

“Do More With Less” Ease the Burden of Staff Shortages & Boost Lab Productivity

Kim Futrell, MT(ASCP), MSHI

Sr. Strategic Marketing Manager, Orchard Software

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Objectives

Describe	relevant trends within the current healthcare and laboratory industry markets.
Define	reasons for the shortage of trained laboratory professionals & explore staff recruitment and retention strategies.
Recognize	tactics being used by successful laboratories to thrive in a dynamic healthcare landscape.
Examine	the value of your LIS as a productivity tool, including appraisal of the benefits of result autoverification.

Healthcare & Laboratory Industry Climate

Vertical Integration in Healthcare

- ~ 40% of physicians - hospital-employed as of 2020
- Some laboratories forced to close as services are taken over by in-house hospital laboratory as part of merger

- Recent studies do not show that acquisitions improve efficiencies, reduce costs, & lead to better care coordination
- Studies show that consolidation increases prices & fails to improve the quality of care

AMA analysis shows most physicians work outside of private practice <https://www.ama-assn.org/press-center/press-releases/ama-analysis-shows-most-physicians-work-outside-private-practice>
<https://revcycleintelligence.com/news/vertical-integration-in-healthcare-impacting-referral-patterns>

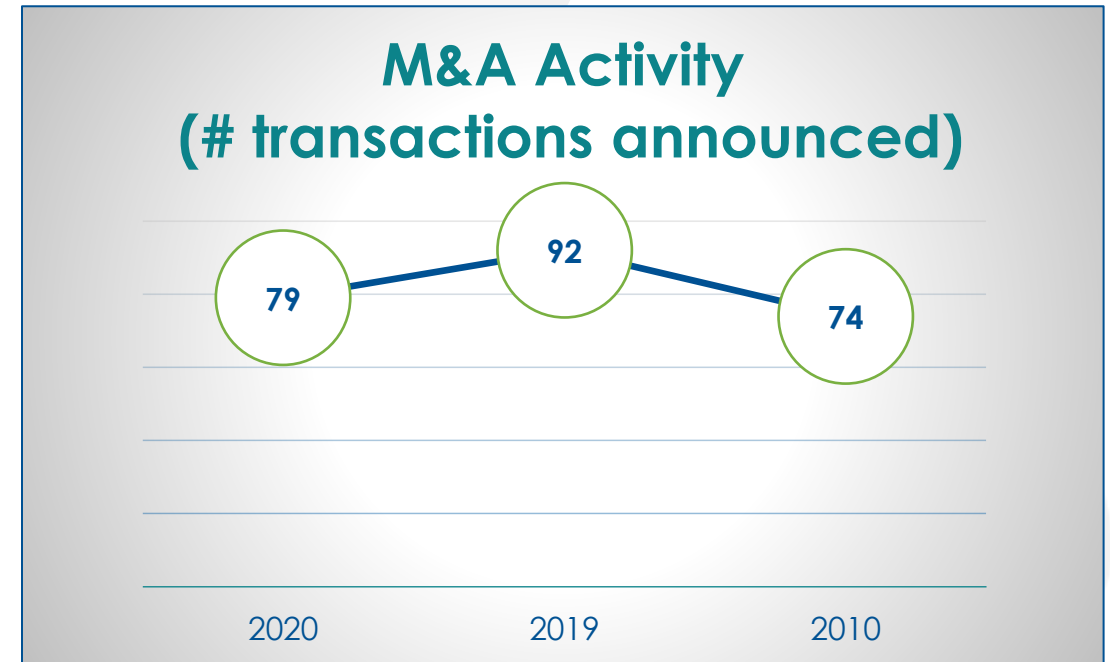
For Example...

	Hospital	Non-hospital	Ave. Reimbursement
Dx Imaging	↑ 26.3 per 1000	↓ 24.8 per 1000	↑ \$6.38 per imaging test
Lab Referrals	↑ 44.5 per 1000	↓ 36.0 per 1000	↑ \$0.57 per lab test

With more hospital-based services, Medicare reimbursement increased after vertical integration.

Combined \$73.1 million ↑ in Medicare spending for imaging and laboratory testing during a four-year period

Will COVID-19 be a catalyst for more M&A activity in 2022?



