Introduction

Scotland Health Care System is a rural health care system whose Primary Service Area is Scotland County and Secondary Service Areas are western Robeson County and Marlboro County in South Carolina. According to the most recent Health Rankings published, Scotland, Robeson and Marlboro Counties are among the lowest counties ranked within their respective states. On average, the prevalence of Diabetes, Obesity and Tobacco Abuse are 15%, 38% and 24% respectively. Scotland Health Care System is committed to providing Safe, High Quality, Compassionate and Sustainable health care to a region that has tremendous health challenges. To provide safe and high-quality care, Scotland participates in the Duke Infection Control Outreach Network (DICON) for best practice and benchmarking purposes. In 2015 and 2016 Scotland hip infection rates were well above the DICON peer and network benchmark rates.

To improve patient safety and quality at the outcome level is to reduce infection rates to prevent co-morbidity and harm. The group collaborated within a co-management structure and set a goal each year to reduce infection rates by 25% from baseline (CY 2015-16) 1.52 (knee) and 1.25 (hip). The group hypothesized that by standardizing perioperative care, risk is significantly lowered for infection based on research. Therefore, the group created a goal to write standard work for the pre, intra and post-operative care around hip and knee arthroplasty according to best practices. Part of that standardization is development of a joint camp curriculum. The group hypothesized that patients who attend joint camp are less likely to experience a perioperative infection. The group set a goal of 80% for target and 60% for stretch for patient joint camp attendance.

Scotland Memorial Hospital partnered in co-management of the orthopedic service line particularly joint replacement with OrthoCarolina (OC) Scotland. Administration and physicians integrated around a four pillar value agenda for the April 2017–March 2019 time period. The four pillars include Safety and Quality Metrics (Infection Rate and Joint Camp class attendance), Patient Experience metrics (Percent Top Box Likelihood to Recommend for Orthopedic Patients Only) and Sustainability Metrics (Block Usage, % On Time Start, Turnover Time, and Cost Reduction DRG 470). Using the PDSA model, standard work was created and implemented for the perioperative care for hip and knee arthroplasty based on the hypothesis that care standardization reduces risks.

Perioperative standard work included CHG baths being performed prior to surgery. In collaboration with anesthesia, no patients received steroids in the pre-, intra- and post-operative periods. Blood glucose levels were maintained below 200 and antibiotics were mixed with normal saline only. Weight based antibiotics, Vancomycin and Ancef, were administered within 2 hours of incision and within one hour of incision, respectively. Any hair at the surgical site was clipped in pre-operative holding area. The patient was prepped prior to incision with a full alcohol bath from ankle to groin with three-minute dry time by sterile RN. The alcohol bath was followed by a Chloraprep bath ankle to groin with a three-minute dry time by sterile RN. The surgeon’s wrists were cinched with sterile coban. The hood was not plugged in until the covering was complete. If the surgical site became visibly soiled, the RN uses Hibiclens and towel dries. Case carts were used for all supplies with standard protocol to remove bioburden.

Regarding post-operative antibiotics one dose of Ancef was administered in the PACU then every 6 hours times four doses. Vancomycin was administered 12 hours from pre-op dose. If an Aquacel dressing is used the patient is instructed to leave on for seven days. If the dressing becomes soiled the provider changes the dressing. Once admitted post-op the RN calls the MD prior to changing or manipulating the dressing. These patients were admitted to a clean hallway with no contact or isolation patients. The hospitalists counseled the patients with diabetes with an order set collaboratively developed by orthopedics and medicine with a goal to keep the blood sugar < 200. Goal LOS for single arthroplasty patients is one day unless barriers prevent discharge like pain management opportunities, etc. Patients ambulate the day of surgery and must meet certain safety goals determined by Physical Therapy (PT) to be discharged. Typical PT referral period was four weeks post-op for patients to get to goal.

Care Redesign

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Discussion

The group set a goal each year to reduce infection rates by 25% from baseline (CY 2015-16) 1.52 (knee) and 1.25 (hip). The group set a goal of 50% for target and 60% for stretch for patient joint camp attendance. For knee arthroplasty comparing 2017 to 2018 the group achieved approximately a 500% rate reduction. The knee infection rate was reduced from 1.84 to zero. Comparing hip infection rates in 2017 the group achieved a 21% rate reduction. The hip infection rate was decreased from 1.32 to 1.05. For a rolling twelve-month period, Feb 18 to Jan 19, all patients who received hip and knee arthroplasty have experienced an infection rate of ZERO. According to the dashboard some surgeons have not experienced any infections in over 22 months. In addition, the group achieved stretch goal in joint camp attendance. Patient experience achieved target at 82% top box. The group has been able to avoid $375,000 in health care cost compared to its first-year baseline. In summary, the group achieved a significant rate reduction and provided value to many patients.

Resources


Contact Info

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A Journey to Value: 365 days and Counting

A Co-Management Approach to Joint Replacement in a Rural Health Care Setting

OrthoCarolina Scotland, Kimberly Mintz RN, S. Nicole Hammonds RN, Beatrice Holt RN MHA, and Cheryl J. Davis, MD

Scotland Health Care System