



# Clinician Guided Strategies: Cut Waste, Not Care

# Health Catalyst Speakers



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# Agenda

- How to Identify Waste with Activity Based Costing
- A Clinician's Perspective
- Scaling and Transforming Actionable Insights in Activity Based Costing with AI
- Q&A



# How to Identify Waste with Activity Based Costing

# Audience Poll 1

Is your organization able to identify unwarranted clinical cost variation?

**A**

**Yes**

**B**

**No**

**C**

**Uncertain**

# Audience Poll 2

Does your organization provide detail data to Clinical Leadership to resolve unwarranted cost?

**A**

**Yes**

**B**

**No**

**C**

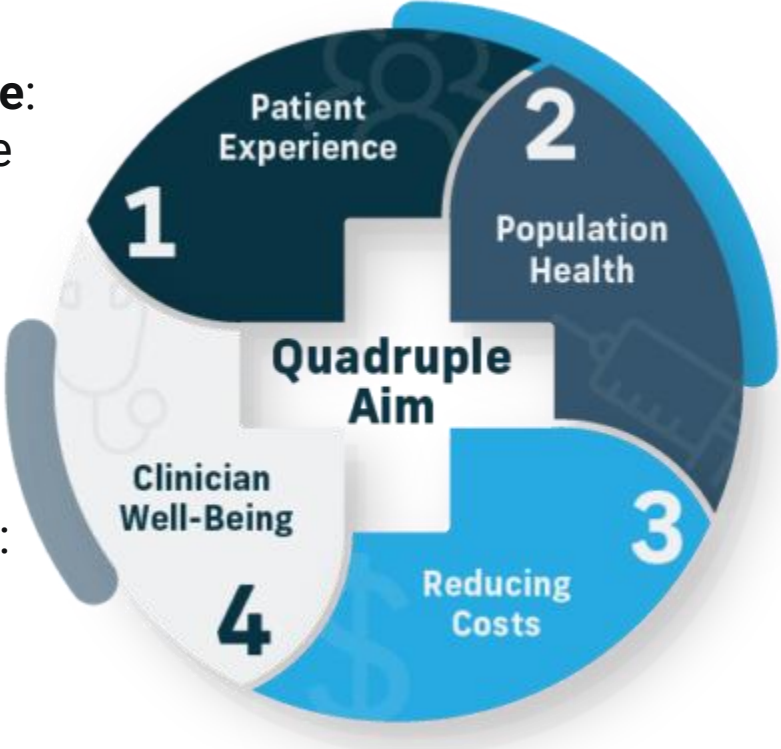
**Uncertain**

# Quadruple Aim Focus

Healthcare Framework Focusing on Four Key Goals

**Improving the patient experience:**  
Enhancing the overall experience of patients receiving healthcare services.

**Improving workforce well-being:**  
Recognizing that the well-being of the healthcare providers is essential for achieving positive patient outcomes.



**Improving the health of populations:**  
Promoting the health and well-being of entire communities.

**Reducing the total cost of care:**  
Lowering the per capital cost of healthcare services.

# Addressing a Changing Healthcare Landscape

## Challenges



Continued Labor Wage Growth

Elevated Cost for Supplies

Increasing Pharmaceutical Cost

Decrease Reimbursement – 2025 Big Beautiful Bill

Volume Shifts

Looming Tariffs -2025 Regulations



# Health Care Financial Pressure Is Real



**Increasing financial scrutiny**



**Struggle to identify and prioritize opportunities**



**Legacy Costing Systems** do not uncover the true opportunity



Clinician **distrust** in financial data

**Higher expectations. Bigger gaps in cost visibility.**

# Why Traditional Tools Fail Service Line Leaders

You get data, but not the tools to act on it.

## Averages hide variation.

You can't improve what you can't see at the service-line level.

## Physicians don't trust the data.

It's not risk-adjusted or clinically meaningful — so they ignore it.

## Finance owns the tools.

But operations and clinicians own the problems.

## Spreadsheets aren't strategic.

Legacy systems are too slow and disconnected from clinical work.

## Can't link cost to outcomes or care paths.

No insight into what's driving variation — or what to change.

## They track costs — not improvement.

# Introducing Clinical Cost Intelligence

## WHAT IT IS

A precision cost intelligence solution purpose-built for service line leaders to eliminate unwanted variation, improve outcomes, and drive performance across sites.

## WHAT IT DOES

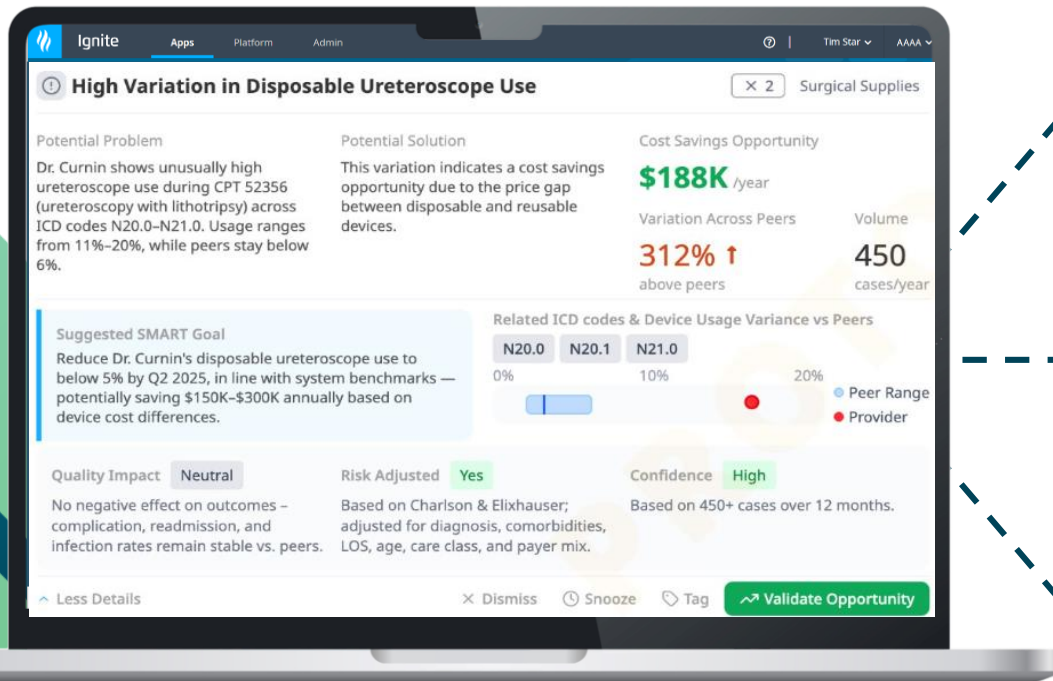
It delivers trusted, case-level insights that help leaders:

- Identify hidden variation
- Prioritize what matters most
- Act with confidence to improve care and reduce cost.

