

Laboratory Stewardship - The Power of Appropriate Test Utilization

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CardinalHealth

Essential to care™

Logistics
Product
Business
Patient

Learning objectives

Describe the difference between utilization management and laboratory stewardship

Identify critical factors for success in implementing laboratory stewardship interventions

Differentiate low impact versus high impact interventions

Cite ways in which laboratory stewardship moves the dial on patient care and outcomes







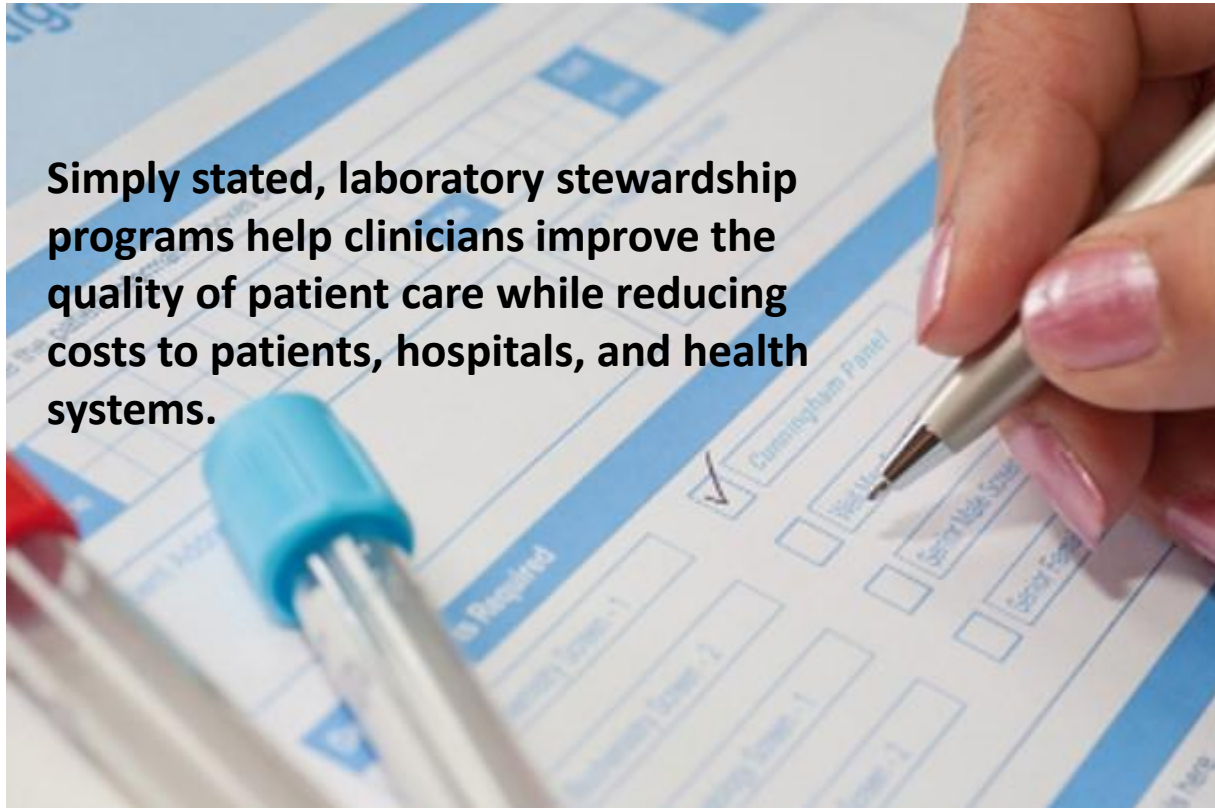
Introduction



Laboratory Stewardship is recognized as one of the most impactful strategies used by hospitals and health systems to **improve the quality of patient care, optimize resources** and **reduce waste.**

Laboratory Stewardship

Simply stated, laboratory stewardship programs help clinicians improve the quality of patient care while reducing costs to patients, hospitals, and health systems.



