F4, Implementing a Sickle Cell Pain Crisis Pathway in a Midwestern Pediatric Emergency Department: A Quality Improvement Project, Abstract

Presenters:
McKenzie Falcone, BSN, RN, CPN, Pediatric Primary/Acute Care DNP Candidate, College of Nursing, Creighton University, Omaha, Nebraska.

Amanda Hinkel, DNP, APRN-NP, CPNP AC/PC, Adjunct Faculty, College of Nursing, Creighton University, Omaha, Nebraska.

Lindsey Leyden, DNP, APRN-NP, CPNP AC/PC, Hematology/Oncology Nurse Practitioner, Children's Nebraska, Omaha, Nebraska.

Taelyr Weekley, PhD, MPH, BSN, RN, Clinical Effectiveness Project Manager, Children's Nebraska, Omaha, Nebraska.

Meghan Potthoff, PhD, APRN-NP, CPNP AC/PC, Assistant Professor, College of Nursing, Creighton University, Omaha, Nebraska.

Funding:
There was no funding provided for this project.

Abstract

Purpose: The purpose of this quality improvement study is to determine the effectiveness of a clinical pathway in patients with sickle cell disease (SCD) experiencing a vaso-occlusive crisis.
Background/Significance: SCD is the most common genetic disease affecting around 100,000 people in the United States and 20 million worldwide. Vaso-occlusive crisis occurs when the sickled red blood cells cause an occlusion in the microvascular bed leading to ischemia which causes pain to the affected site. Approximately 60% of people with sickle cell disease report having one severe vaso-occlusive pain episode a year, leading to emergency room visits.
Problem statement: Pain associated with vaso-occlusive crisis historically has been hard to manage, leading to unnecessary suffering, increased emergency room visits, prolonged hospital admissions, and healthcare costs. Therefore, there is a need for a standardized treatment pathway for patients experiencing a vaso-occlusive pain crisis.
Methods: A pathway team was formed consisting of key stakeholders who helped develop an evidence-based pathway. Education was provided to all staff about the pathway being implemented. Inclusion criteria included patients who presented to the emergency department with sickle cell disease experiencing an acute pain crisis. IRB review was complete, and project approval was obtained. Data was collected via the EMR to examine the aims discussed below.
Results: An independent sample t-test was conducted to compare the four pre- and post-clinical outcomes utilizing a p-value of 0.05 to determine clinical significance. There was a significant difference in three of the following clinical outcomes, including triage to 1st intravenous (IV)/intranasal (IN) pain medication ($t=1.85$; $p=0.034$), first IV/IN medication to pain reassessment ($t=3.75$; $p=<0.001$), and length of stay in the emergency department ($t=2.84$; $p=0.003$).
Conclusion: The implementation of a sickle cell pain pathway in the emergency department decreases triage time to first pain medication, time between the first opioid to pain reassessment, time between first opioid to second opioid, admission rates, and length of stay in the emergency department, and increases the proportion of patients who receive two doses of IN fentanyl.

Keywords: Vaso-occlusive crisis, emergency department, pediatrics, pain, sickle cell disease, clinical pathways, patient outcomes