

How to Develop an Effective Utilization Management Program

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My background

Former Life:

- Business School Professor
- Specialized in Operations Analysis, Analytics

Present Life:

- Director, Center for Effective Medical Testing
- Apply Analytics to Testing Problems
 - Cost-Effectiveness Analysis
 - Utilization

Learning Objectives

List key attributes of successful utilization programs.

Recognize situations where improvement metrics are counterproductive.

Explain how to identify strong utilization projects.

Describe several classes of interventions to improve utilization.

Identify common barriers to successful utilization management.

The REAL Objective:

– Make UM easier!

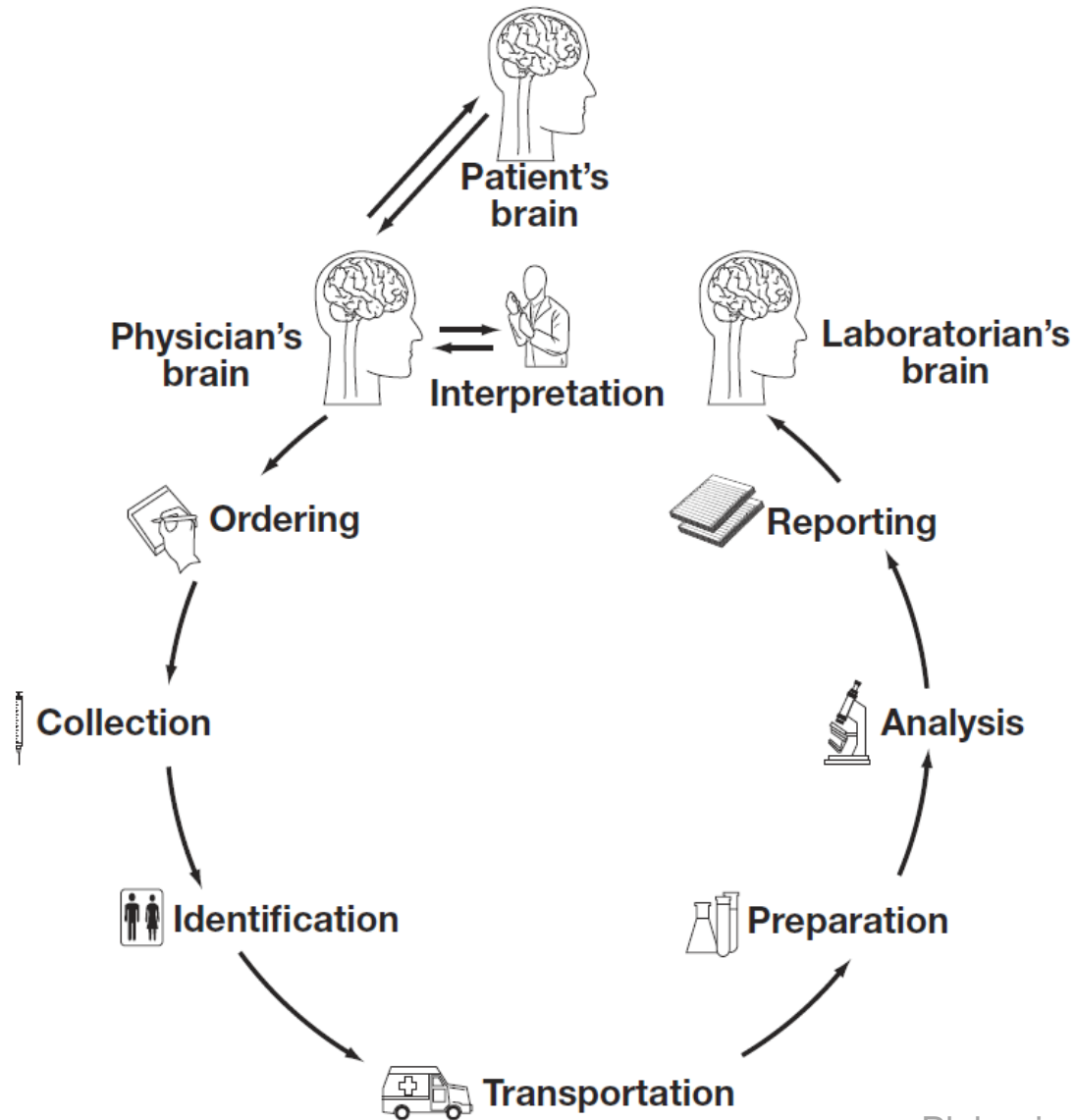
TAKE HOME MESSAGE:

- Utilization management is not difficult
- You already know how to do it
 - Continuous Improvement
 - Plan Do Study Act Cycle

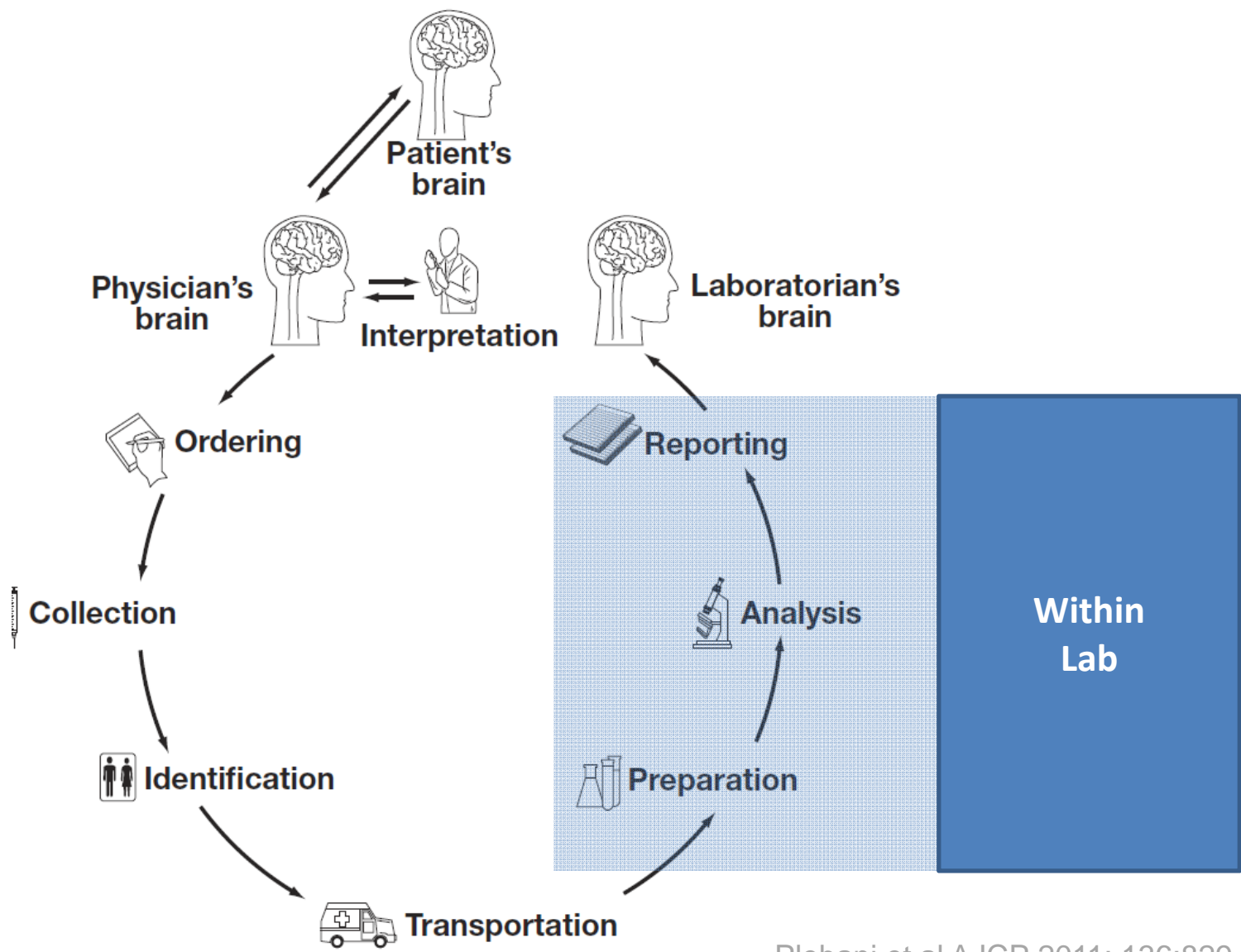
The Opportunity

$$\textit{Value} = \frac{\textit{Health Outcomes} + \textit{patient experience}}{\textit{Cost}}$$