Laboratory Stewardship

What you need to succeed



People

Resource

Structure

Intervention

The art of creating change



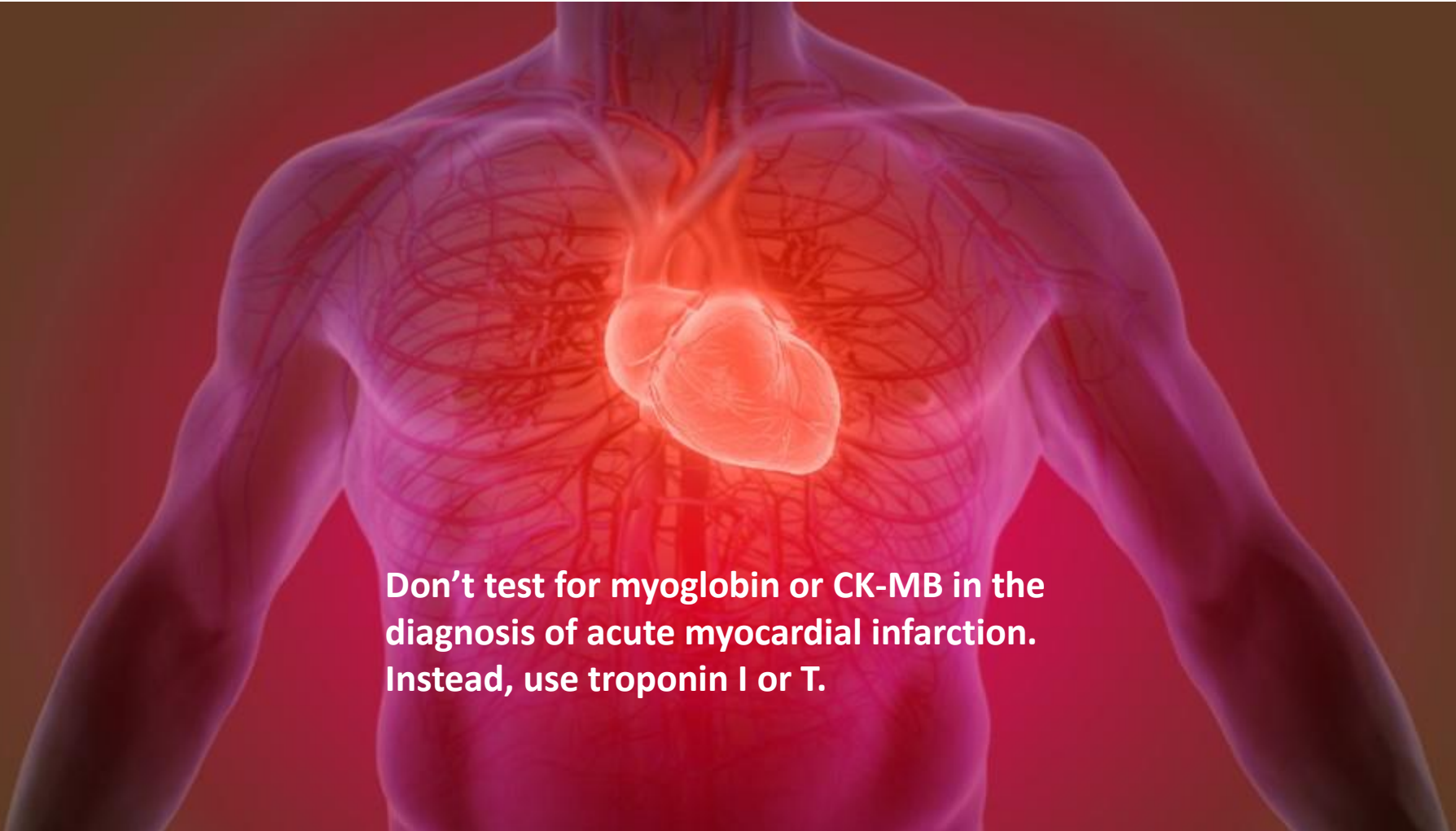
Is physician education alone enough?

What works best: soft or hard stops?

Is it better to ask permission or forgiveness?

Intervention

Removing an obsolete test

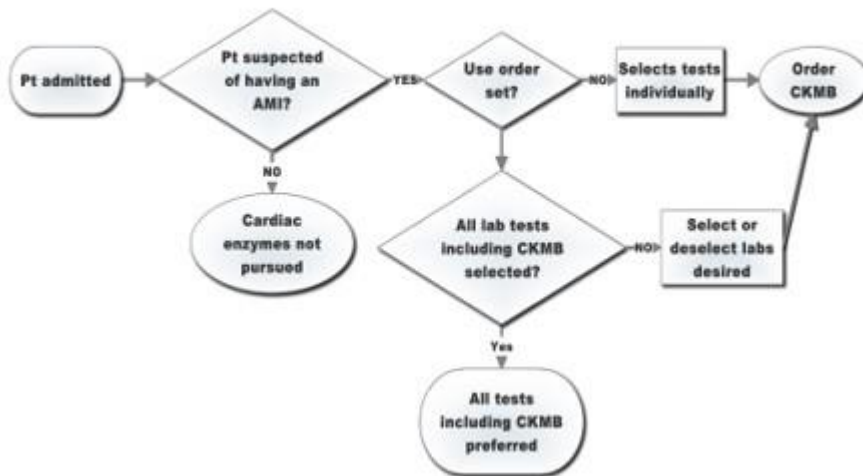


Don't test for myoglobin or CK-MB in the diagnosis of acute myocardial infarction. Instead, use troponin I or T.

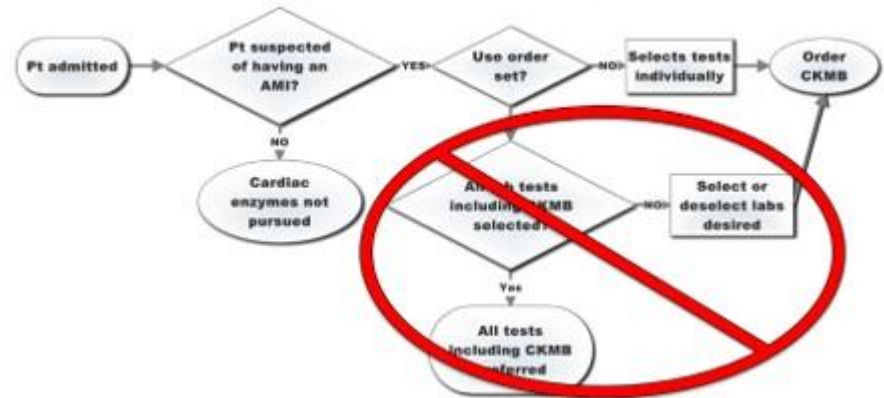
Intervention

Removing an obsolete test

Current State Process: CK-MB Lab Test



Intervention: CK-MB Lab Test



Intervention

Removing an obsolete test

CKMB HARD SAVINGS

2014 Annual Variable Cost - \$42,156.80

(Annual 2014 Volume 7528 x Variable Cost per test \$5.60)

2015 Annual Variable Cost - \$13,766.80

(Annualized 2015 Volume 2460 x Variable Cost per Test \$5.60)

