



A Clinically Integrated Supply Chain = Value

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President Supply Chain Verticals

Beckers Hospital Review

March 2014

- 4 Keys to a Clinically Integrated Supply Chain
- 1. Senior Leadership Support
- 2. Physician Engagement & Education
- 3. Product Variation Reduction
- 4. "Close the Loop" ongoing performance monitoring and feedback

Definition

"Clinical Integration in health care supply chain is an interdisciplinary partnership to deliver patient care with the highest value (high quality, best outcomes, and minimal waste at the lowest cost of care) that is achieved through assimilation and coordination of clinical and supply chain knowledge, data and leadership toward care across the continuum that is safe, timely, evidenced-based, efficient, equitable, and patient focused."

The 2018 AHRMM (Association of Health Care Resource & Materials Management) board of directors

Clinical Integration Components

Executive Leadership

- Executive Sponsor
- Culture of Shared Clinically Integrated Product Selection aligned with Quadruple Aim

Clinician Engagement and Education

- Strong Clinician champion (e.g. Physician, Nurse Executive)
- Evidence-Based Decision Making (e.g. Physicians collaborate around benchmarking and practice variation)

Product Variation Reduction

- Outcome review
- · Cost optimization, standardization

Process and Practice Variation

- · Review of process across every business unit
- · Change management to reduce variation

Supply Chain Leadership

- Clinically integrated sourcing process
- · Project management and change management

Data

- Regulatory or reimbursement change impact
- Historical quality, outcome, and product usage data strive for true cost per case tied to quality measures

Clinical, Financial, Operational Alignment

- High quality + Outcome = Lowest Cost
- Aligned incentives to maximize reimbursement, cost per procedure margin, and acquisition cost

LEADERSHIP UNDER A CLINICALLY INTEGRATED SUPPLY CHAIN

Expand the premise that engagement is narrowed to physicians and clinicians. They are the biggest consumers but also think about how to impact other cost drivers like length of stay, readmissions, care coordination, risk management, and continuum of care.

CHAIN

ise that engagement is narrowed diclinicians. They are the biggest

• Expanded Role -What are the elements that supply chain can own outside of clinician involvement? • Product
Optimization - Clinical
utilization and
standardizing care.
What is the role of
supply chain?

- How can supply chain become more involved in the care continuum? Who are the other players in the continuum of care?

• Beyond Acute Care

• Home Health - Are
the same products being
used across the
continuum? Do we
provide patient training in
the hospital that would
benefit from having the
same products at home?
Are we working to ensure
that our distributors are
helping our home care
team?

• Risk Prevention How is supply chain
engaged in patient
safety protocols that
modify sourcing
practices? (e.g. Risk
program on falls.)
How does Sourcing
contract for socks?

Care Coordination How do we work with
the transition
management teams to
get patients out of the
hospital or the home
health teams to care
for patients in the
home?

Additional examples of where a clinically integrated supply chain is critical

- Acquisitions
- Intra-operability of Medical Devices
- Cybersecurity
- Warranty Device Credit
- Bundles
- Emergency Management



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Cost - all costs associated with caring for individuals and communities

Quality - care aimed at achieving the best possible health

Outcomes - financial results driven by exceptional patient outcomes

Vanderbilt University Medical Center's Approach to Clinical Integration





Founded 2008

Medical Economics Outcome Committee

COMMITTEE CHARTER 2018

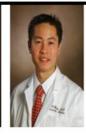
Mission and Vision: A clinician driven process that utilizes evidence-based, clinically sound, financially responsible methodologies for the evaluation of new product introduction, utilization or clinical variation at Vanderbilt University Medical Center with the intent to provide the highest quality care in the most cost-effective manner.

Description: MEOC Committees will be comprised of subspecialty representatives who will have two levels of responsibility: 1.) evaluating new product and device requests from within their peer group, or by request from the MEOC Executive Committee, and 2.) addressing identified opportunities in standardization, utilization or pricing obtained through internal/external analysis and benchmarking. These opportunities can be product category or patient population driven and are intended to compliment the work around bundles or new/existing program evaluation being led by the Patient Care Centers.













