Laboratory Data Reporting and Analytics

Brian Jackson, MD, MS

Assoc Prof of Pathology (Clinical), University of Utah

Medical Director, IT and Support Services, ARUP Laboratories

Notice of Faculty Disclosure

In accordance with ACCME guidelines, any individual in a position to influence and/or control the content of this ASCP CME activity has disclosed all relevant financial relationships within the past 12 months with commercial interests that provide products and/or services related to the content of this CME activity.

The individual below has responded that he/she has no relevant financial relationship(s) with commercial interest(s) to disclose:

Brian Jackson, MD

ARUP LABORATORIES | NATIONAL REFERENCE LABORATORY

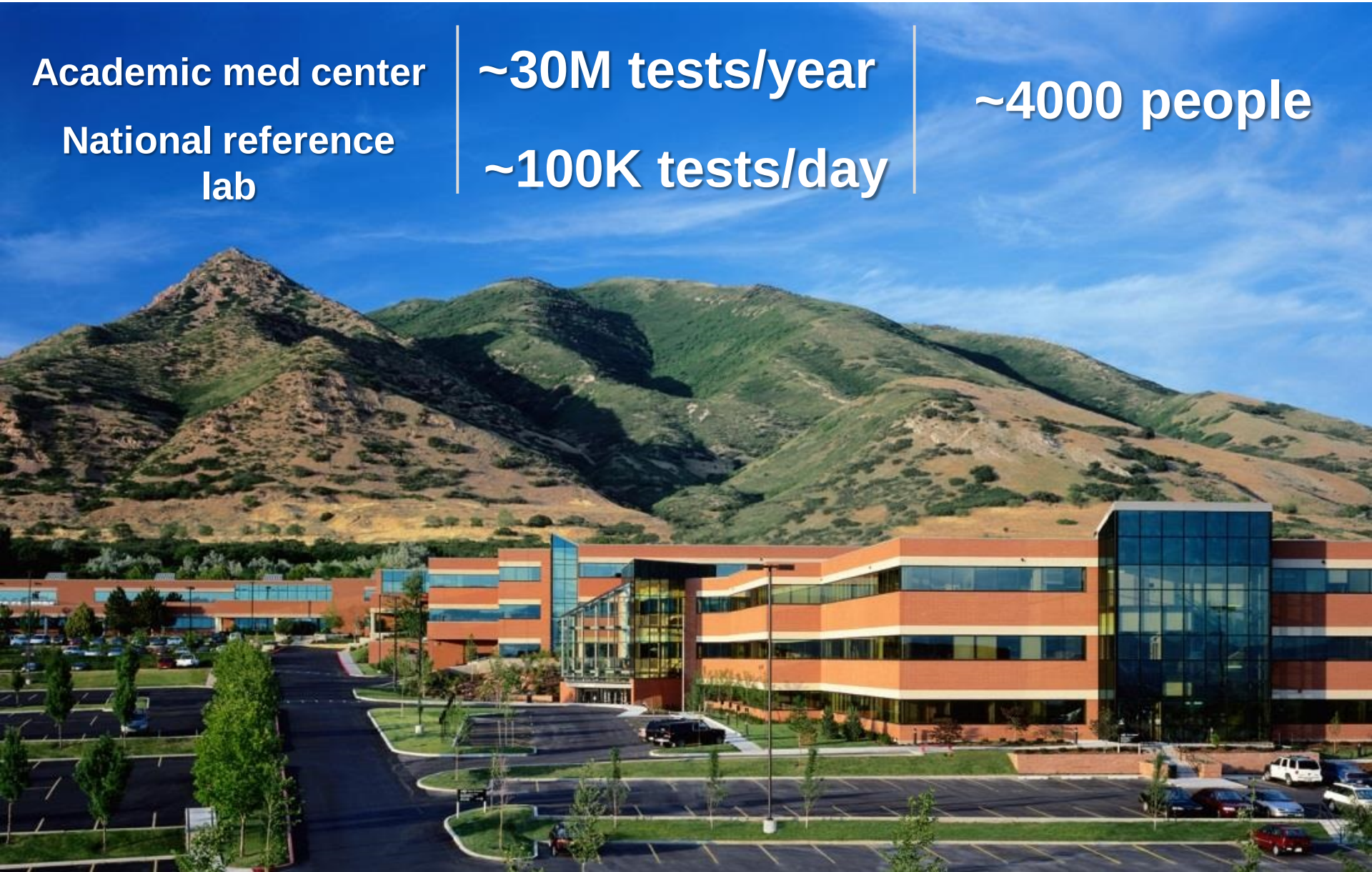
Academic med center

National reference lab

~30M tests/year

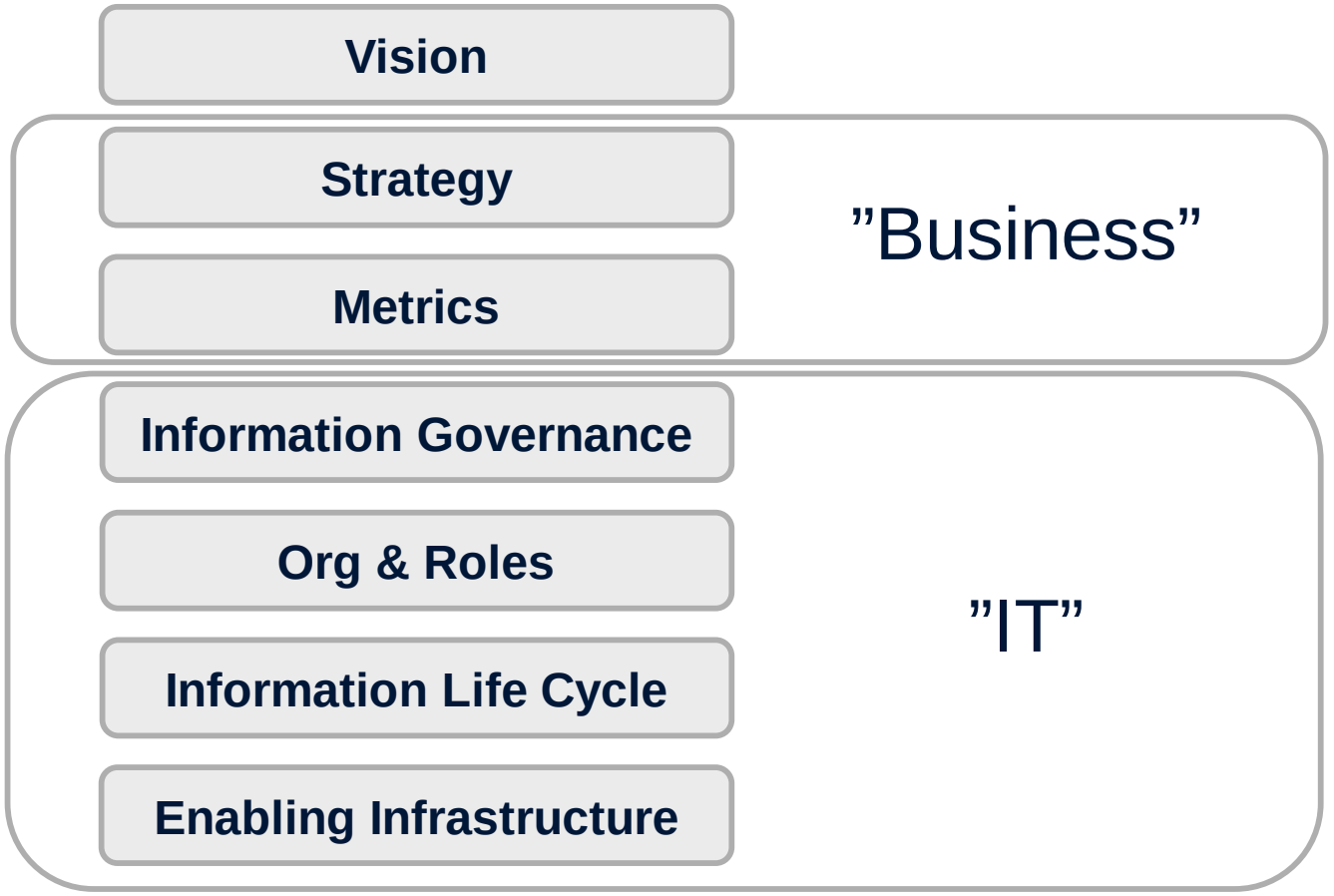
~100K tests/day

~4000 people



Gartner's "Building Blocks"

Gartner’s “Building Blocks”



Gartner's "Building Blocks"

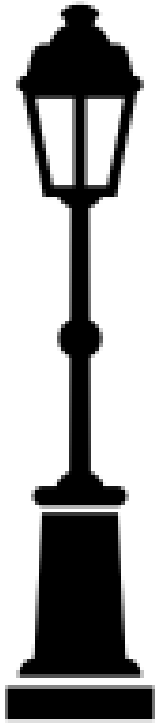
Why do we need data reporting? (Metrics and dashboards and reports)?

