1.0 Introduction

The cause of vaso-occlusive crisis (VOC) is believed to be ischemic tissue injury from the obstruction of blood flow by sickled erythrocytes. Reduced blood flow causes hypoxia and acidosis. This further increases the sickling process, leading to further hypoxia and acidosis—a cycle that eventually leads to ischemic tissue injury. Each VOC varies in intensity and duration. Infection, fever, acidosis, hypoxia, dehydration, sleep apnea, and exposure to extremes of heat and cold can precipitate crises. Often, no cause is identified.

Painful VOC is the most frequent complication of Sickle Cell Disease. Common sites of pain include bone (extremities, dactylitis or hand/foot syndrome, back) and abdominal pain. Bone pain, the most common type of VOC, may or may not be accompanied by swelling, low-grade fever, redness, and warmth. It may be symmetrical, asymmetrical, or migratory. Dactylitis is a common presentation in infants and toddlers; back and abdominal pain are more common in older children. Abdominal pain in children with sickle cell disease is usually a simple VOC, but other diagnoses may present similarly (splenic sequestration, liver sequestration, appendicitis, pancreatitis, biliary colic and cholecystitis, urinary tract infection, pelvic inflammatory disease, etc.) and should be ruled out. In addition, pneumonia and chest crisis may present as, or accompany abdominal pain. During a severe painful crisis, a patient may also develop an acute chest syndrome, or a CNS event.

Pain should be treated early and aggressively. No laboratory features are pathognomonic of VOC; diagnosis is based strictly on the history and physical examination. When treating a painful crisis, the Healthcare Provider needs to be aware that concurrent illnesses such as an acute sequestration, priapism, aplastic episode, or fever/sepsis (see other protocols) may also occur, which must be dealt with concurrently.

This clinical practice guideline has been developed for the management of sickle cell patients with an acute painful episode who present to the emergency department and/or inpatient units.
2.0 Clinical Practice Recommendations for Management of Vaso-occlusive Crisis

**Child with Sickle Cell Disease (SCD) presents to ED with acute painful episodes (vaso-occlusive crisis):**

**ED Initial Assessment and Management:**
- Place a child with symptoms concerning for VOC in a chair or sit up if higher immediately into a team, Authorize admission to hematology service in Sickle Cell Day Unit if required.
- Vital signs: HR, BP, temperature and oxygen saturation.
- History to include:
  - Name, date of birth, medical history, and current medications.
  - Symptoms, duration, previous occurances.
- Physical exam to include:
  - Vital signs, heart rate and rhythm.
  - Localizing signs of infection.
  - Localizing neurological abnormalities.
- Complete the following:
  - History to include:
    - HAUS.
    - Vaso-occlusive crisis.
    - Check oxygen saturation on room air.
    - Review pain score.
- Determine risk for readmission.
- Consider the need for inpatient care.
- Localizing signs of infection.
- Localizing neurological abnormalities.
- Discharge or admit based on localizing signs, neurological abnormalities.
- Consider the need for inpatient care.
- Review pain score.
- Determine risk for readmission.

**ED Discharge Medication Management and Follow-Up:**
- For all degrees of pain (child moderate to severe pain, moderate to severe pain, or severe pain), consider aspirin or acetaminophen for pain management. Consider oral ibuprofen if child has a history of aspirin or acetaminophen intolerance.
- If child is on a pain control plan, consider increasing the dose of analgesics.
- For moderate to severe pain, aspirin or acetaminophen, and oral ibuprofen can be used for pain management.
- If child has a history of aspirin or acetaminophen intolerance, consider dextromethorphan or oxycodone for pain management.
- If child has a history of aspirin or acetaminophen intolerance, consider dextromethorphan or oxycodone for pain management.
- Consider the use of morphine or fentanyl for pain management.
- For all degrees of pain, ensure appropriate pain management instructions and prescriptions are given at discharge.

**Child discharged home with appropriate follow-up instructions:**
- Review pain score.
- Determine risk for readmission.
- Consider the need for inpatient care.
- Review pain score.
- Determine risk for readmission.
- Consider the need for inpatient care.

**PRINTABLE VERSION**

3.0 References


4.0 Related documents

- [Acute Chest Syndrome or Pneumonia: Guidelines for Management in Children with Sickle Cell Disease](#)
- [Pain Assessment Policy](#)
- [Pain Management Clinical Practice Guideline](#)

Attachments:

- [Discharge Criteria 2021 FINAL.pdf](#)
- [ED medication management.pdf](#)
- [Inpatient Management 2021 FINAL.pdf](#)
- [Revision History.docx](#)
- [SC_Clinic Follow Up Revised 2021_FINAL.pdf](#)
- [SCD pain plan_july 2015.pdf](#)
- [VOC Care pathway 2021 FINAL.pdf](#)