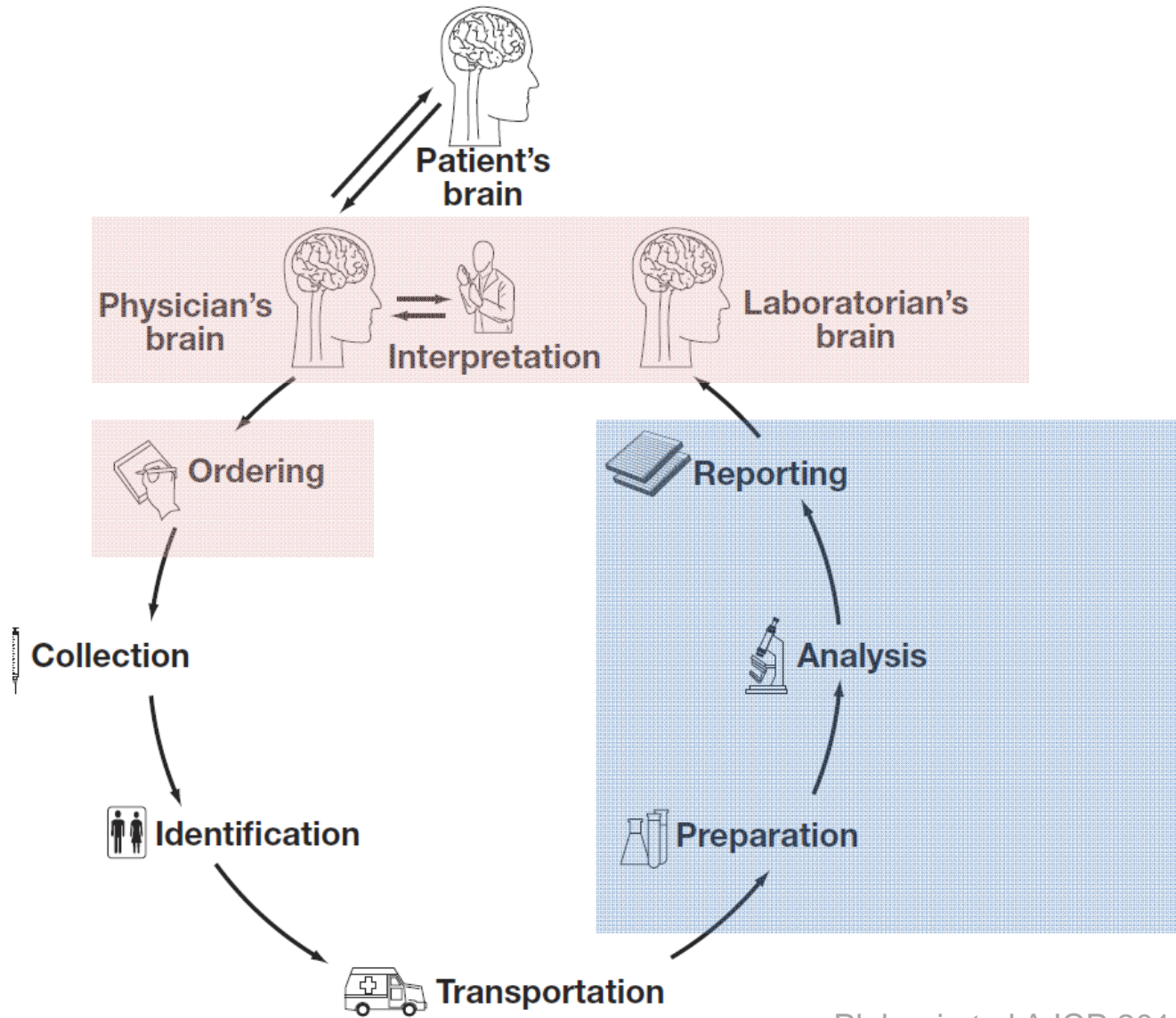
How does the lab contribute value?