Why do we need metrics/dashboards/reports?

- To know whether we're doing the right things
- To know how well we're doing those things
- So that we can make better decisions

- Caveat: the wrong metrics can create the illusion of better decisionmaking.

Measuring what's easy to measure



Bad metrics: Example 1

- Metric: Per-unit reagent costs, tracked over time
- Accountability: Purchasing department is measured and incentivized on reducing the per-unit cost of reagents
- Immediate impact: Purchasing negotiates volume discounts that involve larger shipments
- Delayed impact: Higher cost of inventory, more outdated reagents, higher overall reagent costs

Bad metrics: Example 2

- Metric: Labor cost per performed test
- Accountability: Laboratory is measured and incentivized on workforce efficiency
- Immediate impact: Lab eliminates phlebotomists for inpatient areas
- Delayed impact: Specimens now drawn by more expensive staff (nurses). Pre-analytic quality problems increase.

So how do we align metrics with goals?

1. Measure all the different dimensions of performance equally
   - Cost
   - Customer impact
   - Quality
   - Reliability
   - Timeliness
2. Roll departmental metrics up to top-level metrics

Data Analogy: Managing a Factory

	Reliability and Timeliness (Quality)	Benefit (Revenue)	Resource input (Costs)
Executive	Key rollup measure(s)	Sales	Total costs
	Defects by category	Market share Revenue by segment	Labor Supplies Depreciation
Front line	Defects by process	Revenue per sales rep	Detailed costs per department

Managing a Clinical Laboratory

Executive

Front line

Quality	Patient Benefit	Costs
Overall health system reliability	Global benefit	Total cost to lab
Per clinical practice unit • Variation • Consistency w/guidelines	Benefit per test	Cost per test
Per test: • TAT • Accuracy • Process quality	Benefit per case	Cost per case

Where Do Labs Have Good Metrics Today?

Executive

Front line

Quality	Patient Benefit	Costs
Overall health system reliability	Global benefit	Total cost to lab
Per clinical practice unit • Variation • Consistency w/guidelines	Benefit per test	Cost per test
Per test: • TAT • Accuracy • Process quality	Benefit per case	Cost per case

Where Are the Opportunities?

Executive

Front line

Quality	Patient Benefit	Costs
Overall health system reliability	Global benefit	Total cost to lab
Per clinical practice unit • Variation • Consistency w/guidelines	Benefit per test	Cost per test
Per test: • TAT • Accuracy • Process quality	Benefit per case	Cost per case

Managing Diagnostic Test Utilization

Executive

Front line

Quality	Patient Benefit	Costs
Overall health system reliability	Global benefit	Total cost to lab
Per clinical practice unit • Variation • Consistency w/guidelines	Benefit per test	Cost per test
Per test: • TAT • Accuracy • Process quality	Benefit per case	Cost per case

Total Cost of Laboratory Operations

- Labor
- Reagents
- Instruments
- Facility overhead
  - Space, utilities, IT, etc.

Cost per Test

- Proper Approach
  - Labor, reagents, instruments, overhead
- Do not use 3rd party fee schedule!
- Do not use chargemaster!

Cost per Case

- Assumes you have valid costs at component level
- Overhead allocation is tricky
- Dependent on the clinical algorithms

How to Solve The Cost Crisis In Health Care

The biggest problem with health care isn't with insurance or politics. It's that we're measuring the wrong things the wrong way.

by Robert S. Kaplan and Michael E. Porter

Harvard Business Review Sept 2011

Managing Diagnostic Test Utilization

Executive

Front line

Quality	Patient Benefit	Costs
Overall health system reliability	Global benefit	Total cost to lab
Per clinical practice unit • Variation • Consistency w/guidelines	Benefit per test	Cost per test
Per test: • TAT • Accuracy • Process quality	Benefit per case	Cost per case

Managing Diagnostic Test Utilization

Executive

Front line

Quality	Patient Benefit	Costs
Overall health system reliability	Global benefit	Total cost to lab
Per clinical practice unit • Variation • Consistency w/guidelines	Benefit per test	Cost per test
Per test: • TAT • Accuracy • Process quality	Benefit per case	Cost per case

Global Measures of Healthcare Quality?

