Laboratory Formularies: Improving Care, Reducing Costs

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"How Not to Cut Healthcare Costs"

Robert Kaplan and Derek Haas, *HBR* Nov 2014

- Mistake #3: Focus narrowly on procurement prices

  - Enormous variations in spending on supplies owing to clinician variation

  - "These findings suggest that many hospitals focus too narrowly on negotiating price and fail to examine how individual clinicians actually consume supplies. As a result, they miss potentially large opportunities to lower spending."

Variation in Lab Utilization

Study of 18 academic medical centers

3 common inpatient diagnoses

- Acute MI

- Colorectal CA

- Hip fracture

Ranked into quintiles by resource use

Fisher ES et al. *Health Affairs* 7 Oct 2004

Expense Category	Ratio of highest to lowest spenders
Laboratory testing	1.83
E&M	1.65
Minor procedures	1.37
Imaging	1.22
Major procedures	1.03

History of Formularies

- Original meaning = pharmacopoeia

- Hospital formulary = stocked drugs

  - Associated policies

  - Pharmacy & Therapeutics Committee

- Laboratory "formularies"

Formularies: Building Blocks

Governance of Test Ordering

Organizational Levels of Clinical Oversight

Resources ($)
Carrot/Stick power
(upward arrow)

Regulator

Payor

Health system

Hospital

Physician group/department

Individual physician/provider

Flexibility
Clinical nuance
(downward arrow)

Oversight of test utilization should be organized as close to the physician as practical

University of Rochester

- Laboratory Diagnostic Committee
  - Chaired by Chair of Medicine
  - 1st focus area: expensive sendouts for inpatients
  - 2nd focus area: unreimbursed sendouts for outpts
- Tiered formulary
  - Tier 1: Unrestricted
  - Tier 2: Faculty practice only
  - Tier 3: Not available

University of Michigan

- Chaired by Internist
- Multiple subspecialties represented
- Attention to cultural factors
  - Decision support, education, resource use

Warren JS, AJCP 2013;139:289-297
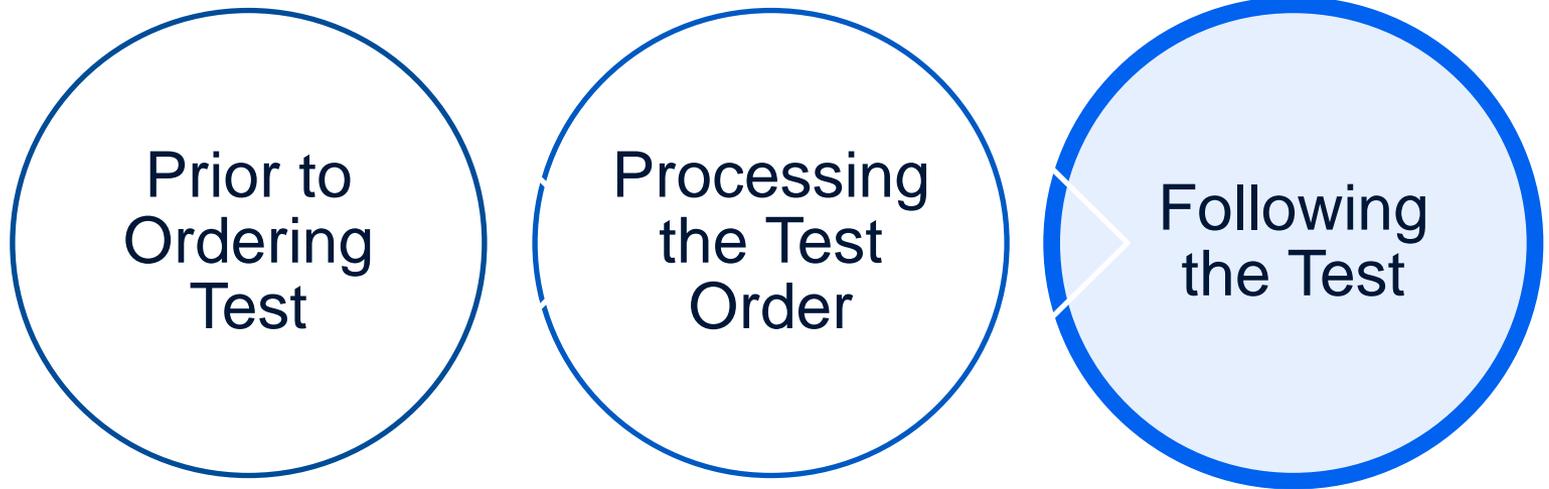
University of Iowa

