

Optimizing Care for Sick Cell Anemia

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What will the attendee be able to do after being in your session?

The attendees will be able to understand how to set up a care path and design analytics metrics to improve health care for sickle cell patients.

Description of the Problem or Gap

Sickle cell patients are one of the largest utilizers of health care services. Despite the relatively small size of the sickle cell patient cohort, the annual hospital costs for sickle cell totals \$488 billion nationally¹. Sickle cell encounters had the highest 30 day inpatient and emergency room readmission rate of all diagnoses according to the federal Healthcare Cost and Utilization Project². This rate is even greater for more at risk populations including the uninsured and those insured by Medicaid³. Opioid addiction is a growing epidemic in the United States. Due to the significant amount of pain prevalent in sickle cell, opioid treatment and addiction is prevalent. At Loma Linda University Health System (LLUHS), sickle cell encounters consistently show length of stay well above national benchmarks and high 30 day readmission rates. Previous research had demonstrated the opportunity to reduce length of stay and readmissions for sickle cell related encounters via specialized workflows and analytics.⁴

Methods

We created an order set and care path to optimize treatment for sickle cell patients. One of our goals was to increase use of patient-controlled analgesia (PCA) and limit use of PRN opioids. Previous research has shown that PCA medications improve pain control and reduce overall administered quantity of opioids. Additionally, we have a secondary goal of transitioning patients to oral opioids prior to discharge. This improves the ability of the patient to control pain after discharge and decreases readmissions. Another goal was to increase the use of ordersets in order to standardize and optimize care. Our care path as designed to improve care management and patient education by encouraging case management consults and providing specific sickle cell education at discharge. Additionally, one of our goals was to schedule post-discharge followup appointments for within seven days of discharge. Our experience is that scheduled outpatient appointments is one of the most important factors in reducing hospital readmissions. Our final process measure was packed red blood cell (RBC) transfusions. RBC transfusions have been shown to increase length of stay, complications and readmissions.⁵ All of these process and medication measures are designed with the overall goals of reducing length of stay, reducing inpatient and emergency department readmissions, and reducing utilization and cost.

Our care path utilizes clinical decision support tools built into our electronic medical record (EMR) including order sets, best practice alerts, and care paths with phases of care. We developed analytics in our enterprise data warehouse to evaluate all data points related to our care path. We developed analytics dashboards using Tableau to analyze our program, trend our key metrics, compare our providers and services, and to allow users to drill down on encounter details to facilitate analysis and performance improvement. Figure 1 shows one dashboard chart for opioid use.

Results

Our project went live only earlier this year and is still being optimized. We have not completed a clinical trial or evaluated our results for statistical significance. However, we have performed preliminary evaluation comparing the three months prior to our program with the most recent three months. This comparison shows an increase in order set utilization from 55% to 94%, an increase in percentage of encounters with case management consults from 16% to 51%, a reduction in percentage of encounters with packed red blood cell administrations from 64% to 28%, an increase in use of PCA medications from 28% to 90% and a decrease in patient days receiving only PRN medications from 5.8 days to 1.2 days. Followup appointments were increased from 6% to 19% of our encounters.

Discussion of Results

Our early analysis shows great success in achieving provider utilization of the orderset and care path (last month utilization was 100%) and in converting from PRN medications to PCA. We were able to increase follow up appointments by over 300%, but our scheduling process still needs to be greatly improved as only 19% of patients are scheduling followup appointments prior to discharge. The reduction of red blood cell transfusions should decrease cost and improve outcomes. Our project is still relatively new and needs further optimization. We do not have enough data to evaluate readmission accurately at this time and length of stay continues to be above our goals.

For our next phase, we will bring in cost data and focus on direct costs resulting from physician orders. This will give us the opportunity to evaluate and optimize the efficiency of our pathway and to reduce costs while improving patient care. Additionally, we will evaluate patient experience results.

IV Opioid Utilization

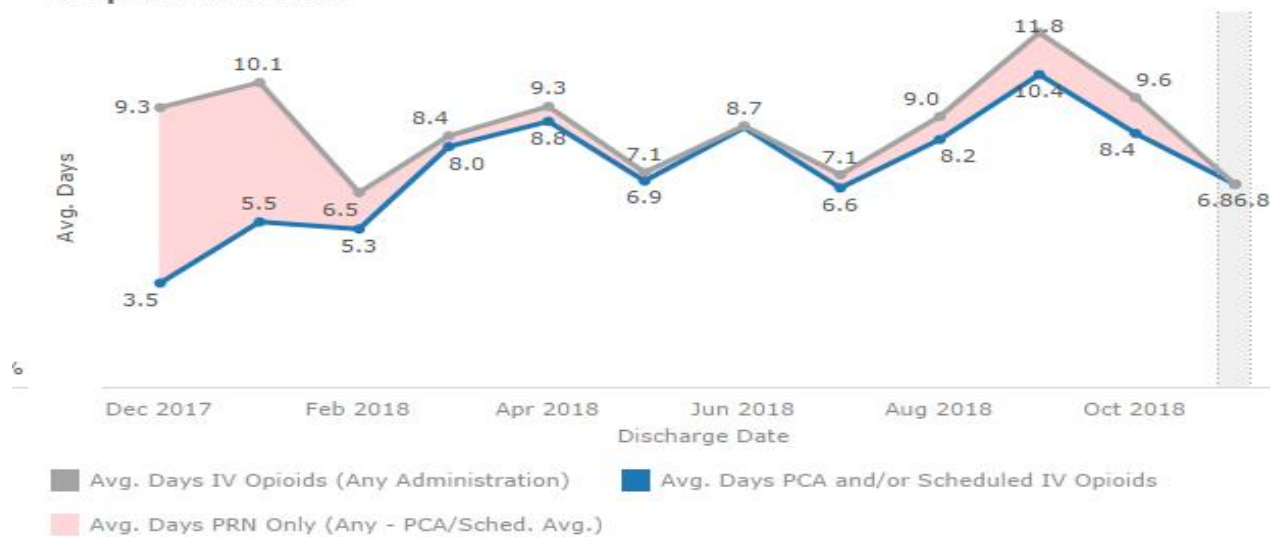


Figure 1. Opioid Utilization Chart

Conclusion

Sickle cell is an important disease requiring specialized clinical decision support and analytics. Sickle cell encounters incur high cost, length of stay and readmission rates. Our program is designed to optimize treatment, patient care and patient education to improve these outcomes. Early analysis shows promising improvements in clinical and process measures and we will continue to develop and optimize our program.

References

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