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904.OUTCOMES RESEARCH-NON-MALIGNANT CONDITIONS

Knowing the Dose to Control the Dose: Optimizing Patient-Controlled Analgesia in Adults with Sickle Cell Disease (SCD)

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Introduction:
Acute painful episodes are the most common cause of hospitalization in SCD. Intravenous (IV) opioids are the analgesic of choice to treat pain requiring hospitalization in adults. On-demand IV opioid dosing can be either via a patient-controlled analgesia (PCA) pump or via intermittent nurse bolus. Advantages of PCA include better analgesia accessibility and relative independence from staff. However, significant variability exists in PCA management. A multicenter, randomized-controlled trial of PCA strategies in SCD was terminated early due to slow accrual, stemming from barriers such as suboptimal communication between inpatient teams. Additional limitations with PCA include technological limitations and incomplete charting through a manual process. We initiated a quality improvement project to understand patterns of PCA use in patients hospitalized for SCD pain crises at our institution.

Methods:
We performed a retrospective manual chart review on all adult patients diagnosed with SCD pain crises admitted to the University of Cincinnati Medical Center (UCMC) from October 1 through December 31, 2022. Inpatient data collected included reason for admission, length of stay, and documentation of inpatient opioid usage in daily clinical notes. Hospitalizations requiring intensive care admission for severe complications were excluded. Outpatient data collected included demographics and outpatient opioid prescriptions via the state prescription drug monitoring database. The study was approved by the UCMC IRB.

Results:
Fifteen patients were admitted to UCMC a total of 24 times for SCD pain crises during the 3-month period. The patients ranged in age from 21 years to 73 years (median age 33 years, interquartile range (IQR) 19.5 years) and the majority (11/15) were women. Disease-modifying therapies prescribed included hydroxyurea (8/15, 53%), chronic transfusions (2/15, 13%), chronic transfusions plus hydroxyurea (1/15), voxelotor (1/15), no disease-modifying therapy (2/15). Nine patients were prescribed daily outpatient opioids that included an oral long-acting opioid plus an oral short-acting opioid. Out of the 24 hospitalizations, 11 were for an uncomplicated pain crisis, 10 were complicated by mild acute chest syndrome (mild hypoxia and/or abnormal chest imaging), and 3 patients experienced other treatable complications (2 with *Staphylococcus epidermidis* bacteremia, 1 with deep venous thrombosis). Five patients were admitted two or more times. Two patients, admitted a total of 5 times, were maintained on nurse-administered IV bolus opioids during their admissions, in addition to oral opioids. The remainder of the patients were treated with a hydromorphone PCA pump with on-demand bolus dosing only, in addition to home long-acting oral opioids when applicable. Two patients were ultimately transitioned from PCA onto nurse-administered bolus IV opioids, due to failure to achieve adequate analgesia with PCA.
In 9 out of the 19 admissions using a PCA, daily MME or the equivalent was charted in at least one progress note (47%). The median LOS in the subgroup in which PCA use was charted at least once was 7 (IQR 3.5) days. In the 10 admissions on a PCA in which daily MME was never charted (53%), the median LOS was 11 (IQR 6.25) days. Among patients not receiving outpatient opioids, daily MMEs from the PCA in the first few days of hospitalization (when recorded) ranged from 24 to 520 (median 178, IQR 241) MME. In patients who had daily chronic pain on outpatient opioid therapy, daily inpatient MME from PCA ranged from 360 to 1020 (median 545, IQR 418) MME. In patients with multiple admissions during the study period, the recorded daily opioid use was about two times that in the single admission group (median 673, IQR 500 MME in the multiple admissions group; vs median 329, IQR 351 MME in the single admission group).

Conclusions:

Our data suggest that length of stay is shortened by ~4 days when clinicians quantify daily opioid use for patients on PCA. In addition, patients with frequent admissions tend to have higher inpatient daily opioid use. This hints that readmission may be partly driven by mild withdrawal when on outpatient opioids at lower MME. A major barrier to data collection was inconsistent documentation of daily opioid use. The next step in our quality improvement project is an educational curriculum on inpatient opioid management for residents and hospitalists.

Disclosures No relevant conflicts of interest to declare.

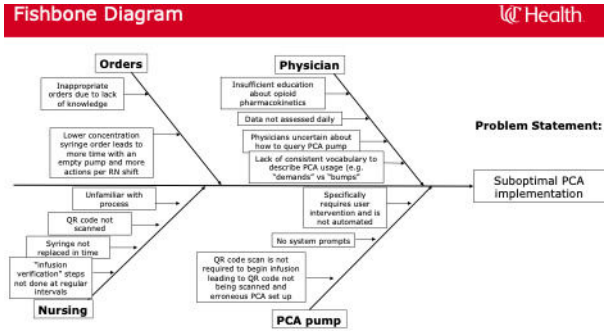

Figure 1

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