- Involvement of non-physicians
  - Laboratory managers
  - Genetic counselors
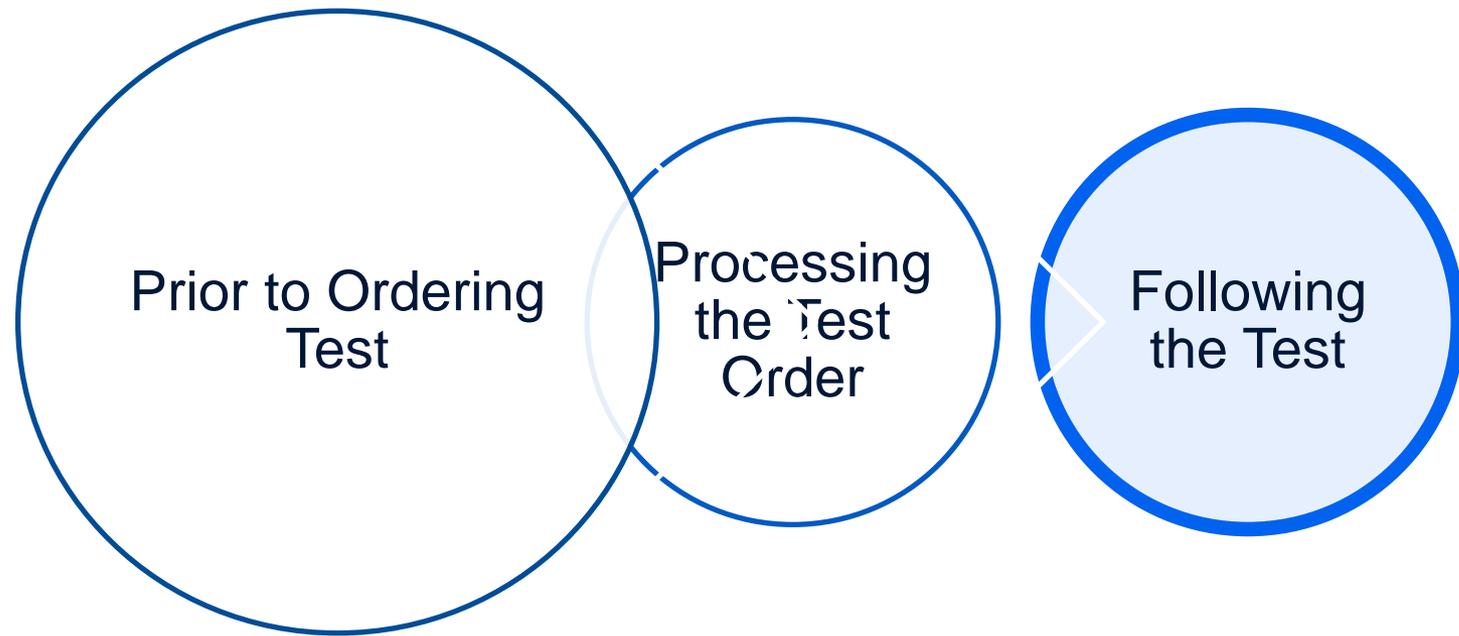- Hospitalist group benchmarking project
- Transplant group