Annual Potential Cost Savings - \$42,156.80 - \$13,766.80 = \$28,380.80

Intervention

Removing an obsolete test



SOFT SAVINGS/GAINS

- Decreased Turnaround Time
- Increased Physician Satisfaction
- Re-Deploying staff to other laboratory testing duties/ increased productivity
- Increased Efficiency
- Cost Avoidance of Inappropriate Ordering and Patient Results
- Avoiding duplicate orders on same patient



Process	Intervention: Tests Resulted Post-discharge				
Utilization Analysis	Tests	Charges	Avg. time [†]	Utilization	
	Culture Tests	8,933 (45% of total volume)	\$4,491,939	7.94 days	10% of reference tests are resulted post discharge
	Other Tests	8,913 (45% of total volume)	\$21,830,237	3.86 days	
	Sendout Tests	1,933	\$326,028	3.63 days	
	Intervention	% Reduction of events		Charge Reduction	Cost Reduction
10-50%		\$\$\$	\$\$\$		

*cost reduction includes cost of phlebotomy

[†] average days of results reported after discharge



Process	Intervention: Daily Order Testing			
Utilization Analysis	Sets	Charges	Cost	Utilization
	CBC with Diff	13,253	\$1,341,204	\$5.59
	CBC	35,272	\$3,181,534	\$5.16
	Basic MP	48,156	\$6,727,393	\$7.73
	Comp MP	369	\$83,615	\$11.92
Intervention	% Reduction of events 10-50%		BC + MP Charge Reduction \$1,133,375 - \$5,666,876	
			BC + MP Cost Reduction \$135,381 - \$676,907	

36%

of discharges had a daily order “set” on every day of their stay

*cost reduction includes cost of phlebotomy

Intervention

Reduce the number of daily blood collections

Daily Phlebotomy & Iatrogenic Anemia

	Current	Proposed
Phlebotomies per Day	4.50	3.00
Total Patient Days	83,785	83,785
Total Phlebotomies	377,033	251,355
mL blood (assume 5 cc's per draw)	1,885,163	1,256,775
\$ per Phlebotomies	\$7.50	\$ 7.50
Total \$'s	\$2,827,744	\$1,885,163
Savings from Phlebotomy Reduction		\$942,581
Less Phlebotomies		125,678
Less Units of blood drawn (assume 300 cc's per unit)		2,094.63

Therapeutic Intervention

“Increasingly healthcare professionals, with the use of laboratory tests, are able to identify and monitor precisely targeted, individualized therapeutic interventions that may result in the best patient outcome – helping to ensure the right therapy for the patient.”

MEDICAL
CARE

HEALTH

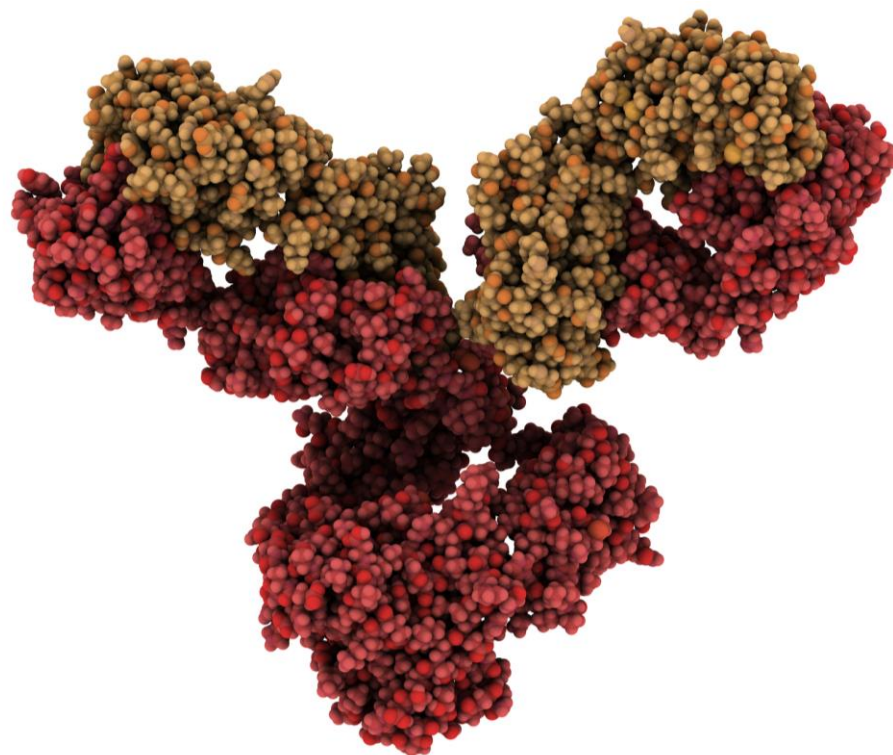


Case Study

Infliximab activity and neutralizing antibody

A significant percentage of patients receiving Infliximab therapy **develop neutralizing antibodies** to the drug, **leading to treatment failure**.

Increased testing for Infliximab activity and antibody formation can lead to better patient care and decrease pharmacy expenses.

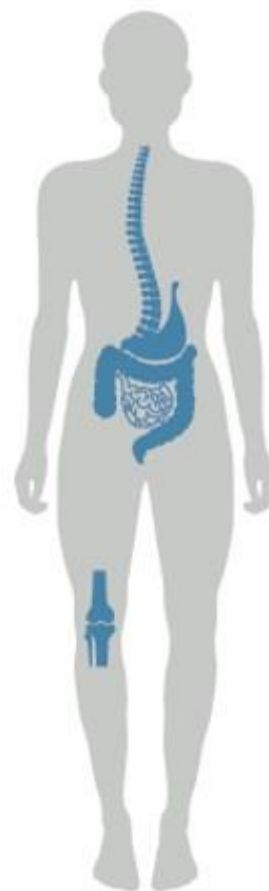


TNF Antagonist

50%

An infographic consisting of four human silhouettes. The first two are blue, and the last two are grey, representing 50% of a total of four.

