Value Collaborative: Final Report-out
October 25, 2016
1. Patients are not currently evaluated in the pre-operative period for risk of acute kidney injury.
2. Delay in intervention for patients with acute kidney injury leads to an increased risk for the development of chronic kidney disease.
3. Patients suffering postop AKI are subject to prolonged recovery periods with average LOS of 4.13 days compared to 3.34 days for all LEJR patients.
The Goal
(big picture of what you were aiming for with the innovation)

1. Evaluate 100% of patients in the pre-operative period for risk of acute kidney injury.
2. Provide intervention within one hour of suspicion of kidney injury.
3. Reduce average LOS for elective LEJR patients with post-operative AKI by 25%.
**The Execution**

(what you did and how—specific steps and tasks to achieve the action)

- Developed algorithm to assess preoperative risk
  - Renal and other
- Mapped workflows
  - utilize goal directed fluid therapy
  - avoid nephrotoxic medications
- Educate providers and staff
The Metrics
(quantify your results wherever possible)
The Summary

Virginia Commonwealth University Health System

Title: Reducing Acute Kidney Injury in Orthopedic Surgery Patients at VCU Health
Team: Orthopedic Providers, PACE providers, Nursing, RAM Care team

Presenter: Paula Spencer, Program Manager RAM Care (paula.spencer@vcuhealth.org)
Scope: Elective lower extremity joint surgery patients cared for at VCUHS during the perioperative period
(Pre-hospital, intraoperative and postoperative phases of care)

1 | DEFINE AND MONITOR

<table>
<thead>
<tr>
<th>Improvement Category &amp; Measurement Description</th>
<th>Baseline</th>
<th>Goal</th>
<th>Period 1</th>
<th>Period 2</th>
<th>Period 3</th>
<th>Period 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality</td>
<td>Perform risk-assessment for AKI on 100% of patients.</td>
<td>0</td>
<td>100%</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality</td>
<td>Provide intervention within one hour of notification to provider.</td>
<td>Not measured</td>
<td>100%</td>
<td>n/a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost</td>
<td>Reduce average LOS to 3.3 days</td>
<td>4.13 days</td>
<td>3.3 days</td>
<td>3.5 days</td>
<td></td>
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</tbody>
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2 | PROBLEM AND GOAL STATEMENTS (SMART Problems/SMART Goals)

Problem:
1. Patients are not currently evaluated in the pre-operative period for risk of acute kidney injury.
2. Delay in intervention for patients with acute kidney injury leads to an increased risk for the development of chronic kidney disease.
3. Patients suffering postop AKI are subject to prolonged recovery periods with average LOS of 4.4 days compared to 3.1 days for all LEJR patients.

Goal:
1. Evaluate 100% of patients in the pre-operative period for risk of acute kidney injury.
2. Provide intervention within one hour of suspicion of kidney injury.
3. Reduce average LOS for elective LEJR patients with post-operative AKI by 25%.

3 | ANALYSIS AND INVESTIGATION

Analysis of historical patient data

Current workflow documentation for the pre-hospital Orthopedic clinic, PACE clinic, postoperative inpatient stay

Examined industry practice by a comprehensive literature search.

Consultation with in-house expertise: Vice Chair, Internal Medicine

4 | IMPROVEMENT DESIGN AND IMPLEMENTATION

Implementation Start Date: 2/1/2016
Implementation Completion Date: June 2016

Development of an algorithm that guides the pre-hospital phase of care for lower extremity joint replacement surgery patients. The algorithm addresses diabetes, hematology, renal status and higher complexity geriatrics, each of which potentially influence the risk for acute kidney injury.

Established best practice guidelines for the early recognition and intervention for acute kidney injury in the perioperative period of the elective lower extremity joint replacement patient.

Electronic solutions implemented June 2016:
Pre-hospital (clinic) order set, Endocrinology/Diabetes management orderset, Inpatient order set, referrals for specialty consultations pre-hospital and inpatient status built in to the order sets.

5 | IMPACT

First period of measurement demonstrates marked improvement in LOS due to increased awareness of the problem.


Period 3 – April-June 2016. Data pending availability.

Formal implementation of the pre-hospital algorithm is still pending.

The pre-hospital algorithm implemented February 1. See slide 3.