The rise of healthcare expenditure requires innovative approaches to understand cost. Orthopedics is well suited for TDABC given the discrete care cycle and significant scale. Opportunity to reduce cost and improve patient value.

Completed process mapping.

2. Compare to billing.

Leadership Support & Team Formation:

Post Process redesign and relocation.

Patient flow optimization.

TDABC helps identify highest cost resources, bottlenecks, and opportunities to:

- Care Plan and Follow
- Low cost activities that deliver high value
- Identified variation in timing of nerve block, and extended PACU duration when nerve block performed early.
- Personnel costs
- Timing and nature of post-op visits

In 2006, the direct and indirect (lost wages) MSK expenditures were ~$950 billion.

Tom Walsh, Co-Founder, C&A Health
Sam Wertheimer, Project Leader and Research Associate, Harvard Business School
Sanjay Pathak, Senior Vice President of Surgical Services & Imaging, BWH

MSK diseases are the leading cause of disability for people in the US over 50.

Value based reimbursement informed.

Highest cost steps and resources.

Resources

Methods & Implementation

- Formed a multidisciplinary team with representation from operations, clinical staff, finance, administration, human resources, material management, and real estate
- Executive sponsors connected the care team and identified experts for clinical areas
- Defined the care cycle to include surgical consult to one year post-op
- Completed process mapping through discussions with content experts, including:
  - Sequence of clinical and administrative activities that occur
  - Resources incurred within each activity
  - Duration of each activity
- Collected cost data for all identified resources to calculate the capacity cost rate, or cost per unit, for each resource:
  - Time and nature of post-op visits
  - Alternative Clinical Therapy protocols
- Developing dynamic model to calculate cost and enable further analysis
- Implemented a web-based patient outcomes tool to facilitate collection and reporting of comprehensive patient outcomes scores

Evaluating Post-Operative Care Models

- Existing pathway for post-operative care was based on historic billing protocols and was not optimized for patient value and outcomes
- Explained options for value-focused approaches under the theory of future bundled payment models:
  - Timing and nature of post-operative visits
  - Alternative Clinical Therapy protocols

Results

TDABC Process Overview

1. Select the medical condition and/or patient population to be examined
2. Define the Care Delivery Value Chain including time period and services in scope
3. Develop process maps for each activity in the patient care cycle; identify resources involved for the patient at each step
4. Obtain time estimates for each process step through dialogue and observation
5. Estimate the cost of supplying each patient resource
6. Determine the practical capacity of each resource and calculate the capacity cost rate (CCR)
7. Multiply resource capacity cost rate and the resource process time to compute total cost across each cycle of care

TDBAC Process Map Results

- Mapped 20 unique care cycle steps
- Developed detailed Process Step Maps to illustrate patient flow, timing, and resources involved in each step
- Established a unified platform that visualizes care cycle and identify bottlenecks

Identification of Value Adding Improvements

TDABC Category

- Underutilized Resources
- Process Efficiency
- Care Delivery Redesign

Patient Value

- Personal care costs 73% of total care cycle cost, followed by consumables at 24%
- Day of Surgery costs were 53% of total cycle cost, driven by personnel and OR supplies
- Physical Therapy represents 72% of Post-OP cost

Total Cycle Cost

- Implement over 150 practice and administrative changes, yielding substantial opportunities to improve patient value

Optimizing Nerve Block Administration

- Identified variation in timing of nerve block, and extended PACU duration when nerve blocks were done pre-operatively.
- Pre-op blocks are longer, harder, more uncomfortable for patients, and generally require more resources.
- Opportunity to reduce cost and improve patient satisfaction with pre-operative nerve blocks as patients feel more comfortable and require fewer short-acting narcotics.
- Decrease by using shorter PACU stay.
- Change in anesthesia team work-flow extended Pre-op time.

Nerve Block Timing

- Implementation of a pre-op nerve block protocol reduced pre-op and recovery cost by 10%

Acknowledgements

- Meredith Wallace, MPH, BWH
- Tom Walsh, Co-Founder, C&A Health
- Sam Wertheimer, Project Leader and Research Associate, Harvard Business School
- Sanjay Pathak, Senior Vice President of Surgical Services & Imaging, BWH
- The team and support provided by BWH, and the Harvard Business School for this project.

Best Practices for TDABC Projects

- Process Mapping:
  - Identify outliers: After determining the typical flow of patients, do an analysis of the percent of patients who fall outside of this care cycle
  - Compare to billing data: Ensures all processes related to a particular diagnosis are captured
  - Leverage clinical content experts: Nurse and tech managers can help with many process maps, but may require support from the front line staff to provide more detail on steps involved in care delivery
- Ask the right questions: Avoid roadblocks by asking detailed questions in areas of significant patient and provider usability
- Financial Data Collection:
  - Prioritize personnel data: Personnel costs often >70% of total care cycle cost
  - Ensure salary accuracy: Capacity cost rates can differ by orders of magnitude between staff types, so it is important to get accurate information and compare to regional benchmarks

References