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Successfully Reducing Clinical Variation in Large Systems: The Precision Model

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Learning Objectives



- Discuss strategies to establish a systemwide clinical variation reduction program
- Describe specific strategies to reduce unwarranted clinical variation, improve patient outcomes and reduce healthcare costs



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Precision



Systemwide program developed to reduce unwarranted variation to improve outcomes and reduce costs of care.

$$\text{Value} = \frac{\text{Outcomes}}{\text{Cost}}$$
The equation 'Value = Outcomes / Cost' is centered. The word 'Value' is in a dark purple font. 'Outcomes' is in a pink font and 'Cost' is in a teal font. A horizontal line is drawn under 'Outcomes'. To the left of the equation, there are two vertical arrows: a light purple arrow pointing up and a grey arrow pointing down.

- Embed evidence-base and agreed-upon care standards into practice
- Align and enhance existing efforts across the system

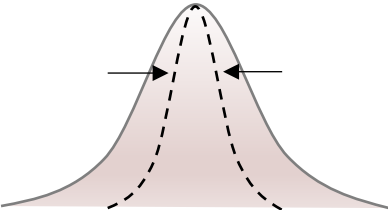
Programmatic approach

- Partnerships with clinical and operational teams
- Data driven
- Adaptive and change leadership
- Governance
- Implementation and improvement science
- Process engineering

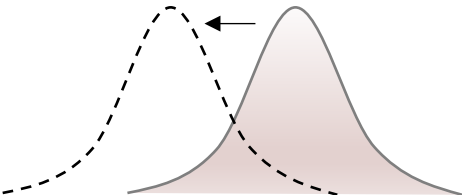


Reducing Unwarranted Variation

Unwarranted variation: differences that cannot be explained by type or severity of patient illness or by patient personal preference



Narrowing the Curve
Optimize clinical approaches, narrowing the curve toward best practice



Shifting the Curve
Align practices toward best practices

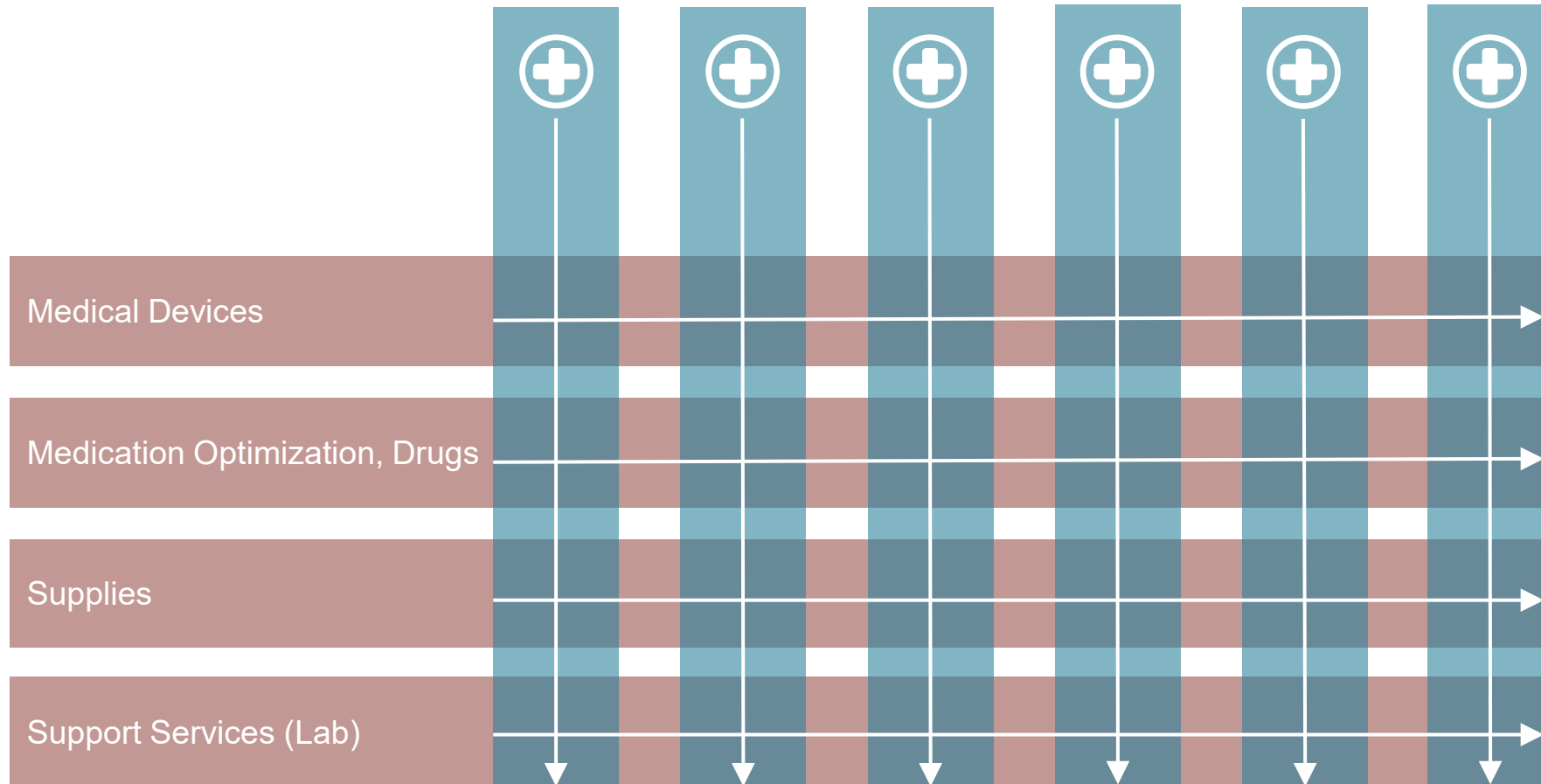
$$\text{Value} = \frac{\text{Outcomes}}{\text{Cost}}$$