“Mega mergers”

2020	7
2019	3

<https://revcycleintelligence.com/news/covid-19-a-catalyst-for-healthcare-merger-and-acquisition-activity>
<https://hbr.org/2021/03/the-pandemic-will-fuel-consolidation-in-u-s-health-care>

Executive Order Calls for Action on Hospital Consolidation

EO asks the Federal Trade Commission to prioritize hospital consolidation in its enforcement efforts

"...underscore that hospital mergers can be harmful to patients and encourages the Justice Department and FTC to review and revise their merger guidelines to ensure patients are not harmed."

"Hospital consolidation has left many areas, especially rural communities, without good options for convenient and affordable healthcare service."

Consolidating Labs

Hospital labs are a high fixed costs + low variable costs service line = strategic place to start with consolidation

Consolidate tests with TATs that are not critical

Update test menus (remove outdated tests)

Consider options for outreach programs

Strategically grow the outreach program

Reprice outreach labs to market rates & renegotiate with payers

Monetize the asset - sell it to a national laboratory

PAMA

Significant ↓ in payment
for ~ 75% of lab tests
billed to CMS

CMS estimated 1st year
cuts at \$670 million

- 10% ↓ from previous fee schedule
- more cuts expected each year through 2022

Some suggest PAMA will
cause more industry
consolidation as the
large reference
laboratories continue to
buy smaller laboratories

Protecting Access to Medicare Act

PAMA Effects

Move to private payer-based rates has led to large ↓ for routine tests but not for newer, high-cost tests

CLFS spending & utilization

- ↑ for independent laboratories
- but ↓ for hospital outpatient & POs



Report to the Congress: Medicare and the HealthCare Delivery System. June 2021. Accessed at: www.medpac.gov/docs/default-source/reports/jun21_medpac_report_to_congress_sec.pdf

CARES Act Delays PAMA Reporting

Second round of reporting will be **Jan 1, - Mar 31, 2022**

- Medicare payment rates determined by 2017 data continue through 2022

15% cuts dictated by PAMA that were to become effective January 1, 2021 are delayed

- Will go into effect January 1, 2022
- May not be reduced by >15% for 2022 - 2024
- CMS will use this data to calculate new CLFS test code rates for 2023-2025

And Then a Pandemic...

Labs pivoted quickly to ramp up
COVID-19 testing

Added new analyzers, methodologies

Addressed supply chain, PPE
shortages

“Never before in my career, and probably in the history of laboratory medicine, has there been such a spotlight on testing. The ability to spotlight what the lab is doing has really been the one highlight of this pandemic.”

- Melissa B. Miller, Director of the Clinical Molecular/Microbiology Laboratory, UNC Medical Center

COVID-19

Pros

- Brought some much-needed recognition to the profession



Cons

- Added an enormous amount of pressure to an already short-staffed profession



Laboratory Professional Shortage

Becker's Hospital Review

“Labor shortages in [clinical] testing labs have existed for years due to factors including low recruitment, an aging workforce, and relatively low pay for [medical] lab technicians and technologists compared to that of other healthcare workers with similar education requirements.”

Poll Questions 1 & 2

Do you feel that MLS/MTs receive lower pay compared to other healthcare careers with similar education requirements?

- Yes
- No
- Not sure

Has your laboratory struggled to maintain a full staff?

