Improvement Path Systems

CASE STUDY

Operational Excellence in Obstetrics
2017

Project Objective & Background

The transfer of patient care from one department to another often presents challenges. The sheer amount of knowledge accumulated through countless hours of clinician documentation through prenatal tracking makes it difficult to consistently and effectively hand off obstetric patients to Labor & Delivery. IPS extensively investigated an enterprise obstetrics program spanning four facilities and three states with a cumulative annual volume exceeding 8,000 births. Our goal was to improve operational efficiency. After assessing the current state of each facility, our team provided and piloted recommendations to improve the patient journey from positive pregnancy test to discharge after delivery. Prior to a pregnant mother arriving at the hospital for delivery, Obstetricians and midwives track maternal and fetal health through regular outpatient office visits corresponding to fetal development milestones. Once the mother begins active labor, the inpatient Obstetrics team (Labor & Delivery) takes over care of the patient until discharge. Nurses on the floor frequently commented on how the outpatient clinics were black boxes from which patients emerged at the worst times. This speaks to the difficulty of identifying pregnant patients prior to delivery. Through many months of observation and analysis, IPS determined the root cause of the many breakdowns and implemented creative solutions to optimize the process.

Challenges

Life in the prenatal outpatient clinic can be strenuous and unpredictable. To bring some clarity and insight into patient demand, the clinics we studied track pregnancies from intake to delivery utilizing spreadsheets. Manually managing the spreadsheet was very labor intensive. Staff commonly found duplicate patients, outdated patients and even instances where current patients were never added to the spreadsheet. To keep the spreadsheets accurate and up-to-date, Licensed Vocational Nurses or Registered Nurses periodically performed a painstaking, manual scrubbing process. With this patient database, clinic managers search for insight into their current patient demand in order to plan accordingly with the right mix of appointments. However, the inaccurate patient database outputs unreliable projections often leading to uninformed decisions negatively impacting Obstetrics and Gynecology clinic operations as well downstream departments such as Labor & Delivery, Surgical, and Radiology. Our team observed clinic managers spending hours each day manipulating appointment schedules to fit more patients in the clinic schedule, oftentimes utilizing gynecology appointment slots for obstetrics care. The constant borrowing of appointments can adversely affect the ability of the gynecology department to fill their Operating Room blocks by reducing the gynecology patient throughput.

Goals

Our team studied how to improve patient flow from outpatient prenatal appointments to discharge from Labor & Delivery to ensure obstetric patients receive the appropriate care through the application of lean and data science principles.

Our Solution

Leveraging our ability to mine EMR data for key clinical data elements, IPS implemented reports that provided insight to decision-makers. We analyzed clinical data found in prenatal appointments to stratify the historical and current pregnant patient population by risk type and gestational age. With this real-time patient database, IPS applied our data science principles to develop dynamic models forecasting future patient demand.

Birth Forecasting

IPS generated a daily report providing forecasts of weekly and monthly birth volume for up to five months into the future. With this insight, the Director of Labor & Delivery can proactively prepare for spikes in patient demand.

Outpatient Scheduling

IPS provided forecasts of weekly and monthly appointment demand to assist the clinic managers with creating provider and clinic schedules that best fit current and projected demand. Informed decision-making allowed for less short-term schedule modifications.

Labor & Delivery Triage

Life on the Labor & Delivery deck is very strenuous and unpredictable, however, there are oftentimes trends in patient arrival patterns that can be used to understand how the deck should be staffed with nurses across triage, delivery rooms and OR. With this insight, the Director of Labor & Delivery adjusted nurse schedules to align with fluctuations of patient demand by time of day / day of week.

Labor & Delivery Procedure Scheduling

During the project IPS also created a report highlighting how procedure scheduling impacts patient census throughout the workweek. This report provides recommendations regarding procedure scheduling to level census, which helped level resources and work processes.

Process Improvements

IPS developed this real-time patient database to show how historical, current and projected patient demand informs the following decisions:

- Prenatal Appointment Demand
- Labor & Delivery Triage Nurse Scheduling
- Labor & Delivery Procedure Scheduling

Effects

- Improved pre-delivery identification of pregnant patients
- Reduced delivery variability by closely monitoring forecasts
- Reduced census variability by appropriately scheduling procedures within L&D
- Reduced short term manipulations to the outpatient appointment schedule
- Reduced data wrangling and reconciliation by clinicians and leadership
- Improved communication between outpatient clinics and Labor & Delivery