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Clinical Success Metrics in Commercial Episode of Care Programs

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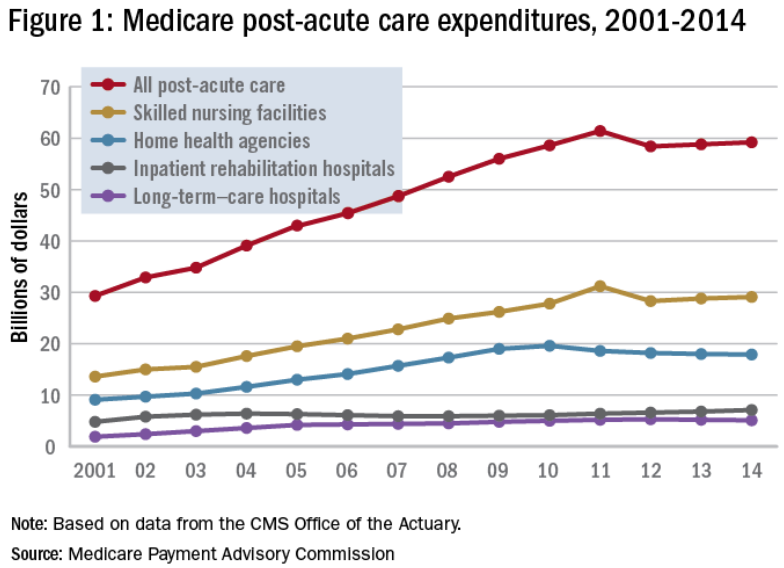
Agenda

1. Remedy Case Study – BPCI Govt Programs
2. Creating opportunity in the Commercially Insured Space
    - Price Variability
    - Overuse and Appropriateness
    - Variation in Typical costs and for Actionable Adverse Events (AAEs)
    - Feedback Reports
3. Creating a program with levers of clinical and financial success
    - Maternity Levers
    - Procedural Lever Development

Shifting to Value Based Models

- Since the establishment of Diagnosis Related Groups (DRGs) in United States the 1980s, inpatient length of stay decreased, but post acute utilization and spending continued to rise (Figure 1)[1,2]
- Centers for Medicare and Medicaid Innovation (CMMI) introduced Bundled Payments for Care Improvement (BPCI) in 2013 which incentivized providers and care teams to assume accountability for a patient's care for a defined period of time.
  - **The program was successful in reducing costs and resulted in savings.**
  - **Through a series of semi-structured interviews with hospital executives participating in BCPI, Zhu and colleagues (2018)[3] highlighted the primary focus areas for post-acute care savings: these include reduced referrals to skilled nursing facilities (SNF) using risk stratification tools, leveraging home care supports, patient education and enhancing coordination with home health agencies to facilitate discharges to home; and enhancing coordination with predetermined networks of SNFs to exert influence over SNF quality and cost.**
  - **The program was expanded in 2018.**

Figure 1[2]



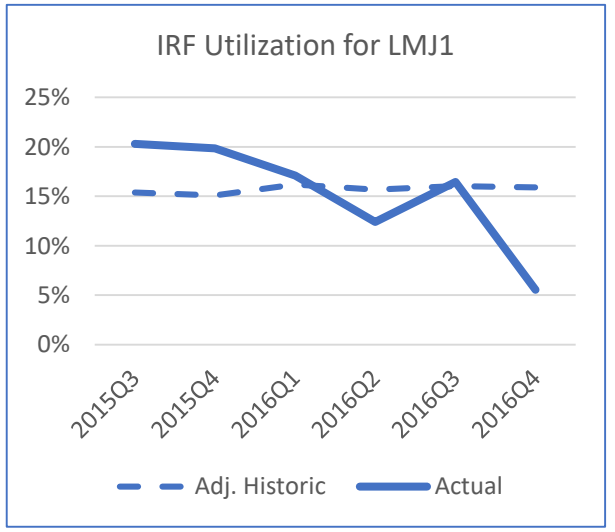
[1]https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5266471/
[2]https://www.the-hospitalist.org/hospitalist/article/129720/transitions-care/eight-things-hospitalists-need-know-about-post-acute
3https://www.healthaffairs.org/doi/10.1377/hlthaff.2018.0257

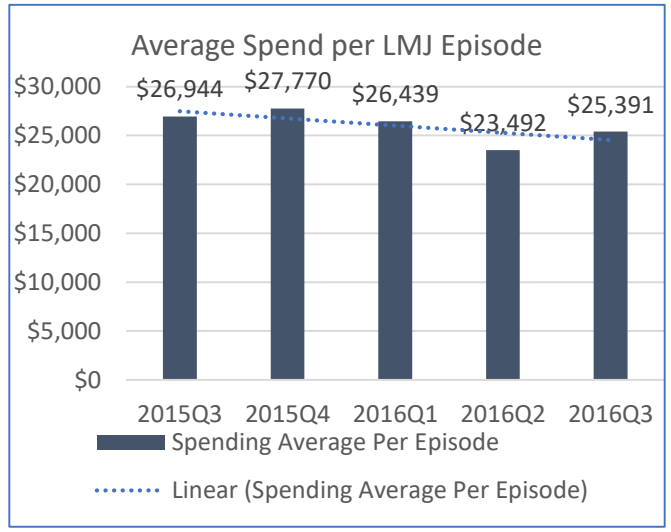
Case Study BPCI – Increasing Physician Engagement

Hospital hospital system with over 400 episodes per quarter. Large program size located in Fort Lauderdale, FL. The non-profit 557-bed hospital was live in 16 BPCI bundles with LMJ as the largest episode. Physician gainsharing was in place but physician engagement was low.

	Overall 2016Q2	MD X Overall	2015Q4	2016Q1	2016Q2
Number of Episodes	121	175	59	62	54
Discharges to Home	12.40%	7.40%	5.10%	8.10%	9.30%
Discharges to HHA	57.90%	58.90%	55.90%	53.20%	68.50%
Discharges to SNF	16.50%	25.10%	30.50%	30.60%	13.00%
Discharges to IRF	12.40%	8.00%	8.50%	8.10%	7.40%
% of Episodes with a Readmit (90 days)	5.80%	4.60%	5.10%	8.10%	0.00%
Average SNF Days	17	14.9	16.2	13.7	14.7

- Development of a physician scorecard to show physicians their performance relative to their peers
- Leveraged physician champions to communicate initiatives to peers
- Education and trainings were focused on a few key levers and performance metrics.

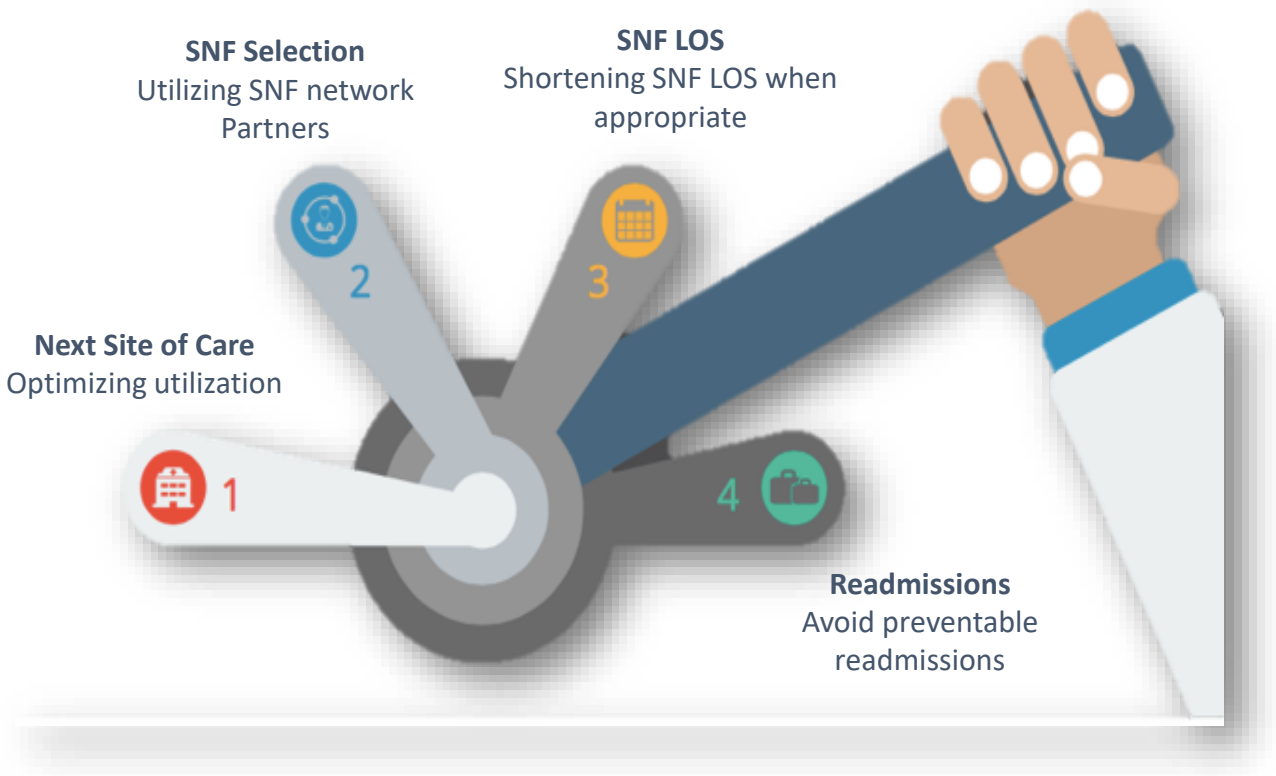




Remedy's BPCI Levers of Success

SNF Selection
Utilizing SNF network Partners

SNF LOS
Shortening SNF LOS when appropriate



Next Site of Care
Optimizing utilization

Readmissions
Avoid preventable readmissions

Overall Government Impact

Next Site of Care Decisions

-10.7%

Avg. SNF Discharge Rate Reduction

Post-Acute Stay Duration

-12.5%

Avg. SNF LOS (days) Reduction

Patient Readmissions

-10.2%

Avg. 90-day Readmission Rate Reduction

How To Drive Behavior Change in an Episodes of Care Program

1. **Narrow the focus** by leveraging data and honing in on one or two operational opportunities at a time. Care team can identify the dominant problem with performance and generate measurable change.

2. **Harness competition** through reporting. Physicians are often motivation by seeing how they or their facility's performance compares to others.

3. **Utilize peer-to-peer communication and leverage onsite resources** to help champion the use of episode tools and education. Physicians tend to be most receptive to their peers.

4. **Incorporate data**. Physicians have been trained to focus on evidence, so tend to find arguments back up by data most compelling.