- Yes
- No
- Not sure

Shortage of Laboratory Professionals



Continuing ↓
in qualified
MLSs

Not matching
the demand
for new
scientists as
older
generation
retires

↑ in non-
certified
individuals
performing
low- to high-
complexity
tests

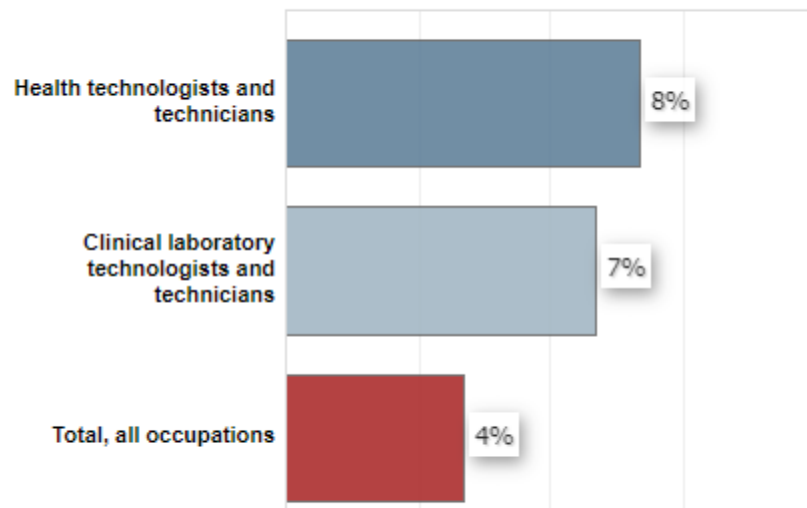
↑ rate of
laboratory
staff taking on
more
responsibilities

Demand projected to grow 7%
from 2019 to 2029

Faster than the average for all
occupations

Clinical Laboratory Technologists and Technicians

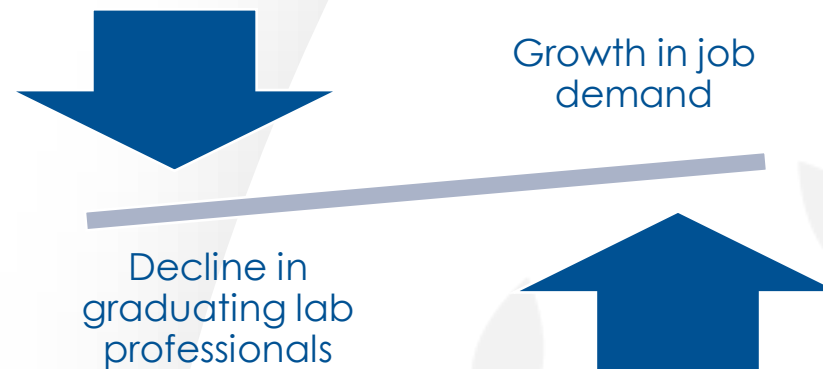
Percent change in employment, projected 2019-29



Note: All Occupations includes all occupations in the U.S. Economy.

Source: U.S. Bureau of Labor Statistics, Employment Projections program

The Labor Gap



MLS programs training only about 1/3 of demand

< 5,000 individuals per year are graduating from accredited training programs

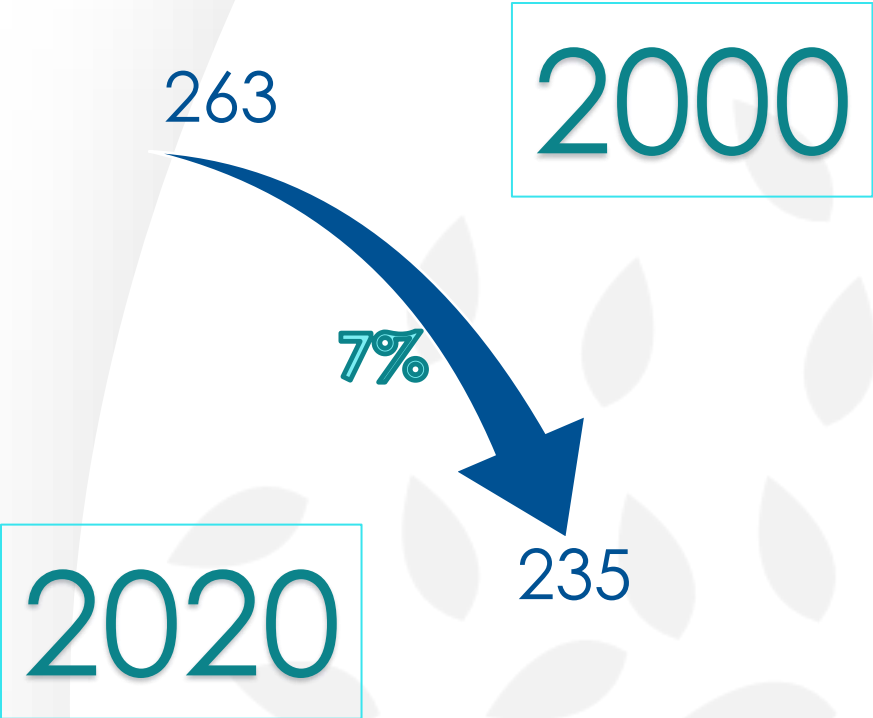
Decreased # of MLS Programs

25%

↓ in the # of MLS programs since 1990

7%

Ave. lab vacancy rate (2018)