Of patients suffering from autoimmune and chronic inflammatory disorders experience treatment failure.



If, And, Then

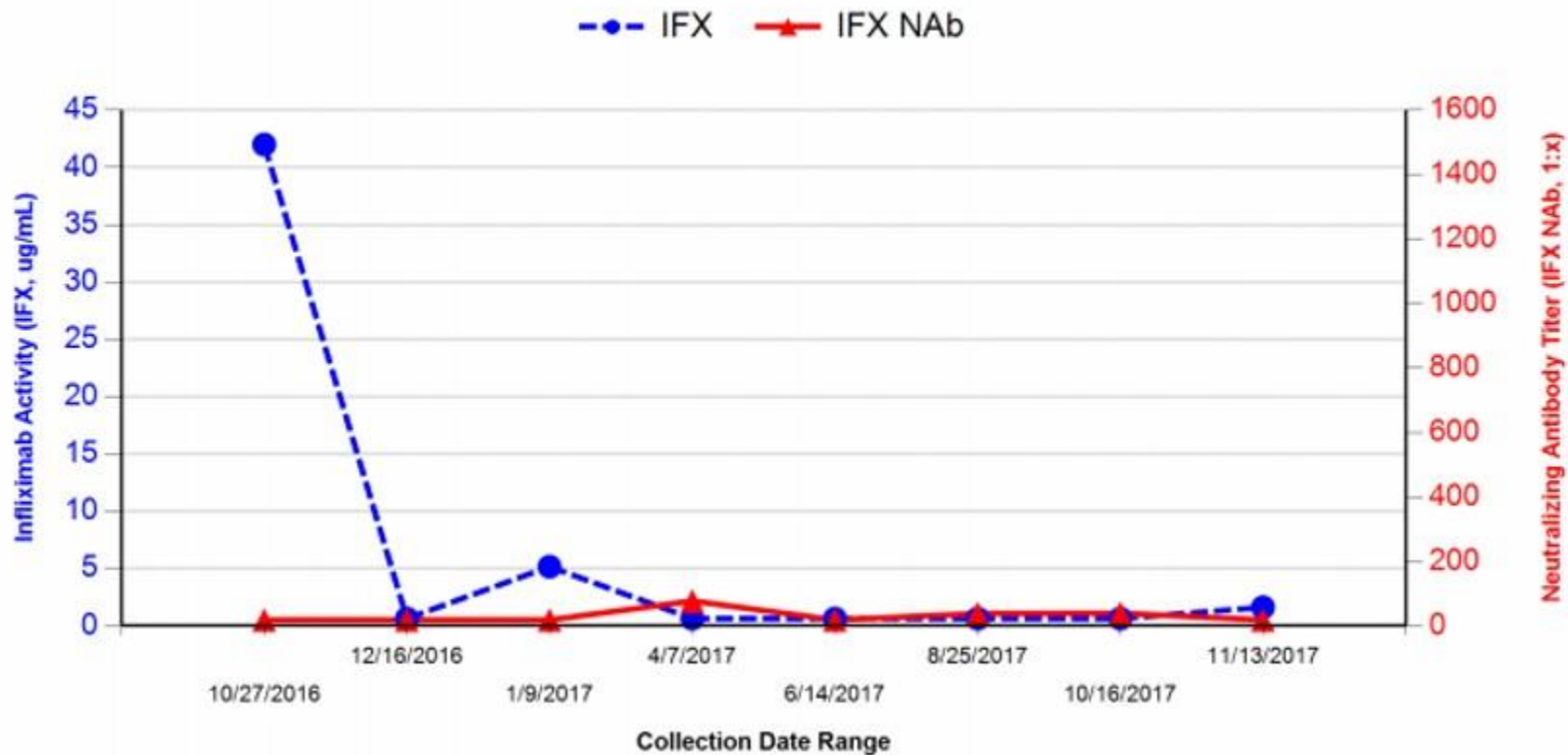


IF Infliximab Activity is...	AND infliximab Neutralizing Ab. Titer is...	THEN...
Not Detected	Not Detected	A higher dosage of infliximab or shortening the dosing interval may be appropriate.
Not Detected	1:20 or greater	A change to another anti-TNF- α drug may be appropriate.
0.65 ug/mL or greater	Not Detected	A change to another type of therapy (not targeting TNF- α) may be appropriate.
0.65 ug/mL or greater	1:20 or greater	Repeat testing is suggested to rule out decreasing infliximab activity and/or increasing neutralizing antibodies.

It's important not only to know if patients have developed neutralizing antibodies, but also **to understand the different implications with therapy** as a result.



Infliximab Activity versus Neutralizing Antibody Titer



Financial Impact

The average cost of administering one dose of infliximab to a commercial insurer is approximately **\$2,800**.