Program	# Measures	# Diagnostic	# Lab
HEDIS	74	20	9
CMS ACO	33	13	4
Choosing Wisely	135	90	21

CMS Penalties for Elective Early Deliveries

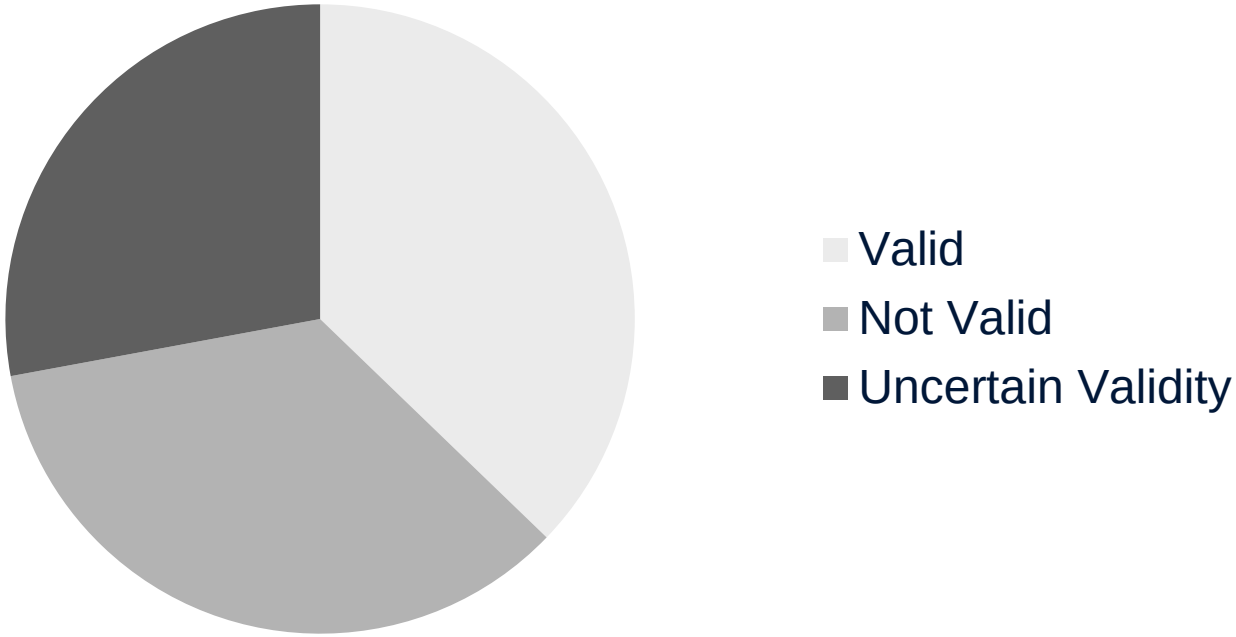
- Point system:
  - 10 (full) points for 0% early elective deliveries
  - 1-9 points (scaled) if between 0 and 3.125%
- Problem: Can have occasional cases that are clinically justified yet don't meet the program's defined exclusions.

Setting Achievable Benchmarks for Value-Based Payments: No Perfect Solution

David W. Baker, MD, MPH[1]; Susan Yendro, RN, MSN[1]
[1]The Joint Commission, Oakbrook, Illinois

JAMA. 2018;319(18):1857-1858. doi:10.1001/jama.2018.2360

ACP Assessment of MIPS/QPP Measures



Time out – Charting a path for improving performance measurement
Catherine H. MacClean, Eve A Kerr, Amir Qaseem
NEJM. 2018;378(19):1757-1761.

Measuring Reliability of Dx Process

- Are the right tests being ordered? How about the wrong ones?

- How do the total turnaround times fit into the clinical processes?

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

Turnaround Time

- Patient perspective
  - From time the test is needed, to the time the result is acted on
- Typical lab perspective
  - From “in-lab” to verification


Laboratory Medicine