The Evolution of Episodes of Care Programs

BPCI Advanced

Advanced APM status under MACRA

Quality-based performance measures

Simplified precedence rules

Now includes outpatient bundles

$

Risk-adjusted prospective pricing

Commercial Programs

Includes only relevant spend in episode price

Includes procedural, chronic, and medical

Flexibility in episode definitions and levers

Triggered by a procedure or event

Retrospective, prospective, and Reference Based Price products

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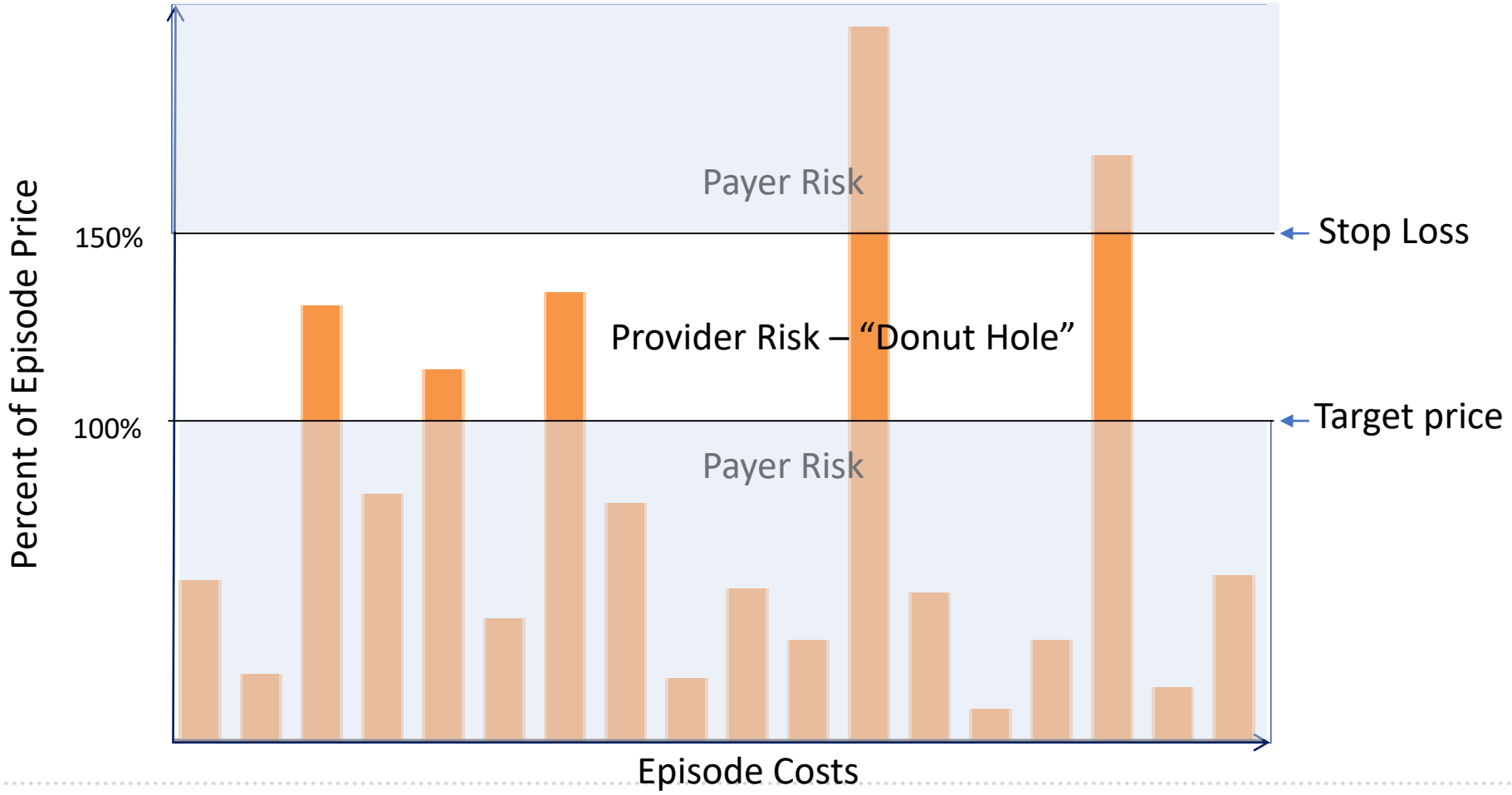
Capturing Opportunity in the Commercially Insured Space

Providers Take on Financial Risk: Manage Within Target Price

Target Price based on relevant services within an episode of care

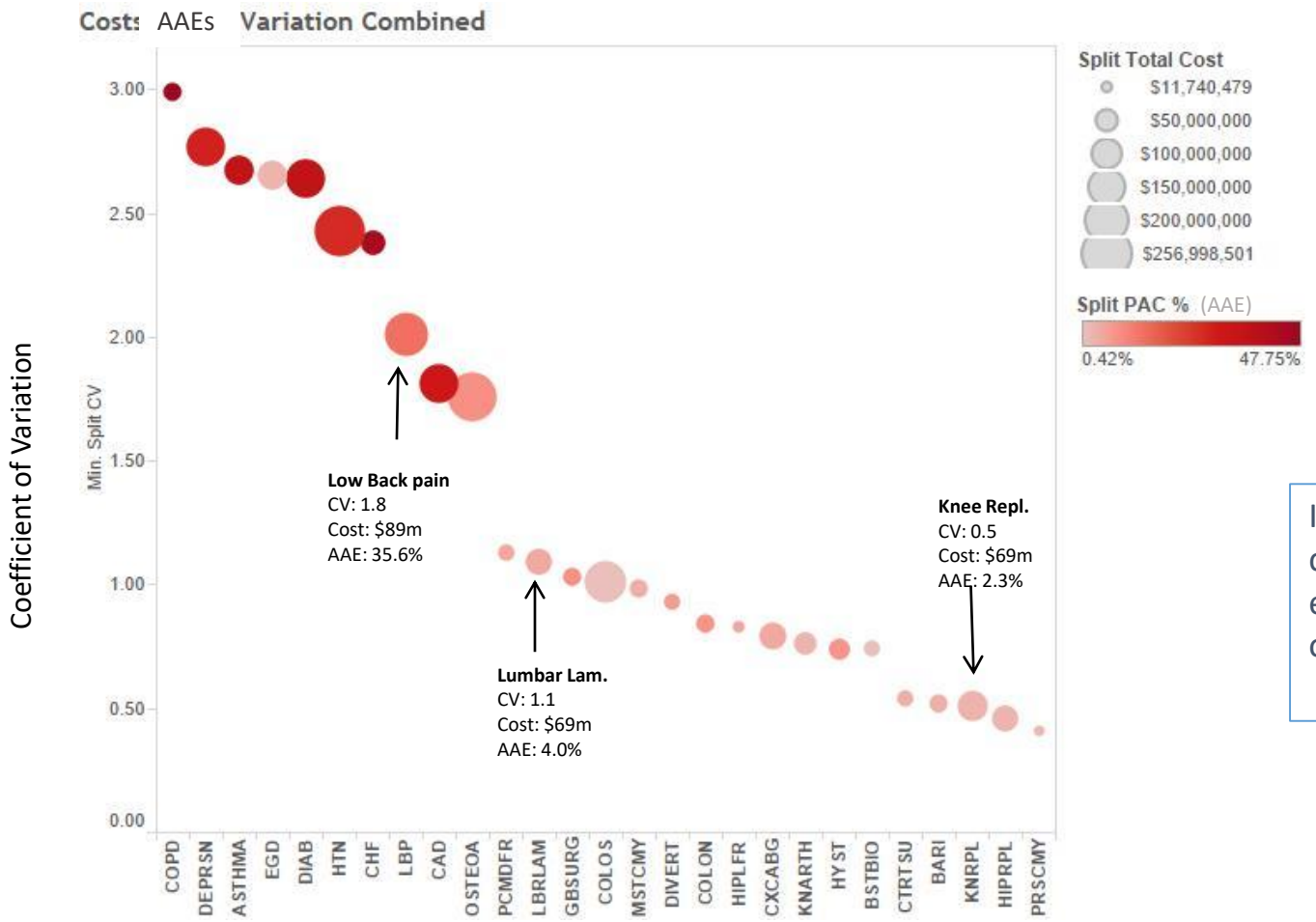


Episodes of Care change the unit of Accounting and of Accountability

Simple Mind-Shift: Value Based Payment and Care Redesign

Fee-for-Service	Episodes of Care Payments
Perform procedures if patient demands it	Perform procedures only when clinically warranted (appropriate use criteria)
Paid for complications of procedures	Held accountable for providing consistently excellent outcomes for procedures
Paid for repeat procedures	Repeat procedures viewed as potentially avoidable services – minimize them
Incentive to overuse imaging and other diagnostic workup	Obtain tests when clinically indicated
Treat patient in most convenient location of care (e.g., HOPD for PCIs)	Shift site of care to cost-efficient, high-quality facilities (e.g., ASC for PCIs)
Care Coordination, feedback not included	Integral Part of Bundled Payments: • Shared Decision Making • Lifestyle changes • Patient Reported Outcomes

Variability in Cost & Quality in EOCs Creates Opportunity to Win



Identifying variability in volume, costs, & actionable adverse events (AAEs) helps identify opportunity for savings

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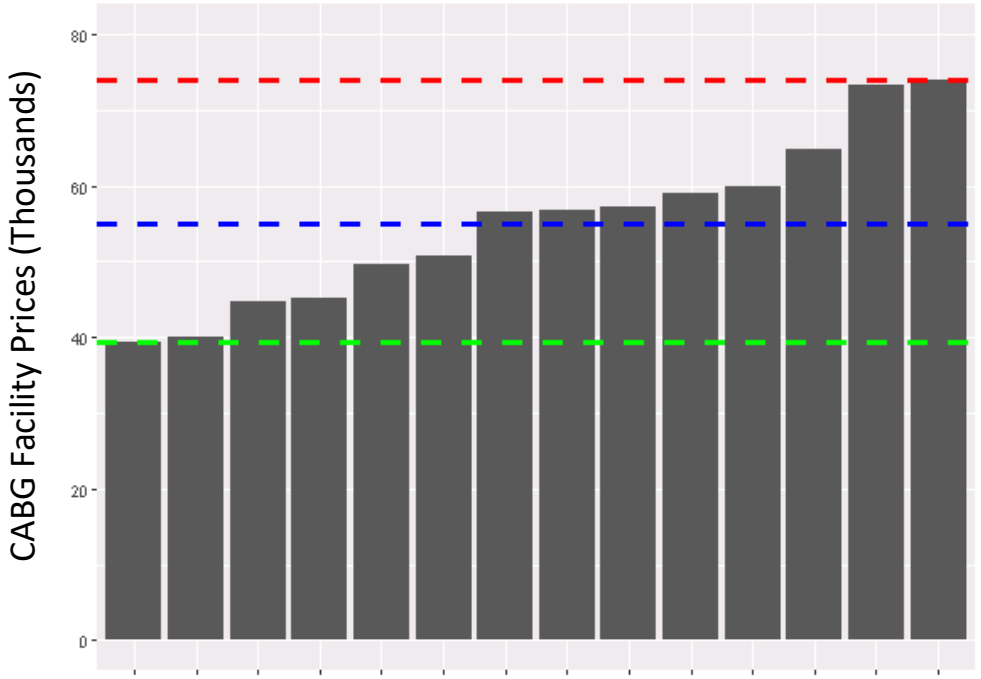
Price Variability

Variability in Facility Prices for Same Procedure

Facility Selection: selecting appropriate facility for cardiology episodes



CABG (inpatient)	**PCI** (inpatient)	**Pacemaker** (Outpatient)
$74,000	$37,000	$26,400
Average: $55,100	$27,800	$19,300
$39,400	$16,800	$9,100

Huge Difference in Facility Costs Based on Care Setting

Care Setting: Shifting procedures to low cost settings where possible in Orthopedic episodes

Lumbar Laminectomy	Count	Percent	Average Cost
Hospital	1,058	44%	$39,654
HOPD	1,318	54%	$14,139
ASC	40	2%	$8,549

Cost savings when surgery at ASC or HOPD

Knee Arthroscopy	Count	Percent	Average Cost
Hospital	48	1%	$22,857
HOPD	4,302	68%	$7,755
ASC	2,018	32%	$4,569

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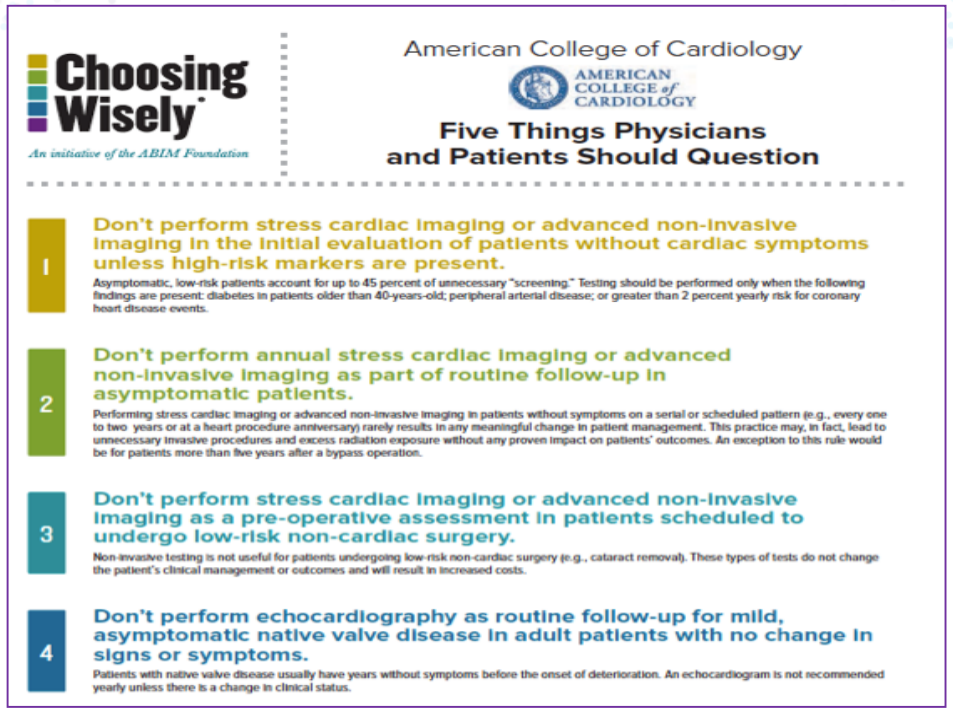
Overuse & Appropriateness