Medical Directors



- Strategy I new product and technology evaluation and acquisition
 - > 2008 present
- Strategy II focused contracting on physician preference and clinical categories
 - > 2008 present
- Strategy III utilization/variability in practice
 - 2012 present
- Strategy IV service line support using evidenced based decision making
 - > 2013 present
- Strategy V establishment of a purchasing collaborative to aggregate volume/reduce variation
 - > 2014 present
- Strategy VI combine total cost of care with clinical outcomes comparison for specific DRG performance/new product requests
 - > 2017 present
- Strategy VII add external clinical data from NSQIP, CDC, registries, patient reported/functional outcomes/claims data into decision making
 - > TBD

Our journey: the strategy is based on the maturity of the organization



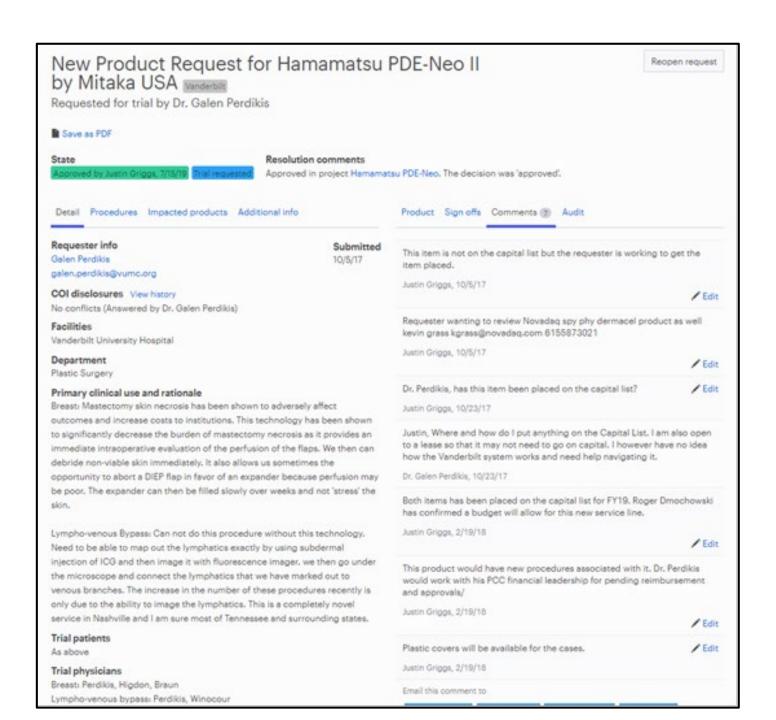
Fiscal Impact Since Inception – Strictly cost of goods impact

MEOC Category	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	Total by Category
MEOC Initiatives	\$0	\$5,913,025	\$2,608,677	\$2,225,263	\$3,711,561	\$3,698,287	\$2,751,692	\$3,789,141	\$1,975,016	\$2,807,965	\$4,650,337	\$1,117,381	\$34,130,964
Medical Sourcing Initiatives	\$1,843,162	\$625,923	\$354,766	\$1,123,689	\$2,554,033	\$2,237,278	\$5,162,886	\$987,037	\$1,804,812	\$1,155,277	\$4,340,789	\$5,019,543	\$22,189,652
Pharmacy Initiatives	\$2,432,113	\$1,619,057	\$3,001,146	\$3,445,703	\$2,738,368	\$3,542,096	\$2,605,342	\$2,770,227	\$2,356,403	\$2,779,129	\$1,024,380	\$442,295	\$28,756,259
Rebates	\$2,035,450	\$3,312,877	\$3,385,335	\$3,698,077	\$461,500	\$770,791	\$1,320,517	\$3,047,815	\$2,002,033	\$3,101,707	\$1,096,318	\$2,602,526	\$26,834,947
Admin Fees								\$1,587,570	\$1,151,939	\$193,943	\$1,936,948	\$2,016,168	\$6,886,568
Total	\$6,310,725	\$11,470,882	\$9,349,924	\$10,492,732	\$9,465,462	\$10,248,452	\$11,840,437	\$12,181,790	\$9,290,203	\$10,038,021	\$13,048,772	\$11,197,914	\$118,798,390

FY19 Summary							
Cardiology	\$630,639						
Med Surg	\$1,867,188						
Periop	\$486,742						
Pharmacy	\$442,295						
Purchased Services	\$3,152,355						
Admin Fees	\$2,016,168						
Rebates	\$2,602,526						
	\$11,197,914						
FY19 Target	\$7,000,000						
Above Target	\$4,197,914						

