

Laboratory Stewardship Essentials

Presented by: Andrew Fletcher, MD, CPE
Medical Director, Consultative Services

Learning objectives

After this webinar, you will be able to:

- Describe ways to establish a Laboratory Stewardship program with appropriate governance and engage ordering physicians
- Identify opportunities to consolidate reference testing to improve patient care with shorter times to diagnosis and cost savings
- Develop and implement a reference laboratory test formulary
- Analyze in-house ordering patterns to identify over, under, and misuse of tests
- Identify opportunities and strategies to reduce duplicate and daily in-house tests
- Formulate strategies to minimize downstream costs through appropriate testing

Where to start?

The Essentials

- Test Consolidation
 - How many reference labs do you use?
- Reference test formulary
 - Creation & Implementation
- In-House Testing
 - Daily recurring labs
 - Inappropriate test intervals



Background

13 Billion tests performed

70% decisions based

10-30% unnecessary

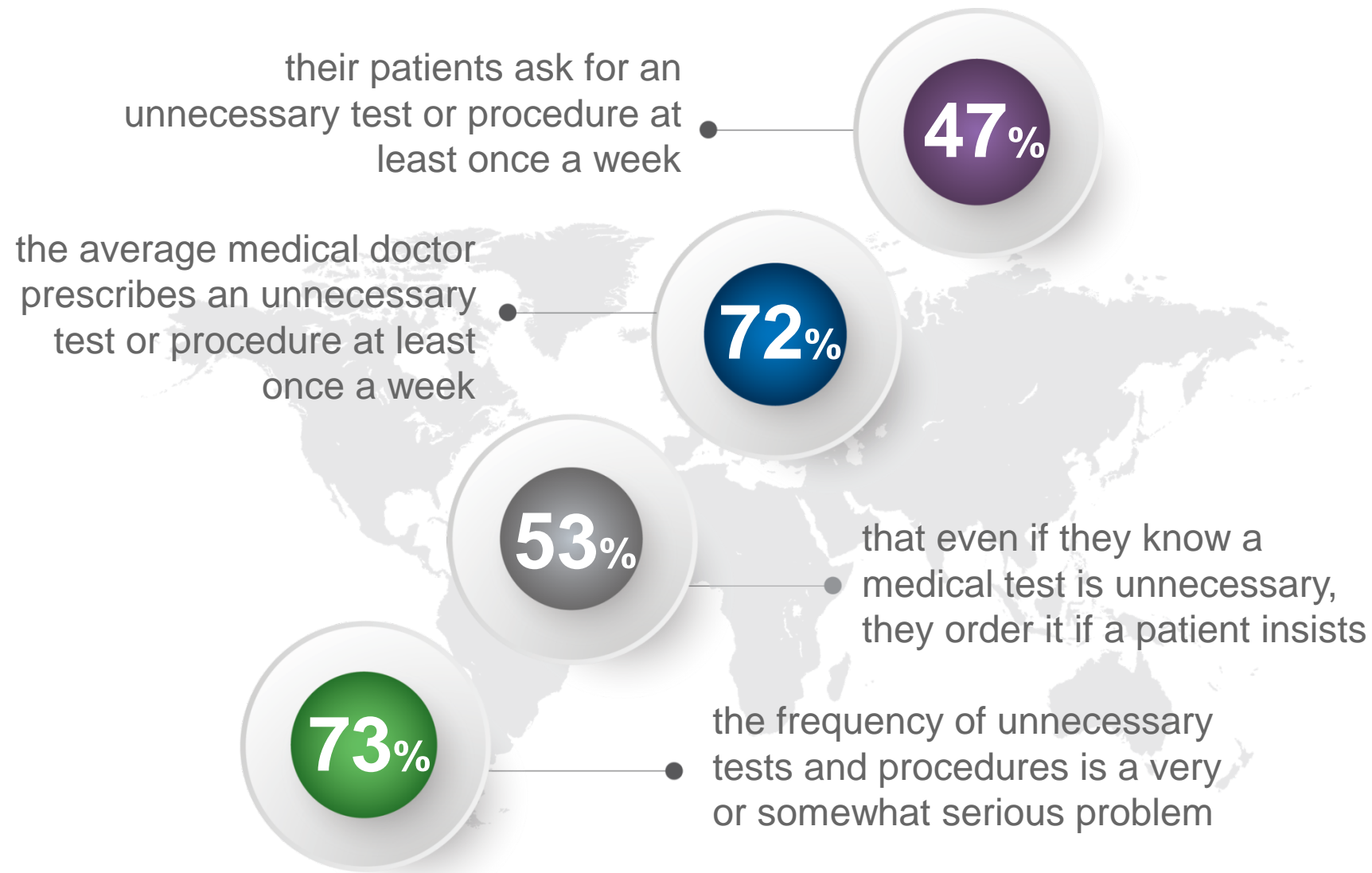


Background

3 most significant causes of patient harm

- Ordering the **wrong** test
- Failing to **retrieve** a test result
- **Misinterpreting** a test result





Trends in Healthcare



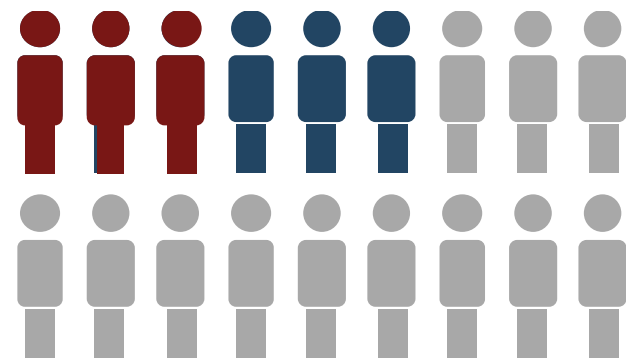
Creating Successful Laboratory Stewardship

1/3

of labs have a
stewardship program

1/2

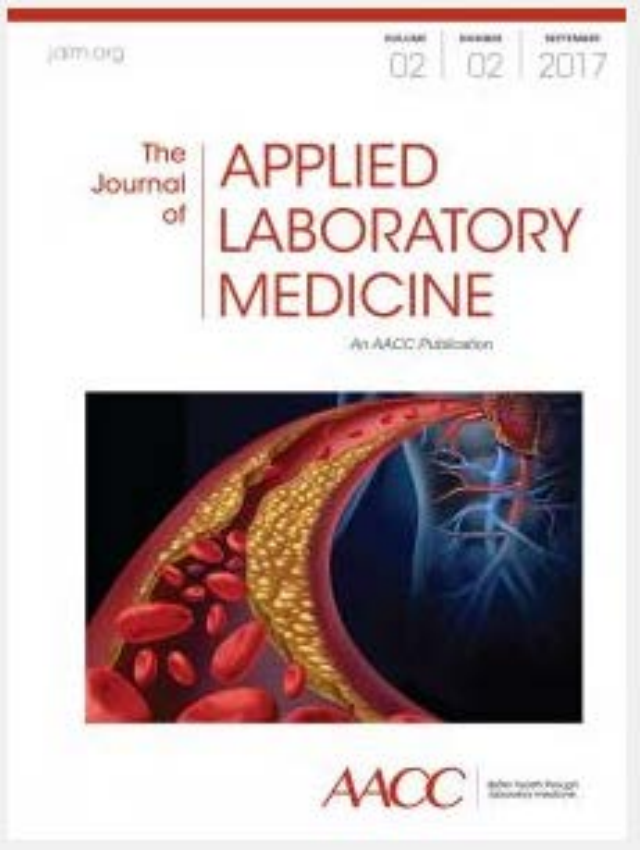
of those labs have a productive
and progressing committee



Success Factors

- Data Analysis
- Formal Governance
- Evidence-Based Recommendations
- IT Engagement and Support
- Project Management
- Measurement and Reporting

NCLS Publication



<http://jalm.aaccjnls.org/content/jalm/early/2017/07/11/jalm.2017.023606.full.pdf>

SPECIAL REPORT



Transforming Laboratory Utilization Review into Laboratory Stewardship: Guidelines by the PLUGS National Committee for Laboratory Stewardship