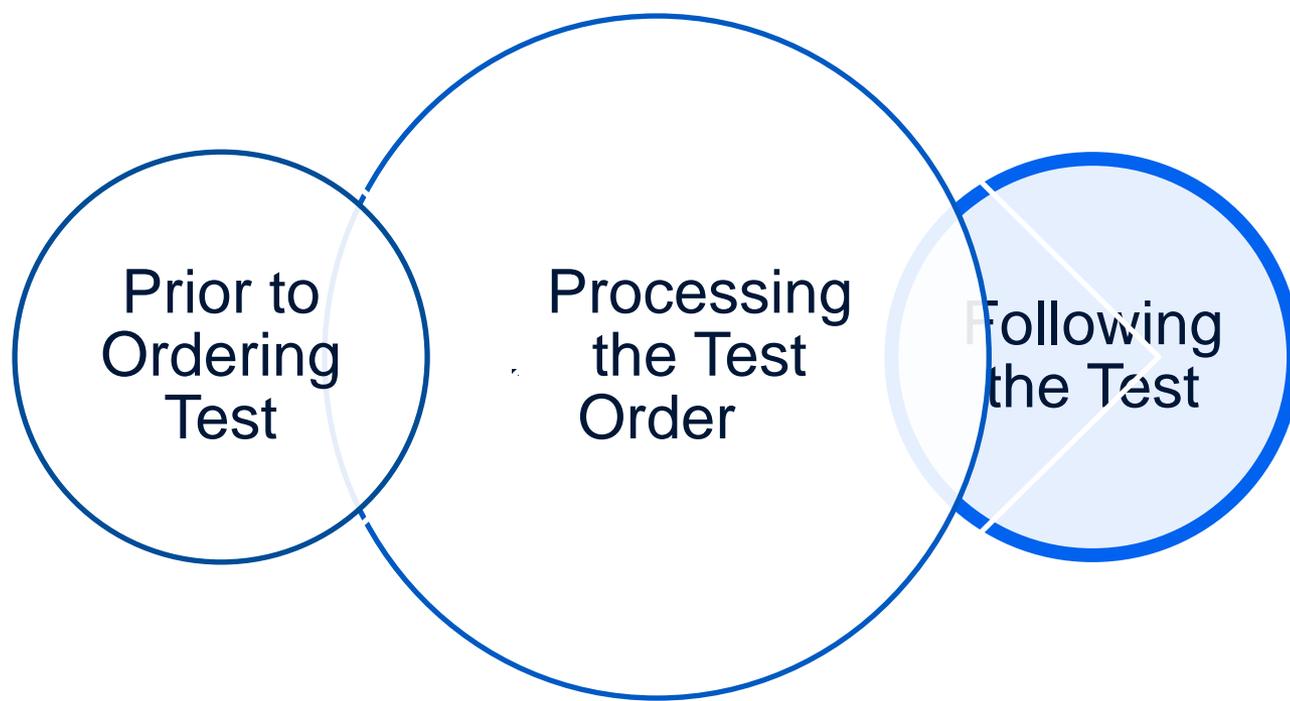Personal communication, Matt Krasowski

Process Considerations

ARUP LABORATORIES

UNIVERSITY OF UTAH SCHOOL OF MEDICINE | Department of Pathology

Mechanics of Test Utilization Mgmt

Prior to Ordering Test

Processing the Test Order

Following the Test

Prior to Ordering Test · **Processing the Test Order** · **Following the Test**

- Limit and actively manage CPOE menu
- Limit and actively manage order sets

Prior to Ordering Test

Processing the Test Order

Following the Test

- Threshold for holding vs. sending