Outcomes
Mortality
Readmissions
Infections
Functional Status
Morbidity
Patient Experience
Resources and Costs of Care
Supply costs
Pharmaceuticals
Over / under utilization
LOS reduction

Standardization Strategy: Two-Pronged Approach



Vertical: Disease/condition-specific groups



Horizontal:
Cross condition
optimization

Driving results



Inputs

Data insights

Frontline care team input

Evidence-based guidelines and research



Design & Implement

Develop Care Standards



Process optimization

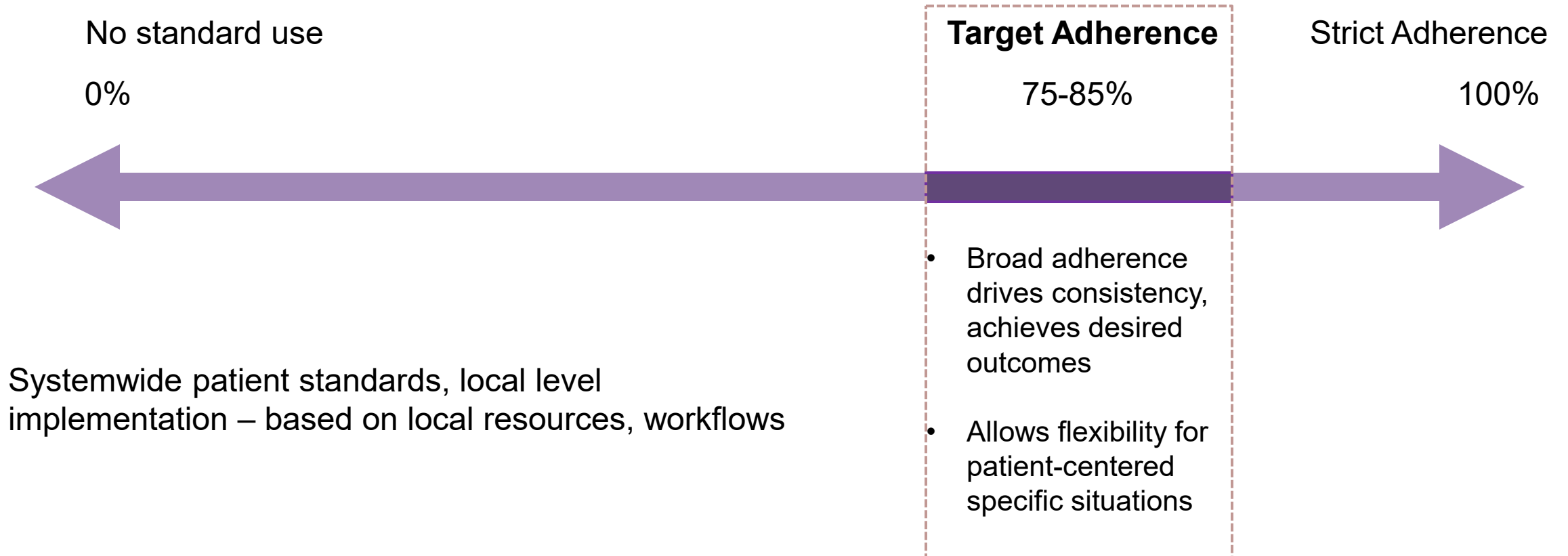


Drive Results

Improve outcomes, reduce costs, improve team engagement

Care Standards

100% Compliance is *not* the target



Long Game



Integrate evidence-based clinical and operational practices into the organizational culture to systematically eliminate unwarranted variation and drive sustainable improvement

Project Examples



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Excess Labs

ISSUE

Clinical guidelines recommend blood tests only when clinically indicated. At Novant Health, labs could be ordered in Dimensions for 999 days resulting in excess labs and costs.