Plebani et al AJCP 2011; 136:829-833

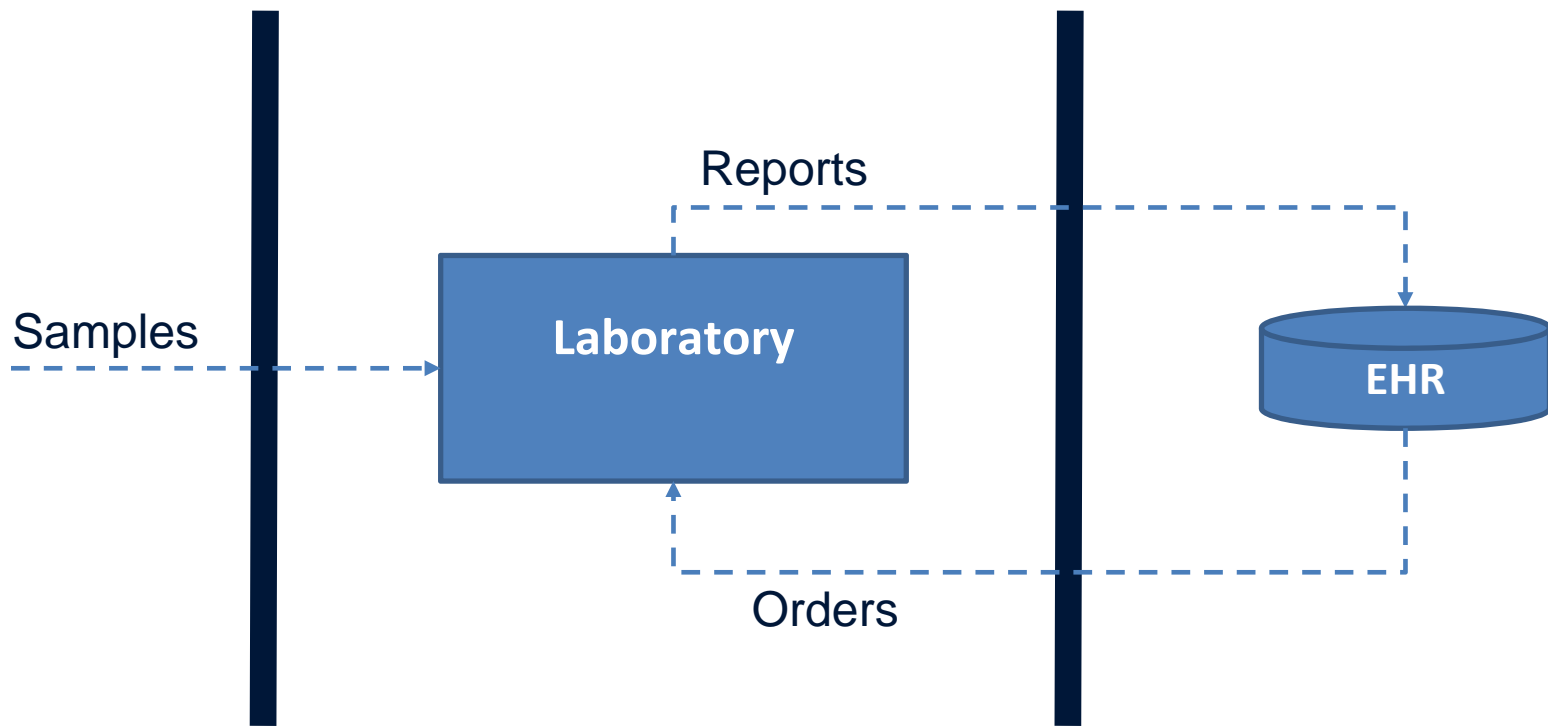


Plebani et al AJCP 2011; 136:829-833



Plebani et al AJCP 2011; 136:829-833

Laboratory as Service Factory



Goals: Efficiency



Clinical Biochemistry

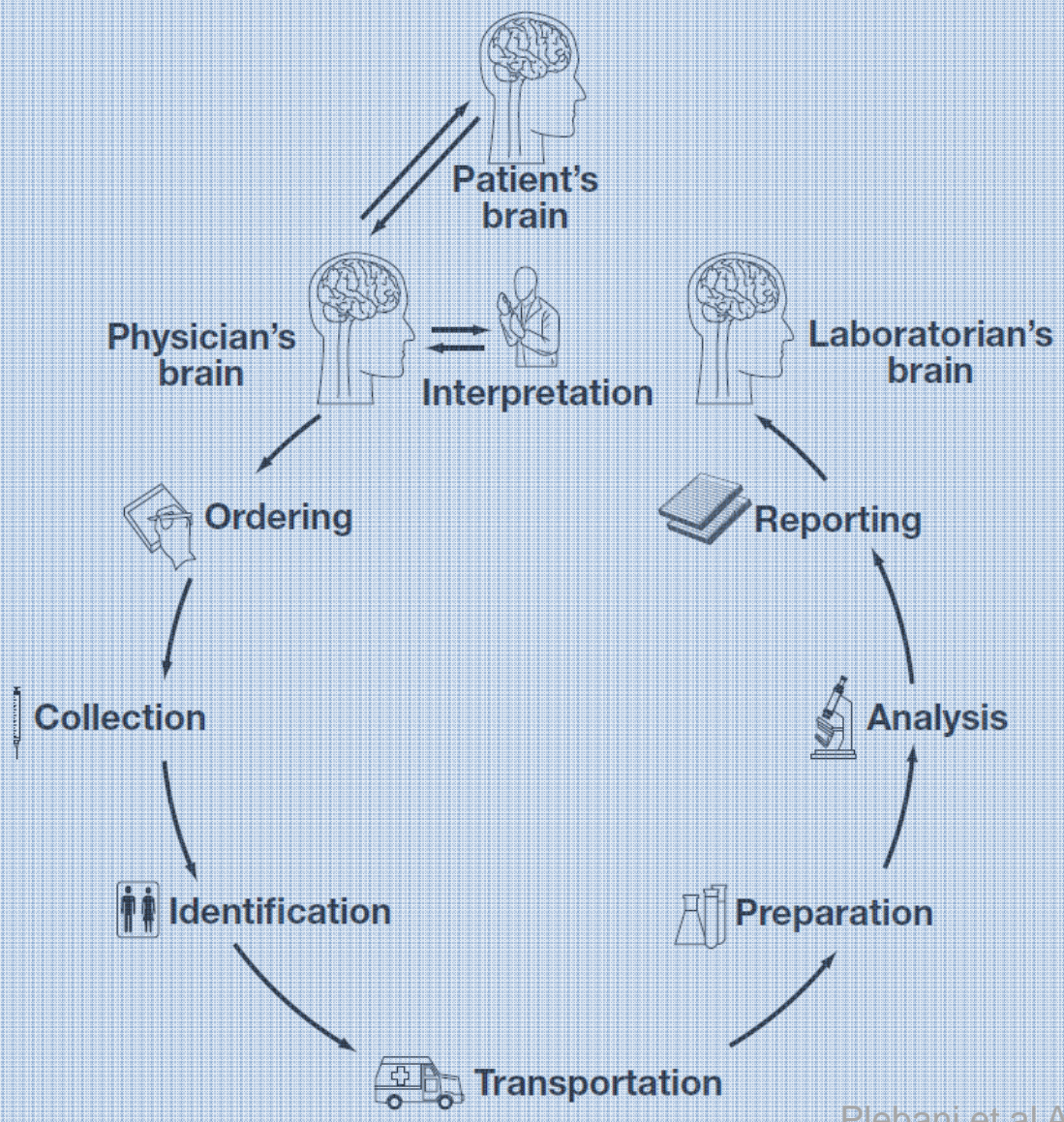
Volume 43, Issue 12, August 2010, Pages 939–941



Editorial

Is laboratory medicine a dying profession? Blessed are those who have not seen and yet have believed

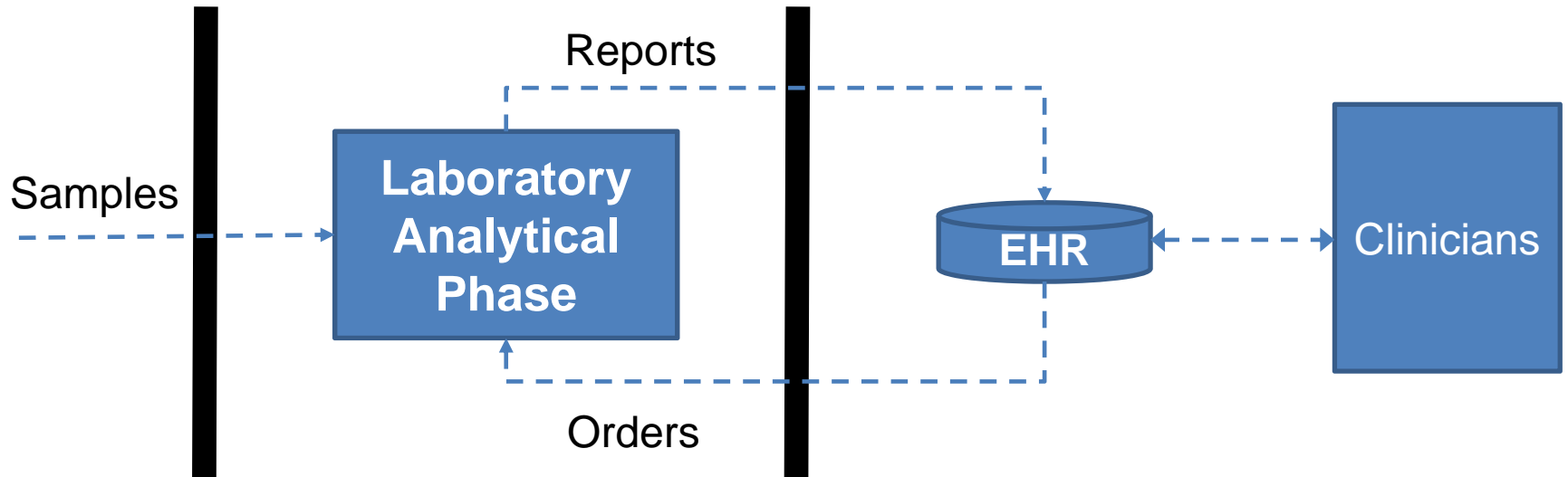
Mario Plebani^{a, b},  , Giuseppe Lippi^c



Sources of Lab Value

Plebani et al AJCP 2011; 136:829-833

Old Approach:



New Approach:



Managing Utilization

- Organization
- Process

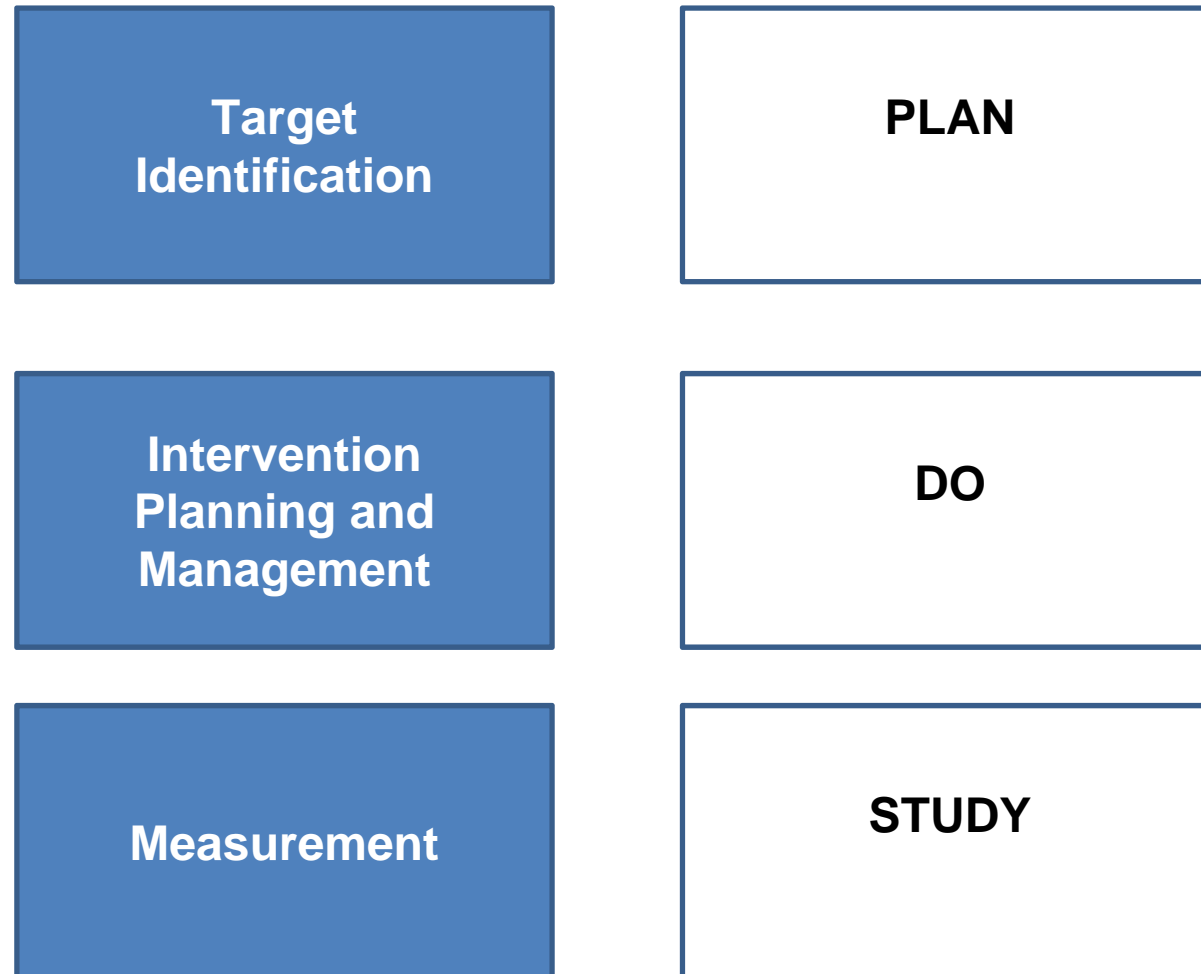
Utilization Improvement Process

**Target
Identification**

**Intervention
Planning and
Management**

Measurement

Utilization Improvement Process



Utilization Improvement Process

**Target
Identification**

PLAN
Idea generation
Project Selection

Data Collection
Data Analysis
Domain
Knowledge

**Intervention
Planning and
Management**

DO
Implement Intervention

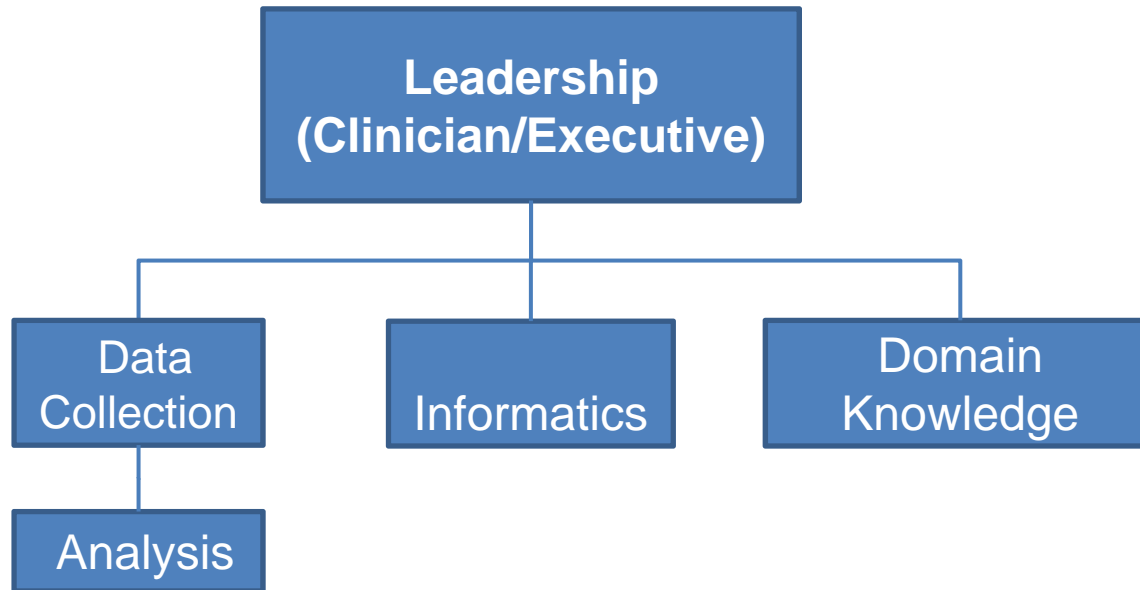
Change Management
Communication
Intervention
Knowledge

Measurement

STUDY
Assess Impact

Data Collection
Data Analysis
Domain
Knowledge

Structure



KEY POINTS:

1. UM is nothing new – process improvement
2. Laboratory Medicine does not have a natural monopoly on utilization management
3. Utilization management is an opportunity for laboratory medicine

Generating ideas for improvement

- Review send out testing
- Obsolete tests
 - Common culprits
 - Helicobacter antibodies
 - Myelin basic protein for multiple sclerosis
 - Culture vs NAAT for microorganisms
 - HVA and MVA for pheochromocytoma
 - CKMB

More common culprits

- Thyroid testing
 - T3 uptake
 - Free T4 is preferred to Total T4
 - T3 testing should be relatively rare compared to T3 testing
 - Reverse T3

(See forthcoming CLSI document on utilization management)

More common culprits

- Thrombotic disorders
 - Functional vs Antigen testing for Proteins C and S
 - Lupus anticoagulant
 - Beta-2 glycoprotein IgA
 - Cardiolipin antibody IgA

Choosing wisely

- Recommendations for 20 different medical societies
- See summary in forthcoming CLSI document on Developing and Managing a Laboratory Test Utilization Program

Choosing wisely

- **American Academy of Family Physicians**
 - No routine screening for prostate cancer using PSA
 - No pap test for women younger than 21
 - Do not screen women younger than 30 with HPV testing
- **American Academy of Allergy, Asthma and Immunology**
 - No routine diagnostic tests for those with chronic urticaria
 - Do not perform unproven diagnostic tests such as IgG testing or battery of IgE tests for evaluation of allergy

Choosing wisely

- **American Society for Clinical Pathology**
 - Do not use bleeding time
 - Use troponin rather than CKMB for AMI
 - Avoid routine preoperative testing for low risk surgeries without a clinical indication
 - Low risk HPV tests
 - Population based screening for Vit-D deficiency
 - Only order vit K if patient has abnormal INR and does not respond to vit K therapy

Generating ideas for improvement

- Guideline adherence
 - Secondary tests second
 - PSA, Free PSA
 - Total Testosterone, Free Testosterone
 - TSH, Free T4
- Questionable cost-effectiveness
 - CVD tests
 - Genetic tests
- Testing Intervals
 - Once in a lifetime tests (germline genetic tests, HAV)
 - Tests with Guidelines (see Royal College)

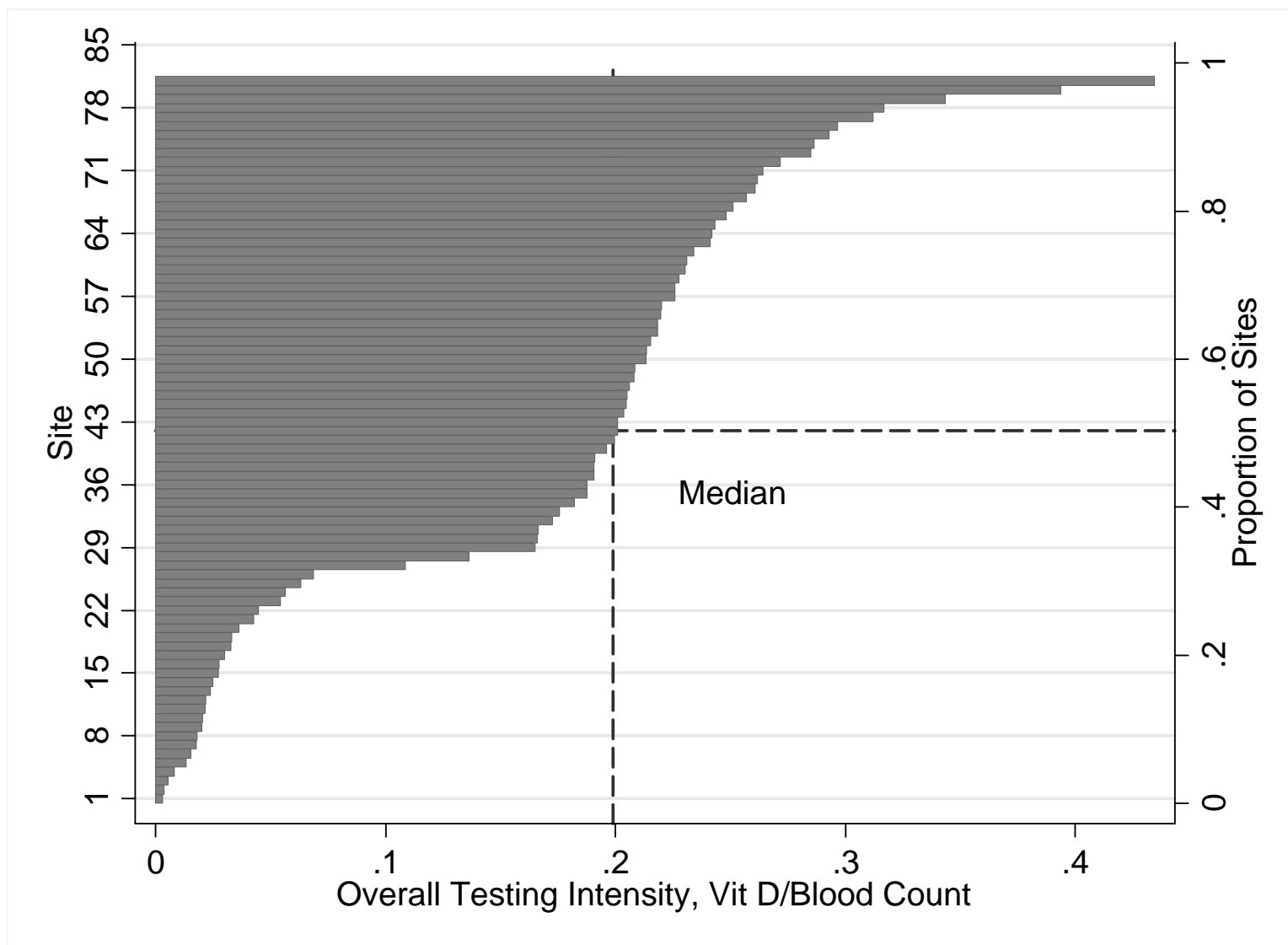
Repeat Testing Guidelines

- **Royal College of Pathologists (UK)**
 - National Minimum Re-testing Interval Project
 - 50-60 suggested intervals
 - <https://www.rcpath.org/asset/BBCD0EB4-E250-4A09-80EC5E7139AB4FB8/>
- **Orth M, et al.** Recommendations for the frequency of ordering laboratory testing. *LaboratoriumsMedizin*. 2014;38(5) in English
- **Janssens PMW, et al.** Managing laboratory test ordering through test frequency filtering. *Clin Chem Lab Med* 2013;51(6): 1207-1215.
- **Konger RL, et al.** Reduction in Unnecessary Clinical Laboratory Testing Through Utilization Management at a US Veterans Affairs Hospital *Am J Clin Pathol* 2016; 145: 355-364. See Supplementary Document – List of ~60 recommended repeat intervals

