Presentation Title:

Creation of an automated malnutrition screen using electronic health record data: A quality improvement project in pediatric and young adult oncology/stem cell transplant

Presentation description:

Two leaders of an interdisciplinary Quality Improvement (QI) project conducted at Children’s Hospital of Philadelphia will present:

1. Brief overview of nutrition challenges in pediatric and young adult oncology/stem cell transplant
3. Improvement in recognition and documentation of malnutrition in the electronic health record

Rapid changes in nutrition status result from the underlying disease state, comorbid conditions, and treatment side effects. The goals of maintaining normal growth and development in children and weight optimization in young adults can be challenging during treatment. Reasons for this include delays in recognition of malnutrition due to suboptimal surveillance of nutrition status, and discrete care episodes distributed across multiple providers in both the inpatient and outpatient settings.
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Presentation Title
Creation of an Automated Malnutrition Screen for Pediatric and Young Adult Oncology/Stem Cell Transplant Patients Using Electronic Health Record Data

Disclosures
- The presenters have no commercial relationships to disclose

Presentation Overview/Summary
Malnutrition in pediatric and young adult oncology and stem cell transplant patients is associated with increased morbidity and mortality. Two members of an interdisciplinary Quality Improvement (QI) project conducted at Children’s Hospital of Philadelphia will present:

1. Nutrition challenges in pediatric and young adult oncology/stem cell transplant
3. Improvement in recognition and documentation of malnutrition in pediatric and young adults oncology/stem cell transplant patients

The Model for Improvement, metrics developed, and results of the project will be described.

Learning Objectives
At the conclusion of the presentation, the learner will be able to:

1. The learner will be able to describe a QI framework
2. The learner will be able to apply the QI framework to improve the identification and documentation of malnutrition in a pediatric oncology inpatient population.
3. The learner will be able to recognize opportunities to employ clinical informatics tenants in their daily work flow.

Key Takeaways/Fast Facts
- Malnutrition screening process can be automated
- Process metrics of the automated screen demonstrated special cause variation
- Outcome metric of improved status of malnutrition at three months was not statistically significant for all degrees of malnutrition
- Outcome metric of improved status of severe malnutrition was statistically significant at three months

Learning Assessment Questions

1. Question 1: Children in treatment for pediatric cancer are not affected by malnutrition
   A. Answer A (or True)
   B. Answer B (or False)
   Answer = False
   Rationale- malnutrition in treatment for pediatric cancer is associated with increased morbidity and mortality.

2. Question 2: All Pediatric Indicators of malnutrition as described by Becker, et al, 2014, were included in the presented automated screen
   A. Answer A (or True)
   B. Answer B (or False)
   Answer = False
   Rationale- Structured data elements were included such as z scores for weight for length and BMI. Growth velocity is computationally difficult to automate. Any weight loss in 1 month to 24 month old patients was used as a surrogate for inadequate growth velocity. Inadequate nutrient
intake quantification and mid-upper arm circumference are not data commonly found in the electronic health record

3. What type of data in the electronic health record is easiest to repurpose for quality improvement, clinical care, or research applications? Please select the single best response below.
   a. Vital signs
   b. Free text in notes
   c. Structured data elements
   d. Unstructured data elements

   Answer = C
   Rationale- Structured data elements are machine interpretable. Free text and subjective information do not allow for computational analysis and definition

4. Quality improvement (QI) projects that assess change over time may not perform traditional statistical tests to determine the “significance” of results. Which of the following are validated approaches to monitor QI data and assess for “special cause variation”?
   a. Run chart
   b. Shewhart chart
   c. Process control chart
   d. All of the above

   Answer = D
   Rationale= All listed charts can depict special cause variation

References
Electronic Clinical Quality Measures (eCQMs). Quality Management


Revised Standards for Quality Improvement Reporting Excellence (SQUIRE 2.0). Standards for QUality Improvement Reporting Excellence (SQUIRE); 2015.