MTS. Clinical Lab Worker Shortage: Addressing The Gap. Accessed at: www.medicaltechnologyschools.com/medical-lab-scientist/interview-clinical-worker-shortage
CLM. Solving the Clinical Laboratory Workforce Shortage. July 2020. Accessed at: www.clinicallabmanager.com/trends/laboratory-staffing/solving-the-clinical-laboratory-workforce-shortage-23189

Why are MLS schools declining?

“[MLS programs] are expensive to offer, so when it comes to cuts and budgets, some of those cuts have been based on how much it costs to run them. That, and they may not have high enough enrollments.”

**- Lisa Cremeans, MMDS, CLS(NCA), MLS(ASCP), Clinical Assistant Professor,
University of North Carolina at Chapel Hill**

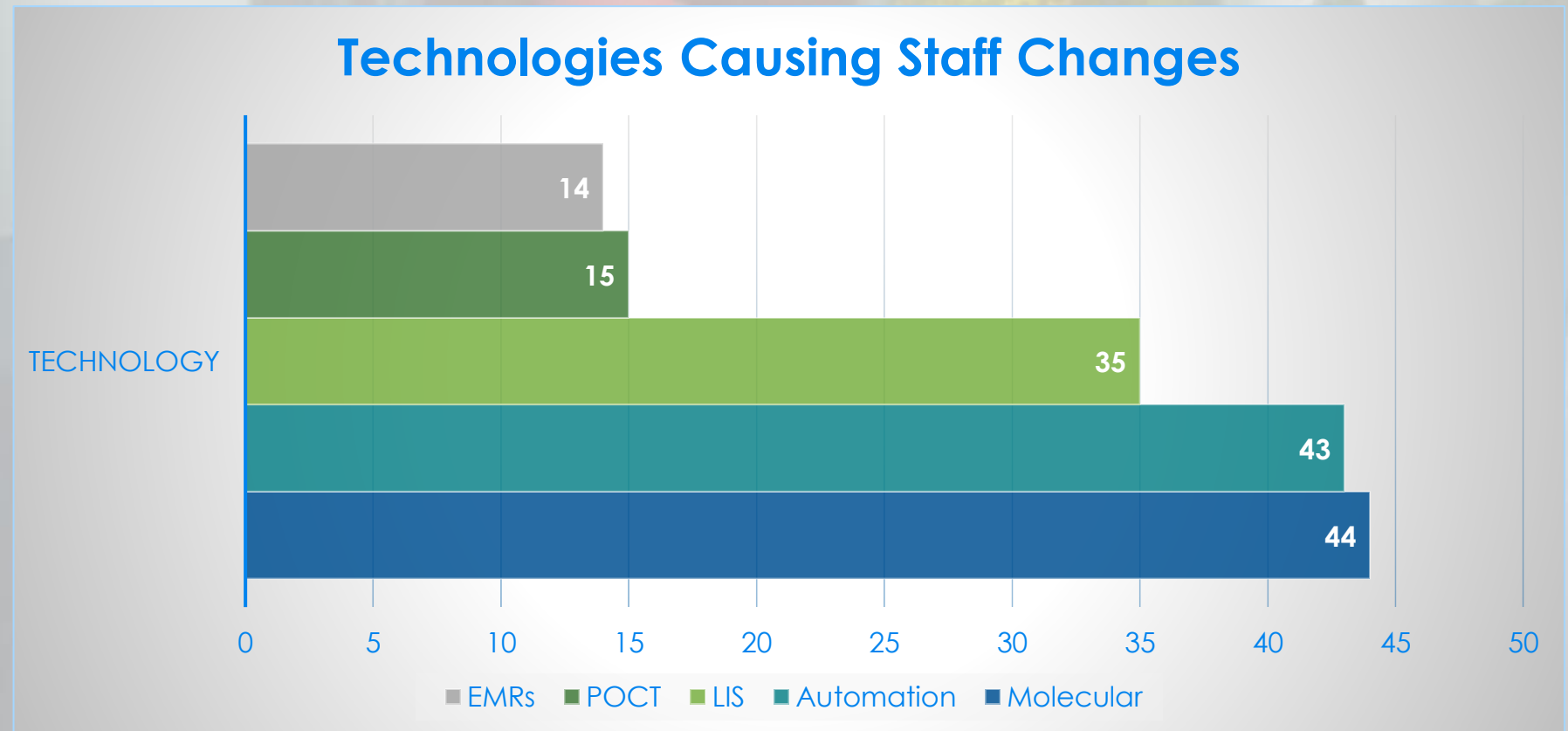
Factors Contributing to MLS Shortage

- Retirement of aging workforce
- Increased demand for laboratory services
- Changes and technology advances in the practice of laboratory science
- Vacancy rates exceed the number of MLS graduates

Why is it difficult to retain laboratory personnel?

- Insufficient job classifications
- Lack of a clearly defined career ladder
- Lack of funding for continuing/advanced education, and tuition reimbursement

Technology Advances



Laboratory Workforce Concerns