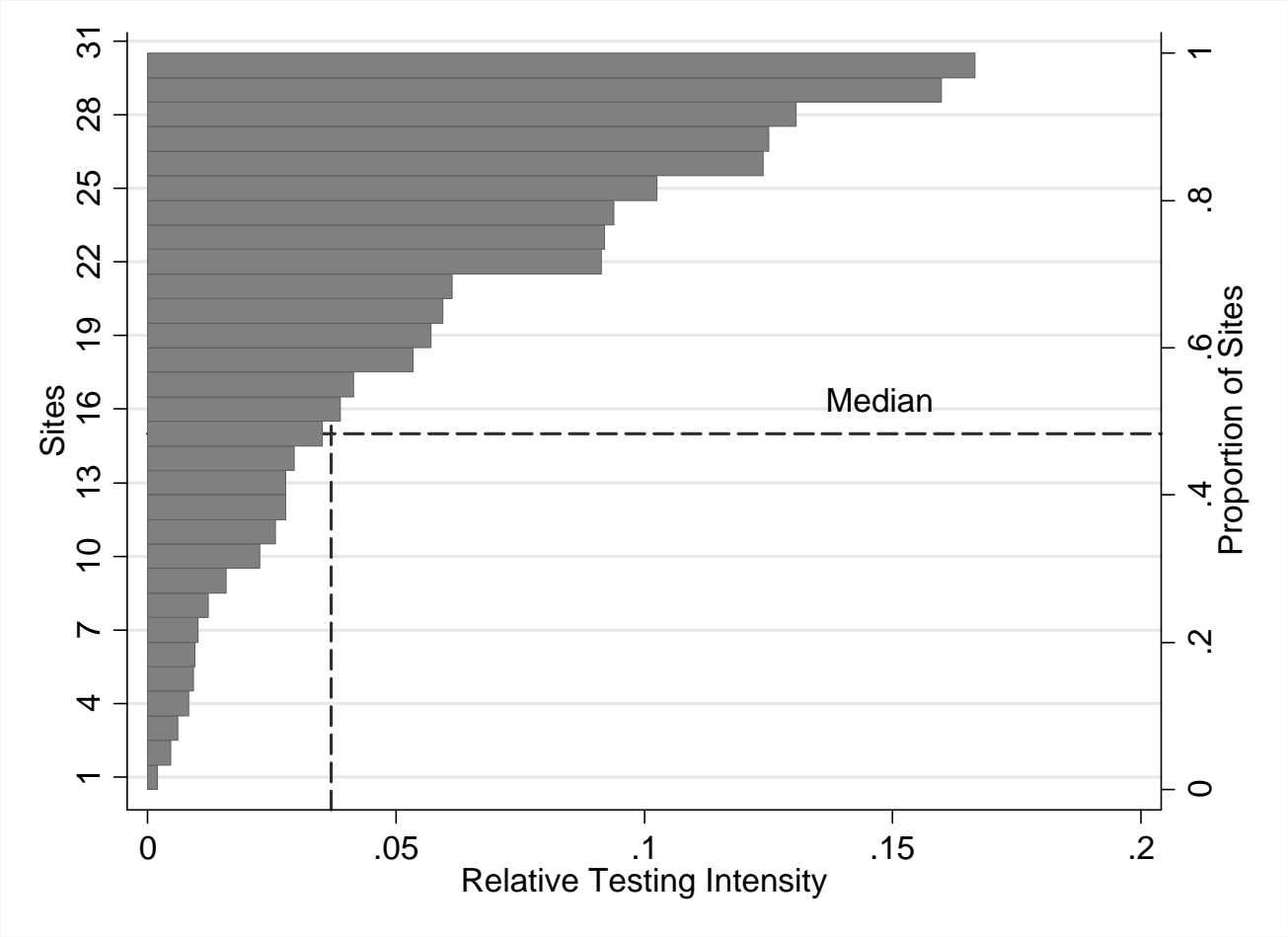
When guidelines are not available

- Benchmarking
- Test Yield
- Frequency profiles

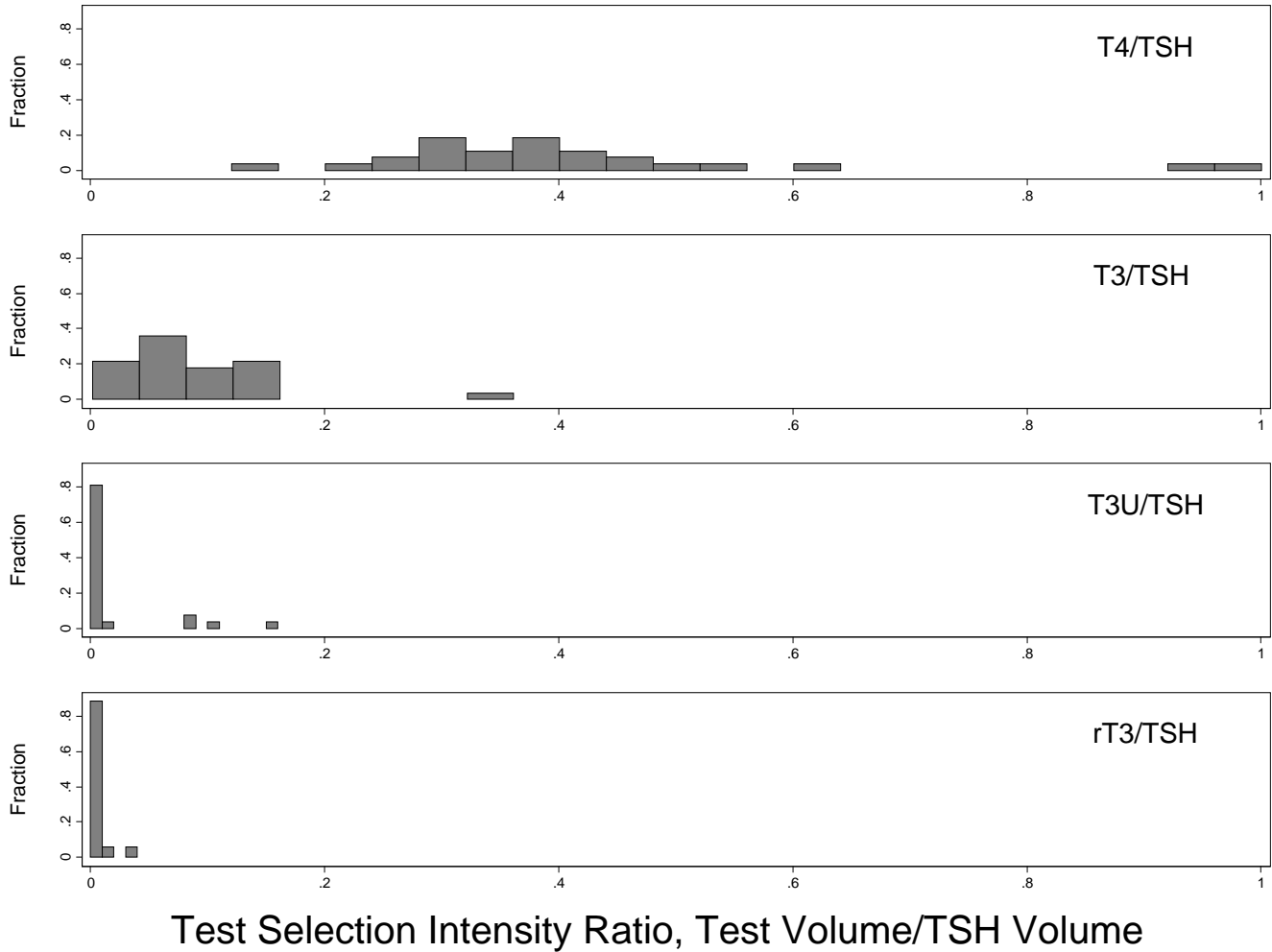
Ratio of vitamin D to CBC



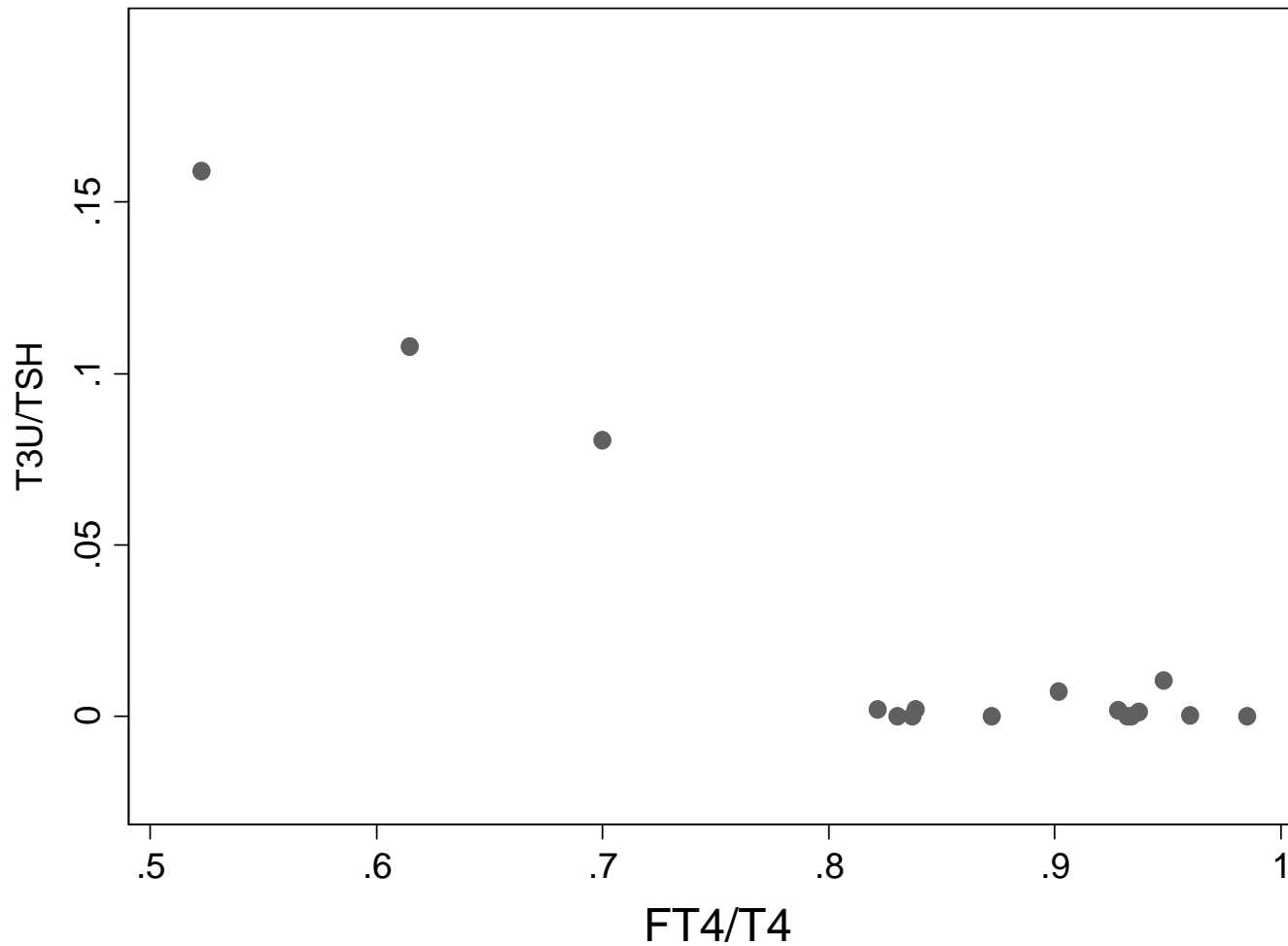
Ratio of 1,25 (OH)₂ Vitamin D orders to 25-OH-Vitamin D