## WHAT IT MEANS

Service line transformation becomes actionable and real:

- **Standardize high-cost care** across physicians and sites
- **Engage clinicians** with data they trust and will use
- **Deliver measurable results** — often in the first year



# Why Clinical Cost Intelligence Works



## Start Where It Matters Most

Focus on high-impact service lines under financial pressure.



## Uncover What Averages Miss

Reveal hidden cost variation at the case, provider, and procedure level.



## Engage Physicians with Trusted Data

Give clinicians accurate, case-level insights they believe—and use.



## See Results, Fast

Drive meaningful transformation with low lift and fast ROI.



## Deliver ROI Fast

Meaningful savings in year one, minimal lift.

**This isn't a  
costing tool.  
It's a  
performance  
improvement  
engine.**

# What Sets Us Apart



## BUILT FOR SERVICE LINES

- Focused on where cost, care, and margins collide

## TRUSTED BY CLINICIANS

- Data is accurate, case-level, and defensible — not finance fluff

## UNCOVERS HIDDEN VARIATION

- Goes beyond averages to reveal high-impact differences

## ACTION-FIRST DESIGN

- Helps you prioritize, plan, and act — not just analyze

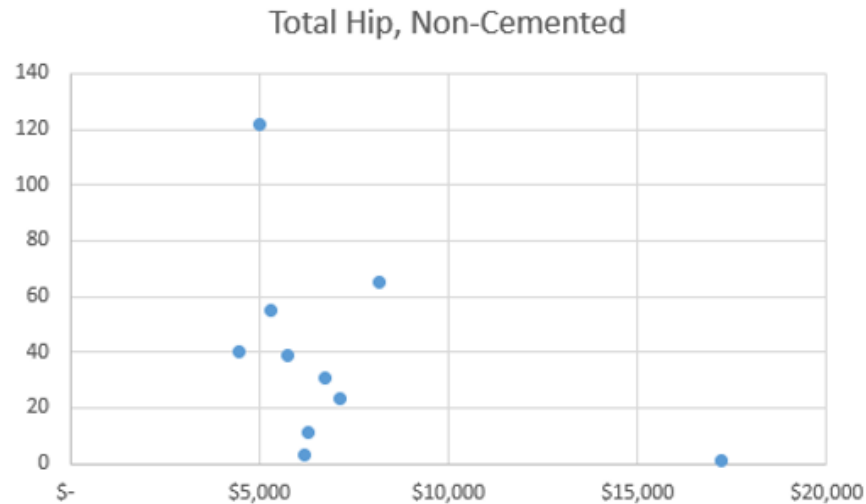
## FAST, MEANINGFUL ROI

- Right-sized to deliver results quickly, without complexity

## Example of Clinical Cost Variation - HIP TJR

# ARTHOPLASTY, TOTAL HIP, NON-CEMENTED

### Opportunity Analysis

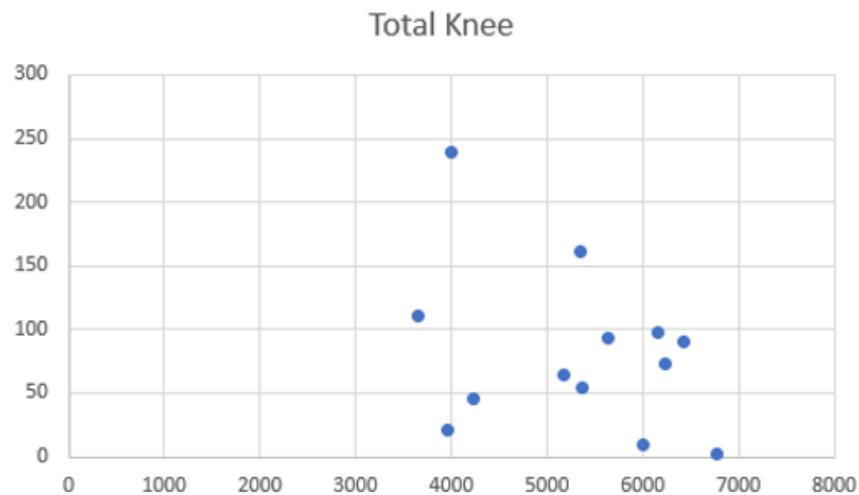


- 10 Surgeons performing this surgical procedure
- Lowest Cost surgeon performs 10% of Cases, second lowest cost provider 31% of Cases
- Supply Opportunity moving to Lowest Cost Surgeon approximately \$582,800

## Example of Clinical Cost Variation - Knee TJR

# ARTHROPLASTY, TOTAL, KNEE






### Opportunity Analysis



- 13 Surgeons performing this surgical procedure
- Lowest Cost surgeon performs 11% of Cases, second lowest cost provider 23% of Cases
- Supply Opportunity moving to Lowest Cost Surgeon approximately \$1,472,000

# Let's Talk About Your Transformation Journey

Transformation starts with understanding where you are today.

