The Future is Here: The Effect of Risk Stratification and Optimization in Bundled Rate Programs for Joint Replacement Surgeries

Define

Background:

Research and literature show that preoperative medical optimization improves patient outcomes during and after surgery while decreasing cancellation and surgery postponement risks.

➤ Bundled Rate Programs (BRPs) include the community of patients we help serve in coordinating their total joint replacement surgeries as they travel from across the United States.

Objective / Goal:

Reduction of surgery cancellations ≤ 2% through capture, monitoring and optimization of abnormal serum blood levels and modifiable risk factors within the next calendar year. (2019-2020.)
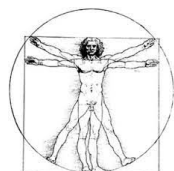
Team Members:
- Patient
- Tiffany: *Nurse Coordinator*
- Sarah : *Nurse Coordinator*
- Surgeon team
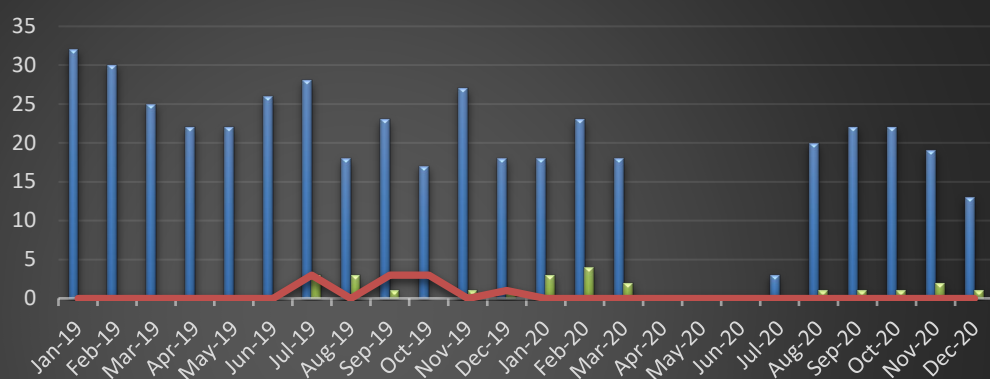- Patient care team: *Local providers*

➤ **Key Metrics:**

- **Serum Hemoglobin:**
  ➤ **Women: ≥ 12 g/dL**
  ➤ **Men: ≥ 13 g/dL**
- **Hemoglobin A1c less than or equal to ≤ 7.5%**

Measure (Pre-Post Measures as annotated graph)

There was a decrease of surgery cancellations for fiscal year 2020 to 0% (no cancellations), due to optimization of lab values prior to scheduling the patient's surgery.

Surgery Cancelations

	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20
Surgeries Scheduled	32	30	25	22	22	26	28	18	23	17	27	18	18	23	18	0	0	0	3	20	22	22	19	13
Unpreventable Cancelations	0	0	0	0	0	0	3	3	1	0	1	1	3	4	2	0	0	0	0	1	1	1	2	1
Preventable Cancelations	0	0	0	0	0	0	3	0	3	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0

Analyze: Identifying & Prioritizing root causes of failures and "bright spots"

Surgery Cancellations Related to:

➤ Lack of anemia surveillance and optimization
➤ Lack of Hemoglobin A1c surveillance and optimization
➤ Lack of abnormal serum lab value surveillance

Improve: High-level timeline with action steps taken

July-October 2019

The rise in the occurrence of surgery cancellations due to abnormal lab values (9.5 %) acted as the catalyst to advocate for nurse lead and driven patient optimization prior to surgery.

November 2019

Once the root cause was identified, team members evaluated and discussed workflow, was granted authorization of implementing nurse lead and driven patient optimization, preoperative labs prior to surgery.

Implemented Optimization

- Preoperative lab work completed along with optimization (anemia, hemoglobin A1c etc.) prior to surgery scheduling. Pt is notified, educated on next steps and primary care physician/specialist involvement.
- Proper documentation is obtained and integrated into patient's electronic medical record.

Action Steps

January 2019- December 2020
Data collection of pre and post implementation and optimization of preoperative labs

Control: Achieving High Reliability

In a study by Dlott et al., (2020) Nurse lead identification and optimization of modifiable risk factors lead to:

➤ Reduction in hospital length of stay (LOS) 2.56 VS 1.81 days, $P < .001$
➤ Reduction in 31- 90 day emergency department (ED) visits: (21.08% VS 10.58%), $P= .025$
➤ Transfusion rates: Medically optimized patients: No patients required transfusion (3.01% Vs 00.00%), $P = .16$
➤ Reduction in Surgical Site Infection (2.41% VS 1.92% P=1.00)- Not statistically significant, but a noted decrease.

The goal was to reduce preventable cancelations due to abnormal lab values to less than or equal to 2%. We were able to achieve zero preventable cancelations.