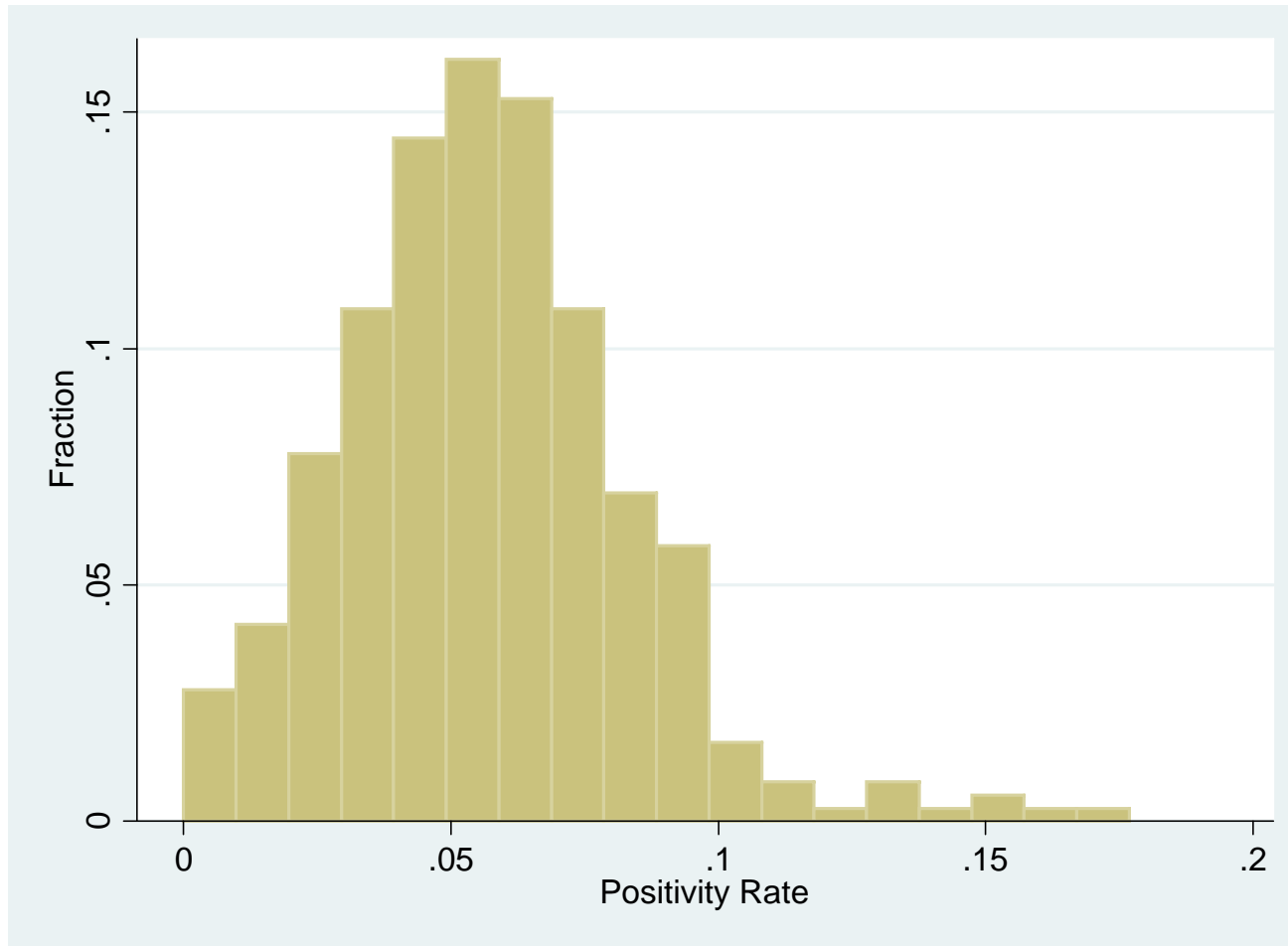
Practice Variation in Thyroid Testing



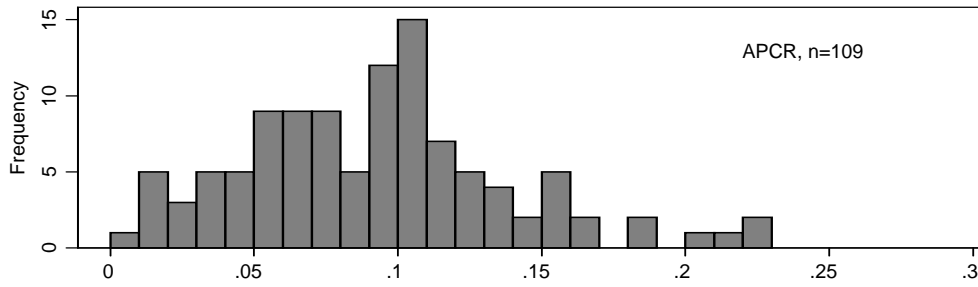
Order patterns by hospital



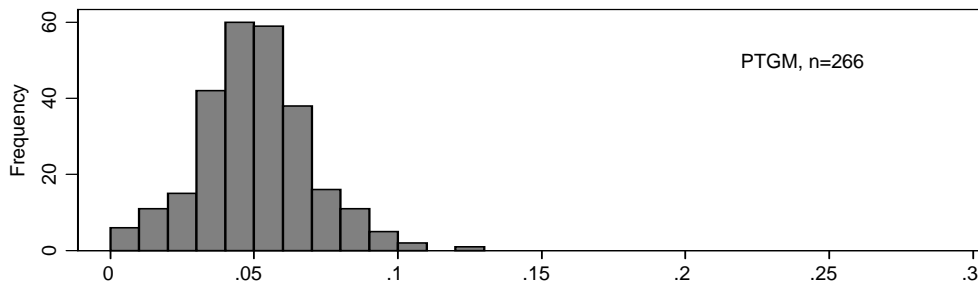
Test Yield Comparison by Hospital (HFE mutation)