				
<b>Current Approach</b>	<b>Barriers to Change</b>	<b>System Pressures</b>	<b>Clinician Engagement</b>	<b>Readiness for Something Better</b>
<ul style="list-style-type: none"><li>▪ How are you identifying variation across procedures or providers?</li><li>▪ What tools are you using today to guide performance improvement?</li></ul>	<ul style="list-style-type: none"><li>▪ Where are you running into resistance or roadblocks?</li><li>▪ What makes it hard to act on the insights you already have?</li></ul>	<ul style="list-style-type: none"><li>▪ Are you being asked to improve outcomes or reduce variation?</li><li>▪ Which service lines are most under pressure right now?</li></ul>	<ul style="list-style-type: none"><li>▪ Do your physicians trust the data they're being given?</li><li>▪ What helps (or hurts) engagement in transformation efforts?</li></ul>	<ul style="list-style-type: none"><li>▪ Are you exploring options beyond your current costing tools?</li><li>▪ If you could transform one thing in your workflow today, what would it be?</li></ul>





# A Clinician's Perspective

# Activity-Based Costing Data *A Clinician's Perspective*



Reveals true cost drivers



Identifies waste and variation



Supports prioritization and strategic decision making



Enables clinician and service line engagement



Drives continuous improvement



# Audience Poll 3

As a clinician or financial leader what is a major pain point you are experiencing in controlling costs?

**A**

**Difficulty identifying what cost driver(s) to focus on**

**B**

**Lack of data granularity to understand variation**

**C**

**How to prioritize the work**

**D**

**Involving clinicians in lowering costs**

**E**

**Engaging the health system in quality improvement activities to lower costs**

# Heart Failure Cardiologists Comparisons

ServiceLineNM	Costed Hospital Account Count	Average LOS	Charges	Payments	Direct Cost	Contribution Margin	Indirect Cost	Cost Amount
⊖ Cardiovascular	679	5.62	\$72,168,038	\$6,851,304	\$5,797,772	\$1,053,532	\$1,912,970	\$7,710,743
⊖ Inpatient	665	5.62	\$71,772,595	\$6,820,375	\$5,731,765	\$1,088,610	\$1,893,526	\$7,625,291
⊖ 291	616	5.75	\$68,241,444	\$6,533,162	\$5,459,403	\$1,073,760	\$1,801,142	\$7,260,544
⊕ [blurred]	46	5.77	\$5,293,515	\$444,763	\$393,801	\$50,962	\$126,545	\$520,346
⊕ [blurred]	46	6.16	\$4,759,416	\$699,688	\$387,323	\$312,364	\$132,883	\$520,206
⊕ [blurred]	44	4.20	\$3,250,345	\$423,445	\$243,278	\$180,167	\$86,228	\$329,506
⊕ [blurred]	42	7.10	\$4,753,098	\$457,209	\$382,130	\$75,079	\$131,306	\$513,436
⊕ [blurred]	35	5.47	\$3,304,040	\$349,618	\$270,316	\$79,302	\$92,280	\$362,596
⊕ [blurred]	34	4.30	\$2,683,903	\$337,426	\$239,254	\$98,172	\$71,336	\$310,590
⊕ [blurred]	33	3.30	\$2,090,549	\$304,759	\$159,872	\$144,888	\$53,700	\$213,572
⊕ [blurred]	32	6.33	\$4,363,486	\$337,827	\$307,450	\$30,376	\$107,089	\$414,540
⊕ [blurred]	24	5.56	\$2,641,995	\$225,885	\$221,175	\$4,710	\$71,840	\$293,014
⊕ [blurred]	22	4.62	\$2,040,575	\$210,185	\$146,492	\$63,692	\$49,263	\$195,755
⊕ [blurred]	21	6.22	\$2,721,115	\$205,045	\$219,131	(\$14,087)	\$67,158	\$286,289
⊕ [blurred]	18	4.55	\$1,655,533	\$151,836	\$150,437	\$1,399	\$49,062	\$199,499
⊕ [blurred]	18	7.22	\$2,714,897	\$226,470	\$236,701	(\$10,231)	\$71,605	\$308,306
⊕ [blurred]	18	4.08	\$1,449,052	\$172,954	\$123,056	\$49,898	\$39,721	\$162,777
⊕ [blurred]	16	5.96	\$2,072,226	\$162,582	\$142,929	\$19,653	\$49,879	\$192,808
⊕ [blurred]	16	5.32	\$1,791,607	\$163,337	\$130,942	\$32,395	\$41,187	\$172,129
⊕ [blurred]	15	6.03	\$2,053,490	\$179,911	\$150,496	\$29,415	\$51,476	\$201,973
⊕ [blurred]	15	7.31	\$2,380,400	\$163,230	\$199,486	(\$36,256)	\$62,929	\$262,416
⊕ [blurred]	14	4.42	\$1,605,391	\$149,443	\$119,617	\$29,826	\$35,963	\$155,580
⊕ [blurred]	14	8.24	\$1,926,514	\$141,723	\$137,301	\$4,422	\$47,736	\$185,038
⊕ [blurred]	13	6.28	\$2,037,924	\$149,438	\$157,378	(\$7,939)	\$52,697	\$210,075
⊕ [blurred]	12	7.35	\$2,193,202	\$157,768	\$163,979	(\$6,211)	\$57,947	\$221,926
⊕ [blurred]	12	11.22	\$2,326,493	\$142,569	\$191,899	(\$49,331)	\$60,610	\$252,510
⊕ [blurred]	10	4.70	\$860,059	\$82,901	\$108,860	(\$25,959)	\$32,538	\$141,398
⊕ [blurred]	10	5.46	\$979,849	\$104,077	\$82,216	\$21,861	\$28,114	\$110,330
⊕ [blurred]	9	4.24	\$709,177	\$98,970	\$57,048	\$41,922	\$19,119	\$76,168
⊕ [blurred]	7	5.42	\$734,040	\$79,020	\$55,771	\$23,248	\$19,403	\$75,174
⊕ [blurred]	5	8.56	\$793,207	\$50,150	\$64,253	(\$14,103)	\$23,050	\$87,303
⊕ [blurred]	5	6.27	\$510,026	\$48,500	\$38,765	\$9,735	\$12,893	\$51,658
⊕ [blurred]	5	9.09	\$609,387	\$41,728	\$64,992	(\$23,264)	\$22,731	\$87,724
<b>Total</b>	<b>741</b>	<b>5.64</b>	<b>\$80,607,161</b>	<b>\$7,528,477</b>	<b>\$6,419,110</b>	<b>\$1,109,366</b>	<b>\$2,127,276</b>	<b>\$8,546,386</b>