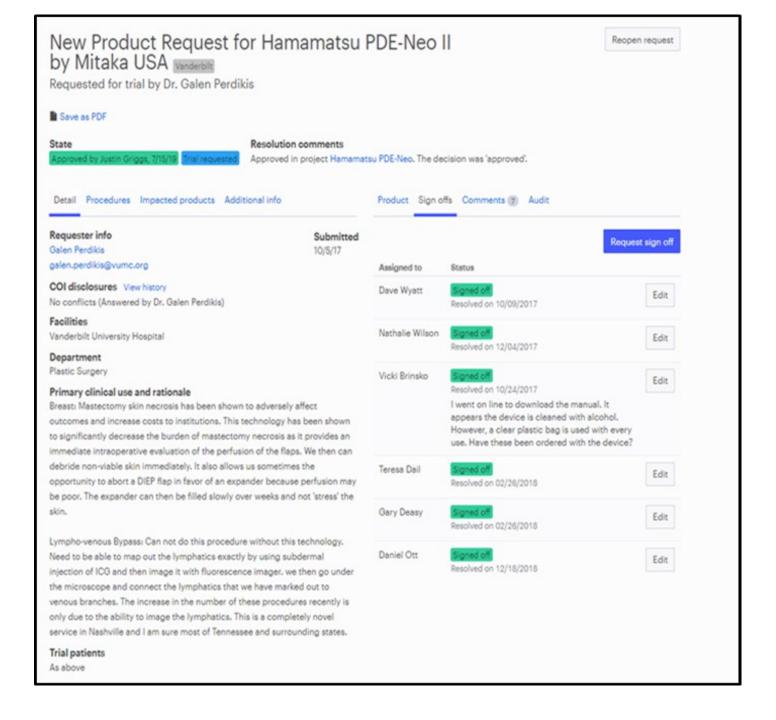
Strategy I

New Product/Technology

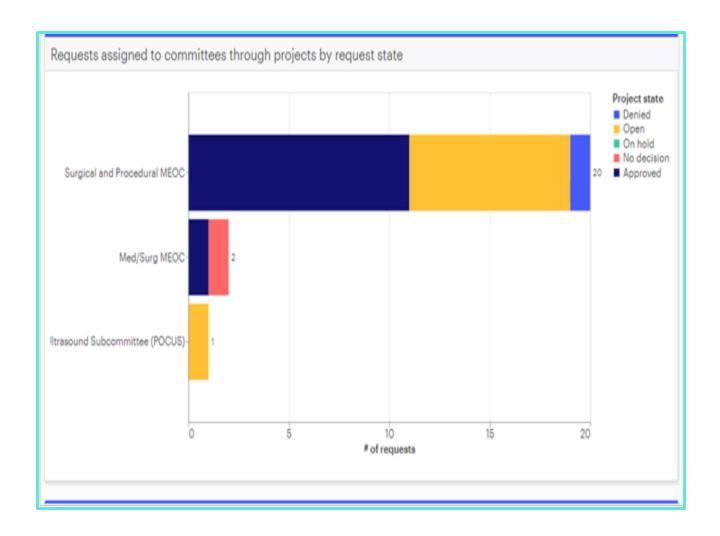


Strategy I

New Product/Technology



FY 19 activity



Strategy II

PPI Contracting

Strategy V

Aggregation within Purchasing Collaborative

n of Spend	Sum of Option Savings 5
\$3,081,257	\$874
\$2,229,300	\$52
\$753,566	\$24
\$3,940,337	\$1
\$675,908	\$:
\$1,837,591	\$
\$548,119	.
\$402,474	
\$585,253	
\$427,929	
\$3,118,649	
\$3,149,564	3
\$1,012,691	\$10.
21,762,640	\$2,956,

VUMC Savings Opportunities

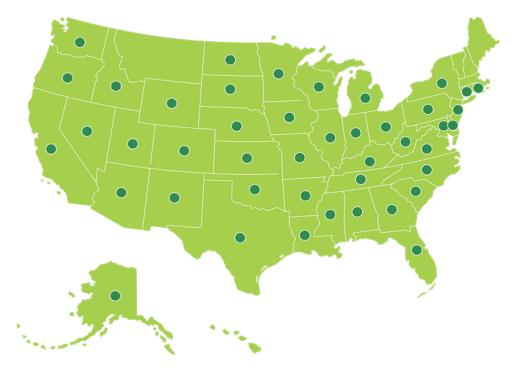
- Ongoing Monthly Reviews
- Top Estimated Saving Initiatives in Pipeline:
 - Total Joints
 - Dual "\$600 \$700K
 - * All Play opportunity pending based on percentile chosen
 - will incorporate 2021 volumes
 - Trauma Will remain with DePuy. ~\$950,000 total value
 - Neuro-stim ~\$500K

All 3 contracts will be part of the Collaborative contract portfolio available to members

