CARE PROCESS DESIGN AND COST ACCOUNTING IN HEALTHCARE: OPTHALMOLOGIC SURGERY

Ellis “Mac” Knight MD, MBA
SVP | CMO Coker Group
mknight@cokergroup.com

October 24, 2015
THE CARE PROCESS DESIGN SYSTEM

• Defining the care process unit (CPU)
• Mapping the CPU using a modified Lean process mapping technique
• Designing evidence-based, best practices into the CPU
• Cost accounting for each step in the CPU and the CPU overall
• Setting quality outcomes measures for the CPU
• Refining and improving the CPU over time using data-driven performance improvement methodology
ECONOMICS OF APPLYING THE CPDS

• Providers can weather the storm of declining FFS reimbursements by better knowing and managing their costs – the effect of decreased revenues can be mitigated by preservation of margin
  – Example:
    • 100 procedures @ $1,000 / procedure of net revenue = $100,000 in NR
    • Cost per procedure @ $800 / procedure results in $20,000 in profit margin
      – When revenue (reimbursement) drops by 20% the net revenue drops to $80,000
      – If costs drop by 25% margins can be preserved - $80,000 - $60,000 = $20,000.
      – The trick is how to free up the cost savings!
• Once FFS reimbursements are replaced by FFV reimbursements then the advantage of the CPDS is to identify costs that can be eliminated without sacrificing quality or patient safety.

• Producing high quality / low cost services via the CPDS will allow providers to capture a greater market share of VBRs. This higher volume of VBR market share (volume through value) will be the economic engine that drives high performing delivery systems going forward.
OPHTHALMOLOGICAL SURGERY

- Processes of care (CPUs) fairly small in number
- Processes of care fairly standardized
- Costs fairly well known for major CPUs
- Ophthalmologists prone to being on the cutting edge and open to using new technology
- Cataract surgery soon to be paid for by CMS via bundled payments
OR Optimization

- Optimal utilization of available operating room (OR) capacity to increase the number of operations
- Leverage lean management tools value stream analysis and optimized value stream design or value stream mapping
- Improved efficiencies of defined processes and elimination of waste turnaround and patient throughput time significantly reduced
- Increased capacities become available and can be utilized to optimize patient monitoring, improved safety and quality and additional operations
- Reduction in throughput time contributes to patient satisfaction
- Develop a flexible and patient-oriented OR capacity utilization
CATARACT SURGERY PROCESS MAP

Patient in Operating Room → Anesthesia → Side Port Incision → Microincision → Capsulorhexis → Phacoemulsification → Irrigation/Aspiration → Surgery Complete → Final Rinse → Insert IOL
Patient In Operating Room

Anesthesia

Anesthetic Gel Instilled Pre-Op

Instill Anesthetic Gel

Patient on Blood Thinner

Intra-venous Sedative

Compliant IV Sedative

Anesthesia Complete
COST ANALYSIS

• Utilize TDABC to assign a cost accurately and efficiently to each process step along the path.

• Only input required is estimate of two parameters at each process step: the cost of each of the resources used in the process and the quantity of time the patient spends with each resource.

• Costs of the entire process are calculated live as users manipulate the process.

• Multiple branching processes can have separate ending costs.
CATARACT SURGERY PROCESS MAP

Patient in Operating Room

Anesthesia

Side Port Incision

Microincision

Capsulorhexis

Phacoemulsification

Irrigation/Aspiration

Insert IOL

Surgery Complete

Total Process Cost: $1603.81
Total Process Time: 40 Minutes
Cost/Minute: $40.10

Process Elements

Intra-veinous Sedative
Cost: $32.68

RN, Preoperative
$0.58/Minute

Anesthesiologist
$1.67/Min

$66.67

$32.68

$32.68

$11.67

$102.25
AGGREGATED AND ANALYZED COST & QUALITY: VALUE EQUATION

<table>
<thead>
<tr>
<th>Process ID</th>
<th>Patient ID</th>
<th>Pre-Op $</th>
<th>Surgery $</th>
<th>Post-Op $</th>
<th>Total $</th>
<th>Pre VA Complication</th>
<th>Post VA CGCA</th>
<th>HPS</th>
<th>P. Sat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hitek 1.0</td>
<td>12345678</td>
<td>$172.87</td>
<td>$1603.81</td>
<td>$181.73</td>
<td>$1958.42</td>
<td>20/60</td>
<td>0</td>
<td>20/20</td>
<td>98%</td>
</tr>
</tbody>
</table>

Generated in office on iPad, patient engagement app or mobile communication
BEYOND PROCEDURES

• The CPDS can also be applied to the following:
  – Other procedures that are amenable to bundling – CABG, Total Joint Replacement, Cardiac Interventions, Colonoscopy
  – Episodes of care for chronic diseases – DM, HTN, HF, CKD, COPD etc.
  – Episodes of care for primary / preventive care
SUMMARY

• Providers need to adopt a systematic approach to care process design that optimizes high quality outcomes and does so at lowest cost – CPDS

• Relatively standardized care processes such as ophthalmologic surgery can be re-tooled using the CPDS Eventually can also apply to episodes of care for chronic disease management

• The CPDS can free up cost savings that can preserve margins in a FFS model and capture market share in a FFV model

• VBRs such as bundled payments are coming and will provide the economic incentives to drive this approach to healthcare delivery reengineering
FOR FURTHER INFORMATION

Ellis “Mac” Knight MD, MBA
SVP | CMO Coker Group
mknigh@cokergroup.com