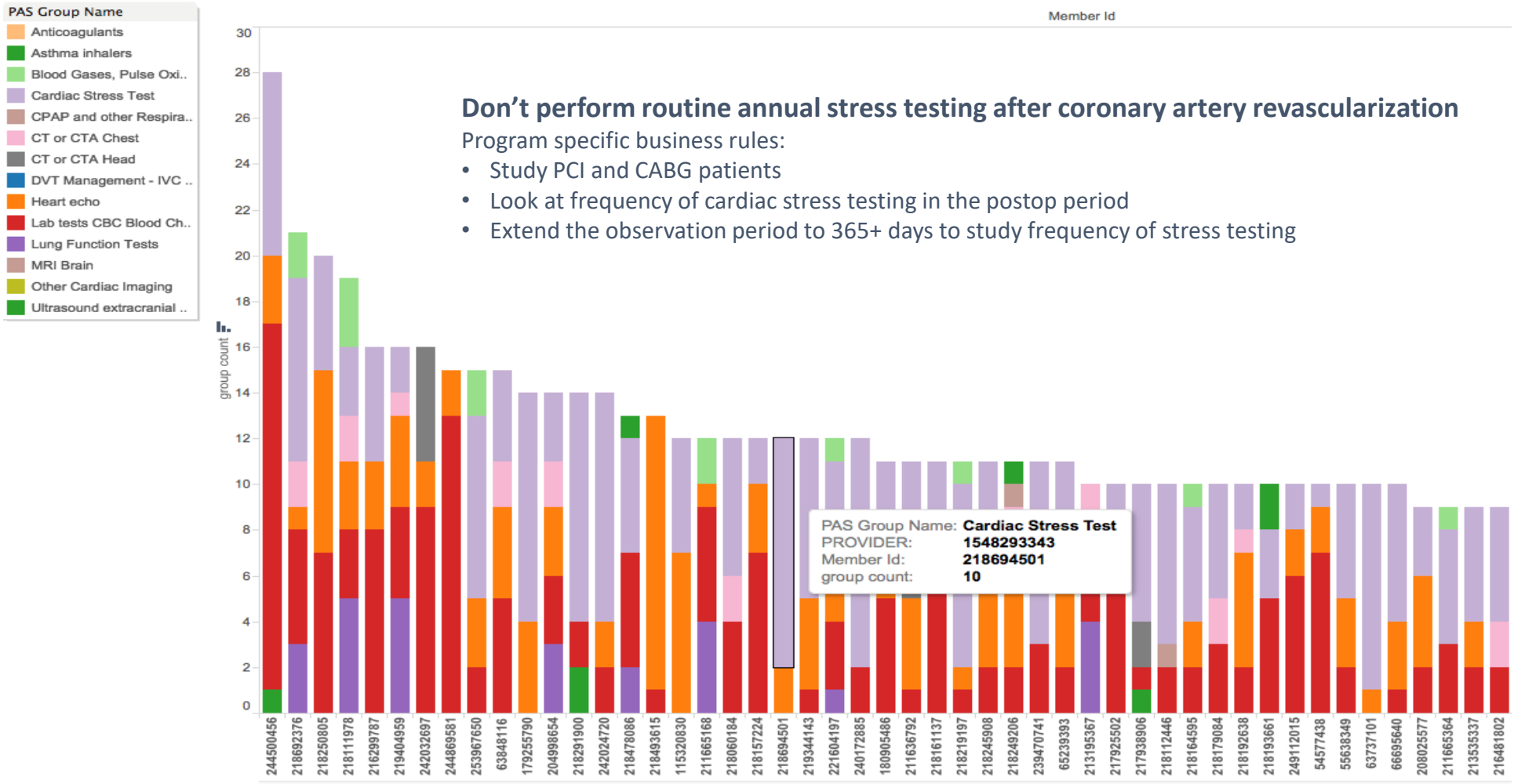
Choosing Wisely Recommendations

- The Choosing Wisely Campaign has enabled patients and providers to choose care that is
  - a) **Supported by evidence**
  - b) **Not duplicative**
  - c) **Free from harm and**
  - d) **Truly necessary**
- Total of **520** recommendations across 80 specialty societies
- **304** unique recommendations were mapped to episodes and flagged as potentially avoidable services (PAS)
  - **53** recommendations related to cardiology
  - **31** related to musculoskeletal system and connective tissues
  - **22** related to nervous system
  - **19-20** each related to respiratory, blood, and immunologic disorders, skin and breast, or to the female reproductive system
- We calculated overuse and determined the rate at which unnecessary services are being performed, as well as their accumulated costs



Service	Choosing Wisely Recommendation	CPT Codes	CPT Code Description
CV Stress Test	Don't perform stress radionuclide imaging as part of routine follow-up in asymptomatic CAD patients	78451, 78452, 78453, 78454, 78460, 78461, 78464, 78465	Myocardial Perfusion Imaging, at rest or stress

Overuse of Cardiac Stress Tests

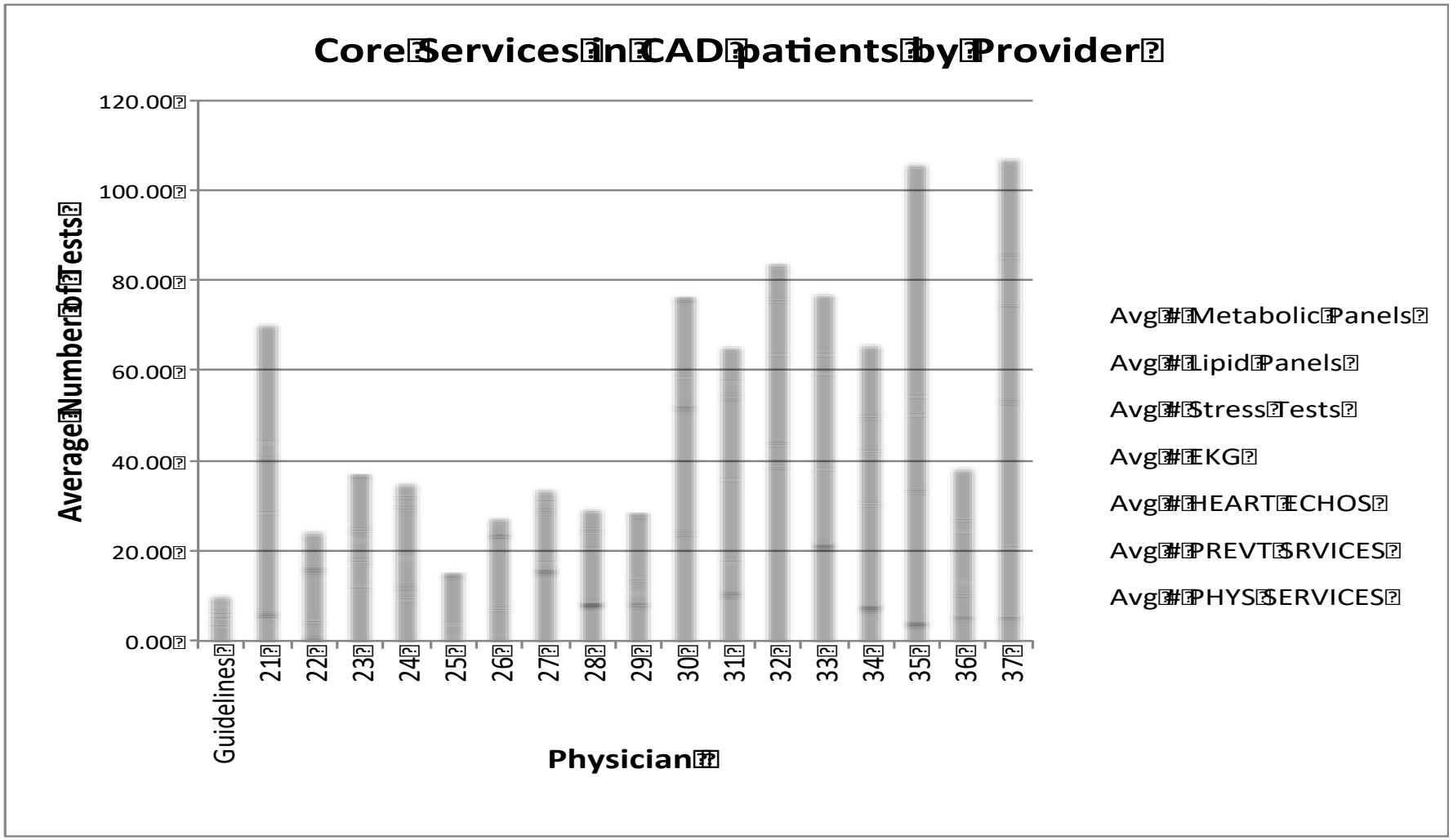


Don’t perform routine annual stress testing after coronary artery revascularization

Program specific business rules:

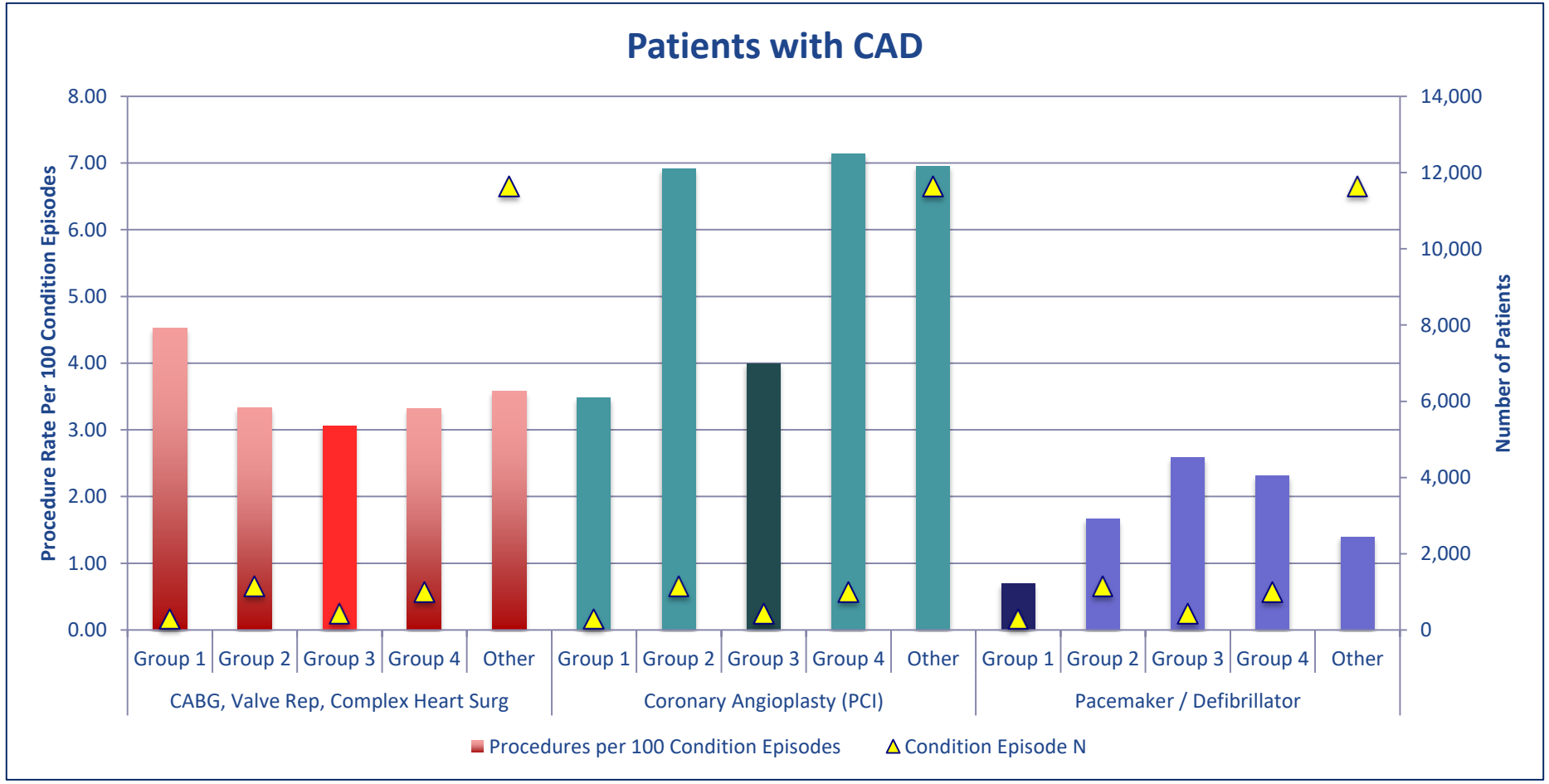
- Study PCI and CABG patients
- Look at frequency of cardiac stress testing in the postop period
- Extend the observation period to 365+ days to study frequency of stress testing

Overuse of Services in CAD by Provider



Appropriateness of Procedures

Incidence of CABG in CAD patients in US = 1.57% & PCI is 7.34%



Appropriate Use Criteria (AUC) for PCI procedures

- Nearly 600,000 PCIs are performed in the US each year at a cost that exceeds $12 billion

- A large multicenter study[1] demonstrated the inappropriateness of PCI procedures in many cases:
  - Patients with no angina – 53.8%
  - Low-risk ischemia on non-invasive stress testing – 71.6%
  - Suboptimal (≦ 1 medication) anti-anginal therapy – 95.8%
  - Substantial hospital variation exists in inappropriate PCI rates -- median 10.8% (Interquartile range = 6% - 16.7%)

- The American College of Cardiology developed AUC criteria[2] from clinical scenarios based on:

  Symptoms, noninvasive testing, coronary artery disease burden as assessed by angiography and SYNTAX scores, fractional flow reserve, and the presence or absence of diabetes