- Initial reject vs get more info

- Tap into governance committee members' expertise

Targeted Test Rejections

- University of New Mexico

  – Vit D 1,25 orders automatically rejected as they arrive in the lab

  – Email to ordering providers: Call the lab to reinstate

  – Dramatic volume reduction

  (Personal Communication, Dr. Michael Crossey)

Prior to Ordering Test

Processing the Test Order

Following the Test
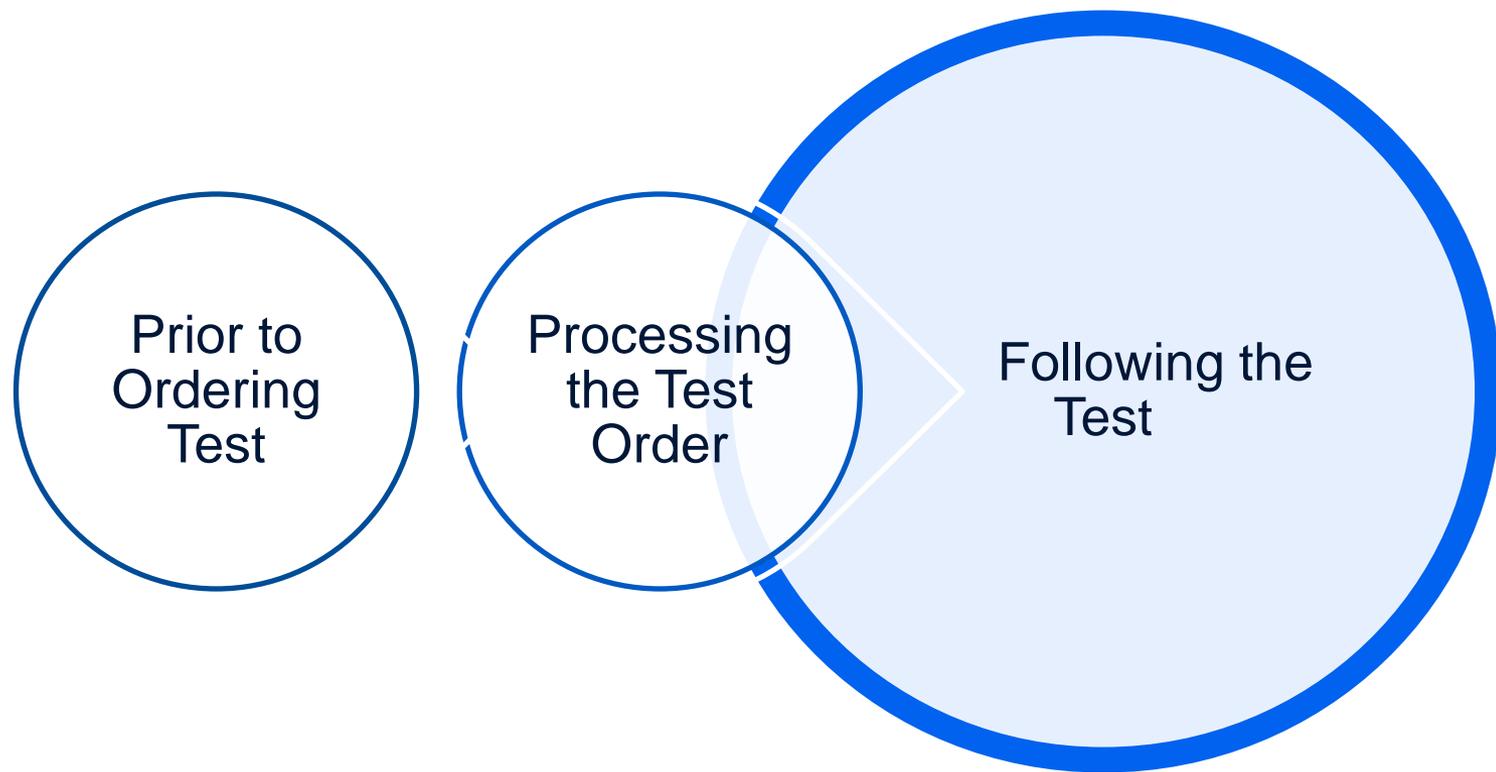
- Feedback Loops
  - Monitoring
  - Updates to CPOE menu and order sets
  - Targeted education