National Footprint – now in 44 states

Strategy V

Vanderbilt Health Purchasing Collaborative

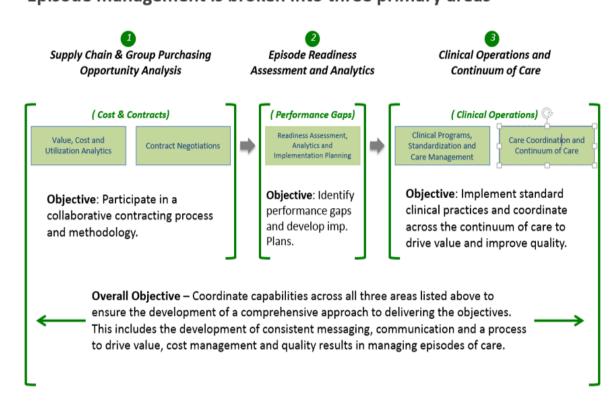


- 54 Hospitals
- 5500+ Clinics
- 47 ASCs
- 36 Retirement Communities
- \$34M Total Savings
- \$55M Total Contract Value
- 11% Average Member Savings
- \$3.5B Combined Supply Spend

Strategy IV

Service Line Support

VUMC Approach: Episode management is broken into three primary areas



FY 20 Direct to Employer Bundles:

- 1. Maternal Health
- 2. Cochlear
- 3. Lumbar Fusion
- 4. Cervical Fusion

5. Total Joints

6. Bariatrics

FY 20 Focus

Supplies

- Year over year change > 3% in acuity adjusted supply cost
- Decrease in average contribution margin
- Defined at PCC level (adult) or Med/Surg/NICU level

Measurement in practice:

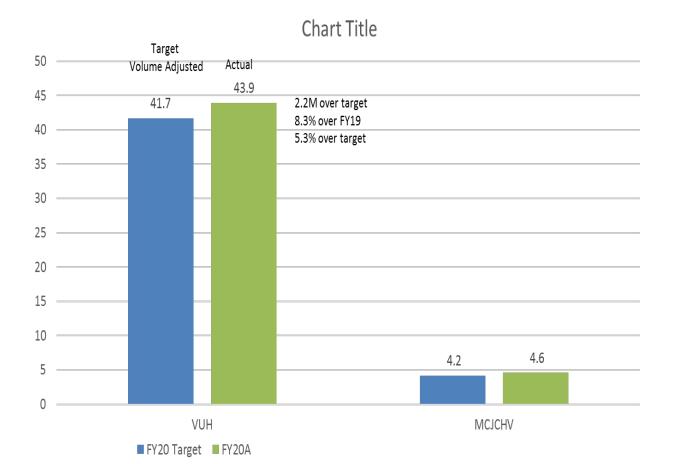
FY19 cost per case with allowance of 3% inflation at the DRG level is the max cost target

Any amount over this is a variance and all PCCs have a target even if margins improved last year

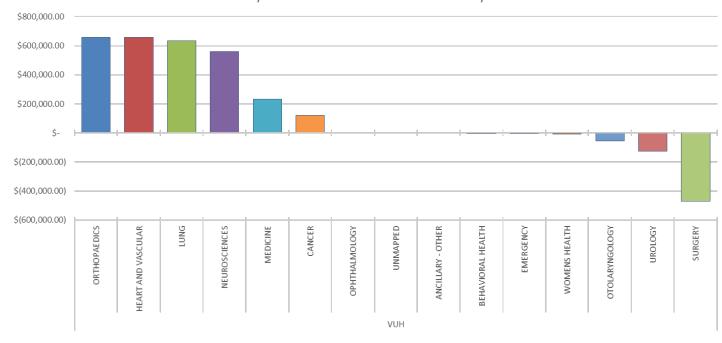


Division Breakdown:

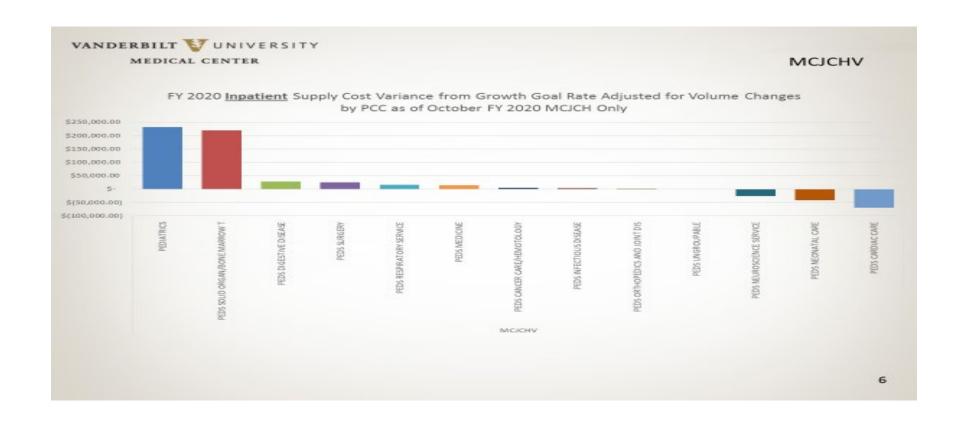
October FYTD IP Supply Cost (annualized) compared to Target of 3% inflation or less