- Each clinical scenario is rated on a scale of 1 to 9

[1] Chan *et.al.* **Appropriateness of Percutaneous Coronary Intervention.** JAMA. 2011;306(1):53-61

[2] Patel *et.al.* **ACC/AATS/AHA/ASE/ASNC/SCAI/SCCT/STS 2017 Appropriate Use Criteria for Coronary Revascularization in Patients With Stable Ischemic Heart Disease.** Journal of the American College of Cardiology May 2017

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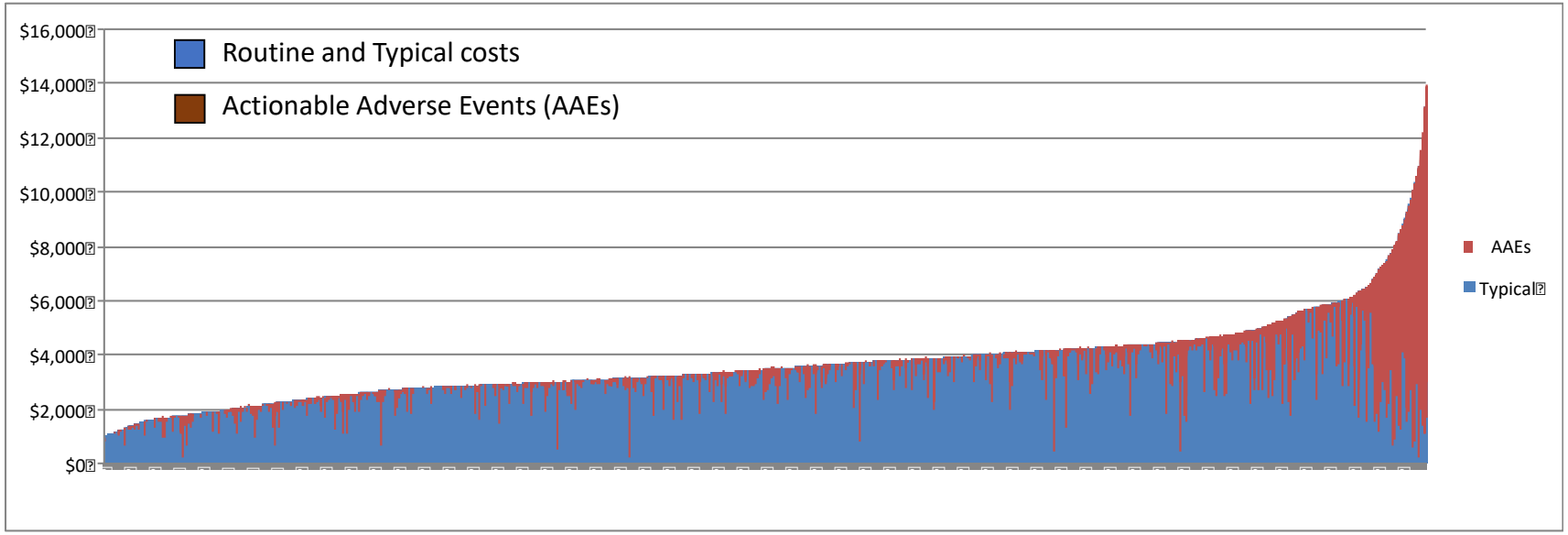
Variation in Typical costs and for Actionable Adverse Events (AAEs)

Identifying variation in both Typical and Complication Costs

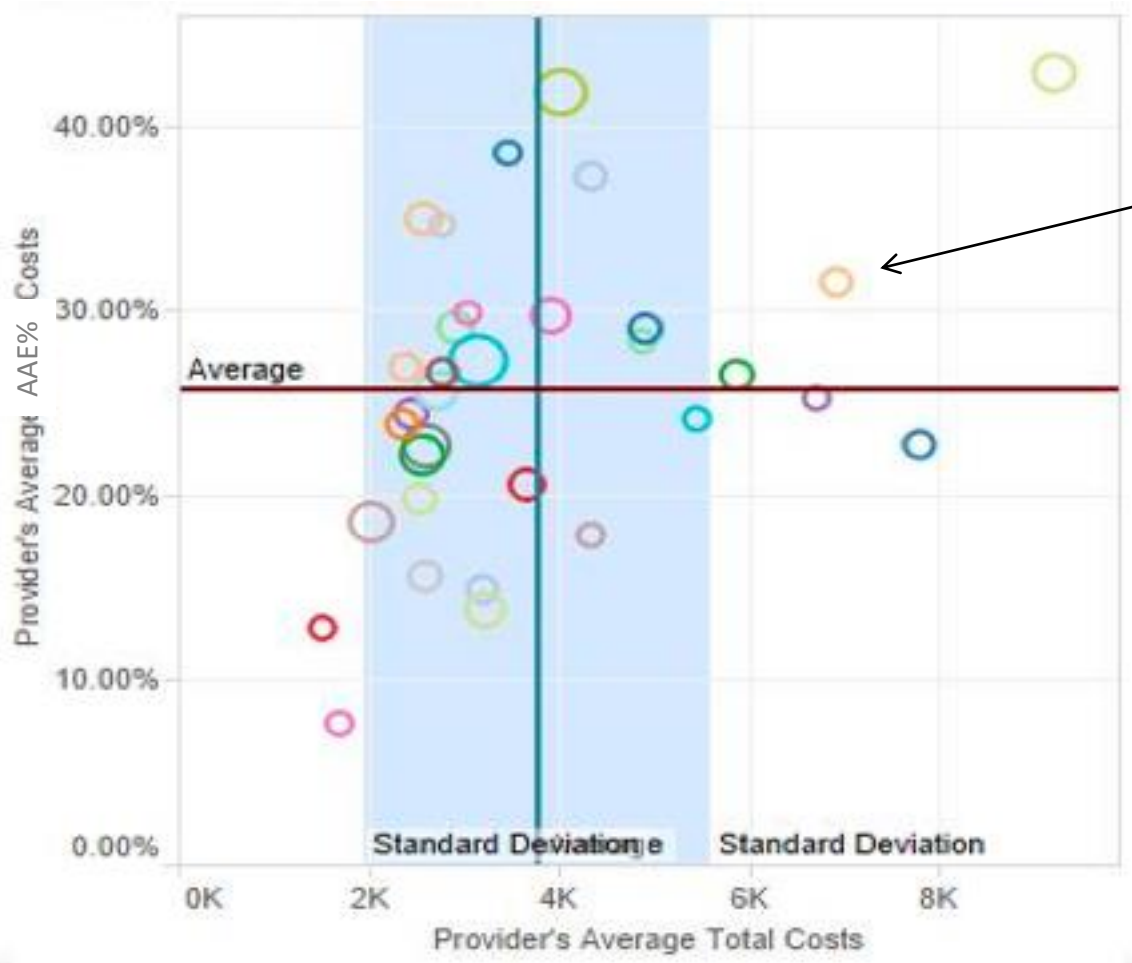
Cataract Surgery



Unique insights from Analytics:

- The tail of the distribution is driven by Actionable Adverse Events (AAEs)
- The variation in Typical costs could be driven by price, or overuse & duplication of services stemming from fragmentation and lack of care coordination.

Cost Quality Analysis at Provider Level

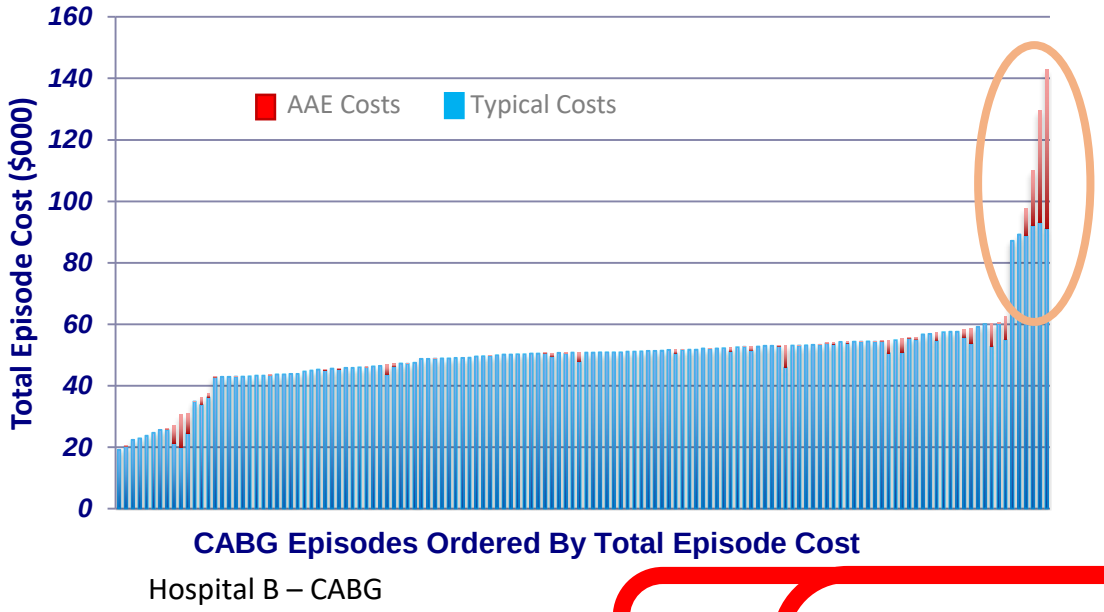


A provider may be an outlier on AAEs or episode costs or both

Drill down to provider's panel of patients to find patient level drivers

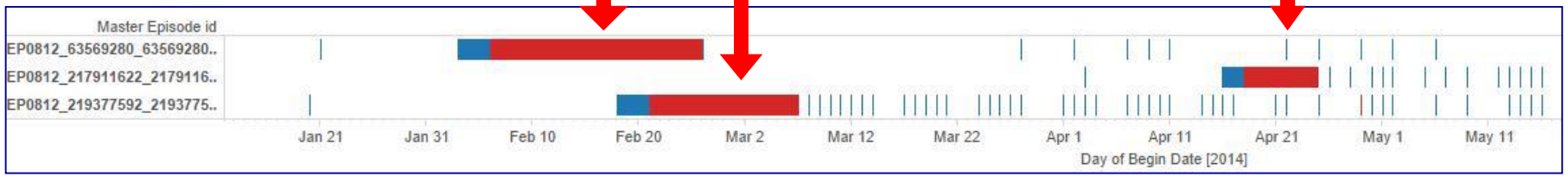
Quality Improvement: Root Cause Analysis

Outlier patients can have a big impact on performance and final budgets!



3 patients accounted for just 9% of Hospital B's total episode costs, but **53%** of total Actionable Adverse Event (AAE) costs…

…Each had a readmission with costs ranging from **$18,000 - $52,000**



Cardiac Rehabilitation within 30 days of surgery

Cardiac Rehab reduces episode costs as well as Readmissions and AAEs - both after CABG and PCI

Procedure	CABG		PCI	
Cardiac Rehab	No	Yes	No	Yes
% of Episodes	92.8%	7.2%	90.5%	9.5%
Avg Episode $	$68,899	$54,571	$33,834	$32,256
Avg AAE $	$15,880	$9,306	$5,433	$2,898
AAE %	**5.4%**	**2.7%**	**16.1%**	**9.0%**
Readmission %	**12.0%**	**3.4%**	**10.1%**	**1.2%**