# Individual Heart Failure Patient Detail

ServiceLineNM	Costed Hospital Account Count	Average LOS	Charges	Payments	Direct Cost	Contribution Margin	Indirect Cost	Cost Amount
50	1	2.96	\$75,386	\$10,951	\$5,965	\$4,986	\$1,608	\$7,573
34	1	7.04	\$124,773	\$9,329	\$10,758	(\$1,429)	\$3,189	\$13,946
35	1	20.58	\$644,255	\$25,176	\$46,361	(\$21,185)	\$15,022	\$61,383
36	1	4.92	\$65,161	\$8,305	\$5,707	\$2,598	\$2,006	\$7,713
73	1	2.67	\$48,354	\$11,092	\$3,455	\$7,637	\$1,226	\$4,682
<b>Total</b>	<b>741</b>	<b>5.64</b>	<b>\$80,607,161</b>	<b>\$7,528,477</b>	<b>\$6,419,110</b>	<b>\$1,109,366</b>	<b>\$2,127,276</b>	<b>\$8,546,386</b>

ServiceLineNM	Interventional and Diagnostic	Nursing	Other Clinical Services	Physician Services	Total
<b>Cardiovascular</b>	\$542	\$4,349	\$1,759	\$4,108	\$10,758
<b>Inpatient</b>	\$542	\$4,349	\$1,759	\$4,108	\$10,758
ADT Minutes		\$4,318			\$4,318
ED Minutes			\$12		\$12
ED Weighted Minutes			\$226		\$226
Explicit Chargeable Supply			\$31		\$31
Explicit Pharmacy			\$327		\$327
Imaging Minutes	\$65				\$65
Lab Minutes	\$151				\$151
Physician Work RVUs				\$4,108	\$4,108
Sum of Charges - HB	\$326		\$1,154		\$1,480
Sum of Charges - Medical Supply			\$40		\$40
<b>Total</b>	<b>\$542</b>	<b>\$4,349</b>	<b>\$1,759</b>	<b>\$4,108</b>	<b>\$10,758</b>

# A Heart Failure Story

## Process Metrics Analysis



### Large Health System

- Prolonged LOS and high average variable cost for HF patients revealed in a Power Costing analysis



### Data Queries / Clinical Cost Intelligence

- Echocardiogram analysis
- Daily weights
- Guideline directed medical therapy not added during hospitalization (antihypertensives, beta blockers)
- Clinically indicated diuretic dosing

# Variation Analysis

## Daily Weights

- LOS decreased by X days
- Variable cost decreased by X\$



## Clinically Indicated Diuretic Dosing

- LOS decreased by X days
- Variable cost decreased by X\$



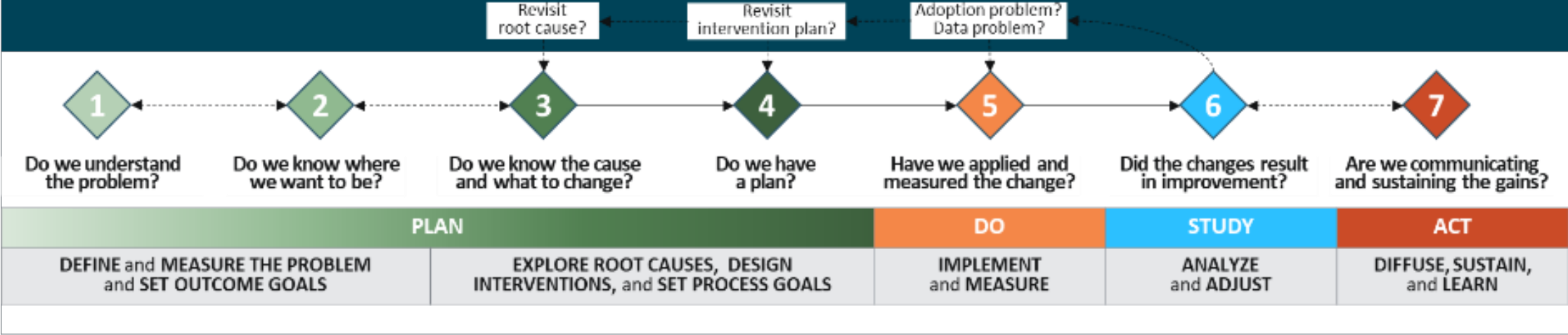
## Guideline Directed Medical Therapy

- LOS decreased by X days
- Variable cost decreased by X\$



# What Next?

## DOMAIN- or INITIATIVE-FOCUSED 7 Guiding Questions Improvement Framework





# Steps 1 – 4 (Daily Weights)

Do we understand the problem?

01

Patients with HF are not being routinely weighed thus contributing to increased LOS and increased variable cost

Do we know where we want to be?

02

Every patient who has a HF diagnosis should be weighed daily

Do we know the causes and what to change?

