Clinical Guideline
Sickle Cell Vaso-occlusive Crisis (VOC)

Pediatric Emergency Medicine & Hematology-Oncology

Inclusion criteria: Age 2-18 years, Diagnosis of Sickle Cell disease, Presenting with VOC

Exclusion Criteria: Hypoxia, Fever, Splenomegaly, Uncharacteristic pain

This guideline should not replace clinical judgment.

If <10kg or refuses fentanyl

Place PIV and check chart for individualized pain plan (IPP)
To find IPP in Cerner, extend date range, go to: Clinical notes > Other documentation > IPP

Child with Simple Vaso-occlusive Episode

For patients >10kg, give intranasal (IN) Fentanyl, 2 doses 5 minutes apart
Consider trial of only oral oxycodone FIRST, if no prior opioids within last 12 hours
If pain is severe and anticipate need for IV therapy, proceed with PIV placement during or immediately after 2 dose IN Fentanyl administration

Pain improved?

Give oral opioid and call fellow to discuss discharge planning
(Labs not absolutely necessary if IV opioids not needed)

As soon as possible:
• Complete full evaluation
• Obtain CBC w/diff, retic, T&S (if concern for severe anemia)
• Manage according to pain plan

Pain significantly improved after 2 IV opioid doses according to pain plan?

Give oral opioid and call fellow to discuss discharge planning

In the next 30 minutes:
• Compete full assessment
• Obtain CBC w/diff, retic, T&S (if concern for severe anemia)
• Consider IVF if clinically dehydrated
• Give initial IV morphine at 0.1 mg/kg if already received IN fentanyl or 0.2 mg/kg if not, both max 4 mg & ketorolac 0.5 mg/kg (max 30 mg)

Pain improved?

In the next 30 minutes:
• Give second dose of IV morphine 0.1mg/kg (max 4mg)
• Re-evaluate in 30 minutes

Pain improved?

In the next 30 minutes:
• Give third dose of IV morphine 0.1mg/kg (max 4mg)
• Re-evaluate in 30 minutes
• If pain significantly improved, give oral opioid and call fellow to discuss discharge planning

Pain score 7 or higher?

Plan Admission:
•Give third dose of IV narcotic, if not already given
•Call fellow to discuss admission plan
•If pain plan exists, order PCA per recommendations
•If no pain plan, order PCA per dosing chart

Unless pain significantly improved after 3rd dose

In individuals with IPP:
Yes

No

Individualized Pain Plan?

Yes

No

Pain improved?

For questions concerning this guideline, contact: chorclinicalguidelines@vcuhealth.org

Last updated: November 2019
Next expected update: November 2022
Upon inpatient admission:

- Use Pediatric Sickle Cell Admission Orders Powerplan
- Continue home medications including Folic Acid and (±) Penicillin
- Continue Hydroxyurea if ANC > 1000 and PLT > 80,000
- Continue Ketorolac 0.5 mg/kg/dose (max dose 30mg) every 6 hours scheduled (after 48 hours, switch to scheduled Ibuprofen)
- Start PCA per Individualized Pain Plan if not started in ED; if no pain plan, use Medication Table below
- Assess patient on arrival to floor – may need opioid bolus while awaiting PCA set up

Dose Adjustment Guidelines:

- If the patient has increased pain scores and is using PCA > 3x/hour, consider giving a bolus dose and increasing basal by 20-25%
- Reassess patient within 1 hour after ANY dose adjustments for sedation and efficacy
- Do not increase basal/PCA dosing more frequently than every 3-4 hours

Side Effect Management:

- Bowel Regimen scheduled: MUSH (Docusate/Miralax) + PUSH (Senna) ± Lactulose as needed
- Itching relief with ORAL Diphenhydramine, Hydroxyzine, or Cetirizine as needed
- Nausea relief with Ondansetron as needed

Other:

- Continuous Pulse Oximetry on all PCA patients for the first 48 hours and with any PCA dose escalation
- IV Fluids should be based on oral intake and clinical hydration status. Goal: achieve & maintain euvoolemia.
- If patient is unable to eat or drink, maintenance fluids should be maxed at 1 x maintenance fluid rate.
- Incentive Spirometry – ensure equipment at bedside and within reach of patient; monitor usage
- Consider PT consult after 24 hours, if specific movement issue identified
- Up & Ambulate at least 2x per shift (mandatory)
- Labs: CBC with Retic at attending/fellow discretion

Medication table

*Ranges listed indicate starting doses for opioid-naive patients

<table>
<thead>
<tr>
<th>Medication</th>
<th>Dose</th>
<th>MAX INITIAL DOSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxycodone</td>
<td>&lt;=6 months PO: 0.025-0.05 mg/kg/dose every 4-6 hours &gt;6 months PO: 0.1-0.2 mg/kg/dose every 4-6 hours</td>
<td>PO: 5 mg - 10 mg</td>
</tr>
<tr>
<td>Morphine</td>
<td>PO: 0.1-0.3 mg/kg/dose every 3-4 hours IV: 0.1-0.2 mg/kg/dose every 3-4 hours</td>
<td>PO: 15 mg IV: 4 mg</td>
</tr>
<tr>
<td>Hydromorphone</td>
<td>PO: 0.03-0.08 mg/kg/dose every 3-4 hours IV: 0.015 mg/kg/dose every 3-4 hours</td>
<td>PO: 2 mg IV: 0.6 mg</td>
</tr>
<tr>
<td>Morphine PCA (1st line)</td>
<td>Continuous rate: 0.01-0.03 mg/kg/hour PCA dose: 0.02 mg/kg every 10 min Clinician bolus: 0.05 mg/kg</td>
<td></td>
</tr>
<tr>
<td>Hydromorphone PCA</td>
<td>Continuous rate: 0.001-0.003 mg/kg/hour PCA dose: 0.002 mg/kg every 10 min Clinician bolus: 0.005 mg/kg</td>
<td></td>
</tr>
</tbody>
</table>

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Executive Summary

Children’s Hospital of Richmond at VCU Sickle Cell VOC Workgroup

Pediatric Hematology-Oncology Owner: Matt Schefft, MD
Pediatric Emergency Medicine Owner: Jonathan Silverman, MD
Pediatric Hematology-Oncology: India Sisler, MD
Pediatric Hematology-Oncology: Cady Noda, PharmD, BCPS
Pediatric Emergency Medicine: Adam Bullock, MD
Pediatric Emergency Medicine: Christina Kirshenbaum, MS, RN, CPN
Pediatric Emergency Medicine Nursing Practice Council (consulting): Celia Hanson, RN, CPEN

Approved (November 2019)

Pediatric Emergency Medicine Quality Committee: Rashida Woods, MD
Chief of Emergency Medicine: Harinder Dhindsa, MD, MPH, MBA, FACEP, FAAEM
Interim Chief of the Division of Pediatric Hematology and Oncology: John McCarty, MD

References

Citation
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Authors: Matt Schefft, MD, Cady Noda, PharmD, BCPS, Celia Hanson, RN, CPEN
Jonathan Silverman, MD, Adam Bullock, MD
India Sisler, MD, Christina Kirshenbaum, MS, RN, CPN

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