1. Need better salaries for laboratory personnel & increased effort in heightening the profile of the laboratory profession in the medical field (21%)

2. Staffing the laboratory with qualified laboratory professionals (18%)

Hiring Challenges

Better pay and/or benefits at other laboratories (51%)

Applicants do not possess necessary certification, education, or skills to perform the work (39%)

Increasing competition for well-trained personnel (46%)



COVID-19

Record # of new CLIA certifications

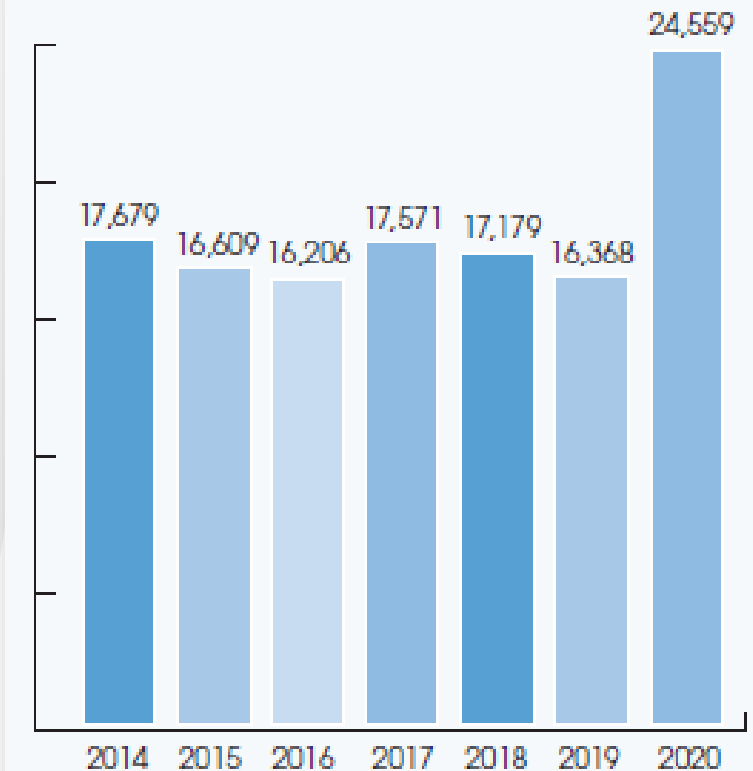
- 24,559 new CLIA labs in 2020
- ↑ 50% from 16,368 in 2019

New labs

- 7,137 physician offices
- 3,539 pharmacies
- 3,392 other
- 2,953 assisted living facilities

Daily COVID-19 PCR testing ↓ ~ 50% since January peak

New CLIA Lab Certifications



Source: CMS/CLIA Files

Laboratory scientists have been on the frontlines of the pandemic since the beginning.

The pandemic, combined with a national shortage of trained lab scientists, has forced MLSs in some labs to work long hours.

Even if a lab isn't fully staffed, the work doesn't stop

Perfect Storm



Value-based
Care

Industry
Consolidation

Workforce
Shortages

Technology
Demands

COVID-19

The most successful laboratories are focused on adapting to change & leveraging as many tools as possible to enable their maximum contribution to patient care.