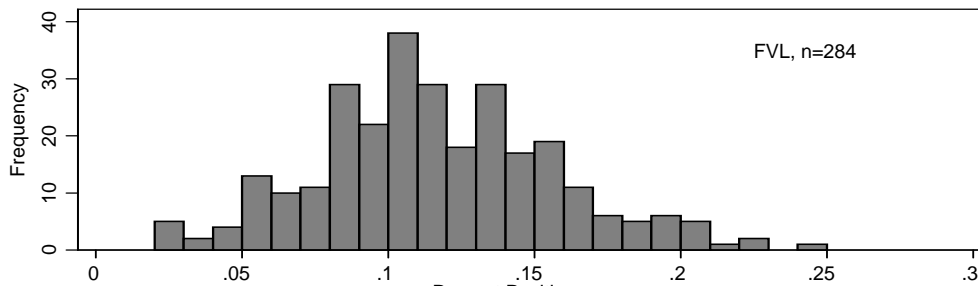
Test Yield by Hospital



Activated Protein C



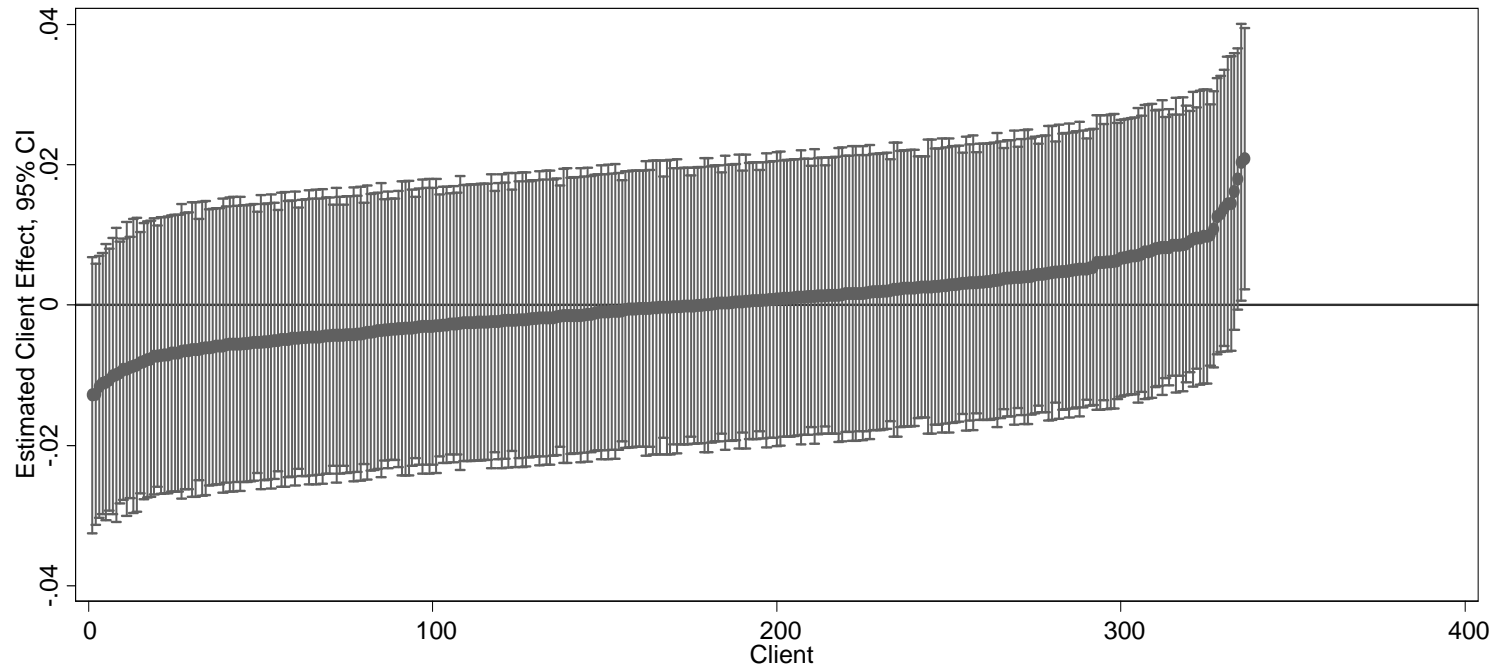
Prothrombin Mutation



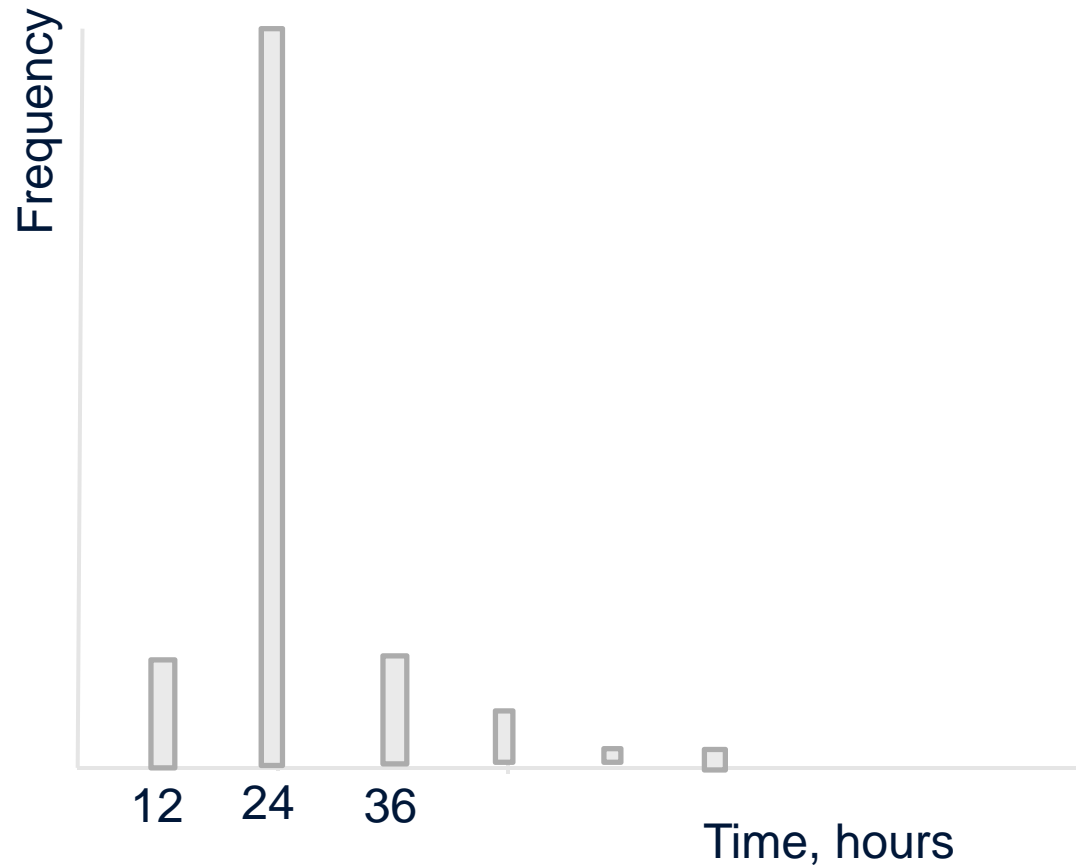
Factor V Leiden

Percent Positive

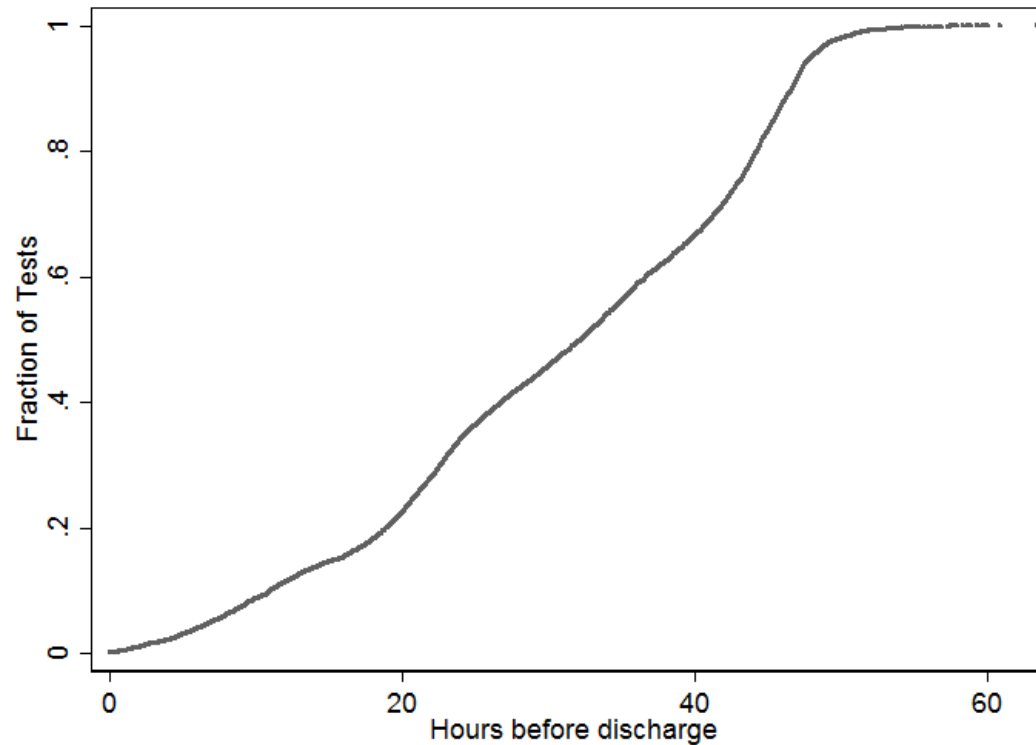
Organizational Effect Across Three Tests APC, PTGM, FVL



Decerebrate order patterns (time interval between orders)

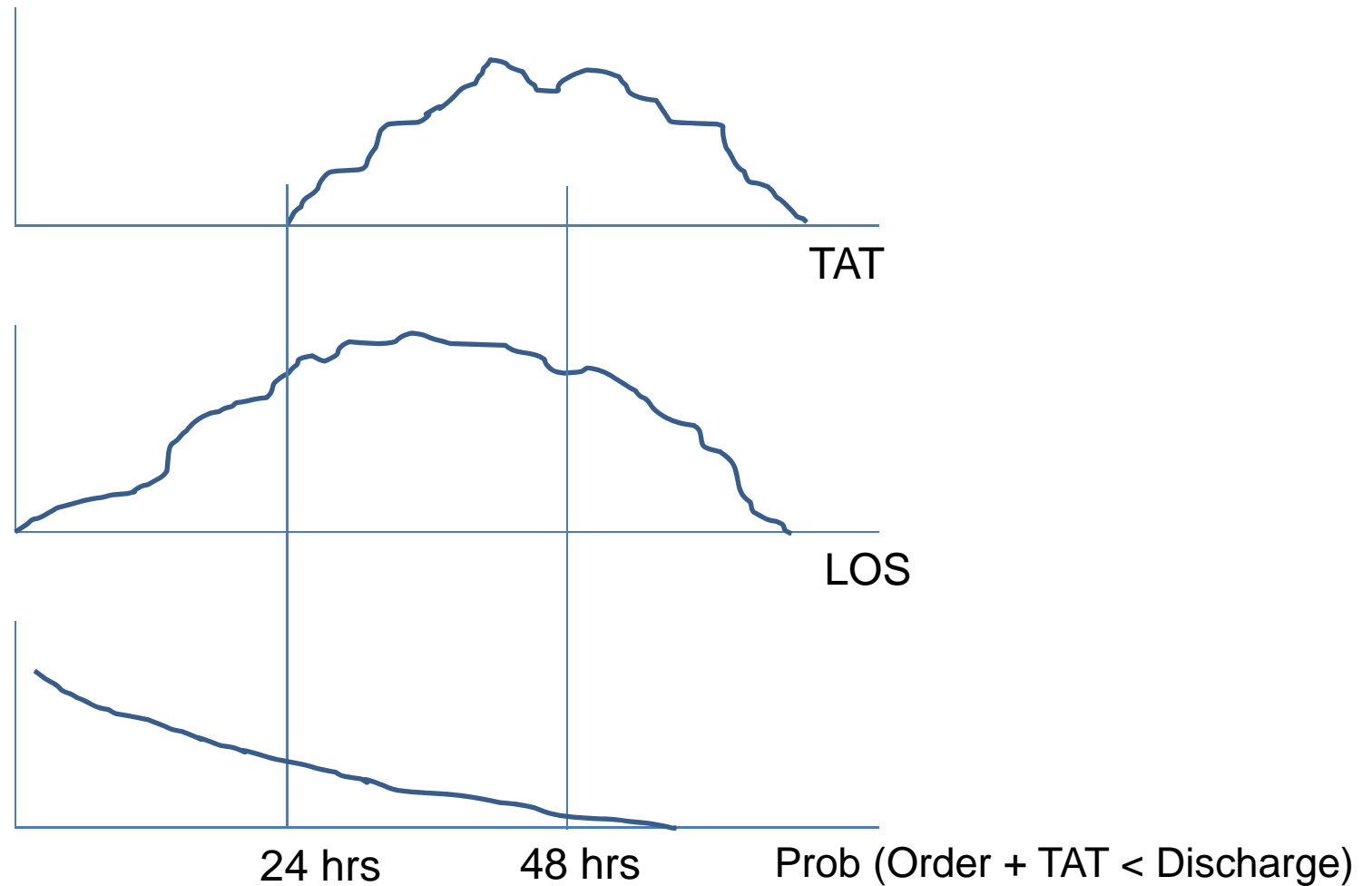


Testing on Autopilot



Time period prior to discharge	Testing rate	Relative rate
<24 hr	249 per hour	71%
24-48 hr	349 per hour	100%

Compare distribution of TAT of sendout tests to distribution of LOS



Picking projects

Results = Potential Impact x Manageability

Potential Impact

- Financial (cost x volume)
- Medical

Manageability

- Diffuse or concentrated problem
 - Planned intervention
- Specific problems (personnel, organizational)

Sustainability

- Education
- Hard stops, eliminating tests

Financial Impact

- 80/20 rule
 - Most tests offer very little savings

Strata	Number of Tests	% of Tests	% of Cost	% total testing volume
1	58	3%	60%	56%
2	190	9%	26%	29%
3	359	17%	10%	11%
4	1463	71%	3%	4%

Financial Impact

- Charges
- Costs
- *Marginal cost*

10% reduction in volume → 2% reduction in cost

Manageability

- Engage key opinion leaders
 - Avoid voting (lowest common denominator)

Manageability

- Easy system-based interventions
 - Eliminate unordered tests
 - 1000 of 3500 never ordered in one year
 - 700 of 3500 ordered once in one year
 - Show “price” data
 - Feldman et al JAMA 2013 → 8.6% reduction
- Easy educational interventions
 - Feedback on relative volume, cost

Interventions

- System based (IT)
 - Cost info
 - Present last result
 - Restrictions (formularies)
 - Decision Support (links to algorithms)
- Education
 - Targeted (individuals, departments)
 - Broad based (residents)
 - Hidden curriculum favors zebra workups

Interventions

- Feedback
