Enhancing Productivity in Urology Operating Rooms

Project Overview
- Lahey Hospital and Medical Center Urology Department hypothesizes two problems related to OR utilization:
  - Urology’s specialty ORs have low overall utilization
  - Operational factors are holding back surgical productivity

- Data Availability:
  - Time-stamped records for ~1900 surgical cases from Sep ’18 to Aug ’19
  - Block schedules for OR 2 and lithotripsy rooms
  - Service primarily conducts elective cases during block hours

- Project Objectives:
  - Investigate feasibility of closing one of two ORs
  - Increase scheduling efficiency
  - Evaluate block time allocation among surgeons
  - Identify utilization metrics to be tracked and communicated

- Project Methodology:
  - 14 stakeholder interviews to understand OR processes
  - Root cause analysis and literature review
  - Quantify room utilization to determine necessary open hours
  - Quantify block utilization by individual surgeons
  - Develop actionable recommendations

Root Cause Analysis
- Incentives
  - Physician Compensation
  - Physician Qualifications

- Measurement
  - Anesthesiologists
  - Nursing Incentives – Specific to Litho room

- Infrastructure
  - Scheduling
  - Communication
  - Operational Structure

- Data Sharing – Compute and Communicate KPV
- Policy Communication
- Leadership Priority Shifting to Efficiency

Recommendation
1. Lahey Hospital should continue to utilize both OR 2 and litho for Urology surgical cases.
2. Schedule management for OR 2 and litho should be centralized.
3. Urology should reallocate block time to align surgeon assignments with utilization patterns.
4. After centralizing scheduling and reallocating surgeon assignments, OR 2 and litho available block time could be reduced to 9 hours/day, 5 days per week for OR 2 and 4 days per week for litho.
5. These metrics should be tracked and communicated regularly between operations and Urology clinical leadership: Room utilization based on scheduled time; Owned and total block utilization by surgeon; Demand for OR time outside owned blocks by surgeon

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Project Summary
Our team worked with Lahey Hospital & Medical Center to conduct qualitative and quantitative analysis on enhancing productivity in two Urology operating rooms (ORs), the lithotripsy room (Litho) and cystoscopy room (OR 2). Lahey hypothesized that opportunities existed to both increase utilization of these Urology ORs and reduce operational barriers to surgeon and staff productivity. We employed both qualitative (primary and secondary) research and quantitative analysis to structure actionable recommendations related to these hypotheses.

Other extensive interviews with OR stakeholders, we concluded that detailed measurement of OR time and communication of key metrics between operations and leadership is the most important general solution to solving existing and future OR scheduling challenges. Our analysis of OR time stamp records from September 2018 – August 2019 indicates that Lahey should continue to staff both specialty Urology ORs, but we see the potential to reduce OR 2’s block time from 11 hours per day to 9 with the aid of centralized schedule management. We also identify an opportunity to reallocate OR blocks to better match individual surgeon demand for OR time and propose a set of metrics to monitor the ongoing quality of OR time allocation. We identify a set of current individual surgeons who are candidates for block time realignment. Finally, though the bulk of our work takes procedure time as given, we analyze differences in anesthesiology time for surgery procedures and propose a framework for monitoring individual procedure time deviations for anesthesiologists and surgeons.