OVER 2.6 MILLION PATIENTS PRESCRIBED WORLDWIDE*

Gastroenterology

Moderately to severely active

Crohn's Disease

Moderately to severely active

Pediatric Crohn's Disease

Moderately to severely active

Ulcerative Colitis

Moderately to severely active

Pediatric Ulcerative Colitis

Rheumatology

Moderately to severely active

Rheumatoid Arthritis

Active

Psoriatic Arthritis

Active

Ankylosing Spondylitis

Dermatology

Chronic severe

Plaque Psoriasis

Blood Stewardship



Case Study

Intervention with blood products

“Why give 2 when 1 will do?”
Single Unit RBC Transfusion

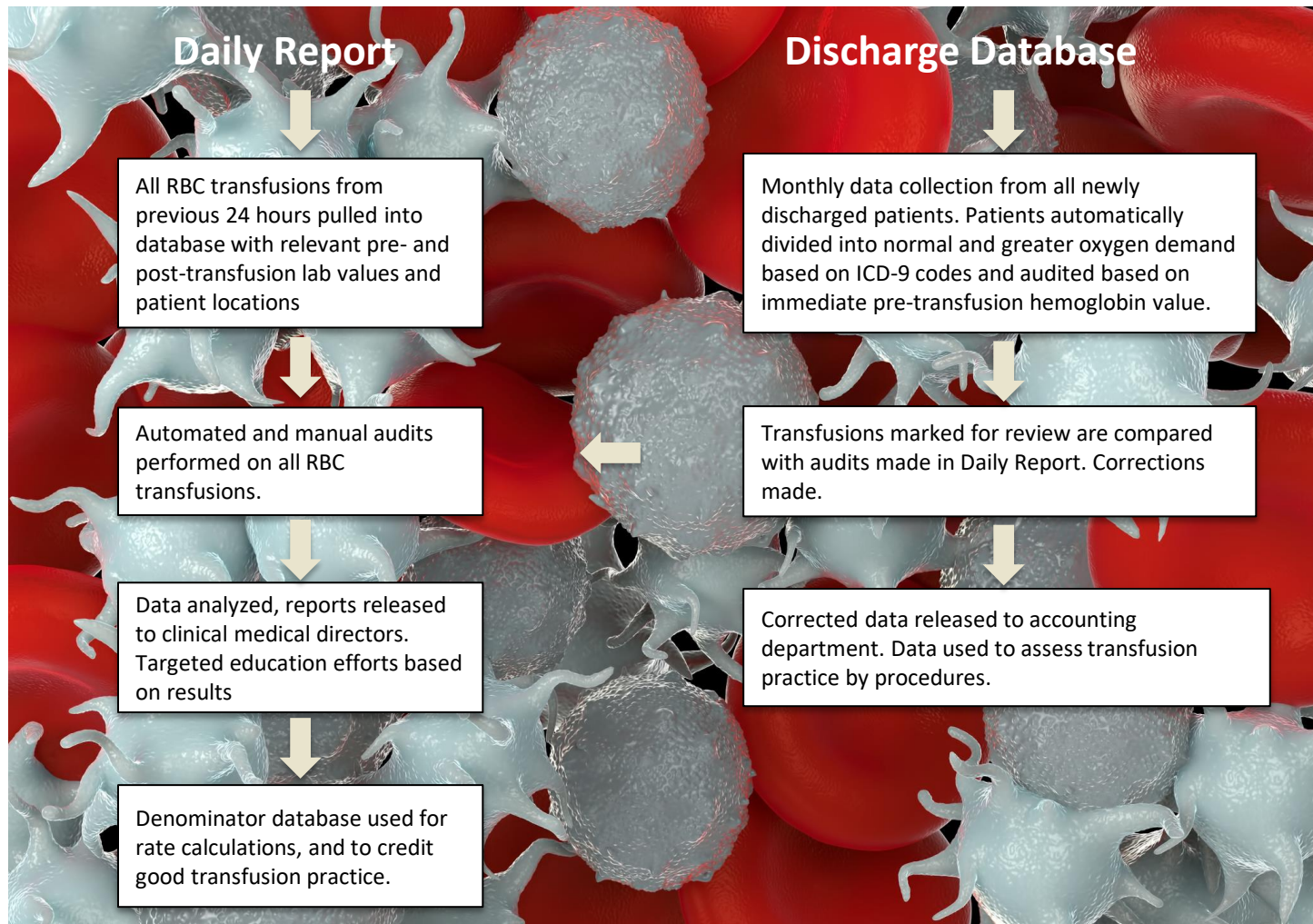


An initiative of the ABIM Foundation

Single unit red cell transfusions should be the standard for non-bleeding, hospitalized patients.

- 7 g/dL threshold for stable patients
- 8 g/dL threshold for stable patients with cardiovascular disease

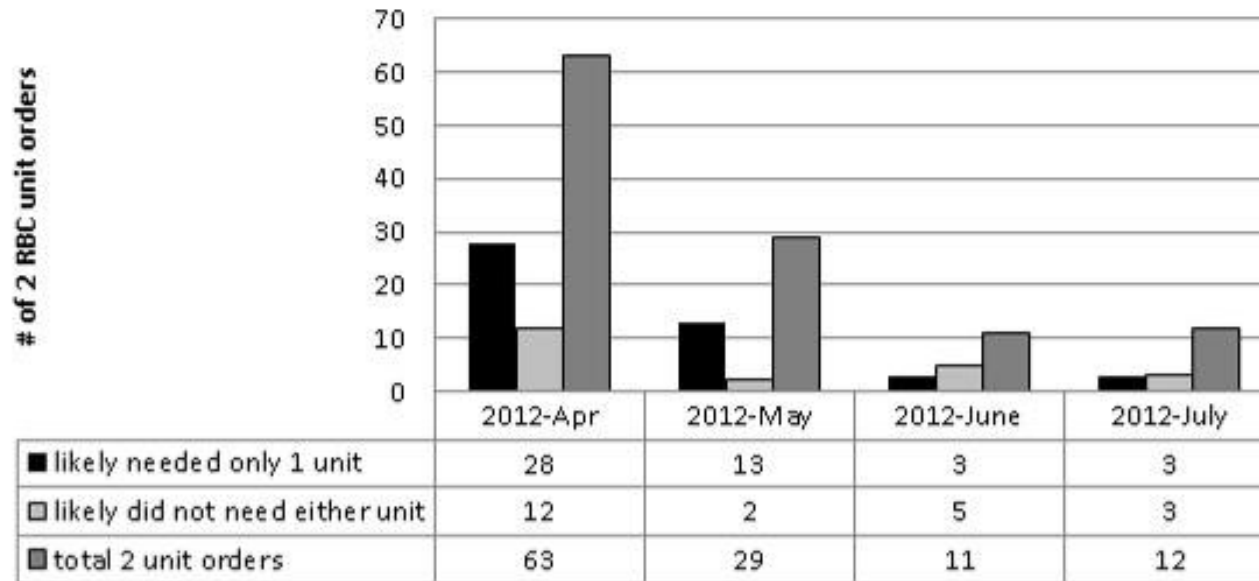
Don't transfuse more units of blood than absolutely necessary.