AAE = Actionable Adverse Events
Source: Remedy's internal analysis

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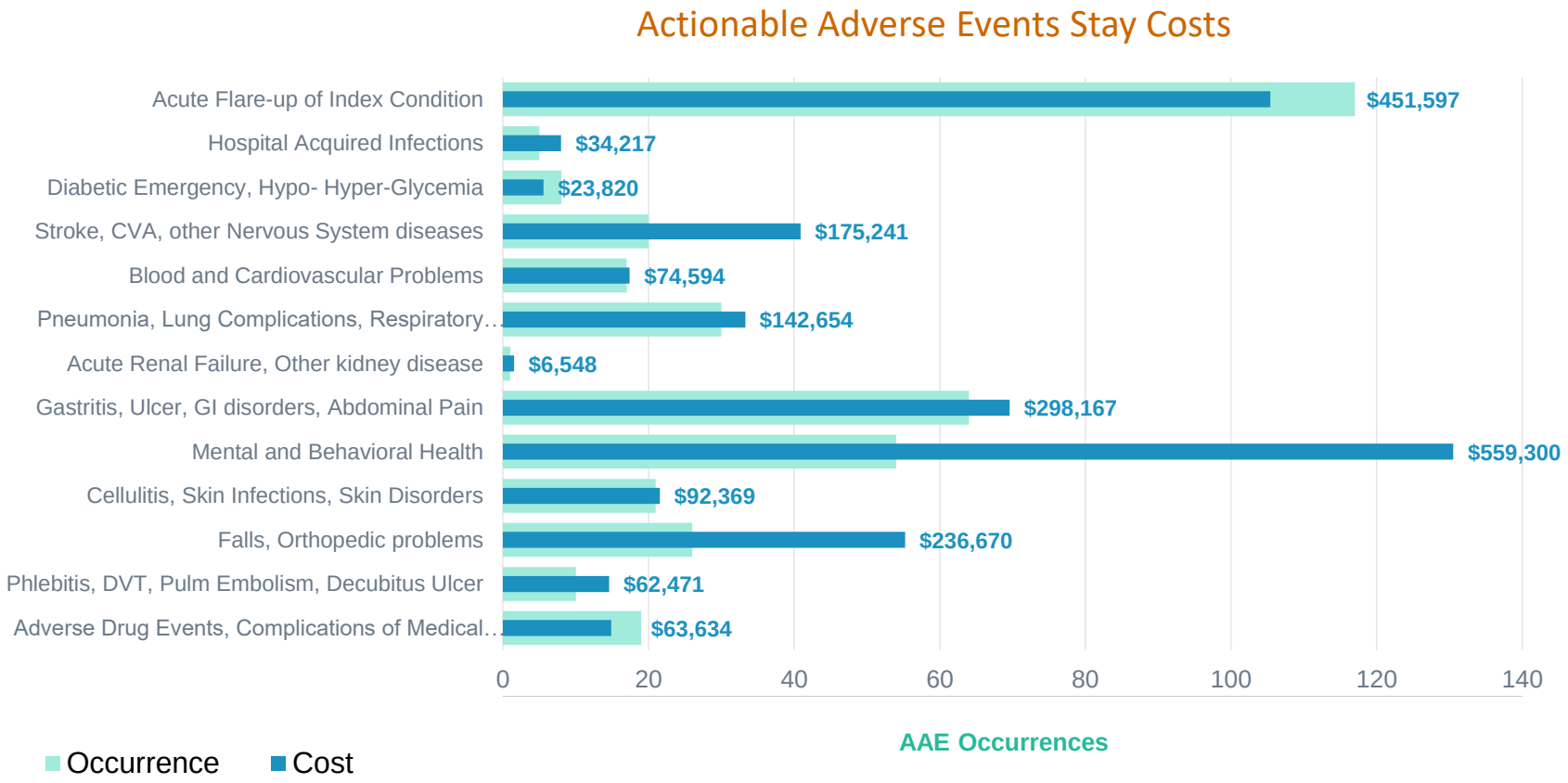
Feedback Reports

Real Time Performance: Drilldown for Hospital

Asthma Inpatient Complications



Real Time Performance: Drilldown for Providers

Asthma Professional Adverse Actionable Events (AAE)