- Waste in system
- Unnecessary lab draws for patients
- Increased costs


ANALYSIS


In 2022 excess labs resulted in \$1.9M in increased healthcare costs.

Criteria	# of Excess Labs
>3 days or >6 occurrences in a row	468,266
>1 time during encounter	40,316
Total	508,582

- Excess labs:
- Daily labs ordered > 3 days in a row
 - One-time labs ordered > 1

IMPACT POTENTIAL

 Reduce waste in system

 Improve patient experience

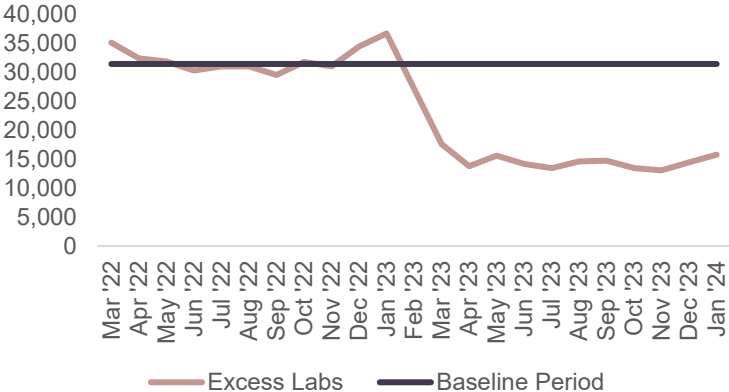
 Decrease costs

Improvement Strategy & Impact

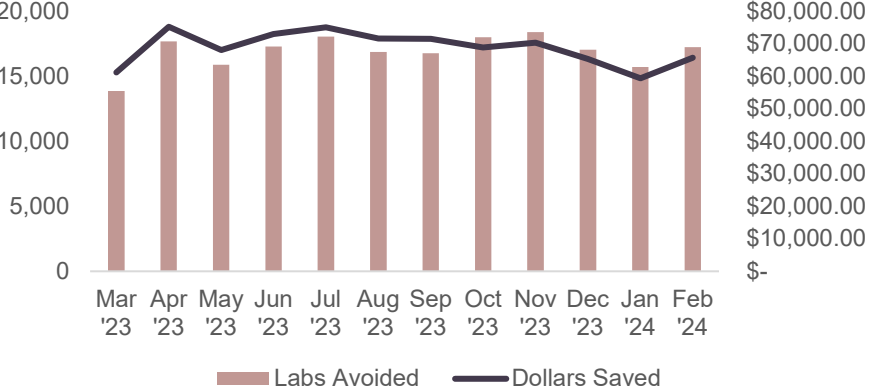
INTERVENTIONS

1. Limit the number of times that clinicians can order labs in Epic to either 3 days in a row or 1 day depending on the lab
2. Increase clinician awareness of the clinical recommendations to limit unnecessary labs and the costs associated with ordering unnecessary labs

Excess Labs



Excess Labs Avoided and Cost Savings



Source: Epic & Strata

Impacts

Over 185,000 excess labs avoided saving \$800,000

Observation Optimization

ISSUE

The percentage of encounters in observation status and observation stays with LOS > 48 hours exceeded the national norms and there was significant variation amongst similar sized facilities within our system.

- Under-reimbursed for the care provided
- Impact on quality data
- Unclear guidance for providers

ANALYSIS

- Variation in observation status across facilities and providers
- Targeted DRGs with high percent observation and LOS > 48 hours

Metric	Baseline
Observation %	31.56% <i>Nat Avg Medicare ~ 23%</i>
% of Obs LOS > 48 hrs	34.63%
Avg Obs LOS (hrs)	55.86 <i>Nat Avg Medicare ~ 25.75</i>
Obs to Inpatient Conversion Rate	30.90%
Avg reimbursement difference (for like diagnosis)	\$3,000