FY 2020 <u>Inpatient</u> Supply Cost Variance from Growth Goal Rate Adjusted for Volume Changes by PCC as of October FY 2020 VUAH Only



Directional Opportunity Assessment



Directional Opportunity Assessment

Monthly data analysis on cost, volume and margin

			YOY Change		YOY Change in Var							
		TOT Change			Supply Cost	% Change	Change in				Change in	Change in
	Change in	in Var	Cost per	Due to	Due to	Due to	AVG Var		Change in	Change in	Avg.	Avg. Net
High Cost Supply Item Group	Accounts	Supply Cost	Account	Util/Price	Volume	Volume	Supply Cost	CM %	CM%	OM%	Charges	Revenue
Total Artifical Heart	1	\$130,527	\$0	0.00%	\$130,527	100.00%	\$130,527	-60.83%	-60.83%	-108.41%	\$2,581,764	\$319,496
Pacemaker/ICD	13	\$458,038	\$236,007	51.53%	\$222,031	48.47%	\$1,396	16.12%	-23.31%	-27.96%	(\$33,946)	(\$25,770)
Valve Surgery	-29	(\$97,013)	\$12,811	13.21%	(\$109,825)	-113.21%	\$320	46.19%	-6.40%	-7.41%	\$68,568	\$5,941
VAD	-4	(\$178,459)	\$241,739	135.46%	(\$420,198)	-235.46%	\$8,634	26.65%	-6.30%	-6.42%	\$33,764	(\$19,783)
Neuro Stimulator	-23	(\$603,804)	(\$196,083)	-32.47%	(\$407,721)	-67.53%	(\$1,343)	-2.45%	2.57%	3.21%	(\$7,221)	(\$4,040)
Watchman	14	\$211,053	(\$29,456)	-13.96%	\$240,509	113.96%	(\$508)	2.45%	2.76%	5.61%	(\$4,382)	\$300
TAVR	7	\$253,120	\$32,377	12.79%	\$220,743	87.21%	\$661	4.43%	2.93%	7.10%	(\$24,553)	(\$4,203)
Cath Vent Assist	1	\$60,893	\$37,268	61.20%	\$23,625	38.80%	\$1,491	34.29%	3.30%	7.22%	(\$50,204)	(\$4,689)
Mitraclip	15	\$450,885	(\$12,407)	-2.75%	\$463,292	102.75%	(\$1,551)	9.00%	21.33%	30.26%	\$5,070	\$9,163
Spinal Rod	1	\$17,658	(\$10,928)	-61.89%	\$28,587	161.89%	(\$5,464)	28.93%	117.60%	141.51%	\$8,932	\$54,326



Strategy III

Utilization and Variation in Practice



Client: Vanderbilt

Reporting Period: Jun 19 - Nov 19
Period 1 Date Range: Jun 19 - Aug 19

Period 2 Date Range: Sept 19 - Nov 19

OVERALL SUMMARY	PRICE CH	UTILIZAT	UTILIZATION CHANGE PRODUCT		T CHANGE	TOTALS			TALS	
Reporting Period: Period 1 Date Range:										
			Net		Harry	10010-000		100		#
2000000 000	POLITICAL STATE		Utilization	% Utilization	Product	Product Change		Overall	Change	Product
P1 Spend	Net Price Impact	% Price Impact	Impact	Impact	Change Impact	Impact %	P2 Spend	Change	%	5
\$61,474,676	-\$69,394	-0.1%	\$1,342,643	2.2%	\$2,214,604	3.6%	\$65,141,028	\$3,487,853	5.67%	19865