03

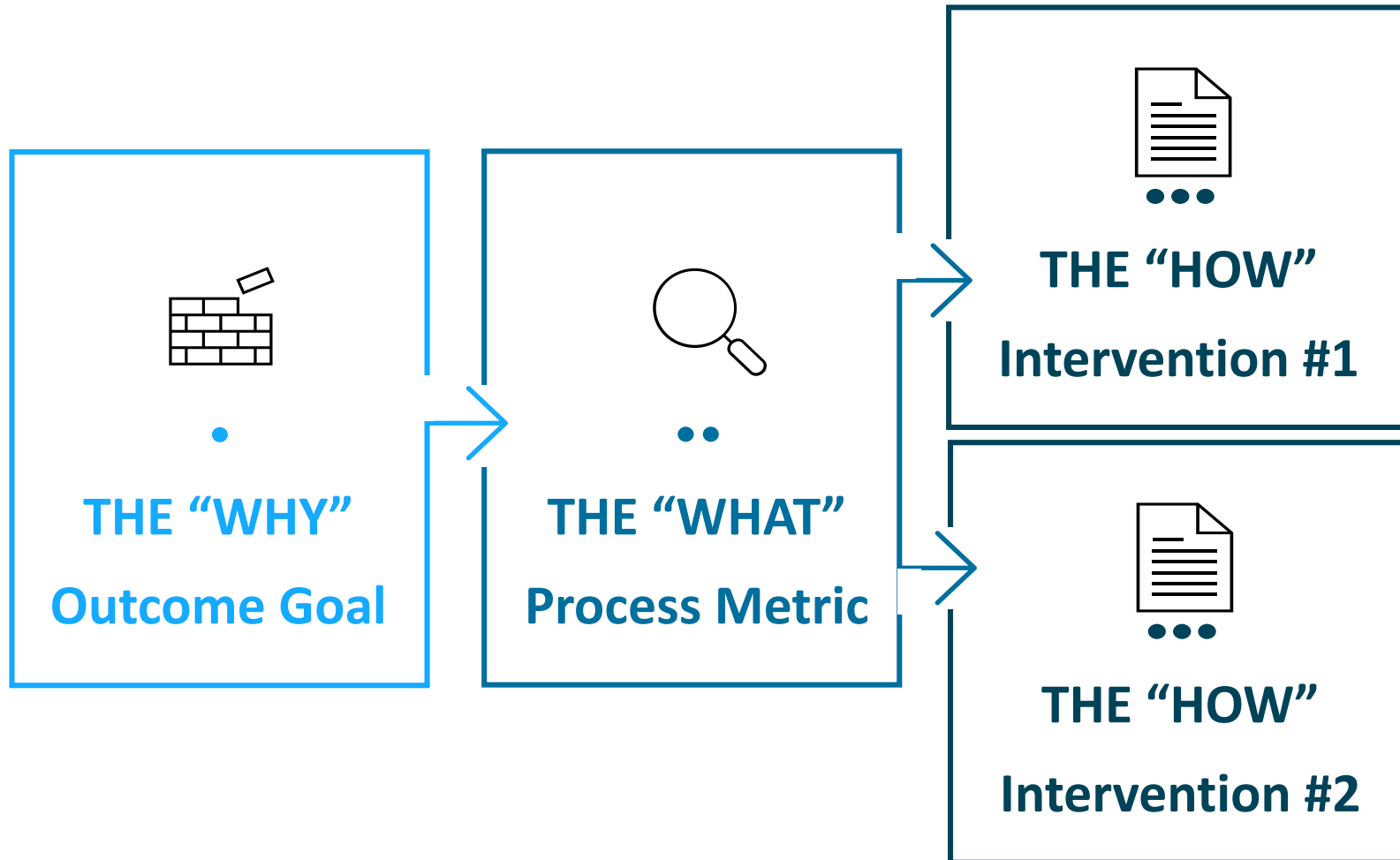
Short staffed, access to scales, a lack of understanding of the importance of weighing HF patients.

Do we have an implementation plan?

04

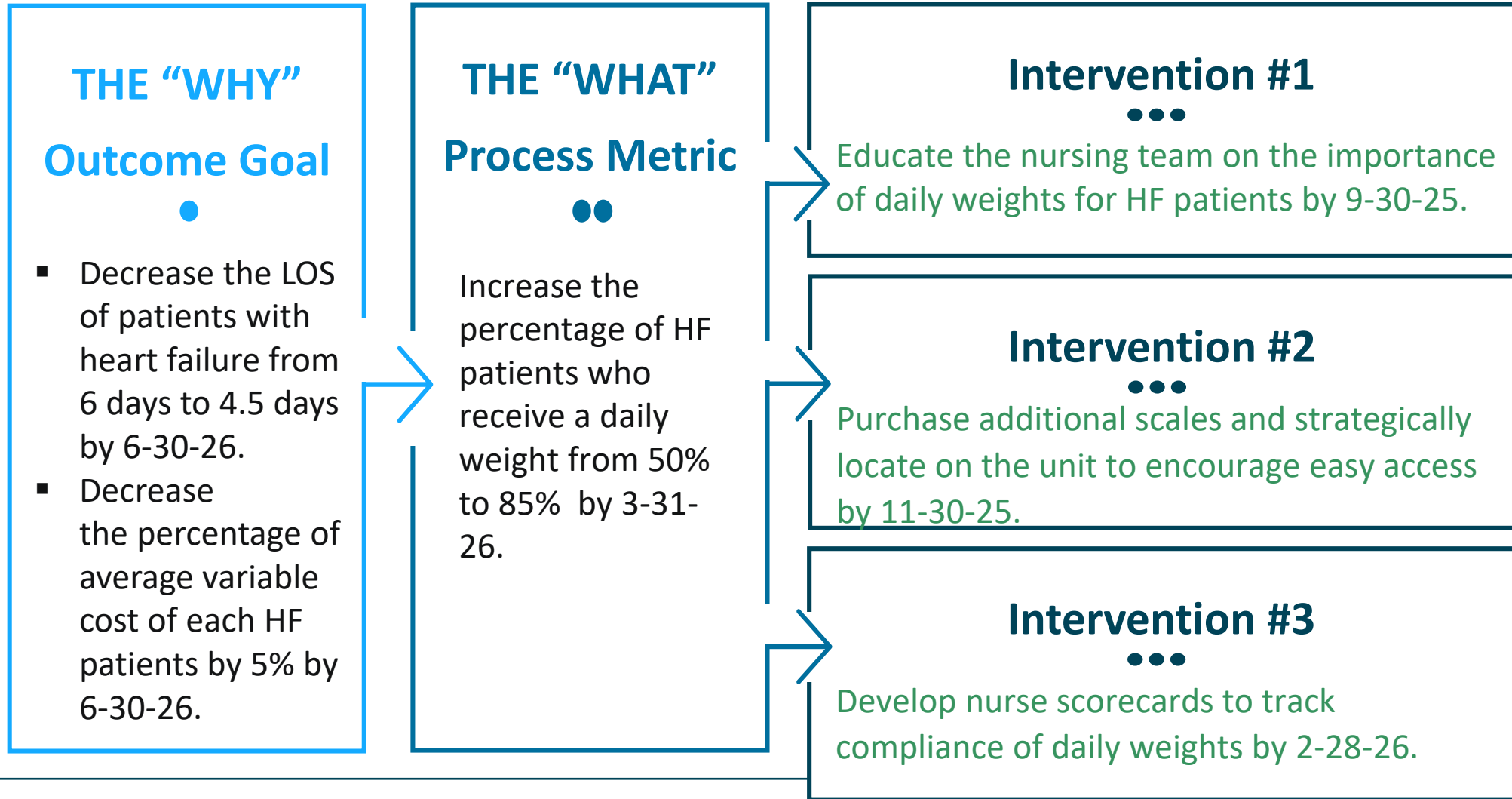
Education, new scales, prioritizing daily weights at the beginning of the day shift, nurse feedback

# Relation of Goals, Metrics, and Interventions



2–4 four process metrics should produce significant outcome improvement

# Relation of Goals, Metrics, and Interventions



# Steps 1 – 4 (Guideline Directed Medical Therapy)

Do we understand  
the problem?