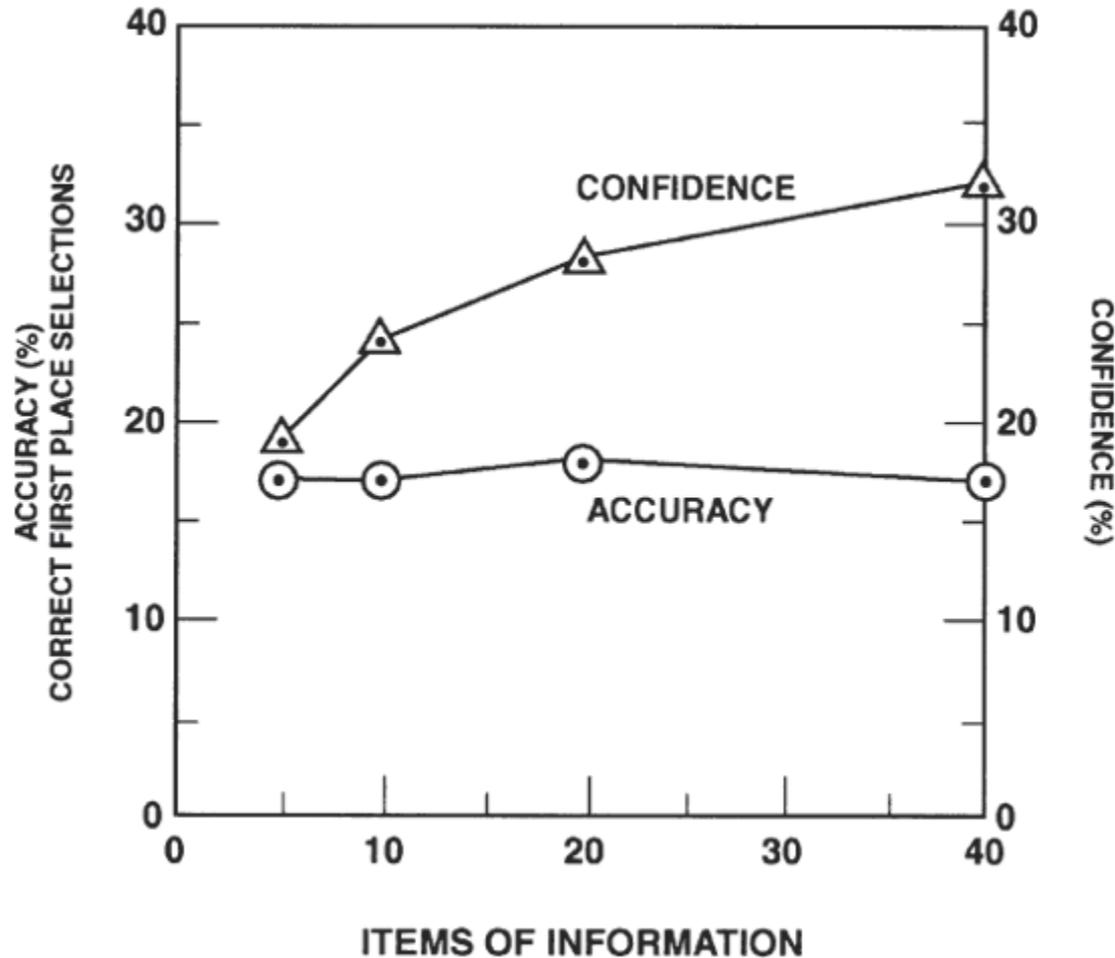# Medical Impact on Patients

Do Restrictions Hurt Patients?

Do Restrictions Hurt Patients?

- <u>No.</u>

  - In some cases, too much testing can actually hurt patients

  - Properly designed restrictions can support evidence-based practice without interfering with appropriate care.

Horserace Handicappers

Slovic P., unpublished ms. Cited in Heuer RJ, Psychology of Intelligence Analysis, 1999.

Take-home points

- Excess testing doesn't add true information value

- Doctors can't cognitively handle excess data

- Excess data causes overconfidence

Evidence Base for Lab Tests

- Generally available

  - Analytic validation

  - Plausible correlation of marker to disease state

  - Guidelines for routine tests for high-prevalence diseases

- Not available

  - Demonstration of improved clinical outcomes for most tests

  - Guidelines for most tests

Journal: *Evidence Based Medicine*

- October 2014 Table of Contents

  - Therapeutics/Prevention: 22 articles

  - Diagnosis: 3 articles (2 D-dimer, 1 ultrasound)

  - Quality Improvement: 2 articles

Measurement Criteria Must Be Credible (But Don't Require Level 1 Evidence)

Metrics/Analytics

Metrics for Diagnostics

Quality	Patient Benefit	Costs
Overall system reliability	Global benefit	Total cost to lab
	Benefit per test	Cost per test
Per test/setting: • TAT • Accuracy • Process quality	Benefit per case • Variation • Consistency with guidelines • Consistency w/expert opinion	Cost per case

Executive

↕

Front line

Managing Diagnostic Test Utilization

Quality	Patient Benefit	Costs
Overall system reliability	Global benefit	Total cost to lab
	Benefit per test	Cost per test
Per test/setting: • TAT • Accuracy • Process quality	Benefit per case • Variation • Consistency with guidelines • Consistency w/expert opinion	Cost per case