Intervention

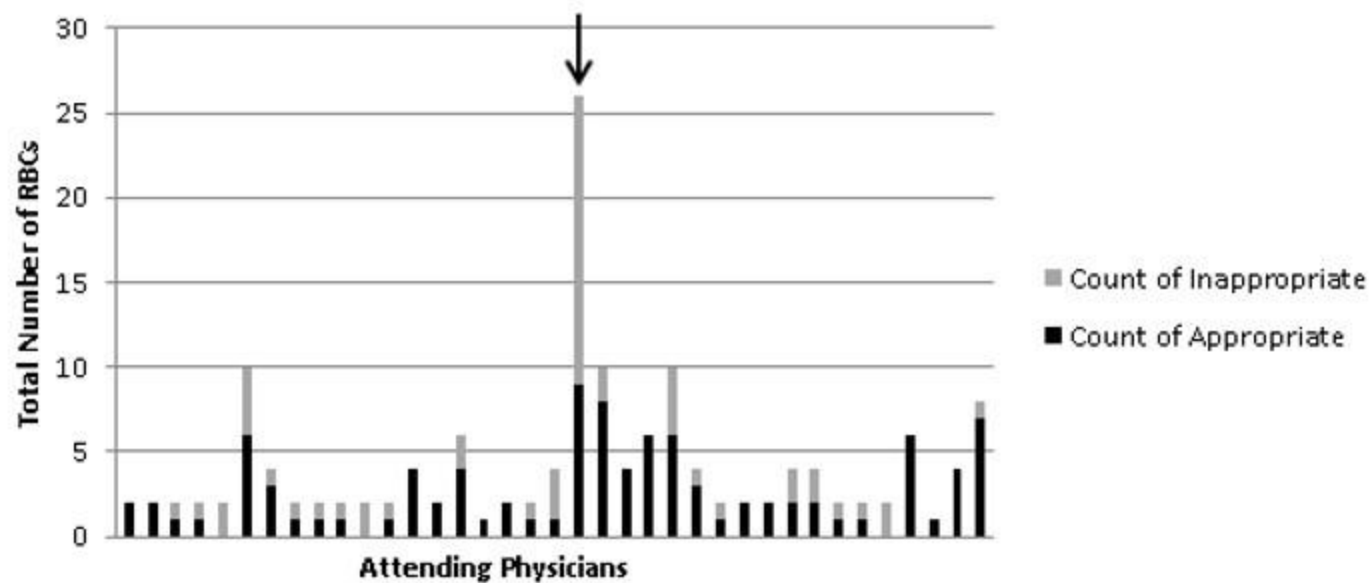
Utilization of packed RBCs

Monthly trend data sent to medical directors or services lines as part of hospital-wide patient blood management program.