Department Name	Product Decscription	Manufacturer Name	Sum of Utilization Impact	Sum of Price Impact
☐ Cardiology - Interventional		Abiomed	\$300,000	\$0
	□Transcatheter Aortic Valve, EvolutR, 34mm	Medtronic	\$120,000	\$0
	□ Watchman System, CLS, 24mm	Boston Scientific	\$102,000	\$0
☐ General Medical / Nursing	Oxygenator 215ML QUADROX-ID Adult Diffusion Membrane Without Filter Noncoated Screw Connector Perfusion Sterile Latex Free Disposable	Getinge	\$505,120	\$0
☐ Cardiology - Electrophysiology	☐ EP Catheter, Thermocool Smarttouch, Bi,Nav,Tc,D-F,C3	Biosense-J&J	\$117,840	\$0
	□ ICD, Resonate EL DR IS-1 DF4	Boston Scientific	\$103,250	\$0
	☐ Resonate CRT-D, 5.37 x 8.18 x 0.99cm	Boston Scientific	\$111,000	\$0
☐ Operating Room (Surgery/OR)	□ Processor N7 Nucleus Cochlear System	Cochlear Americas	\$300,184	\$0
□ Central Sterile	☐ SterilContainer, Orange	Aesculap	\$115,138	\$0
Grand Total			\$1,774,532	\$0

Strategy III

Utilization and Variation in Practice

	VUM	CANNED CONTR	ACT COMPLIAN	ICE TRACKER		
DASHBOARD NAME	MANUFACTURER	CONTRACT COMMITMENT %	ACTUAL % (OCT18-SEP19)	ACTUAL % (NOV18-OCT19)	ACTUAL (DEC18-NOV19)	*ACTUAL (JAN19-DEC19)
CORONARY STENT	MEDTRONIC	80%	75%	75%	75%	73%
SPINE IMPLANT	J&J,MEDTRONIC, & STRYKER	90% (Tri)	99%	98%	99%	99%
TRAUMA	181	90%	65%	68%	70%	71%
SURGICAL GLOVE	CARDINAL	90%	94%	93%	94%	93%
EXAM GLOVE	MEDLINE	90%	98%	98%	98%	98%
TOTAL JOINT	STRYKER, & ZIMMER	90% (Dual)	56%	56%	57%	58%
TAVR	EDWARDS &MEDTRONIC	100% (Dual)	100%	100%	100%	100%
SUTURE	I&I	90%	96%	96%	96%	96%
ENDOMECHANICAL	J&J	90%	87%	99%	99%	99%
TROCAR	J&J	90%	42%	42%	46%	46%
MESH - SYNTHETIC HERNIA & FIXATION	١%١	90%	54%	55%	53%	51%
HEART VALVE	ABBOTT & EDWARDS	90%	84%	84%	74%	75%
STANDARD ENERGY	1 <mark>%</mark> 1	90%	95%	95%	95%	95%
ADVANCED ENERGY	181	90%	50%	50%	50%	50%
CRM	BOSTON & MEDTRONIC	80% (Dual)	93%	91%	93%	93%
SEALANT	181	85%	77%	77%	77%	77%

MEOC Medical Directors will own this work

Supply Cost per Case

	2019 MTD	2019 MTD	MTD	MTD	PY MTD	PY MTD	2019 YTD	2019 YTD	YTD	YTD	Prior YTD	Prior YTD	
Key Ratios:	Actual	Budget	Var	% Var	Actual	Var	Actual	Budget	Var	% Var	Actual	Var	
OR Supply cost per case	2,945	3,055	109	4%	3,059	114	3,047	3,064	16	1%	3,061	13	OR
Cath Cost per case	3,089	2,467	(622)	(25%)	2,520	(568)	2,985	2,464	(521)	(21%)	2,550	(435)	Cath
EP Cost per case	8,627	9,732	1,105	11%	11,494	2,867	9,350	9,715	365	4%	9,639	290	EP
Cath & EP Combined Cost per Ca	4,776	4,797	21	0%	5,235	459	4,921	4,785	(137)	(3%)	4,761	(160)	Cath & EP
Heart Tx per procedure	67,632	57,082	(10,550)	(18%)	54,698	(12,934)	62,745	57,082	(5,663)	(10%)	51,489	(11,256)	Heart Tx
Kidney Tx per procedure	28,865	28,232	(632)	(2%)	23,556	(5,309)	25,886	28,232	2,347	8%	31,753	5,867	Kidney tx
Lung Tx per procedure	66,298	62,491	(3,808)	(6%)	62,663	(3,636)	68,441	62,491	(5,951)	(10%)	60,576	(7,865)	Lung Tx
Pancreas Tx per procedure	45,952	53,320	7,368	14%	45,490	(462)	45,635	53,320	7,685	14%	52,499	6,864	Pancrease Tx
Liver Tx per procedure	48,485	44,627	(3,859)	(9%)	38,727	(9,758)	43,560	44,627	1,067	2%	43,948	388	Liver Tx
IP Nursing per Pt Day	84	91	7	7%	84	0	85	87	3	3%	80	(4)	IP Nurse
ED per visit			0	#DIV/0!		0			0	#DIV/0!		0	ED