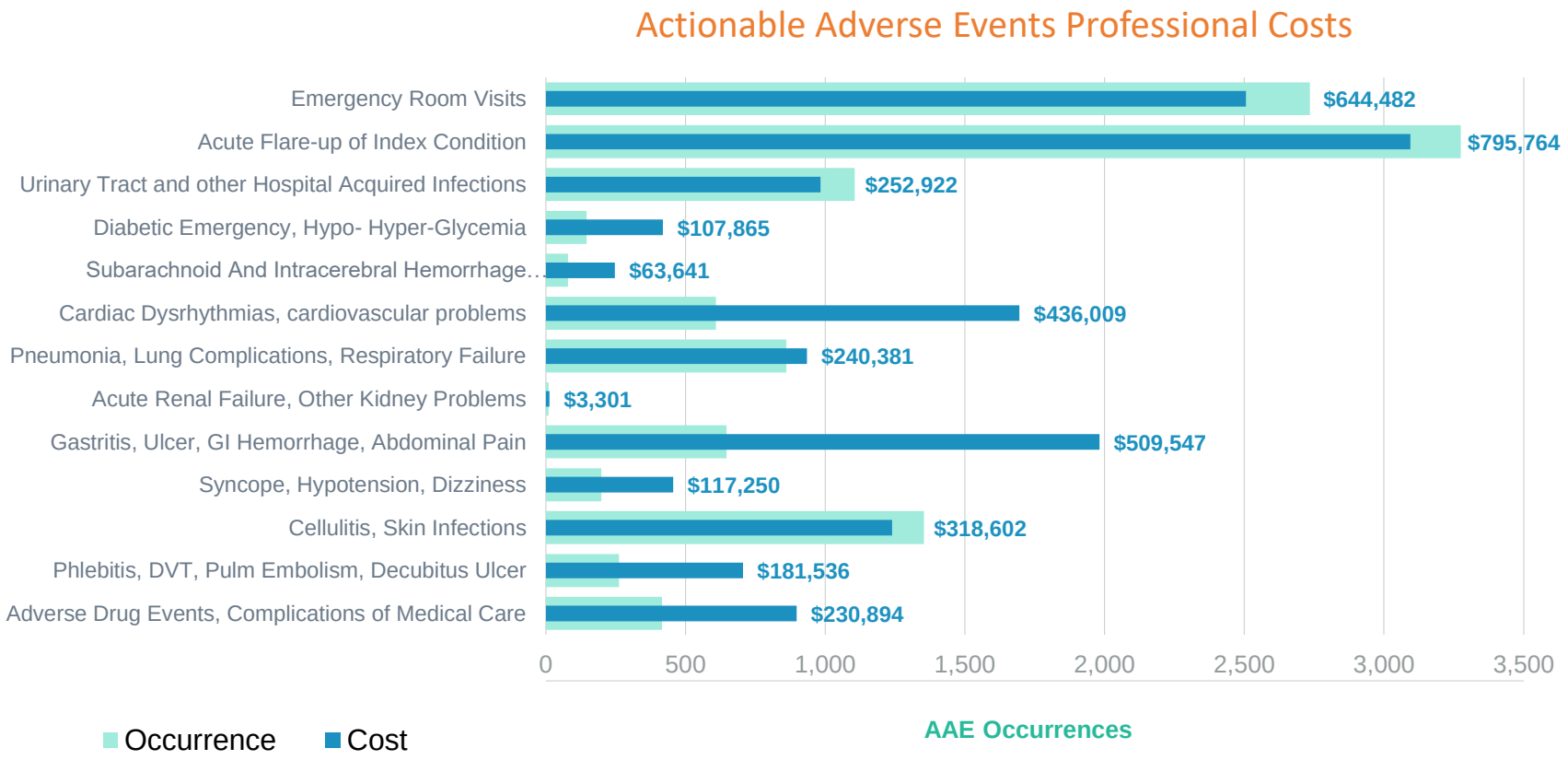


Tableau Reports: Comparing Providers

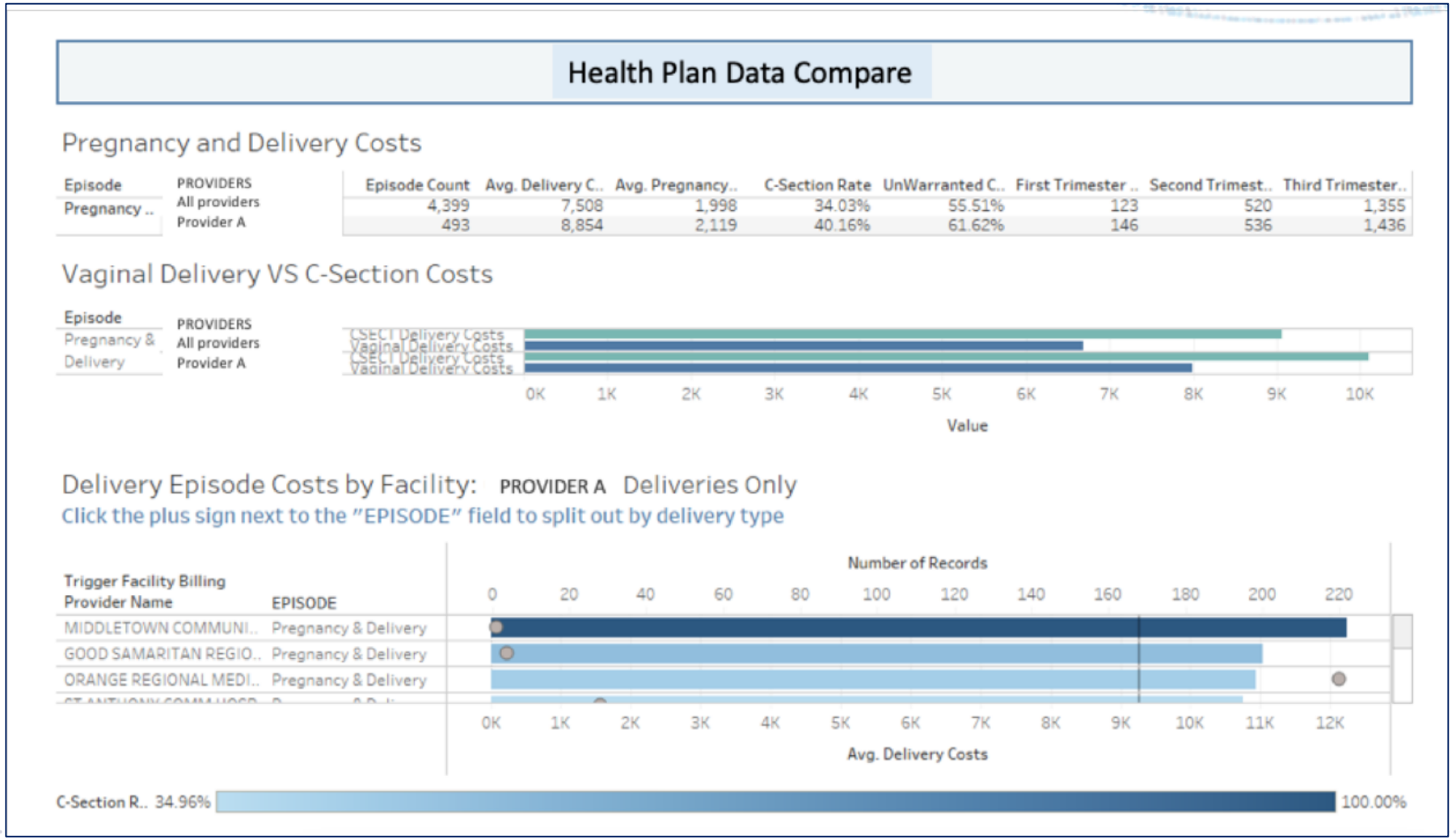


Tableau Reports: Provider Dashboard

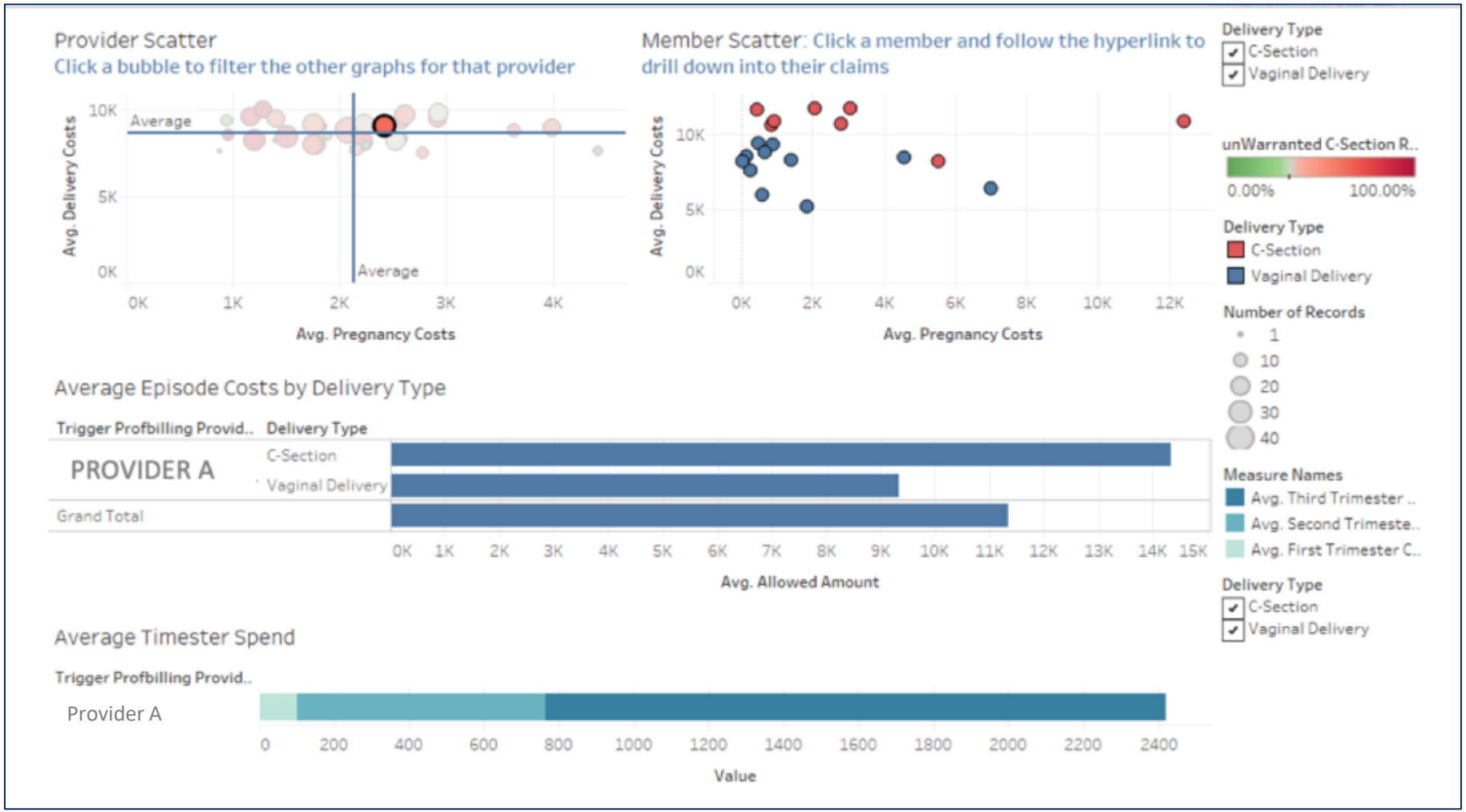
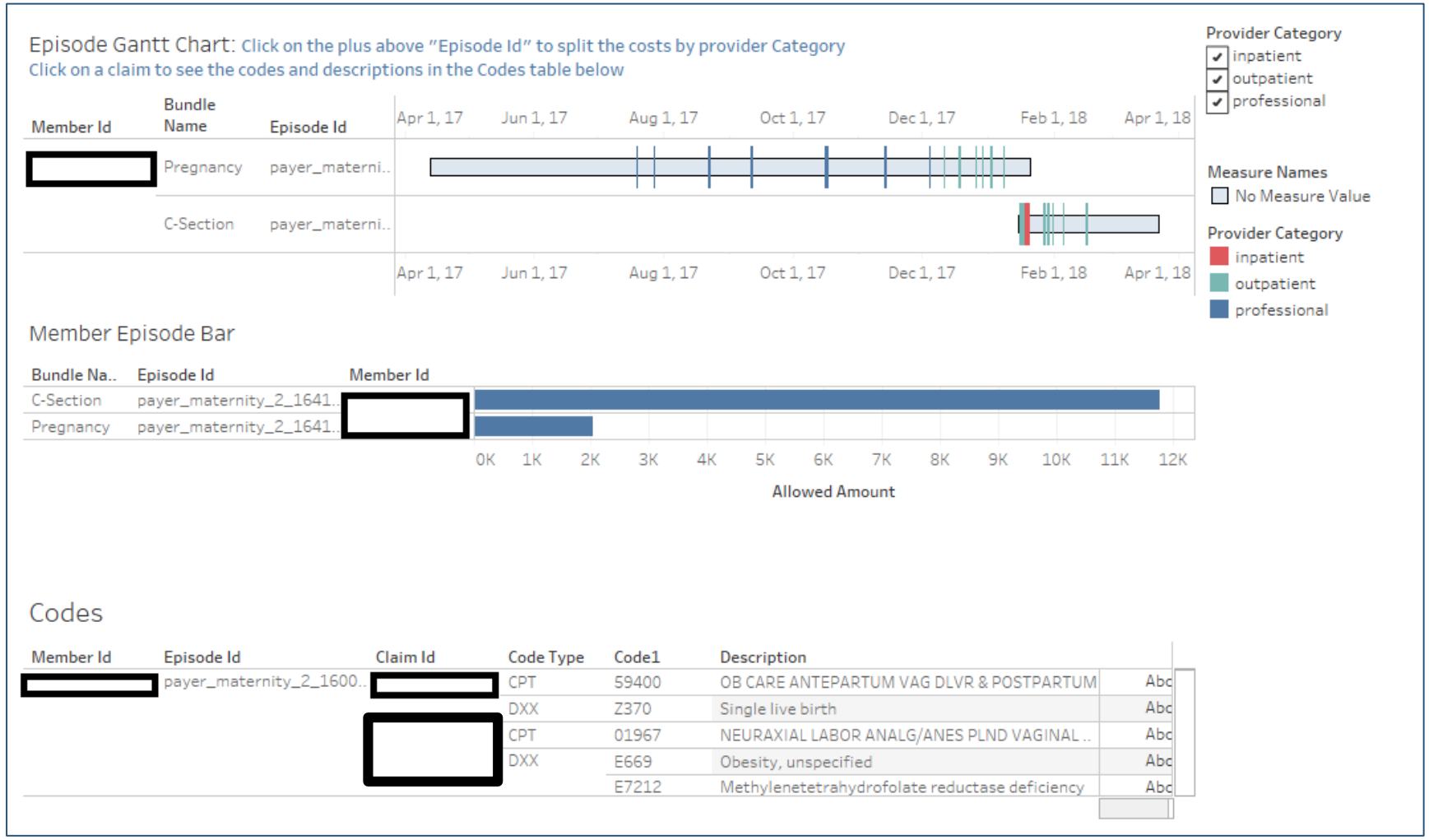


Tableau Reports: Member level drill-down



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Creating a program with levers of clinical and financial success

Lever Development for Commercially Insured Health plans

- Identify high value providers to enter into risk bearing arrangements

- Identify patients “early” that are likely to begin an episode so we can steer these patients to high value providers
  - Prior authorizations – two way arrangements with health plans
  - Predictive data science

- Identify opportunities of clinical success – lever components
  - Ways to help providers “win” within a bundled payment contract
  - Ways to improve patient experience

Identifying Opportunities by Looking for Variation in Episodes

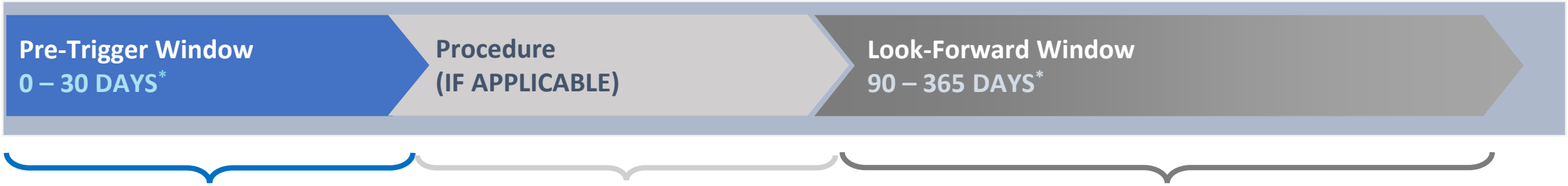
Clinical and operational opportunities are identified by a high variation in cost and/or outcomes when looking at pain points throughout a patient's journey. We call clinical and operational opportunities Levers of Clinical Success. Levers of Clinical Success have three main components:

1. Levers must have an impact on cost and/or outcomes
2. Levers are able to be operationalized by clinical teams
3. Levers must be measurable and trackable over time

Questions to ask:

- Tests – are they required? (Choosing Wisely)
- Surgery – is it required? (Appropriateness of care)
- Co-providers / consults – which ones are necessary?
- Complications – which ones to focus on
- Site of care – which setting is most cost-effective
- Follow-up – modify care plan if outcomes not as desired

Care Redesign: Levers of Clinical & Financial Success



SOURCES OF SAVINGS

- Appropriate testing: Imaging, Stress testing, Echocardiogram etc.
- Appropriate care choice: Medical vs. PCI
- Appropriate choice of high value provider – high efficiency, high quality
- Site of care choice: inpatient vs. ASC

SOURCES OF SAVINGS

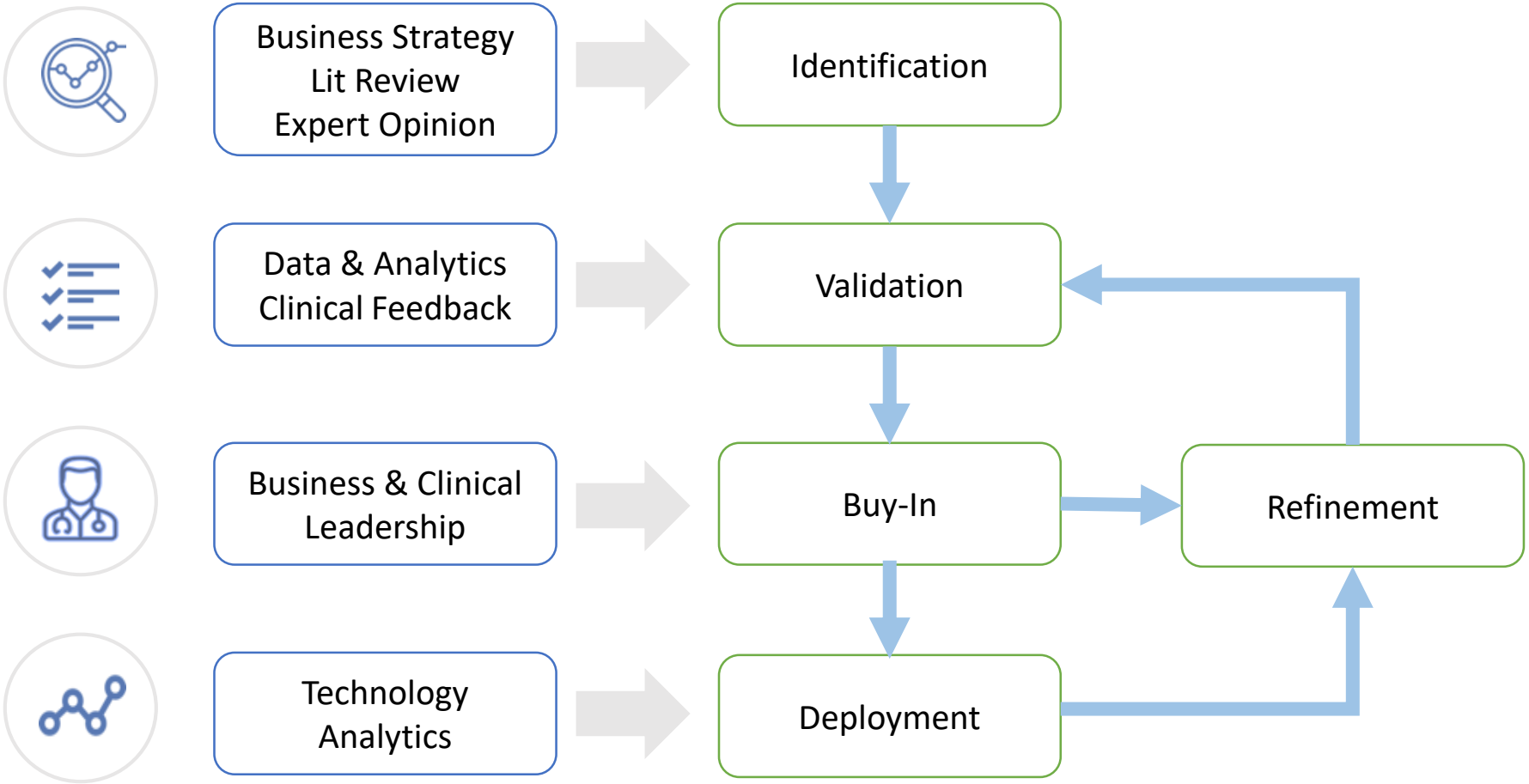
- Procedure choice
- Device choice
- Choice of co-providers: anesthesiologist, infectious disease specialists, pulmonologists

SOURCES OF SAVINGS

- Reduced readmissions
- Reduced Actionable Adverse Events
- Appropriate choice of post-acute care provider
- Appropriate testing
- Care Coordination
- Medication choice and compliance