Executive

Front line

Metrics for Diagnostics

Executive

Front line

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Executive

Front line

Patient Benefit (of a Test) per Case

- Outcomes
  - Generally not practical in this setting.
- Normative (Evidence Based Medicine)
  - Guidelines
  - Other clinical literature
  - Local expert opinion
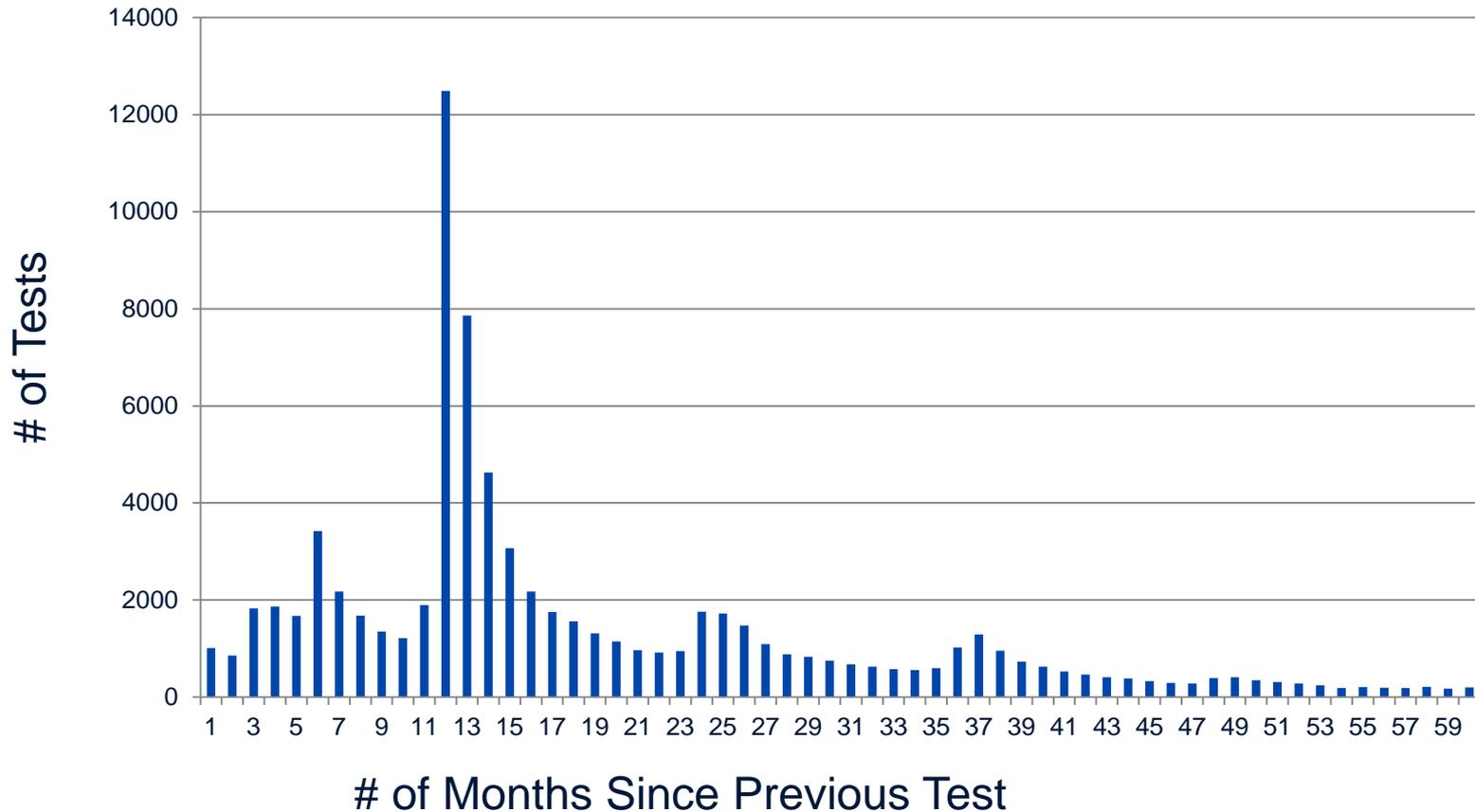- Non-normative/Descriptive
  - Variation

Diagnostic Testing Guidelines

Useful where available,
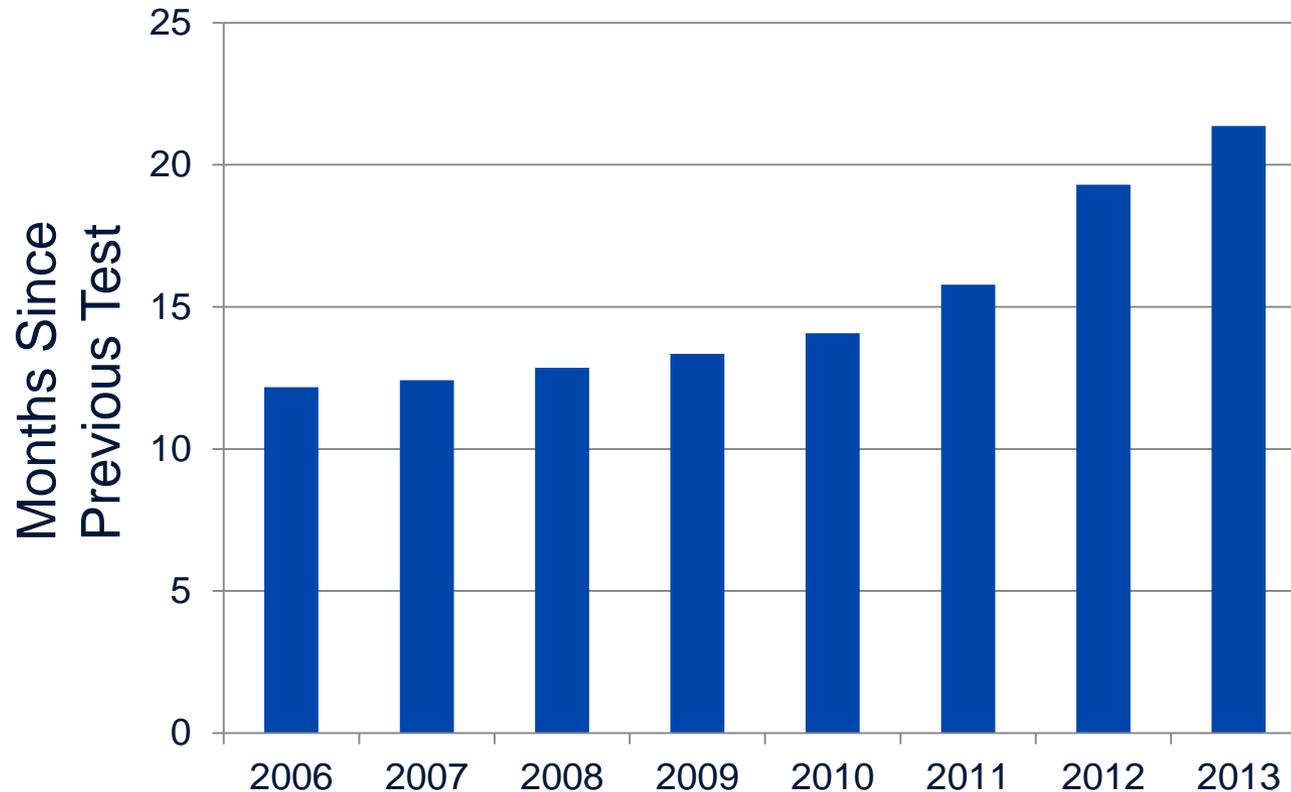
but <u>extremely</u> incomplete