Jane A. Dickerson,^{1,2*} Andrew H. Fletcher,³ Gary Procop,⁴ David F. Keren,⁵ Ila R. Singh,⁶ Joaquin J. Garcia,⁷ Robert B. Carpenter,³ Joe Miles,³ Brian Jackson,³ and Michael L. Astion^{1,2}

Appropriate utilization of clinical laboratory services is important for patient care and requires institutional stewardship. Clinical laboratory stewardship programs are dedicated to improving the ordering, retrieval, and interpretation of appropriate laboratory tests. In addition, these programs focus on developing, maintaining, and improving systems to provide proper financial coverage for medically necessary testing. Overall, clinical laboratory stewardship programs help clinicians improve the quality of patient care while reducing costs to patients, hospitals, and health systems. This document, which was created by a new multiinstitutional committee interested in promoting and formalizing laboratory stewardship, summarizes core elements of successful hospital-based clinical laboratory stewardship programs. The core elements will also be helpful for independent commercial clinical laboratories.

Pathology and laboratory medicine have transformed the practice of medicine by providing tests and services for diagnosis, treatment, monitoring, and prevention of disease and driving advances in all fields of medicine. Laboratory testing is the single highest-volume medical activity with an estimated 13 billion tests performed in the US each year (1). In addition, about 70% of downstream medical decisions are based on pathology and laboratory medicine results (2).

The 3 most significant causes of patient harm related to laboratory services are ordering the

wrong test, failing to retrieve a test, and misinterpreting a test result (3). A number of studies, as well as review of insurance claims, reveal that 10%–30% of laboratory tests performed in the US are either unnecessary or inappropriate (4). About 30% of genetic test orders are inappropriate (5), and about 5% of genetic test orders are frank medical errors (6). About 7% of test results are never retrieved or retrieval is significantly delayed (7). Like all medical interventions, inappropriate laboratory test ordering and interpretation have serious effects, including delayed

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[†]Nonstandard abbreviations: UM, utilization management; PLUGS, Pediatric Laboratory Utilization Guidance Services; CPOE, computerized provider order entry.

Where to start?

Three **initial areas of focus**

- Test Consolidation
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Test Consolidation

How many reference laboratories do you use?

1. Is there a primary Vendor?
2. Why are tests sometimes not consolidated?
 - Physician Request
 - Patient Request
 - Insurance requirement
 - Easier process for lab staff