Strategy IV:

Example of clinical engagement using evidence to impact cost per case

Supply/Drug name under review	Baseline Average Cost/ Month	Post Pilot Average Cost/ Month	Is this drug/supply clinically necessary for patient population? (Y/N)	Alternative options for treating this patient population:	Mitigation strategies explored and/or applied to improve margin:	Action Plan:
TYRX Antibiotic Sleeve	\$30,132	\$14,096	Υ	N	□ Conduct additional utilization analysis □ Explore contract adjustment opportunities □ Redefine process to ensure appropriate financial clearance □ Other	
Plasma Blade	\$12,875	\$8,577	Υ	Υ	□ Conduct additional utilization analysis □ Explore contract adjustment opportunities □ Redefine process to ensure appropriate financial clearance □ Other	

- Combined spend between the 2 products ~ \$700,000 year
- · Clinical criteria adopted for both
- Savings opportunity ~\$200,000 per year

What other changes have we made.....

- No longer use robotics to perform bariatric surgery
- Reduced the amount of anti-biotic bone cement being used for primary joint replacement
- Eliminated the use of an auto-transfusor for a specific population
- Reduced the amount of new products being permanently requested through our process by allowing trials to document comparative differences

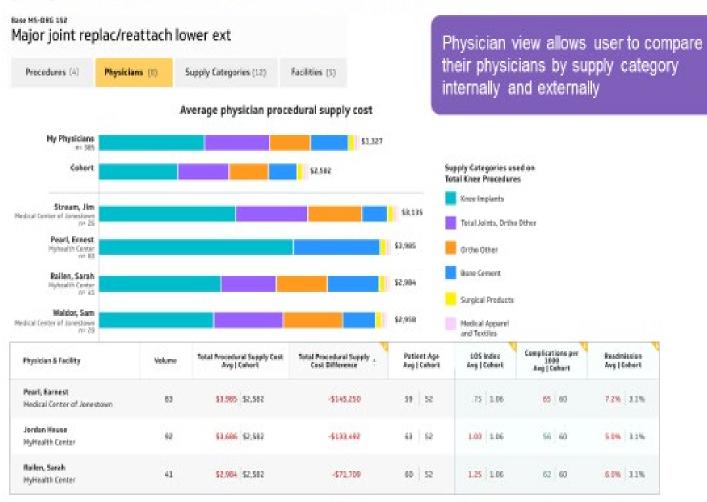
Strategy VI:

Utilizing a clinically integrated data set with administrative outcome data

Strategy VII:

Adding to this our internal patient reported outcomes

Data can be viewed by procedures, physicians, supplies or facilities





Current state

Active Contract Pricing Initiatives

- MEOC/contract savings for medical supplies will result in a \$4M FY impact
- Benchmark pricing on additional product categories shows \$2.6M in savings opportunity (line item pricing) on \$40M spend in 9 categories. \$2M of \$2.6M falls into service lines:
 - \$1.4M is in ortho/trauma/spine
 - \$600K is in cardiology
- Contracts are actively being negotiated, with engagement of clinical/physician leadership, for ortho and cardiology which will yield a fiscal year impact of ~\$830K

Clinical Variation/Utilization Opportunities

- Pilot initiated by VUH leadership limited to cath/EP, neuro-interventional and interventional radiology. Cath/EP were able to impact utilization of products by implementing clinical protocols.
- Currently, targets not set in other areas
- Exploring external data aggregator for supply utilization/quality measures at case level
 - Anticipate an April 1 go live
- 2 current sources of internal data exist to understand supply cost and physician utilization. Both are drillable to get finer details but require enhancement.
 - EPSI supply expense dashboard (Finance)
 - Direct point of use data at case level (Supply Chain)

Future State for even more clinically integrated approach

- <u>Contract pricing:</u> Continue to utilize external benchmarking to identify line item pricing opportunities and engage physician/clinical leaders at the PCC level when necessary for decision making. Will continue to set savings target goals annually based on benchmark data.
- <u>Clinical Variation/Utilization Opportunities:</u>
 - Need chair/chief engagement: no incentive for their faculty to change practice
 - While data exists, it needs to be presented in more user (and physician) friendly, trended manner.
 - Roles/responsibilities need to be clarified within the PCC and departments on how to address an opportunity, work it, ensure compliance going forward and what supply chain and finance support looks like.
 - MEOC medical directors can be utilized to address any "leakage" to contract commitments as it relates to vendors or products being utilized outside of approval.