*Episode Window length varies by episode

Cycle of Development: From Lever Conceptualization to Deployment



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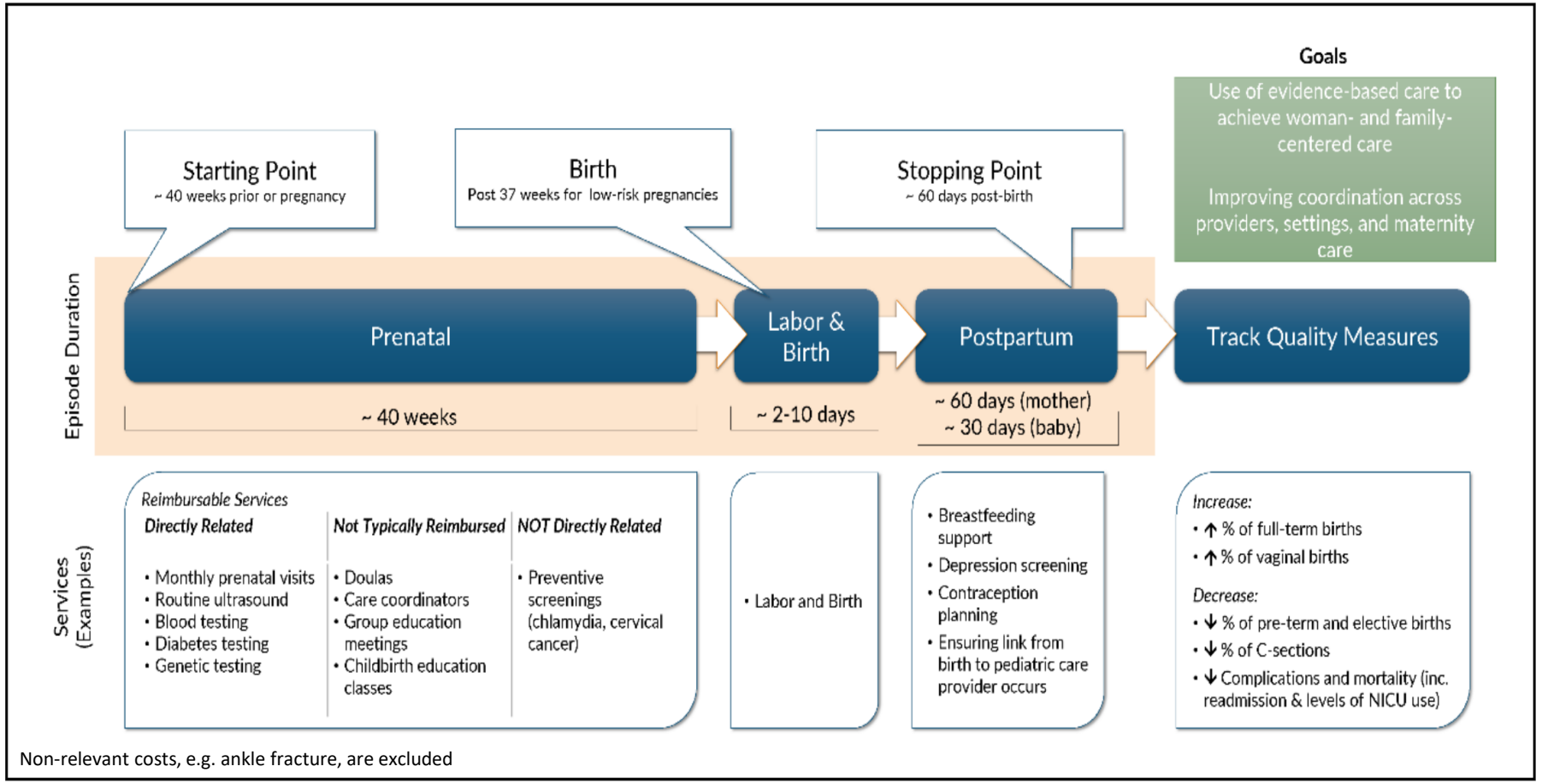
Development of Maternity Levers of Success

Maternity Episode: From Womb to Crib A Bundle of Bundles



Non-relevant costs, e.g. ankle fracture, are excluded

Reference: HCP-LAN: http://hcp-lan.org/workproducts/cep-whitepaper-final.pdf

Global Maternity Levers

The Global Maternity Episode is 270 days long. The levers must enable OB/GYN to engage and achieve savings over the course of this long episode

PRENATAL LEVERS

Timely and Adequate Prenatal Care – Reducing the Incidence of Low Birth Weight Babies

BIRTH LEVERS

Facility Selection

Reduce C-Sections by giving a blended rate (built-in incentive)

POSTPARTUM LEVERS

Appropriate Nursery Level – Decrease NICU, Decrease Infant Mortality

1. Facility Selection
2. Shifting unwarranted cesarean to vaginal deliveries
3. Appropriate nursery level care
4. Early prenatal care – reducing low birth weight babies

EPISODES

- Mother – prenatal
- Mother – delivery
- Mother – post partum (60 days)
- Newborn – 30 days

Shifting low-risk cesarean deliveries[1] to vaginal deliveries

Data Summary	Output
Total Deliveries (inpatient triggered only)	18,578
Average cesarean delivery cost	$11,789
Average vaginal delivery cost	$8,338
Cesarean section deliveries (N, %)	7,320 (39.4%)[2]
Cesarean sections that were low-risk[3] (N, %)	1,844 (25.2%)
Total number of inpatient facilities	122

[1]Jolles DR https://www.ncbi.nlm.nih.gov/pubmed/28132426
[2] National C-Section Rates are 32% (CDC – 2017)
[3] ACOG criteria adopted to identify low-risk C-sections

Savings Opportunity	Output
Average dollars saved per episode per facility (IQR)	$3,451 ($2,333 - $4,581)
Average Savings per Facility (IQR)	3.1% (1.6% - 4.0%)
Number of low-risk cesareans	1,844
Total potential savings[1]	$6,363,644
Overall Savings (% of Total $)	3.4%
Shift in C-Section Rates (current to new)	39.4% to 29.4%[2]

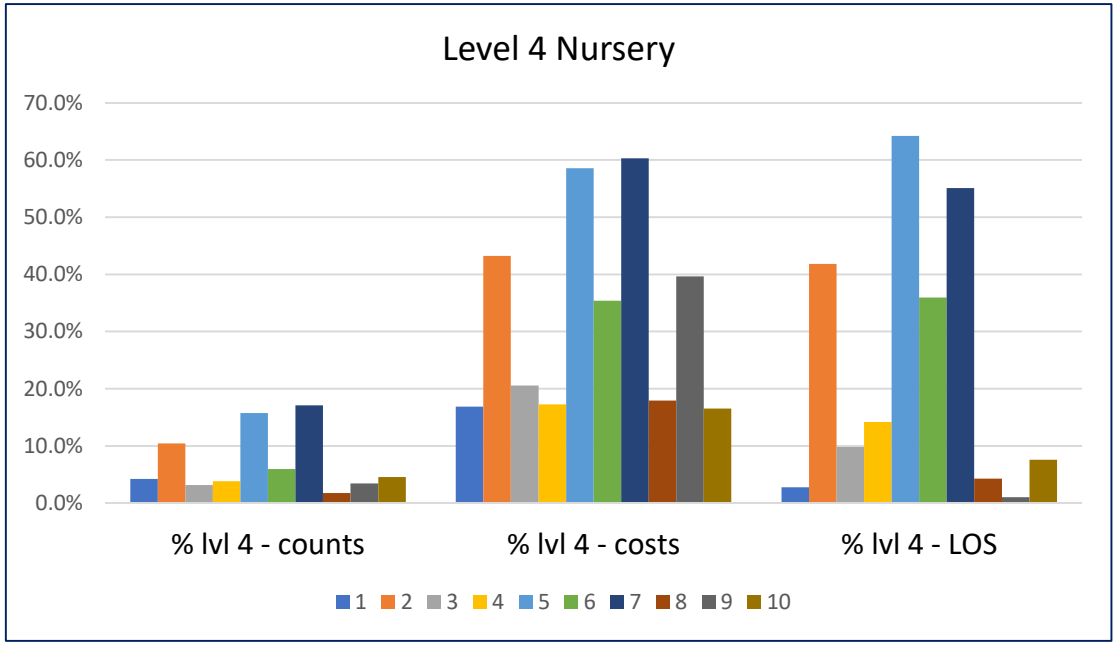
[1]Assumes all low-risk C-Sections could have been shifted to vaginal deliveries
[2] Leapfrog target rates for NTSV (Nulliparous, Term, Singleton, Vertex) Cesarean births is 23.9% by 2020

Variability in Level 4 Nursery Utilization: Newborn Lever

Use of In-Appropriate Nursery Level Care

N=18,139*		Count	Level 1	Level 2	Level 3	Level 4
Low Birthweight						
	Very Extreme LBW (<500g)	15	40%	0%	7%	53%
	Extreme LBW (500-999g)	20	15%	0%	25%	60%
	Very LBW (1000-1499g)	22	9%	5%	23%	64%
	LBW (1500-2500g)	609	75%	5%	8%	12%
	Not LBW	17,473	93%	2%	2%	3%
Prematurity						
	Extreme prematurity (<26 wks)	97	29%	15%	32%	24%
	Premature (<36 wks)	243	51%	11%	15%	24%
	Full term	17,799	93%	2%	2%	3%

Variability of Nursery Level 4 Utilization Across Facilities



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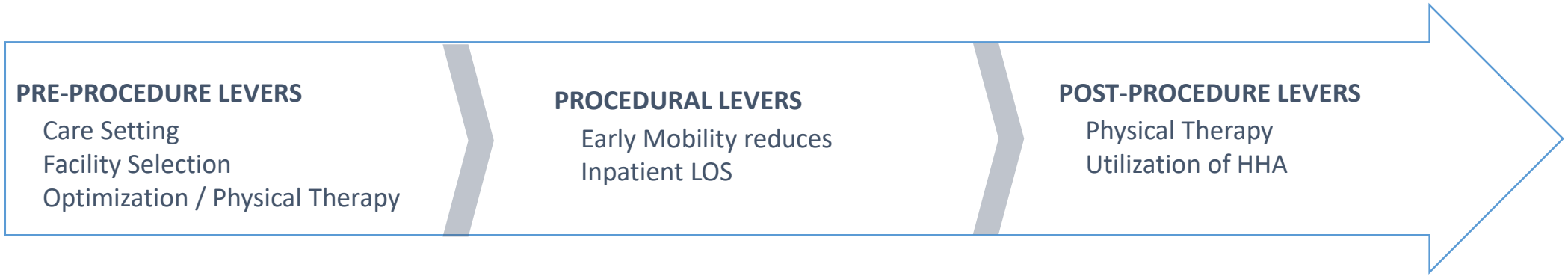
Procedural Lever Development

Orthopedic Levers

Orthopedic episode duration varies by episode Optimization and home recovery were important elements in determining the following:



1. Care Setting
2. Facility Selection
3. Early Mobility reduces Inpatient LOS
4. Physical Therapy Pre- and Post- Surgery

EPISODES

- Knee Revision / Knee Replacement
- Hip Replacement / Hip Revision (*not care setting)*
- Knee Arthroscopy
- Lumbar Spine
- Lumbar Laminectomy
- Shoulder Replacement

1 Selection

Identify patients who will benefit from surgery.

2 Optimization

Prepare patient medically and functionally to ensure better outcomes and a safe home recovery.

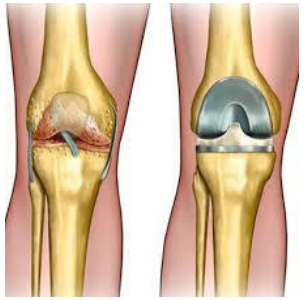
3 Disposition

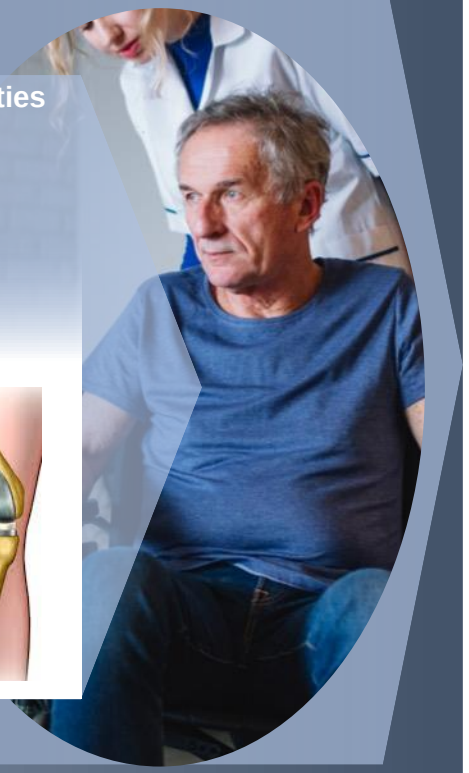
Manage expectations for home recovery. Utilize performance network as necessary.

4 Follow-Up

Manage comorbidities and reduce risk of readmission.

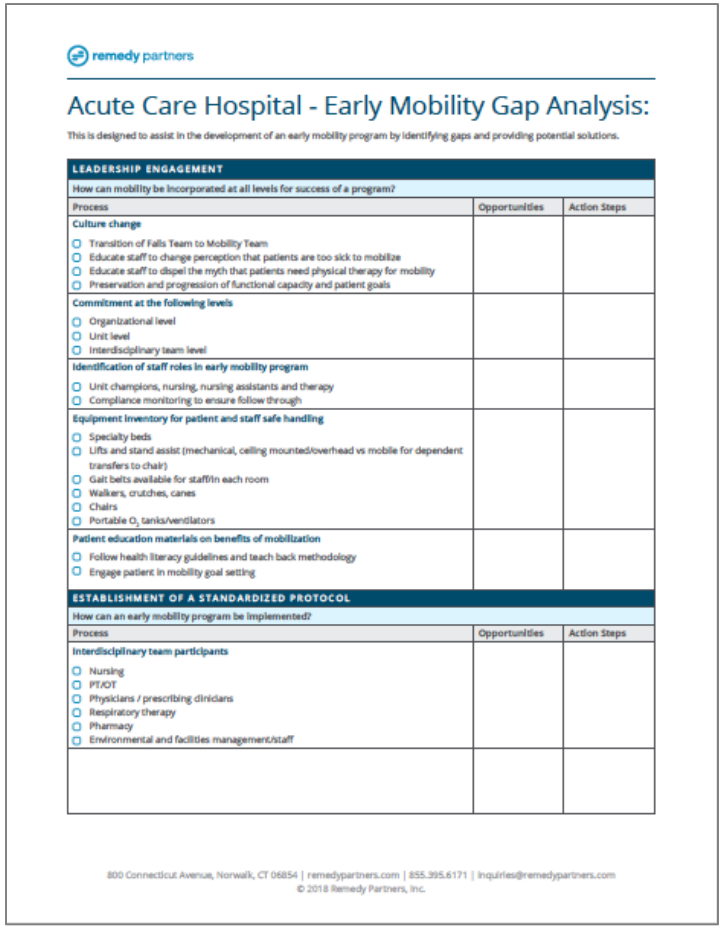

Artificial joint





Early Mobility Program

Leveraged gap analysis and Early Mobility Program of the Ortho team



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Acute Care Hospital - Early Mobility Gap Analysis:

This is designed to assist in the development of an early mobility program by identifying gaps and providing potential solutions.