Free Phenytoin at Lab X	\$106
Free Phenytoin at Primary Lab vendor	\$13

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Test Formulary

Review



all send out
testing
performed
in 1 year

Eliminate



test listing in
menu if
ordered <4
times in 1 year

Review



remaining
test on menu
to see if
reasonable

POE Optimization



Vitamin D

- 1,25-Dihydroxy vitamin D
- **25-Hydroxy vitamin D**



Folate

- Folate (RBC)
- **Folate (serum)**



Flu

- Flu PCR
- Flu respiratory viral panel
- **Flu screen**



Gonorrhea

- Gonorrhea culture
- **Gonorrhea DNA probe**

POE Optimization

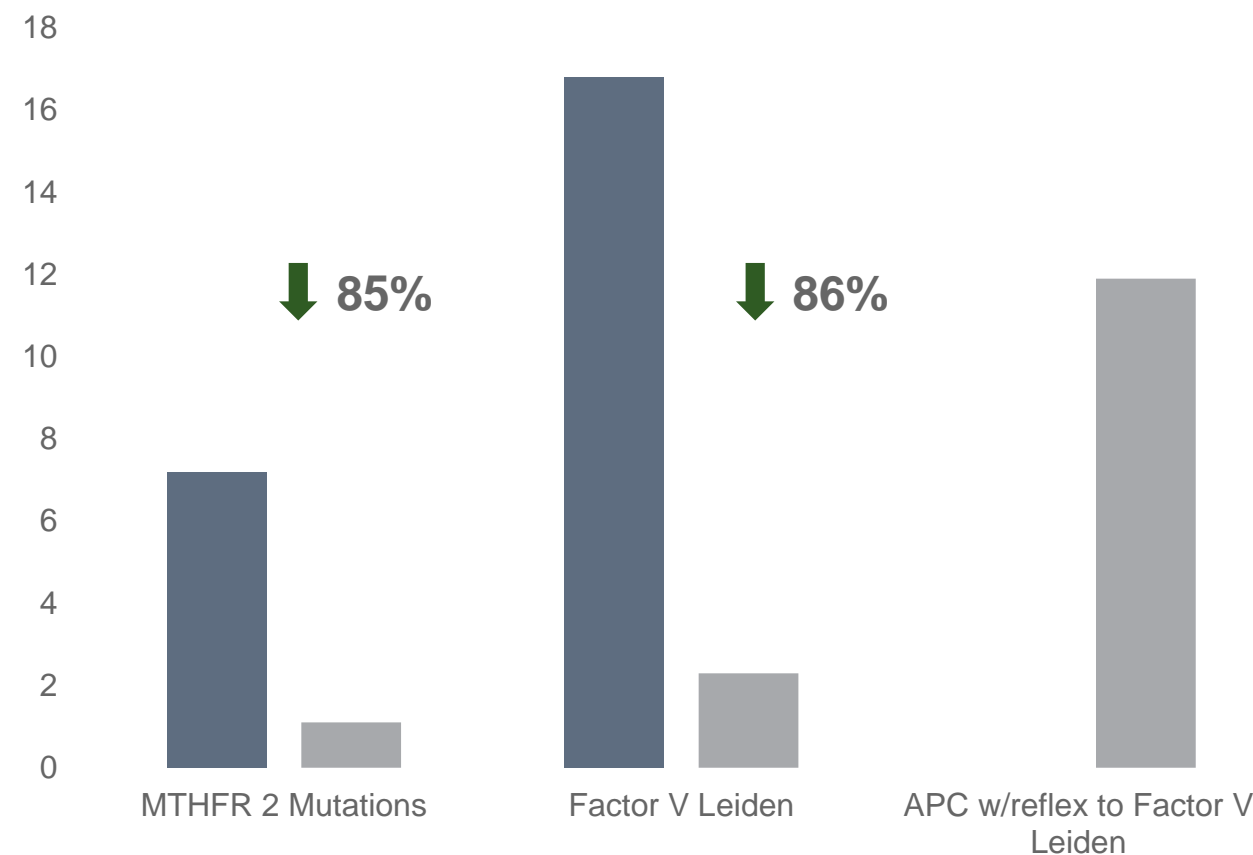
- ☐ CELIAC SEROLOGY (REF, \$\$, 3d)
- ☐ IMMUNOGLOBULIN E (IGE) (REF, \$\$, 5d)
- ☐ LEVETIRACETAM LEVEL (REF, \$\$, 2d)
- ☐ PROTEIN C/S PANEL, FUNCTIONAL (REF, \$\$, 3d)
- ☐ RENIN (REF, \$\$, 2d)
- ☐ THYROID Abs (REF, \$\$, 2d)
- ☐ ALPHA-FETOPROTEIN (AFP) (REF, \$\$, 3d)
- ☐ B2 GLYCOPROTEIN I ABS IGG IGM (REF, \$\$, 3d)
- ☐ BUPRENORPHINE and METABOLITES, URINE (REF, \$\$, 5d)
- ☐ CARDIOLIPIN Abs (IgG, IgM, IgA) (REF, \$\$, 2d)
- ☐ GLUTAMIC ACID DECARBOXYLASE AB (REF, \$\$, 4d)
- ☐ ISLET CELL (REF, \$\$, 4d)
- ☐ LAMOTRIGINE LEVEL (REF, \$\$, 2d)
- ☐ OXCARBAZEPINE (TRILEPTAL) (REF, \$\$, 3d)
- ☐ THYROID STIMULATING IMMUNOGLOB (REF, \$\$, 3d)
- ☐ THYROXINE BINDING GLOBULIN (REF, \$\$, 3d)
- ☐ TISSUE TRANSGLUTAMINASE IGA AB (REF, \$\$, 3d)
- ☐ TOPIRAMATE (TOPRAMAX) LEVEL (REF, \$\$, 3d)
- ☐ TPMT ENZYME (REF, \$\$, 2d)
- ☐ VON WILLEBRAND MULTIMERIC PANEL (REF, \$\$, 4d)
- ☐ ACTIVATED PROTEIN C RESISTANCE (REF, \$\$, 5d)
- ☐ ADRENOCORTICOTROPHIC HORMONE (ACTH) (REF, \$\$, 3d)
- ☐ ALDOSTERONE, SERUM (REF, \$\$, 5d)
- ☐ ALDOSTERONE/RENIN ACT RATIO (REF, \$\$, 6d)