01

Patients with HF  
are not being  
routinely  
(re)started on Get  
with the Guideline  
Medications while  
hospitalized

Do we know where  
we want to be?

02

Every patient who  
has a HF diagnosis  
should be started  
on appropriate  
guideline directed  
therapy as soon as  
possible

Do we know the  
causes and what to  
change?

03

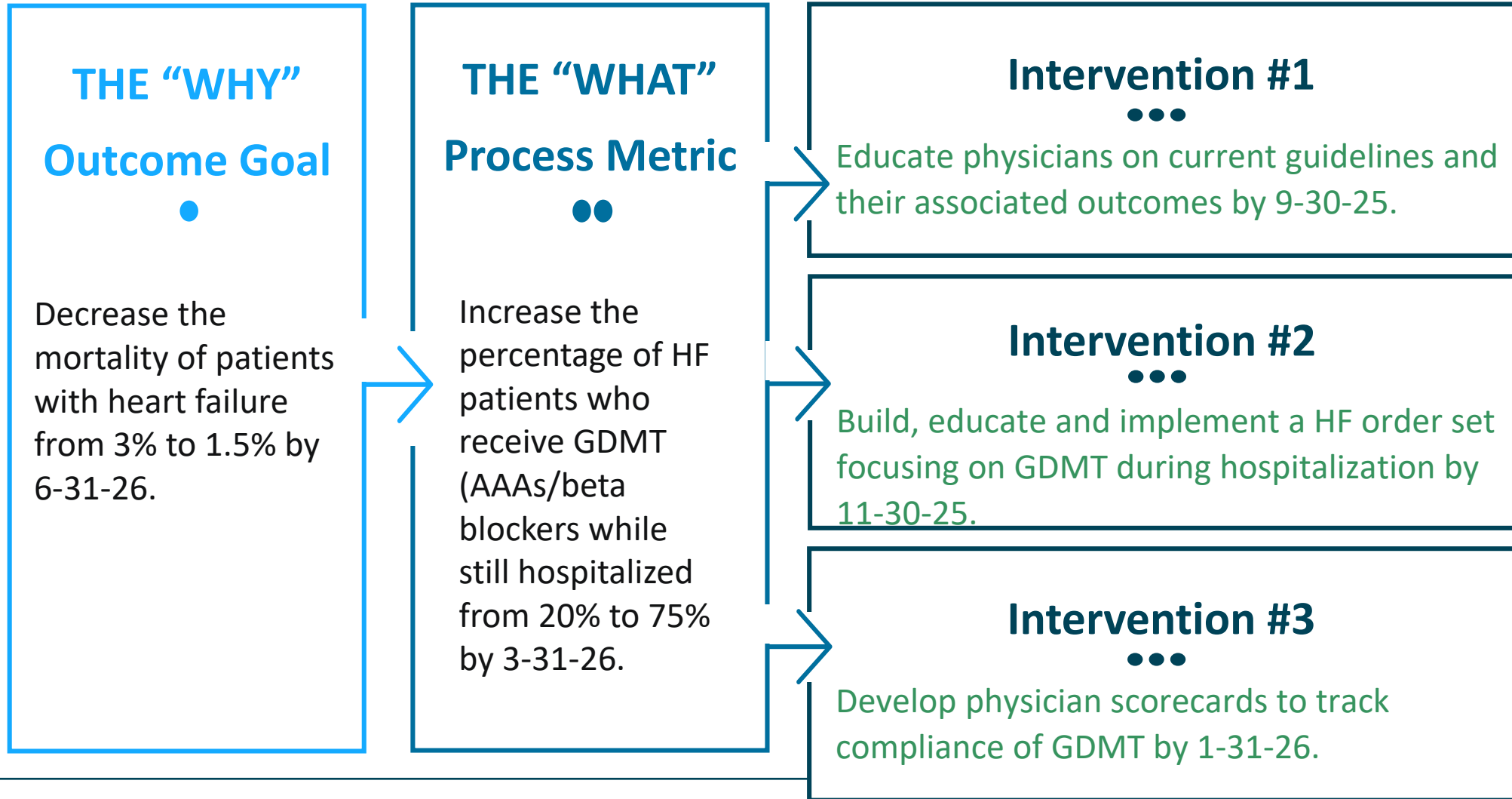
Variation in  
practice and in  
medications  
prescribed

Do we have an  
implementation  
plan?

04

Physician  
education,  
standardized order  
sets, compliance  
report cards

# Relation of Goals, Metrics, and Interventions



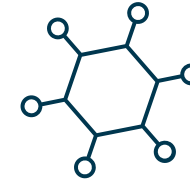


# Scaling and Transforming Actionable Insights in Activity Based Costing with AI

# AI Enabled Activity-Based Costing



- Hundreds of thousands of combinations of providers, procedures, supplies, etc.
- Our goal is to identify cost and reimbursement variations/irregularities
- Deliver insights as understandable, actionable and measurable financial efficiencies



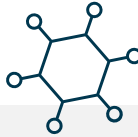
## Multistep/Multi-Agent Framework

- Statistical/machine learning models adapted to the complexity and nuances of ABC data
- Quality Improvement (QI) Agent (LLM) combined with output of first step