LEADERSHIP ENGAGEMENT		
How can mobility be incorporated at all levels for success of a program?		
Process	Opportunities	Action Steps
Culture change ☐ Transition of Falls Team to Mobility Team ☐ Educate staff to change perception that patients are too sick to mobilize ☐ Educate staff to dispel the myth that patients need physical therapy for mobility ☐ Preservation and progression of functional capacity and patient goals		
Commitment at the following levels ☐ Organizational level ☐ Unit level ☐ Interdisciplinary team level		
Identification of staff roles in early mobility program ☐ Unit champions, nursing, nursing assistants and therapy ☐ Compliance monitoring to ensure follow through		
Equipment inventory for patient and staff safe handling ☐ Specialty beds ☐ Lifts and stand assist (mechanical, ceiling mounted/overhead vs mobile for dependent transfers to chair) ☐ Gait belts available for staff/in each room ☐ Walkers, crutches, canes ☐ Chairs ☐ Portable O_2 tanks/ventilators		
Patient education materials on benefits of mobilization ☐ Follow health literacy guidelines and teach back methodology ☐ Engage patient in mobility goal setting		
ESTABLISHMENT OF A STANDARDIZED PROTOCOL		
How can an early mobility program be implemented?		
Process	Opportunities	Action Steps
Interdisciplinary team participants ☐ Nursing ☐ PT/OT ☐ Physicians / prescribing clinicians ☐ Respiratory therapy ☐ Pharmacy ☐ Environmental and facilities management/staff		

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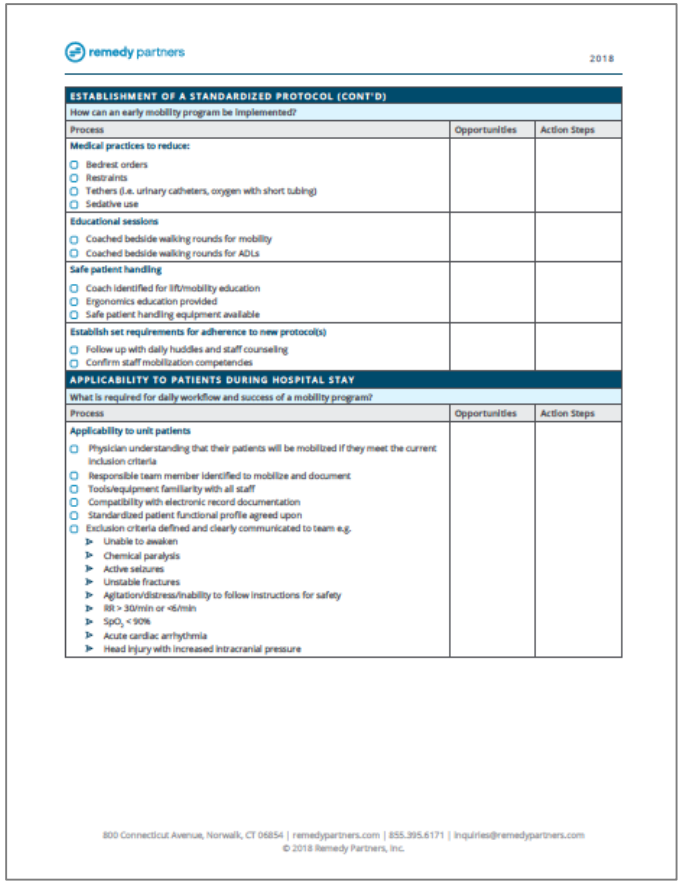

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ESTABLISHMENT OF A STANDARDIZED PROTOCOL (CONT'D)		
How can an early mobility program be implemented?		
Process	Opportunities	Action Steps
Medical practices to reduce: ☐ Bedrest orders ☐ Restraints ☐ Tethers (i.e. urinary catheters, oxygen with short tubing) ☐ Sedative use		
Educational sessions ☐ Coached bedside walking rounds for mobility ☐ Coached bedside walking rounds for ADLs		
Safe patient handling ☐ Coach identified for lift/mobility education ☐ Ergonomics education provided ☐ Safe patient handling equipment available		
Establish set requirements for adherence to new protocol(s) ☐ Follow up with daily huddles and staff counseling ☐ Confirm staff mobilization competencies		
APPLICABILITY TO PATIENTS DURING HOSPITAL STAY		
What is required for daily workflow and success of a mobility program?		
Process	Opportunities	Action Steps
Applicability to unit patients ☐ Physician understanding that their patients will be mobilized if they meet the current inclusion criteria ☐ Responsible team member identified to mobilize and document ☐ Tools/equipment familiarity with all staff ☐ Compatibility with electronic record documentation ☐ Standardized patient functional profile agreed upon ☐ Exclusion criteria defined and clearly communicated to team e.g. ➢ Unable to awaken ➢ Chemical paralysis ➢ Active seizures ➢ Unstable fractures ➢ Agitation/distress/inability to follow instructions for safety ➢ RR > 30/min or <6/min ➢ SpO_2 < 90% ➢ Acute cardiac arrhythmia ➢ Head injury with increased intracranial pressure		

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Gap Analysis and Program:

- Developed by the Ortho Team

Audience:

- Hospital clinical team and Surgeon

Components:

- Communicate benefits of the program
- Identify gaps in existing early mobility practices and subsequently provides tools and education for success
- Assist providers in implementing an early mobility program

Home Recovery Care Guidelines

Home Recovery Care Guidelines (Spine, Shoulder, Knee) available in Episode Connect

Home Preparation:

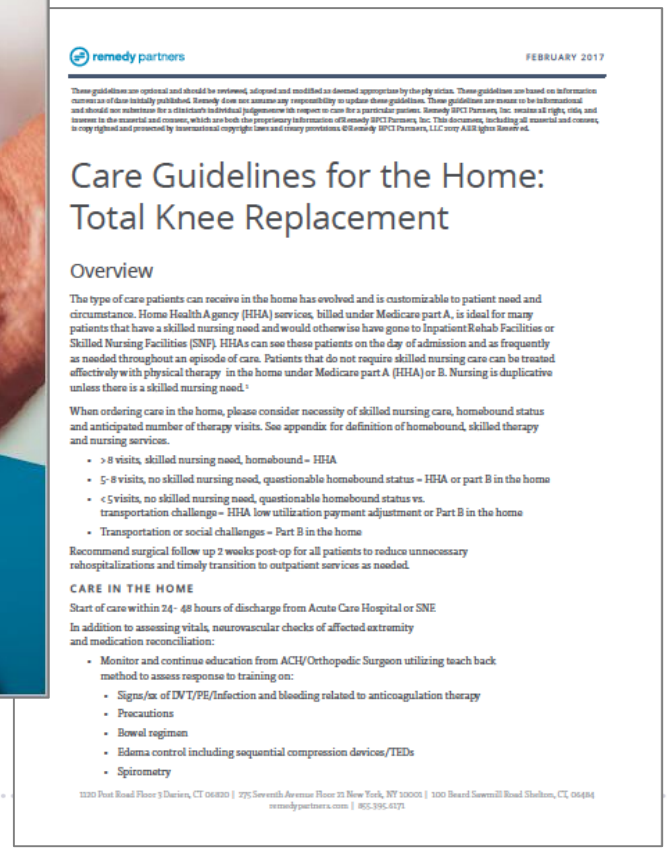
- Developed by our Ortho Team

Audience:

- Home Health Agency

Components:

- Assist HHA transitioning a patient from Hospital to Home
- Maximize benefits of home recovery
- Reduce Readmissions
- Educating HHA on optimal recovery of patients



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Care Guidelines for the Home: Total Knee Replacement

Overview

The type of care patients can receive in the home has evolved and is customizable to patient need and circumstance. Home Health Agency (HHA) services, billed under Medicare part A, is ideal for many patients that have a skilled nursing need and would otherwise have gone to Inpatient Rehab Facilities or Skilled Nursing Facilities (SNF). HHAs can see these patients on the day of admission and as frequently as needed throughout an episode of care. Patients that do not require skilled nursing care can be treated effectively with physical therapy in the home under Medicare part A (HHA) or B. Nursing is duplicative unless there is a skilled nursing need.[1]

When ordering care in the home, please consider necessity of skilled nursing care, homebound status and anticipated number of therapy visits. See appendix for definition of homebound, skilled therapy and nursing services.

- > 8 visits, skilled nursing need, homebound = HHA
- 5- 8 visits, no skilled nursing need, questionable homebound status = HHA or part B in the home
- < 5 visits, no skilled nursing need, questionable homebound status vs. transportation challenge = HHA low utilization payment adjustment or Part B in the home
- Transportation or social challenges = Part B in the home

Recommend surgical follow up 2 weeks post-op for all patients to reduce unnecessary rehospitalizations and timely transition to outpatient services as needed.

CARE IN THE HOME

Start of care within 24- 48 hours of discharge from Acute Care Hospital or SNF

In addition to assessing vitals, neurovascular checks of affected extremity and medication reconciliation:

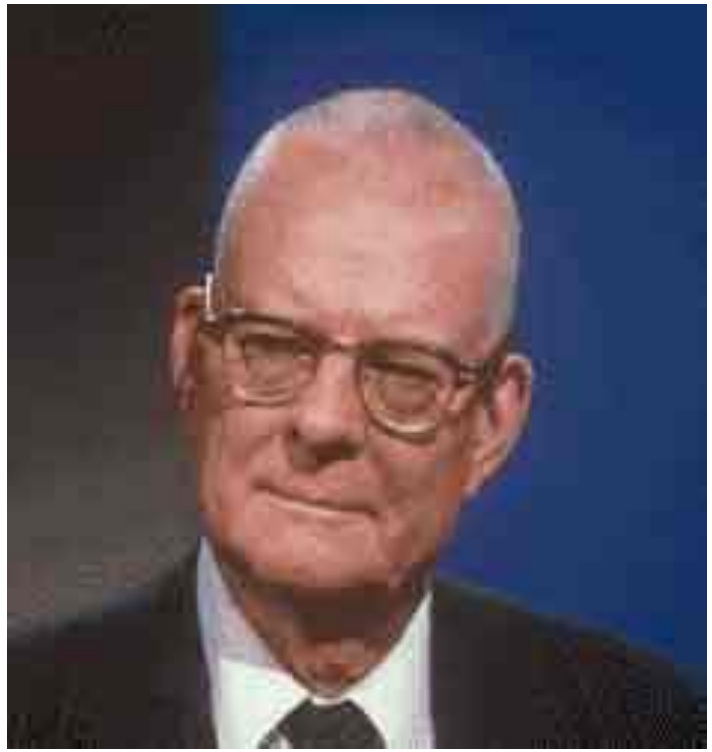
- Monitor and continue education from ACH/Orthopedic Surgeon utilizing teach back method to assess response to training on:
  - Signs/sx of DVT/PE/Infection and bleeding related to anticoagulation therapy
  - Precautions
  - Bowel regimen
  - Edema control including sequential compression devices/TEDs
  - Spirometry

Summary & Conclusions

Catalyzing Care Redesign & Process Re-engineering

- Bundled Payments through Shared Savings
  - **Creates an atmosphere of cooperation between payer and provider without shifting insurance risk to provider**
- Two-sided risk arrangements
  - **Brings providers skin in the game creating a strong incentive to find inefficiencies in care**
- Identifying levers of clinical & financial success helps providers win
  - **Reduce ED visits, readmissions, actionable adverse events, find efficiencies, shifting care to low cost options, care redesign, process re-engineering**
- Fueling intrinsic incentives drives change
  - **Feedback reports, dashboard of all patients, improvement over time, peer comparisons, benchmarks**

W. Edwards Deming



- When people and organizations focus primarily on quality, quality tends to increase and costs fall over time.
- When people and organizations focus primarily on *costs*, costs tend to rise and quality declines over time.
- “In God We Trust…All Others Bring Data”

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