Financial Impacts

	Inpatient Reference test cost
Monthly average pre Formulary	\$31,054
Monthly average post Formulary	\$20,028
Percent decrease	35%
Average monthly savings	\$11,026
Projected yearly savings	\$132,309

Commonly Misordered Tests

Test Removal & Reflex Path Implementation



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Daily Orders



Don't perform repetitive CBC and chemistry testing in the face of clinical and lab stability.



Don't order diagnostic tests at regular intervals (such as every day), but rather in response to specific clinical questions.

Intervention Methods

Proactive

Appropriate order sets
Order management
Preference list management
Physician education
Physician report cards



Reactive

Duplicate alerts
Formulary restriction alerts
Best Practice Alerts
Physician education



Best Practice Alert

Order placed for the procedure in last **30** days

Order # 76548965
Ordered: 76548965
By: Zyne Cotopaxi, MD
Resulted: 09/04/2016 15:47
Collected: 09/04/2016 13:00

	Component	Value	Units	Flag
	Thyroid Stimulating Hormone	4.0	IU/mL	

Continue placing order?

Yes

No

Troponin Orders and Chest Pain LOS

Order picklists -- Webpage Dialog

Selected Visit Other Visit No Visit Do Not Discontinue Orders After End of Visit

Common Patient Based Order Sets Search Personal Favorites << Session Defaults

troponin

All Meds Labs

Favorites

- 00 - Updates for Physicians
- 01 - Medications
- 02 - IV Fluids
- 03 - Blood Bank orders
- 04 - Laboratory Orders
- 05 - Radiology Orders
- 06 - Vascular Orders
- 07 - Respiratory Orders
- 08 - Cardiology Tests
- 09 - Diet Orders
- 10 - Consult Orders
- 11 - Protocol Orders
- 12 - Discharge/Transfer
- 14 - GetWell Network Education
- Cardiology Order Sets
- Internal Medicine Order Sets
- Pediatrics Order Sets
- Physical Medicine/Rehab Order Sets

Specialty

TROPONIN - I

Notify MD: Elevated Troponin Levels

Cardiac Enzymes

Troponin STAT and then every 6 hr x 2

- TROPONIN - I Stat
- TROPONIN - I Timed Q6hrs Daily for 12 Hours

Troponin STAT and then every 4 hr x 2

- TROPONIN - I Stat
- TROPONIN - I Timed Q4hrs Daily for 8 Hours

Troponin STAT and then every 3 hr x 2

- TROPONIN - I Stat
- TROPONIN - I Timed Q3hrs Daily for 6 Hours

Troponin STAT and every 3 hrs x 4; Notify MD if positive

- TROPONIN - I Stat
- TROPONIN - I Timed Q3hrs Daily for 12 Hours
- Notify MD: If troponin results are positive

[Evidence to use troponin as firstline cardiac biomarker](#)

Troponin STAT and every 3 hrs x 4; Notify MD if positive

- TROPONIN - I Stat
- TROPONIN - I Timed Q3hrs Daily for 12 Hours
- Notify MD: If troponin results are positive

