24 hrs Ondansetron PO/IV: 0.15 mg/kg/dose q8hr PRN (max 8 mg/ with little/no al of transitioning to PO pain regimen within ays if clinically appropriate Discharge Criteria and Instructions

### **Discharge Criteria and Instructions:**

Pain well-controlled on PO Pain Plan, return to baseline functionality

# Review of Key Points



- Timely assessment and initiation of pain plan is essential
- An interdisciplinary, multimodal approach to acute Sickle Cell Disease pain management is ideal
- Our Pain Team is available to help when needed

# **Quality Metrics**



- Percentage of eligible patients who utilize the pathway order set
- Average time from ED arrival to first opioid administered (oral or IV) in ED (minutes)
- Percentage of ED patients who are admitted
- Average time on IV opioids after arrival to medical-surgical floor (hours)
- Average time from arrival to ED to PCA initiation (minutes)
- Average time from arrival to medical-surgical floor to PCA initiation (minutes)
- Percentage of admitted patients with pain team service consult ≤ 24 hours from admission
- Percentage of admitted patients who have orders for any of the following adjuvant therapies: PT, Psychology, Integrative Medicine, or Massage Therapy
- ALOS (days, IP/OBS) and ALOS (minutes, ED)
- Readmissions within 7 days
- Readmissions within 30 days

# Pathway Contacts



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# Additional Resources



- Pain List Serv feedback from other Children's Hospitals
- Sickle Cell FAB
- Dr Zempsky's participation in national Sickle Cell Meetings to address pain management
- Hospital-wide stakeholder meeting
- Sicklecelldisease.org
- New England Pediatric SC Consortium

# **Thank You!**



# **About Connecticut Children's Clinical Pathways Program**

The Clinical Pathways Program at Connecticut Children's aims to improve the quality of care our patients receive, across both ambulatory and acute care settings. We have implemented a standardized process for clinical pathway development and maintenance to ensure meaningful improvements to patient care as well as systematic continual improvement. Development of a clinical pathway includes a multidisciplinary team, which may include doctors, advanced practitioners, nurses, pharmacists, other specialists, and even patients/families. Each clinical pathway has a flow algorithm, an educational module for end-user education, associated order set(s) in the electronic medical record, and quality metrics that are evaluated regularly to measure the pathway's effectiveness. Additionally, clinical pathways are reviewed annually and updated to ensure alignment with the most up to date evidence. These pathways serve as a guide for providers and do not replace clinical judgment.