IMPACT POTENTIAL



Increase accurate patient status



Optimize observation management and improve LOS



Improve accurate revenue capture



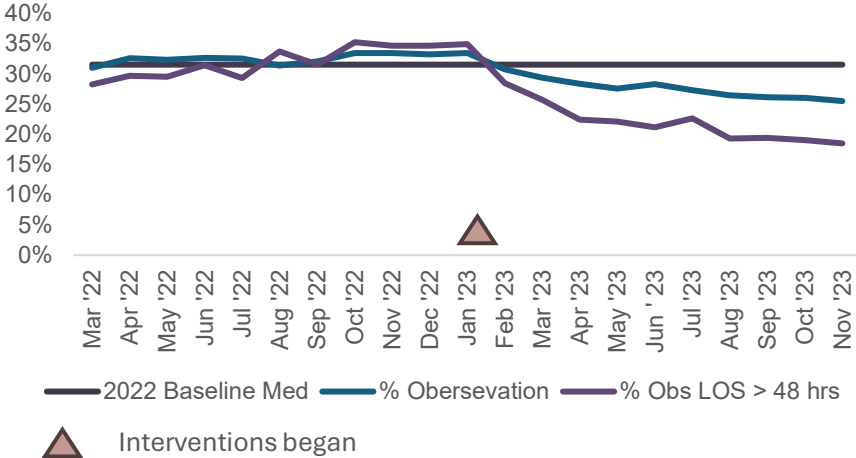
Reduce unnecessary higher costs for patients

Improvement Strategy & Impact

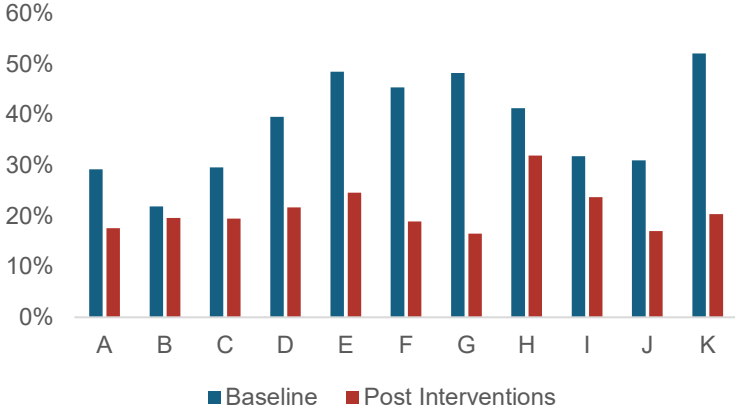
INTERVENTIONS

1. Remove default to Observation status from multiple admission order sets
2. Adopt a payor agnostic approach to inpatient criteria
3. Robust denials management program
4. Review all admits for appropriate status within 24 hours
5. Concurrent reviews of observation patients every 24-48 hours
6. Proactive Case Management/ Social Work involvement in the ED to avoid social admits
7. Explore process to efficiently care for observation patients

% Observation and LOS>48 Hours



Variation in Observation % Across Facilities



Source: Epic

Impacts

Reduced variation across facilities, dropping observation **31.6% to 21.4%**

Obs LOS > 48 hours decreased from **34.6% to 14.7%**

Financial impact: **\$21.4M** over 12 months

Fluid Stewardship: Albumin

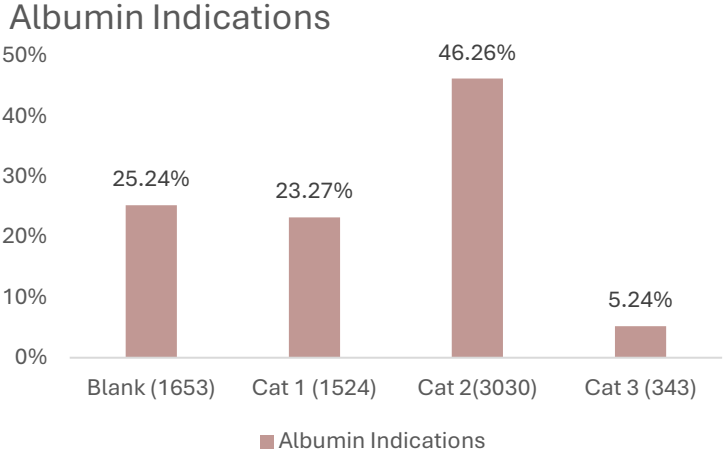
ISSUE

- Albumin, a plasma substitute for volume replacement, is only beneficial in specific scenarios
- Few evidence-based indications support the routine use of albumin in clinical practice to improve patient outcomes
- Albumin misuse can lead to negative cardiovascular, hematological, renal, pulmonary, and immunological impacts and has also been associated with higher mortality for some patient populations

ANALYSIS

In 2023, albumin was administered **over 6,000 times** costing over **2 million dollars**