HPV: Tests on Patients <21 years old
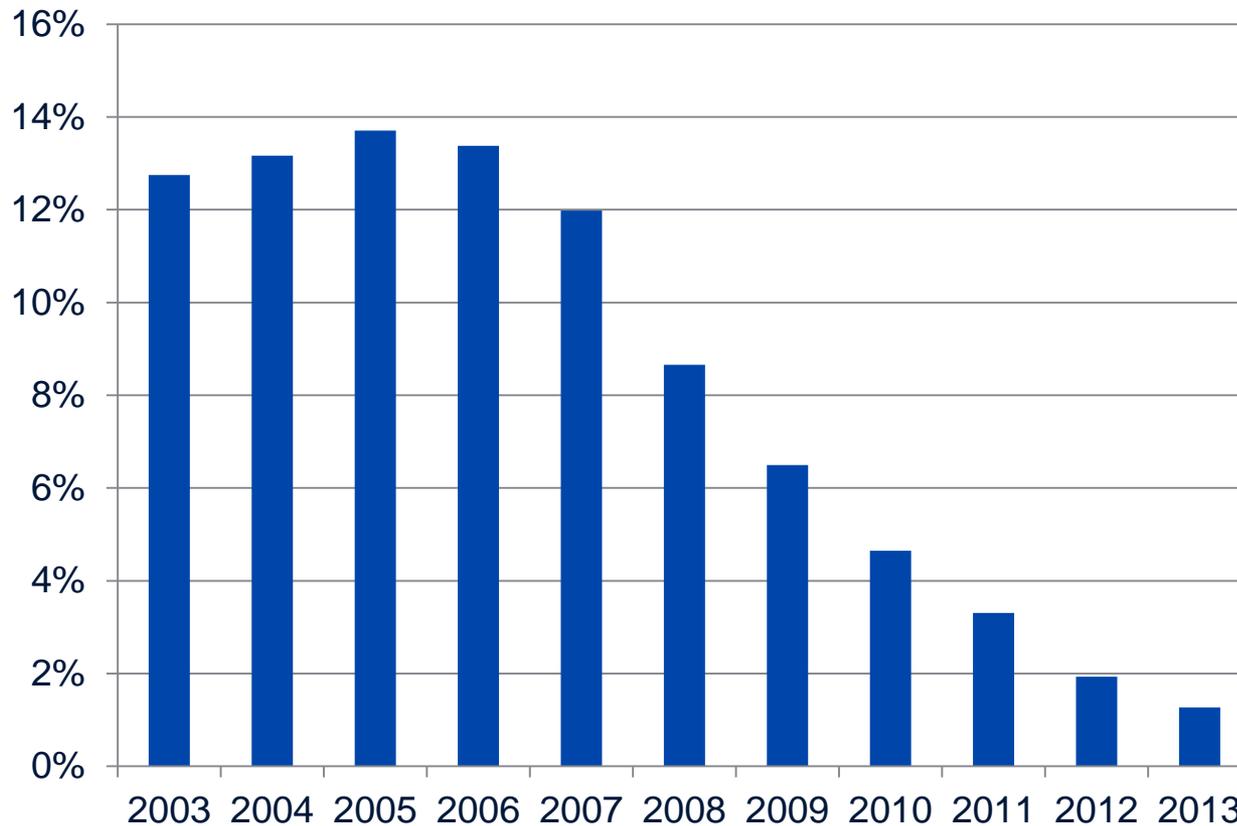
Repeat Intervals Following Negative HPV Tests (2003-2013)