Intervention

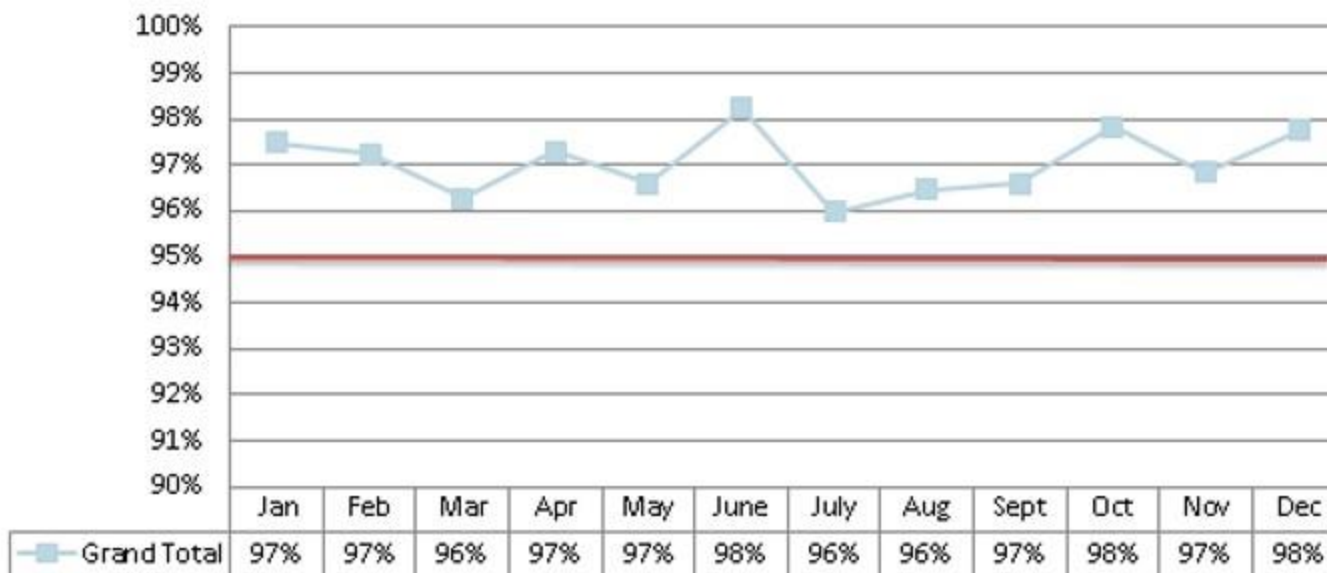
Utilization of packed RBCs



Intervention

Utilization of packed RBCs

% Appropriate RBC Transfusions



Intervention

Utilization of packed RBCs

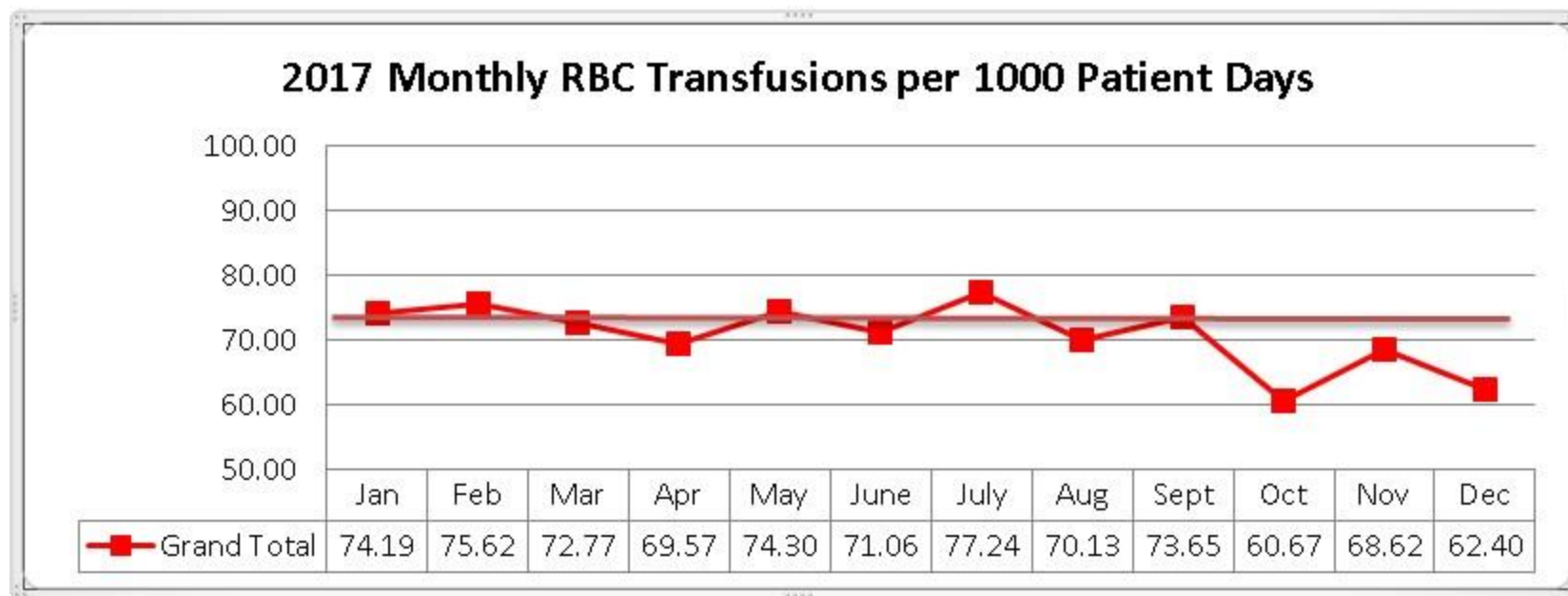


2017 % Appropriate RBC Transfusions



Intervention

Utilization of packed RBCs



Intervention

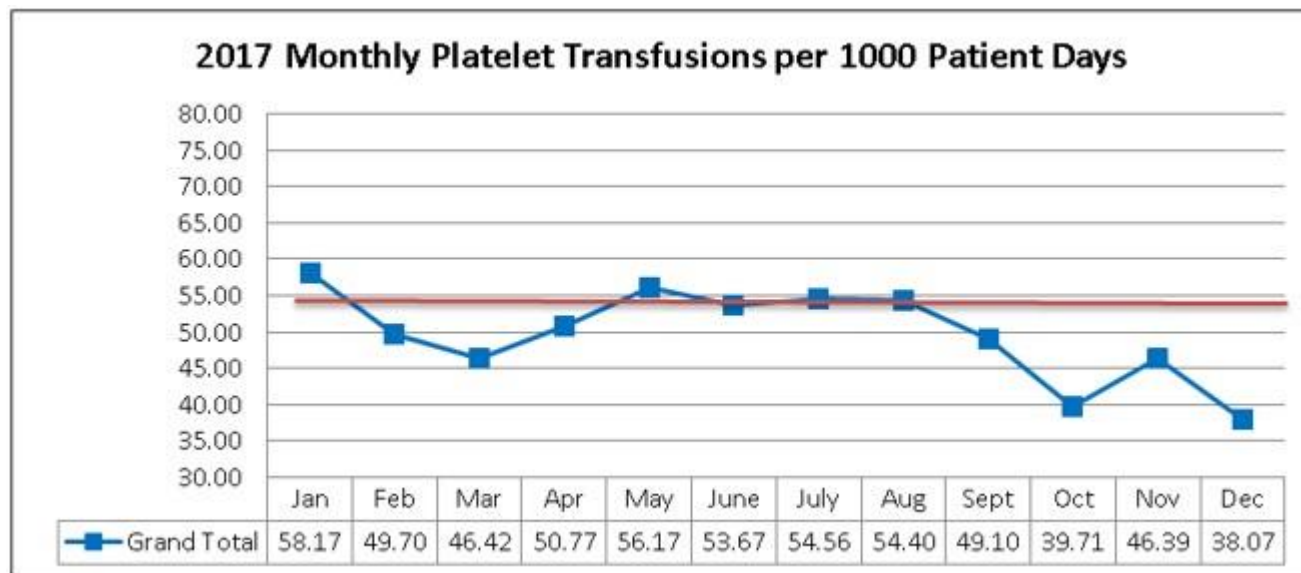
Utilization of packed RBCs

Previous Years Median Rate:

Year	Median Rate	% Yearly Change	% Change from Baseline (2012)
2012	78.09	baseline	NA
2013	74.82	4.2% decrease	NA
2014	71.26	4.8% decrease	8.7% decrease
2015	72.24	1.4% increase	7.5% decrease
2016	79.05	9.4% increase	1.4% increase
2017	71.92	9.0% decrease	7.9% decrease

Intervention

Platelet utilization



Intervention

Platelet utilization

Previous Years Median Rate:

Year	Median Rate	% Yearly Change	% Change from Baseline (2012)
2012	70.34	baseline	NA
2013	63.96	9.1% decrease	NA
2014	55.50	13.2% decrease	21.1% decrease
2015	51.21	7.7% decrease	27.2% decrease
2016	57.29	11.9% increase	18.6% decrease
2017	50.23	12.3% decrease	28.6% decrease

Blood Stewardship

Summary

“There are some patients who will die without transfusions and there are some that will die because of transfusion.”


-Ian Roberts, Director of Clinical Trials Unit, London



Life saving &
Life threatening process

Blood Stewardship

Summary

A detailed 3D rendering of numerous red blood cells, showing their characteristic biconcave disc shape. The cells are scattered across the frame, with some in sharp focus in the foreground and others blurred in the background, creating a sense of depth. The overall color palette is a range of reds, from deep crimson to lighter, almost pinkish tones where the cells are more distant or out of focus.

**Approximate
Savings:
\$5,000,000**

Diagnostic Stewardship

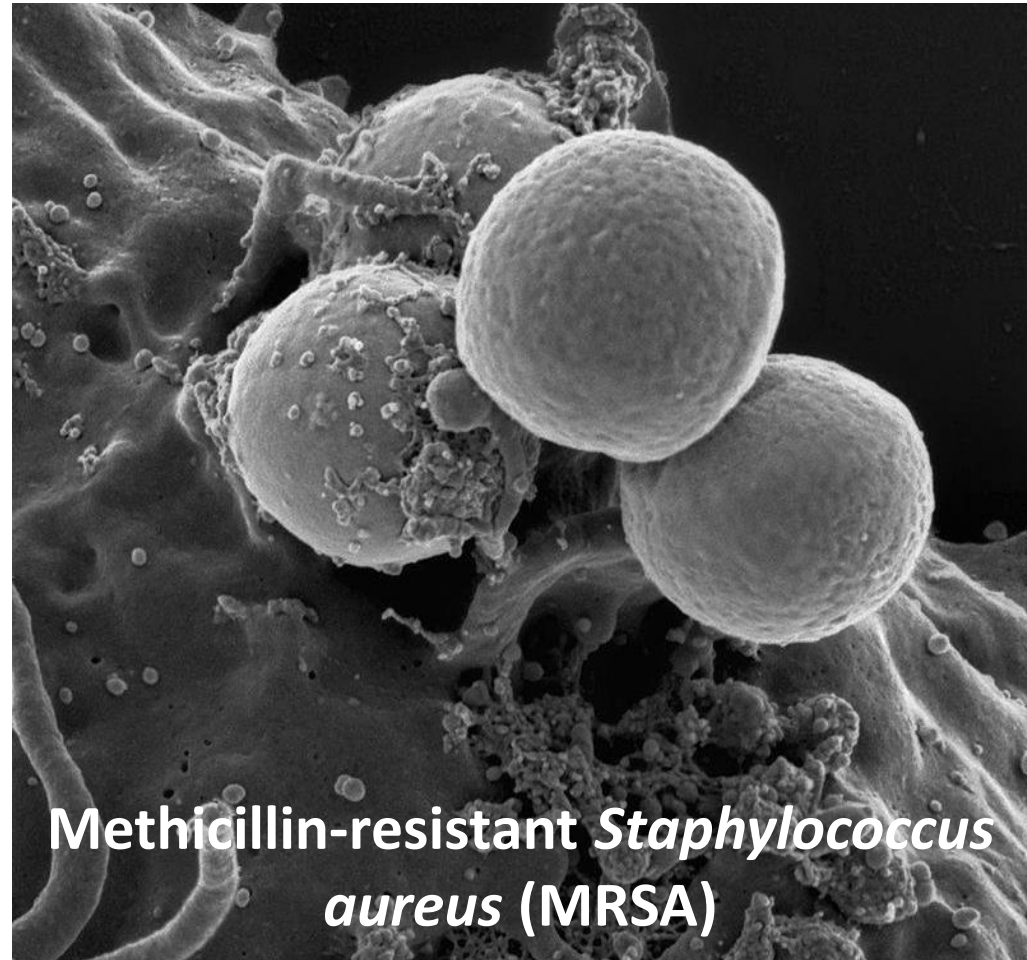


Case Study

Prevention before intervention

Objective:

Implement a screening program to **reduce the number of potentially life threatening infections** in hospital patients.



Screening Program Results



Results:

Number of high-risk patients
screened:

8,968

Reduction in MRSA infections from 2007 –
2012:

56

Savings Through Prevention



MRSA costs about \$10 billion a year to treat in the U.S., averaging about \$60,000 per patient.

Savings → **\$2.9 million**

Closing Thoughts

Stewardship:

As defined by Merriam-Webster

The conducting, supervising, or managing of something; especially the **careful and responsible management of something entrusted to one's care.**



Questions?

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