Only 24% of orders placed were for a reason supported by evidence, as documented in the EHR



IMPACT POTENTIAL



Decrease clinical complications and length of stay



Reduce supply and resource waste and cost



Improve patient experience



Increase clinical team alignment

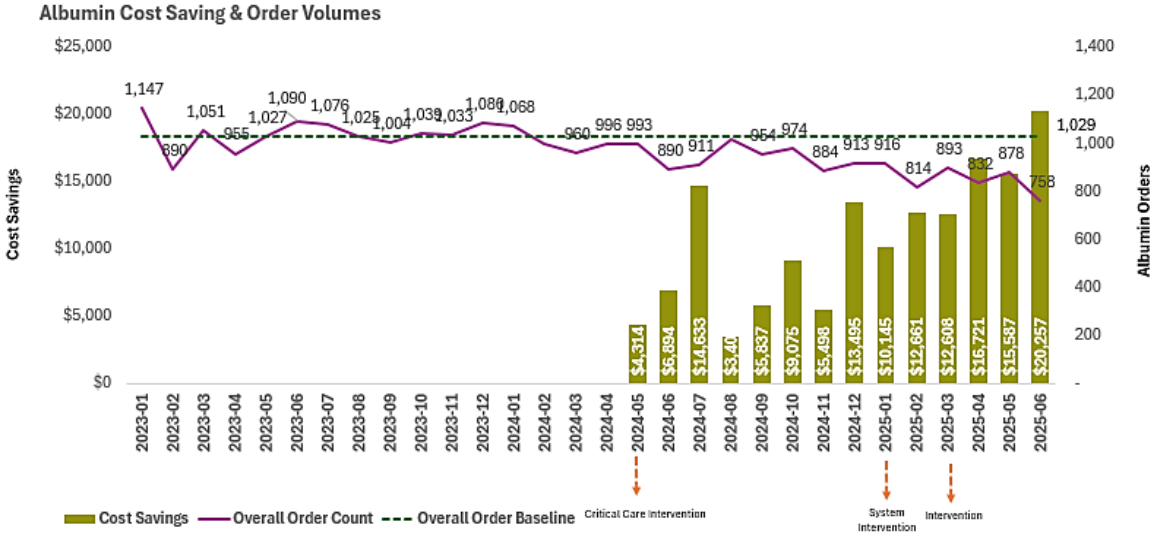
$$\text{Value} = \frac{\text{Outcomes}}{\text{Cost}}$$

Callum, J., Skubas, N. J., Bathla, A., Keshavarz, H., Clark, E. G., Rochweg, B., ... & Wood, E. (2024). Use of Intravenous Albumin: A Guideline From the International Collaboration for Transfusion Medicine Guidelines. *Chest*.

Improvement Strategy & Impact

INTERVENTIONS

1. Develop evidence-based care standard
2. Evaluate albumin and defaults in order sets and on preference lists
3. Robust education on evidence-based albumin use and alternative interventions
4. Modify albumin orders to reflect evidence-based clinical indications, concentration, volume, frequency and duration and require indication for ordering
5. Limit ordering frequency to *once* to encourage reassessment prior to subsequent doses
6. Standardize and incorporate fluid related communication into patient progression rounds



Impacts

Decrease in overall orders from **6.3 to 4.6 per 100 patient discharges** in last 6 months.

Corresponding **increase of 478** more orders placed and documented as **meeting evidence-based criteria**.

Avoided **3,871 units**, **saving \$151,132** with phase 1 implementation and 3-month systemwide adoption.

Data Source: Epic. Permission to share for purposes of quality improvement by Novant Health Institute of Safety and Quality

Additional Initiatives



Send Out Labs

Inpatient DM Management

IV Fluid Stewardship

Blood Transfusion

Anemia

ED Boarding Safely

Orthobiologics Spine

Maternal Hypertension

Blood Product Waste

Clinical Documentation AI

Low Risk Chest Pain

Colorectal Cancer Screening

Telemetry Utilization

Lessons Learned



- Reducing clinical variation at scale is achievable with the right strategy and structure
- Early wins build credibility, generate momentum, and foster broad engagement
- Success depends on strong alignment across clinical divisions and key support services

Key Takeaways



- Align around a shared purpose: improving outcomes while reducing costs
- Engage care teams early—insights from those delivering care are essential for buy-in and real-world adoption
- Establishing care standards is only the first step; optimizing workflows ensures that doing the right thing is easy and sustainable for care teams
- While each initiative is unique, the common threads of improvement science, data analytics, and adaptive leadership are foundational across all efforts

Questions?



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