 - Individuals, Groups
 - Public vs private
- Rewards & Penalties

References on interventions:

- Kobewka et al. CCLM 2015;53(2):157-183
- Baird, G. The laboratory test utilization management toolbox. Biochemica Medica 2014; 24(2):223-224

Metrics

- Standards of proof
 - Before and after study sufficient for business
 - Academic publication will slow you down

Metrics - costing

- Charges
- Variable vs Fixed Costs
 - Most testing costs are fixed
 - What would you save if you sent the test out?

Good references:

- Huck & Lewandrowski, Utilization Management in the clinical laboratory: An introduction and overview of the literature *Clinica Chimica Acta* 2014;427:111-117.
- Melanson, Establishing benchmarks and metrics for utilization management. *Clinica Chimica Acta* 2014; 427:127-130.
- Forthcoming CLSI document (chapter on metrics by Jason Baron and Kent Lewandrowski)

Should you measure?

A hospital is considering whether to implement a cost feedback program on their test menu. Previous studies have indicated that one might expect a 7% reduction in testing. Overall lab budget is \$14 million/yr. Should the hospital conduct a study to measure the impact?

- Expected savings = $\$14,000,000 * 0.07 * 0.33 = \$323,000$ per year
- Estimated variable costs = 33%
- Cost feedback is unlikely to do harm. Not costly to implement.
- Cost of study:
 - Control arm = 50% of tests (no savings)
 - Interventional arm = 50% of tests (\$160,000 savings)
- Bottom line: Pay \$160,000 to see how big the savings were

Summary

- What we know
 - Process improvement methodology
 - Interventions
 - Targets with good metrics and guidelines (N ~50)
- What we don't know
 - Need more guidelines, targets
 - How to evaluate downstream impact (patient outcomes)
- Keys:
 - Effective Project Management
 - Sharing Knowledge (don't reinvent the wheel)



Department of Pathology

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