Work Plan

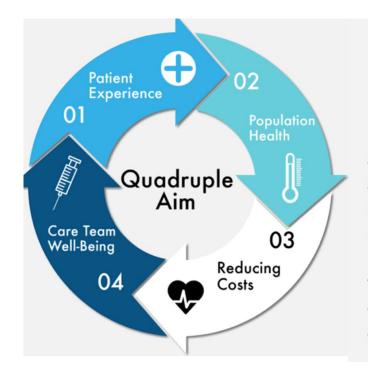
Action Step	Status	Responsible	Time Frame
Strategy meeting held: Warren, Dave P, Teresa, Jim	Completed	J. Kasnick, T. Dail	1/21/2020
Hospital President and Ambulatory Leadership determine designees for the work and reporting cadence	In Process	Scott, Meg, Tom	2/11/2020
Engage chair/physician leadership for a pilot in areas w/ greatest opportunity	T. Dail gained commitment from R. Wright and W. Clair	T. Dail, J. Slayton	1/22/2020
Develop process for managing supply initiatives utilizing pilots: better reporting and role/responsibility assignments	Utilize Ortho and Cardiology as pilots Finance develops reporting with Supply Chain	T. Dail, J. Kasnick, Scott, Meg, Tom	3/15/2020
Define role of PCC financial managers	Will define post pilot; ensures ongoing monitoring and sustainability	J. Kasnick	April 2020
Finalize contract price reductions for Ortho and Cardiology	In Process	T. Dail	3/15/2020
Determine reporting needs for pilots	Meeting last week. Prototype being developed to share with pilot areas	T. Dail, J. Kasnick, C. Hill	3/15/2020
Define RACI for ongoing opportunities	Not Started	T. Dail, Scott, Meg, Tom	3/15/2020

Work Plan

Action Step	Status	Responsible	Time Frame
Develop process to ensure that approved cost of new technology through MEOC is captured for forecasts	Not started	J. Kasnick, C. Hill	4/30/2020
Roll out pilot work to other supply-intensive PCCs/areas	Not started	T. Dail, J. Kasnick, Scott, Meg, Tom	May 2020
Utilize MEOC physicians for review of contract compliance to address non-compliance that can impact pricing/cost per case	Initial conversation with directors completed. Rewriting charter. Dashboards being developed	T. Dail, MEOC Medical Directors	April 2020
Establish process for determining future savings targets	Not started	J. Kasnick	6/30/2020
Determine how to utilize this information around bundle price setting	Not started	J. Kasnick, K. Nanney, CJ Stimson	TBD
Revisit cost savings sharing with clinical depts. and / or chair goals to support setting efforts	Not started	C. Moore, Funds Flow Committee	6/30/2020

The next big step....





Supply chain's <u>Carefluent</u> Connect is specifically focused on providing solutions that will impact every aspect of the Quadruple Aim

This is what sets us apart from those non traditional companies trying to break into the healthcare market.

Who is the customer:

- 1. The patient/consumer
- 2. The care provider
- 3. The payers

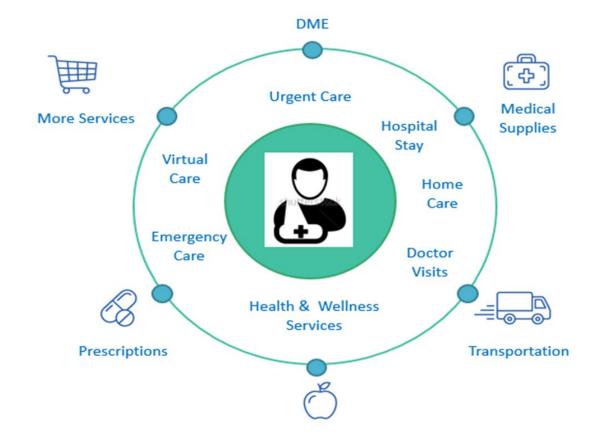
What is the value:

- 1. Coordination/ownership of needs
- 2. Meet the customer where they are at
- 3. A provider and patient focused processed

What is the goal:

- 1. Customer loyalty
- 2. Provider satisfaction
- 3. Impact to cost, quality and outcomes

A Truly Clinically Integrated Approach





Remember that is a journey......

