

Objective

At Orange City Area Health System, we strive to provide quality care for the whole patient. One of the ways we aim to do so is preventing patients from getting readmitted to a hospital, specifically within 30 days of discharge.

Background

Hospital readmissions within 30 days are often avoidable and are costly, a dissatisfier for patients and their families, and can have a negative impact on a patient's outcomes. We know that some patients are a higher risk of readmission than others, and research shows that they need to have more frequent monitoring by their healthcare team. We set a goal that all high risk patients would have a follow-up appointment or be seen by home health within 3-5 days of discharge from the hospital, and all other patients would be seen within 14 days of discharge from the hospital.

Actions Taken

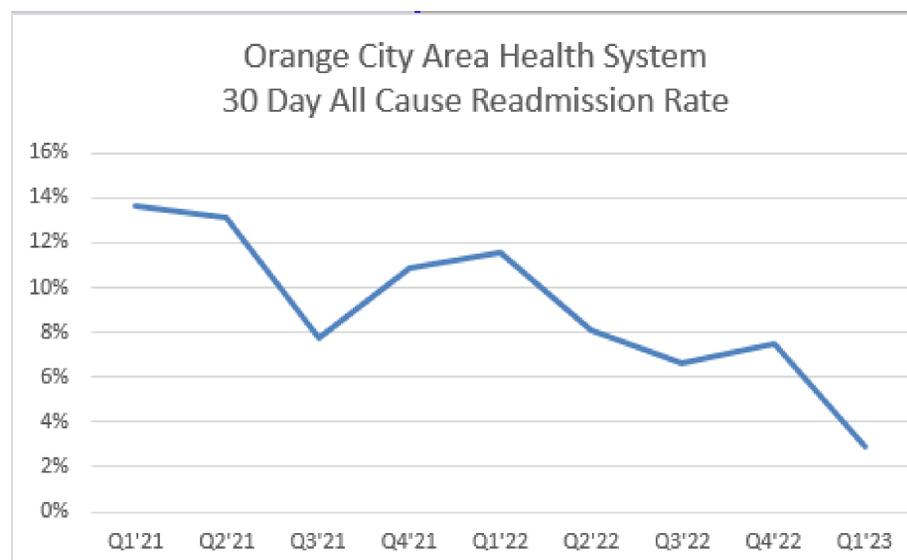
Over the course of the past 2 years, we have changed many aspects of our discharge planning process utilizing the PDSA cycle. Our electronic medical record (EMR) identifies the readmission risk score nearly immediately upon admission and updates about every 6 hours. See examples of how that is calculated (right). A patient is then categorized as a high, medium, or low risk for readmission, using a red, yellow, or green indicator on our patient list. A high risk is a score of 21 or above, and these patients are reviewed closer by discharge planners. Our discharge planners review a number of questions with them including some of their social determinants of health, as well as what types of interventions they plan to use. Upon discharge from the hospital, discharge planners also aid providers and nurses in getting follow-up appointments made in the appropriate time frame and are added to the After Visit Summary.

For Score and 7 Percent Ago: Using Readmission Risk Scoring to Prevent Hospital Readmissions

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Metrics

We looked at all cause readmission for patients over the age of 18, compared to the total of acute admissions. Planned readmissions are not included in this measure. Another metric we've added in Quarter 1, 2023 and will trend over time to compare to readmission rate is the number of patients who had a follow-up appointment scheduled prior to discharge from the hospital in an appropriate time frame according to their risk score.



Model Formula and Variables

The model is a penalized logistic regression implemented using the standard logistic equation: $1/(1+e^{-LP})$

The linear predictor (LP) inputs, listed below, are grouped by documentation type.

$LP = -3.212 + \text{all the following...}$

Diagnoses

Any actively documented diagnosis in a patient's chart is counted as a 1 for that group.

- + 0.19 * Cancer
- + 0.137 * Electrolyte disorder
- + 0.082 * Deficiency anemia
- + 0.07 * Renal failure
- + 0.372 * Drug abuse
- + 0.021 * Charlson comorbidity index

Demographics

- + 0.001 * Current age

Recent Lab Results

For lab results, the most recent result in the last 72 hours is considered by the model. If there is no result available, the variable is set to missing and has no effect on the score. Otherwise, the value is compared to its reference range to determine if the value is low, high, or abnormal.

- + 0.109 * Low hemoglobin
- + 0.166 * Low calcium
- + 0.143 * High BUN
- + 0.078 * High creatinine
- + 0.132 * High INR
- + 0.108 * Phosphorus lab present

Medication Orders

For medication orders, all active inpatient medication orders and any active or suspended outpatient medication orders were compiled.

- + 0.013 * Number of medication orders
- + 0.079 * On anticoagulants
- + 0.171 * On antipsychotics
- + 0.079 * On corticosteroids
- 0.353 * On NSAIDs
- + 0.017 * On ulcer medications

Order Types

Any order of the given type from the previous 12 months was counted as a 1 for that group.

- + 0.12 * Imaging order
- + 0.17 * ECG/EKG order
- + 0.132 * Restraint order

Utilization

- + 0.017 * Current length of stay
- + 0.088 * Number of hospitalizations in last year
- + 0.139 * Encounter of ten days or longer in last year
- + 0.101 * Number of ED visits in last six months
- 0.035 * Has a Future Scheduled Appointment

Analysis

When analyzing our data, we set a goal of less than 7% of all inpatients discharged would be readmitted to our (or any associated Sanford owned/managed facility) within 30 days of discharge.

From a report we can run from our EMR, we can easily identify the patients that were readmitted within 30 days. The discharge planners do a thorough interview asking the patient their perspective on why they were readmitted and if there was any part of the discharge plan they didn't follow. They continuously work with members of the interdisciplinary team such as nursing, pharmacy, therapy, social work and providers, to identify and implement an effective discharge plan.

They also utilize an audit tool to review the initial admission chart and assess for any areas of improvement or prevention, including when their follow-up appointment was. The lead discharge planner, director of patient care services and quality manager then review these on a quarterly basis to look for trends or areas that staff can work on.

Next Steps

We will continue to use risk scoring as a tool to evaluate when a patient should follow-up with their Primary Care physician or another member of the care team. The discharge planners continue to guide our providers in setting up appropriate follow-up appointments prior to discharge.

The discharge planners, along with the quality manager and director of patient care services, continue to review each readmission individually and assess for trends among providers. We have also started to include swing bed patients in this measure in Quarter 2, 2023.

