

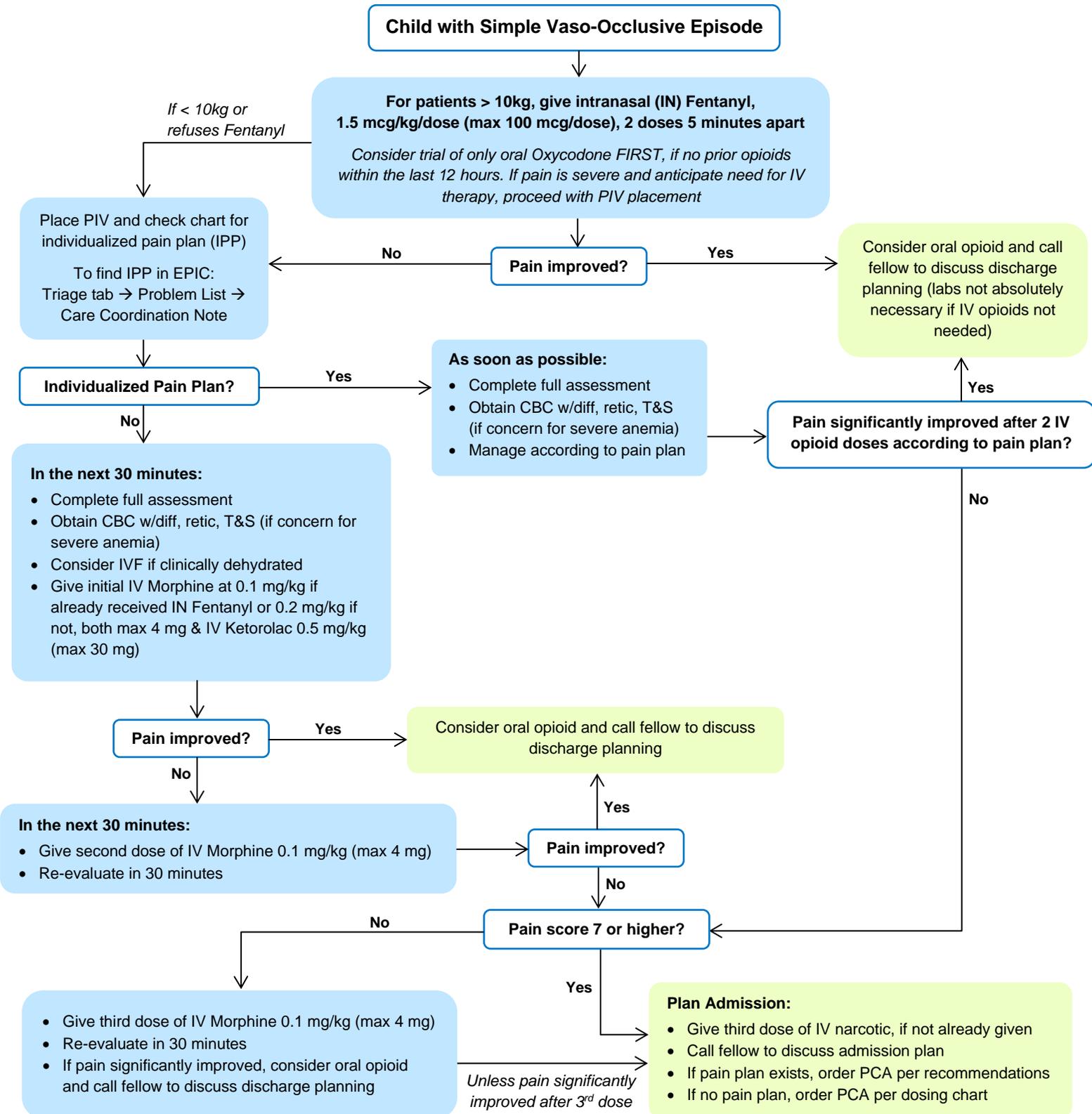
Clinical Guideline

Sickle Cell Vaso-Occlusive Crisis (VOC)

Pediatric Emergency Medicine & Hematology-Oncology

 This guideline serves as a guide and does not replace clinical judgment.

- **Inclusion Criteria:** Age 2–18 years, Diagnosis of Sickle Cell Disease, presenting with VOC
- **Exclusion Criteria:** Hypoxia, Fever, Splenomegaly, Uncharacteristic pain



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Upon Inpatient Admission:

- Use Pediatric Sickle Cell Admission Orderset
- 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) IV every 6 hours scheduled (after 48 hours switch to scheduled oral 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
- Consider Naloxone infusion for opioid pruritus at starting dose of 0.5 mcg/kg/hour

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 euvolemia.
- 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 doses for opioid-naïve patients

Medication	Dose	MAX Initial Dose
Oxycodone	≤ 6 months PO: 0.025–0.05 mg/kg/dose every 4–6 hours > 6 months PO: 0.1–0.2 mg/kg/dose every 4–6 hours	PO: 5 mg–10 mg
Morphine	PO: 0.1–0.3 mg/kg/dose every 3–4 hours IV: 0.1–0.2 mg/kg/dose every 3–4 hours	PO: 15 mg IV: 4 mg
Hydromorphone	PO: 0.03–0.08 mg/kg/dose every 3–4 hours IV: 0.015 mg/kg/dose every 3–4 hours	PO: 2 mg IV: 0.6 mg
Morphine PCA (1st line)	Continuous rate: 0.01–0.03 mg/kg/hour PCA dose: 0.02 mg/kg/every 10 min Clinician bolus: 0.05 mg/kg	
Hydromorphone PCA	Continuous rate: 0.001–0.003 mg/kg/hour PCA dose: 0.002 mg/kg/every 10 min Clinician bolus: 0.005 mg/kg	

Executive Summary

Sickle Cell Vaso-Occlusive Crisis (VOC)

Pediatric Emergency Medicine & Hematology-Oncology

Children's Hospital of Richmond at VCU: Sickle Cell VOC Workgroup

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Approved (January 2026)

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References

Kavanaugh PL, et. al. Improving the management of Vaso-Occlusive Episodes in the Pediatric Emergency Department. *Pediatrics*. 136:4. October 2015. DOI: 10.1542/peds.2014-3470 Krishnamurti L, Smith-Packard B, Gupta A, Campbell M, Gunawardena S, & Saladino R. (2014).

Impact of individualized pain plan on the emergency management of children with sickle cell disease. *Pediatr Blood Cancer*, 61. <https://doi.org/10.1002/pbc.25024>

Schefft, MR, Swaffar C, Newlin J, Noda C, & Sisler I. (2018). A novel approach to reducing admissions for children with sickle cell disease in pain crisis through individualization and standardization in the emergency department. *Pediatric Blood & Cancer*, e27274. <https://doi.org/10.1002/pbc.27274>

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Citation

Title: **Sickle Cell Vaso-Occlusive Crisis (VOC)**

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Date: **January 2026**

Retrieval website: <https://www.chrichmond.org/health-care-professionals/chor-clinical-guidelines>

Example: Children's Hospital of Richmond at VCU, Silverman J, El Amin N, Noda C, Sisler I. Sickle Cell Vaso-Occlusive Crisis (VOC) Guideline. Available from: <https://www.chrichmond.org/health-care-professionals/chor-clinical-guidelines>