# Models Adapted to ABC

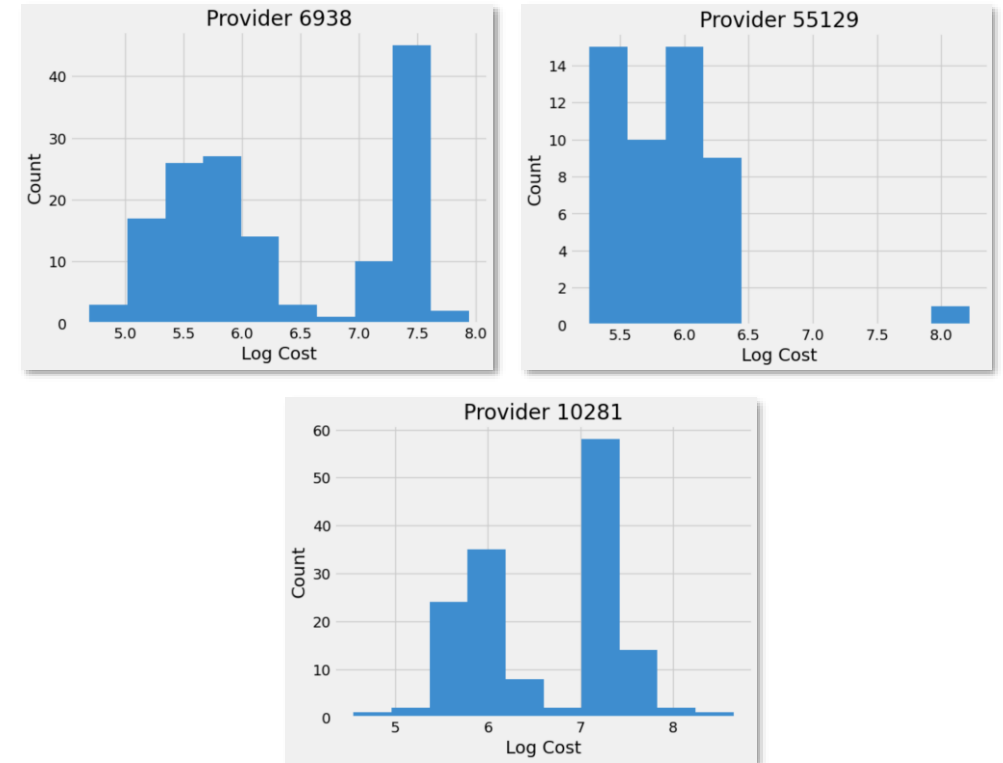


- We want to isolate provider specific variation in a scalable and generalizable manner
- Standard summary statistics, e.g., mean, median, CV, etc. will miss important nuance in the underlying data distribution



- Must account for procedure and patient specific factors, e.g., diagnosis, if the case was planned, time-of-day, other patient factors
- Opportunities – Ensure we minimize false positives, maximize true positives

## Distribution of costs for the same procedure across providers





# Quality Improvement Agent

## Guidelines (Overview)

Apply each of the 7 steps from the Health Catalyst framework

For each step, include a **Cross-Check & Validation Section** that examines:

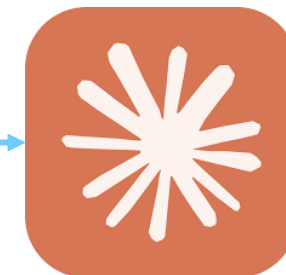
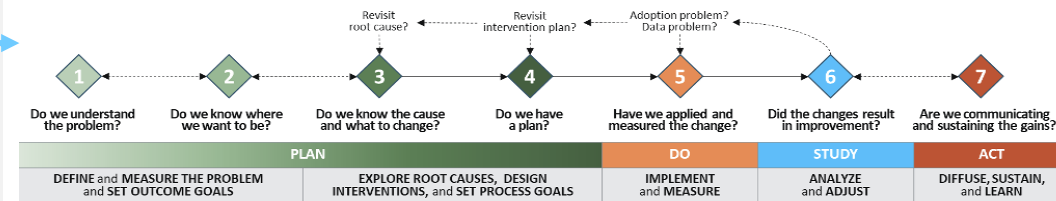
- Are there valid clinical reasons that could explain these patterns?
- What additional data would strengthen or challenge our conclusions?
- How might this provider's case mix, patient population, or circumstances differ?
- What unintended consequences could our recommendations create?
- Are there system-wide factors (equipment, training, protocols) contributing to variation?
- Which stakeholders should validate our assumptions before proceeding?

## Analytical Approach:

- Present findings as opportunities for improvement and standardization
- Consider both provider-specific and system-wide contributing factors
- Balance cost optimization with clinical effectiveness and safety
- Identify potential best practices that could be shared across providers
- Frame recommendations as collaborative improvement rather than corrective action

## Instructions: Improvement Framework

### DOMAIN- or INITIATIVE-FOCUSED 7 Guiding Questions Improvement Framework



# Utilization rates for ureteroscopy with lithotripsy

Provider_A	Provider_B	mean_difference	ci_lower	ci_upper	prob_A_more_expensive	significant	avg_case_cost_A	avg_case_cost_B	n_cases_A	n_cases_B
10281	11750	605.270133	271.834676	973.711003	1.000	True	1041.093000	337.337619	140	21
10281	55129	597.194542	372.335684	868.286748	1.000	True	1041.093000	418.456600	140	50
10281	6938	185.899145	8.659693	360.861813	0.981	True	1041.093000	835.598276	140	145
10313	11750	948.086177	610.651495	1326.305802	1.000	True	1363.583623	337.337619	69	21
10313	519671	561.347846	-108.240862	1268.177854	0.939	False	1363.583623	398.970000	69	1
10313	55129	940.010587	691.170802	1222.064246	1.000	True	1363.583623	418.456600	69	50
10313	6938	528.715190	331.232523	721.158029	1.000	True	1363.583623	835.598276	69	145
18237	55129	853.763153	482.478669	1284.444054	1.000	True	1410.790909	418.456600	11	50
18237	6938	442.467756	107.023209	804.968529	0.996	True	1410.790909	835.598276	11	145

1

Do we understand the problem?