TROPONIN STAT and REPEAT every 4 HRS X 2

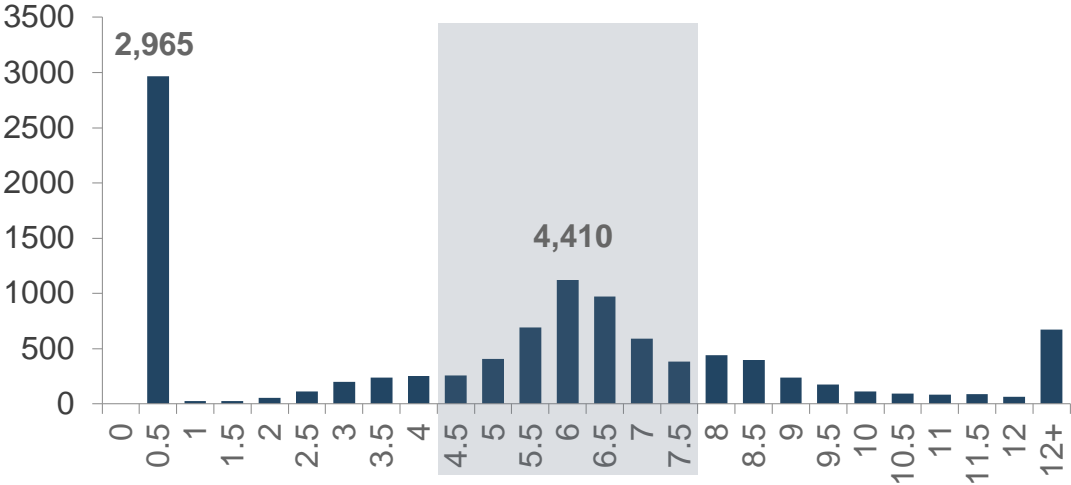
- Perform: iSTAT troponin stat, if unavailable order Serum Troponin I stat
- TROPONIN - I Timed Q4hrs Daily for 8 Hours

Troponin STAT and then every 3 hr x 2

- TROPONIN - I Stat

Add Add & Close Close

Troponin I

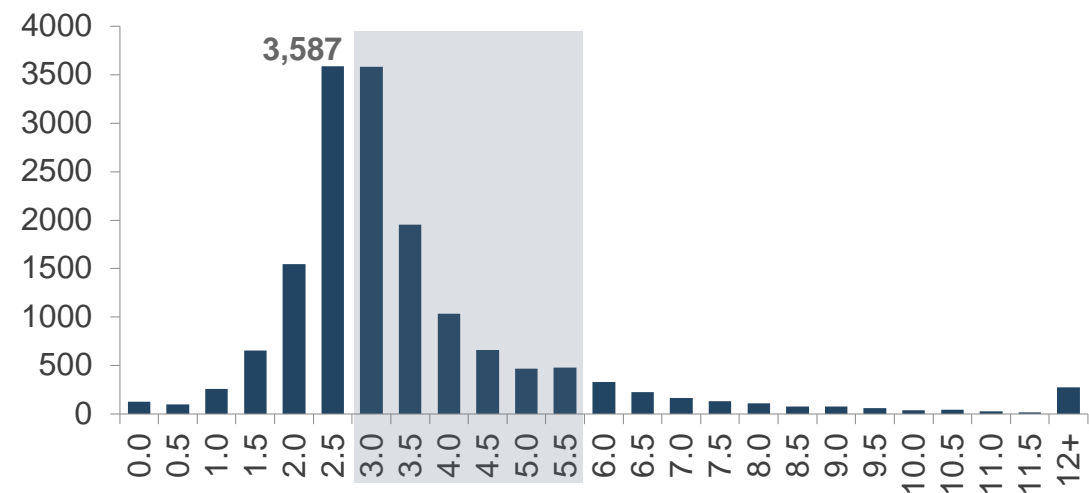


1 Identify order mechanisms that drive the repeat interval

2 Modify the repeat time to be 3-6 hours after

Improve the time-to-decision by improving the test interval by up to **3 hours**

Troponin I



1

Identify order mechanisms that drive the repeat interval

2

Modify the repeat time to be 3-6 hours after

Improve the time-to-decision by improving the test interval by up to **3 hours**

Downstream Impact on Pharmacy

IVIG

Argatroban

Remicade



Summary

Justification for Stewardship

NCLS Recommendations

Three initial area of focus:

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Questions?

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