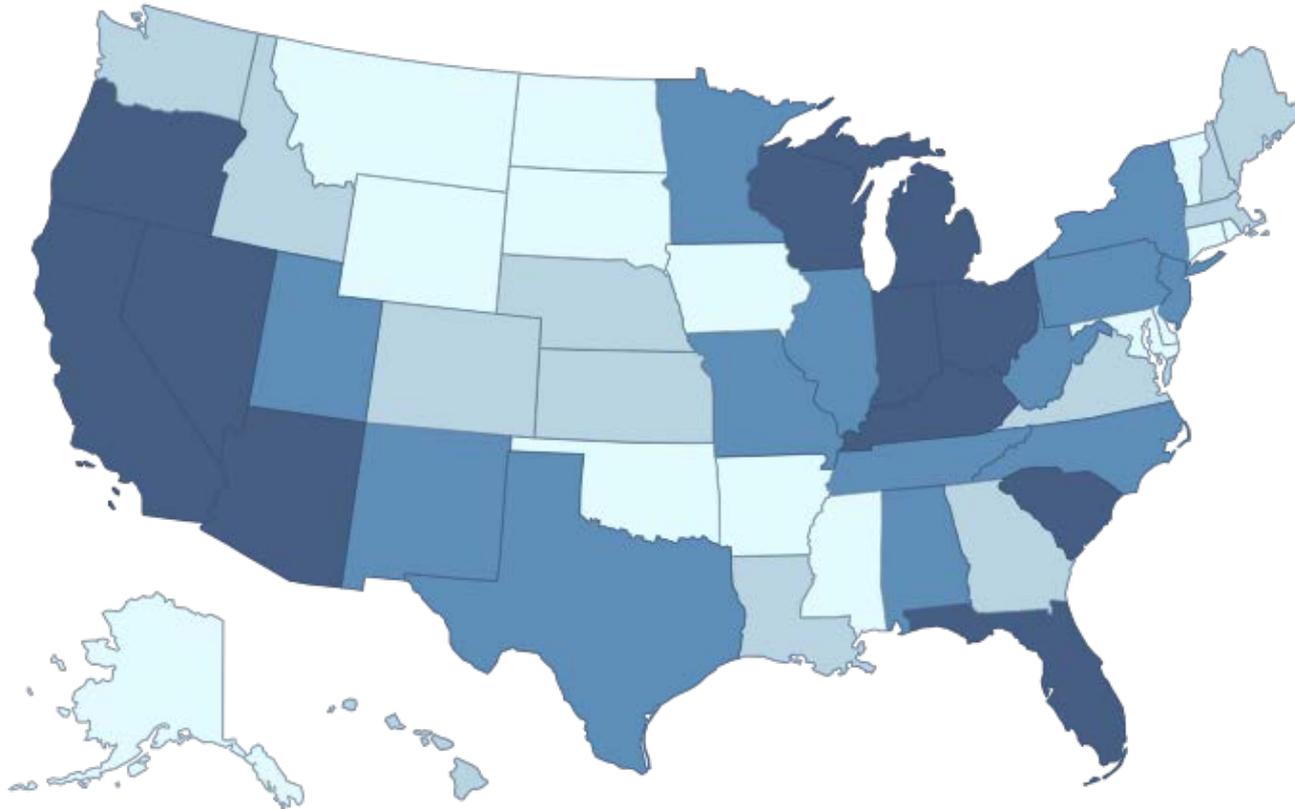# HPV: Median Repeat Interval Following Negative Result

Measuring Variation

- Available across full spectrum of tests and settings

- Non-judgmental (Validity harder to question)

- Decades of experience (esp. Dartmouth)

NMR Lipoprofile

Volume Index (normalized by ARUP volume)

Legend:
- 0.0 to 4.0
- 4.1 to 37.0
- 37.1 to 340.0
- 340.1 to 6,074.0

VAP Cholesterol

Volume Index (normalized by ARUP volume)

Legend:
- 0.0 to 1.6
- 1.7 to 10.1
- 10.2 to 49.7
- 49.8 to 566.0

Neopterin

- Nonspecific marker of inflammation

- Of research interest, but not in routine clinical use for any one disease

- 770 orders to ARUP in recent 12 month period
  - 83% from a single client
  - 64% of those were placed by a single physician (=53% of ARUP's national volume)

Measuring Variation

- Comparison group needs to be "reasonably" valid

- Can benchmark on multiple levels

  - Physician group

  - Hospital

  - Health system

  - Geographic region

- Use raw volumes, _not_ CPT, charges or costs

Conclusions: Metrics for Laboratory Utilization

- Goal = Value

  – Both patient and system perspectives

- Financial metrics: Need to get the costs right

- Clinical metrics

  – Normative (guideline-based)

  – Non-normative (variation)

- Lab process metrics

The Future of Laboratory Medicine = Medicine