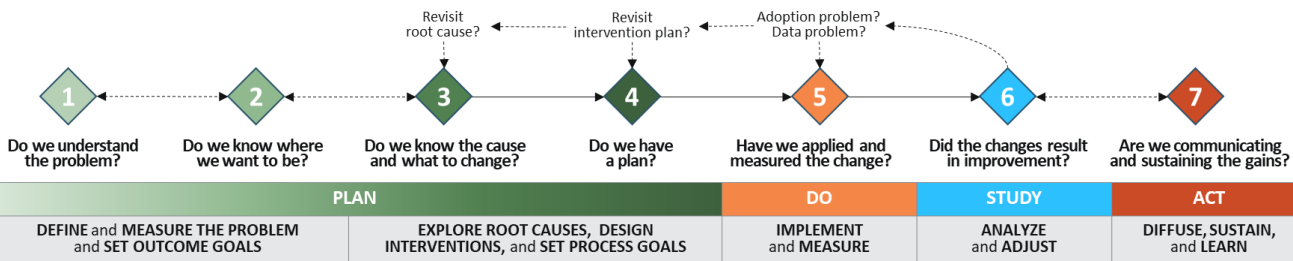
## Problem Statement:

Provider 10281 shows variable utilization rates of disposable ureteroscopes (ureteroscope disp aptra and ureteroscope disp aptra revers) ranging from 9.2% to 20% across different diagnosis codes, while other providers (6938, 11750, 55129) show either no usage or minimal usage (1.75%) of these expensive disposable devices. This represents a potential cost savings opportunity given the significant price difference between disposable and reusable ureteroscopes.



QI Agent

## DOMAIN- or INITIATIVE-FOCUSED 7 Guiding Questions Improvement Framework



# Complete Generated Output

## Quality Improvement Agent: Utilizes Health Catalyst's Quality Improvement Framework

### Problem Statement:

Provider 10281 shows variable utilization rates of disposable ureteroscopes (ureteroscope disp aptra and ureteroscope disp aptra revers) ranging from 9.2% to 20% across different diagnosis codes, while other providers (6938, 11750, 55129) show either no usage or minimal usage (1.75%) of these expensive disposable devices. This represents a potential cost savings opportunity given the significant price difference between disposable and reusable ureteroscopes.

### Key Findings:

- Provider 10281 uses disposable ureteroscopes in 13.1-20% of N20.0 cases, 9.2-18.4% of N20.1 cases, 13.5% of N20.2 cases, 20% of N21.0 cases, 14.3% of N40.1 cases, and 20% of R31.0 cases
- Provider 6938 uses disposable ureteroscopes in 9.2% of N20.0 cases, 4.3% of N20.1 cases, and 5.7% of N20.2 cases
- Providers 11750 and 55129 show minimal to no disposable ureteroscope usage

### SMART Outcome Goal:

Reduce Provider 10281's disposable ureteroscope utilization rate to align with system benchmark (<5% by Q2 2025), potentially saving \$150K-\$300K annually based on cost differentials (\$1,500-\$3,000 per disposable scope vs. reusable alternatives).

### Proposed Interventions:

1. Equipment audit: Assess reusable ureteroscope availability and condition
2. Clinical review: Analyze case complexity justifying disposable use
3. Cost transparency: Implement real-time cost feedback at point of care
4. Standardization: Develop clinical criteria for disposable vs. reusable selection
5. Training program: Enhance provider proficiency with reusable equipment

### Implementation Plan:

- Week 1-2: Conduct provider interview and case review
- Week 3-4: Equipment assessment and inventory optimization
- Week 5-8: Implement cost feedback system and clinical guidelines
- Month 3-6: Monitor utilization rates weekly and adjust interventions

### Key Metrics:

- Disposable ureteroscope utilization rate by diagnosis code
- Total supply costs per procedure
- Clinical outcomes (complications, success rates)
- Provider satisfaction scores

### Success Indicators:

- Utilization rate reduction to <5%
- Maintained or improved clinical outcomes
- Cost savings of \$12,500-\$25,000 per month
- Provider acceptance of new protocols

### Immediate Next steps

1. Urgent: Schedule meeting with Provider 10281 to understand clinical rationale
2. This week: Pull detailed case data for the past 6 months
3. Within 2 weeks: Benchmark against national standards and peer institutions
4. Month 1: Implement pilot intervention focusing on most common diagnosis codes

**Estimated Impact: If successful in reducing utilization to 5%, this could save approximately \$200,000 annually while maintaining quality outcomes, representing a significant opportunity for value-based care improvement.**

## High Variation in Disposable Ureteroscope Use

× 2 Surgical Supplies

### Potential Problem

Dr. Curnin shows unusually high ureteroscope use during CPT 52356 (ureteroscopy with lithotripsy) across ICD codes N20.0–N21.0. Usage ranges from 11%–20%, while peers stay below 6%.

### Potential Solution

This variation indicates a cost savings opportunity due to the price gap between disposable and reusable devices.

### Cost Savings Opportunity

**\$188K** /year

### Variation Across Peers

**312% ↑**  
above peers

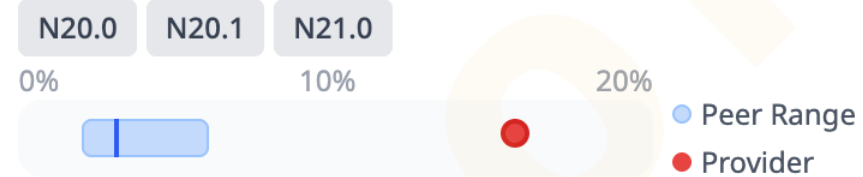
### Volume

**450**  
cases/year

### Suggested SMART Goal

Reduce Dr. Curnin's disposable ureteroscope use to below 5% by Q2 2025, in line with system benchmarks — potentially saving \$150K–\$300K annually based on device cost differences.

### Related ICD codes & Device Usage Variance vs Peers



Quality Impact **Neutral**

No negative effect on outcomes – complication, readmission, and infection rates remain stable vs. peers.

Risk Adjusted **Yes**

Based on Charlson & Elixhauser; adjusted for diagnosis, comorbidities, LOS, age, care class, and payer mix.

Confidence **High**

Based on 450+ cases over 12 months.

^ Less Details

× Dismiss

🕒 Snooze

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↗️ Validate Opportunity

# Questions?

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