How Successful Labs Adapt & Thrive

Recruitment & Retention Efforts



Strategies to Recruit & Retain Laboratory Staff

- Flexible scheduling
- Relocation or sign-on bonus
- Tuition reimbursement
- Lucrative benefit packages
- Career advancement options
- Training opportunities

Clinical Laboratory Workforce: Understanding the Challenges to Meeting Current and Future Needs

ASCP + University of Washington Center for Health Workforce Studies

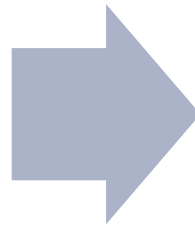
Goal = determine & propose innovative strategies to recruit MLSs

- 1. Improving visibility of the profession**
- 2. Improving workforce recruitment and retention**
- 3. Promoting diversity and inclusion in the laboratory**

Innovative Solutions

University of Minnesota's Medical Laboratory Science Program

Reduced the time MLS
students spend on clinical
rotations from 22 weeks to
12 weeks



Program director says the
plan for next year may
reduce clinicals even
further

Scott, K. Solving the Clinical Laboratory Workforce Shortage. CLM. July 2020. Accessed at:
www.clinicallabmanager.com/trends/laboratory-staffing/solving-the-clinical-laboratory-workforce-shortage-23189

Recruitment Strategy

Alverno Labs Sign-on Bonus

Alverno Labs Offering Up To \$10K Hiring Bonus For MT/MLTs

Alverno Laboratories (Hammond, IN) is offering big sign-on bonuses as it tries to fill hundreds of open jobs. Alverno employs roughly 2,116 people and has about 288 openings, including 29 positions at multiple locations for midnight medical technologist (MT) and medical laboratory technician (MLT) positions. Alverno, which has had trouble filling positions because of a lack of qualified applicants, is offering the incentive through September 9. The \$10,000 bonus will go to newly-hired MT/MLTs who stay on for at least 13 months. Alverno, an independent lab company that is owned by Franciscan Alliance and AMITA Presence Health, operates a central lab near Chicago and manages 30+ hospital labs in Illinois and Indiana.

Retention Strategy Example

University of Vermont Medical Center Lab Preceptor Program

Technologists are given tools they need to be effective teachers for new hires & students who rotate through

- 4-hour workshop offered at various times of the day to accommodate most staff
- VARK Learning styles are taught (visual, auditory, read-write, kinesthetic)
- Has increased their job satisfaction

Recruitment Strategy Example

Memorial Sloan Kettering Cancer Center Laboratory Scholars Program

Places non-lab employees from other parts of the organization in an education program & retrain them to become laboratory technologists

Recruitment Strategy Example

TriCore Reference Laboratories Histology Apprenticeship Program

Recruit candidates from among TriCore employees to participate in targeted histotechnology training

Laboratory Stewardship



Think beyond reporting test results to downstream healthcare processes

Assist providers in best test selection & interpretation

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Assist providers in best test selection & interpretation



Laboratory stewardship means the laboratory takes responsibility for the use of lab testing—from order through interpretation to analytics.

Standardization...

Can improve efficiency, patient satisfaction, quality of care, & workflow across clinical operations

EHR & LIS setup becomes uniform across locations, reducing opportunities for misinterpretation

Uniform purchasing standards help obtain the most cost-effective products that provide the best patient outcomes

Patients benefit from consistency in laboratory testing

Differences in testing methodologies can be confusing & potentially lead to misinterpreted results

Standardized policies, SOPs, & methodologies improve manageability, quality, & efficiency due to decreased redundancy & errors

Automation

In addition to freeing staff for other duties, various forms of laboratory automation can:

Decrease repetitive injuries

Improve TATs

Improve cost effectiveness by speeding process time


Eliminate human error

Improve tube tracking ability

Improve job satisfaction



Your LIS as a Productivity Tool

- 
- Integrate your lab
 - Access patient records & data
 - Standardize procedures
 - Efficiently use resources
 - Reduce errors
 - Reduce paper
 - Automate reporting
 - Reduce TAT
 - Improve staff performance & satisfaction

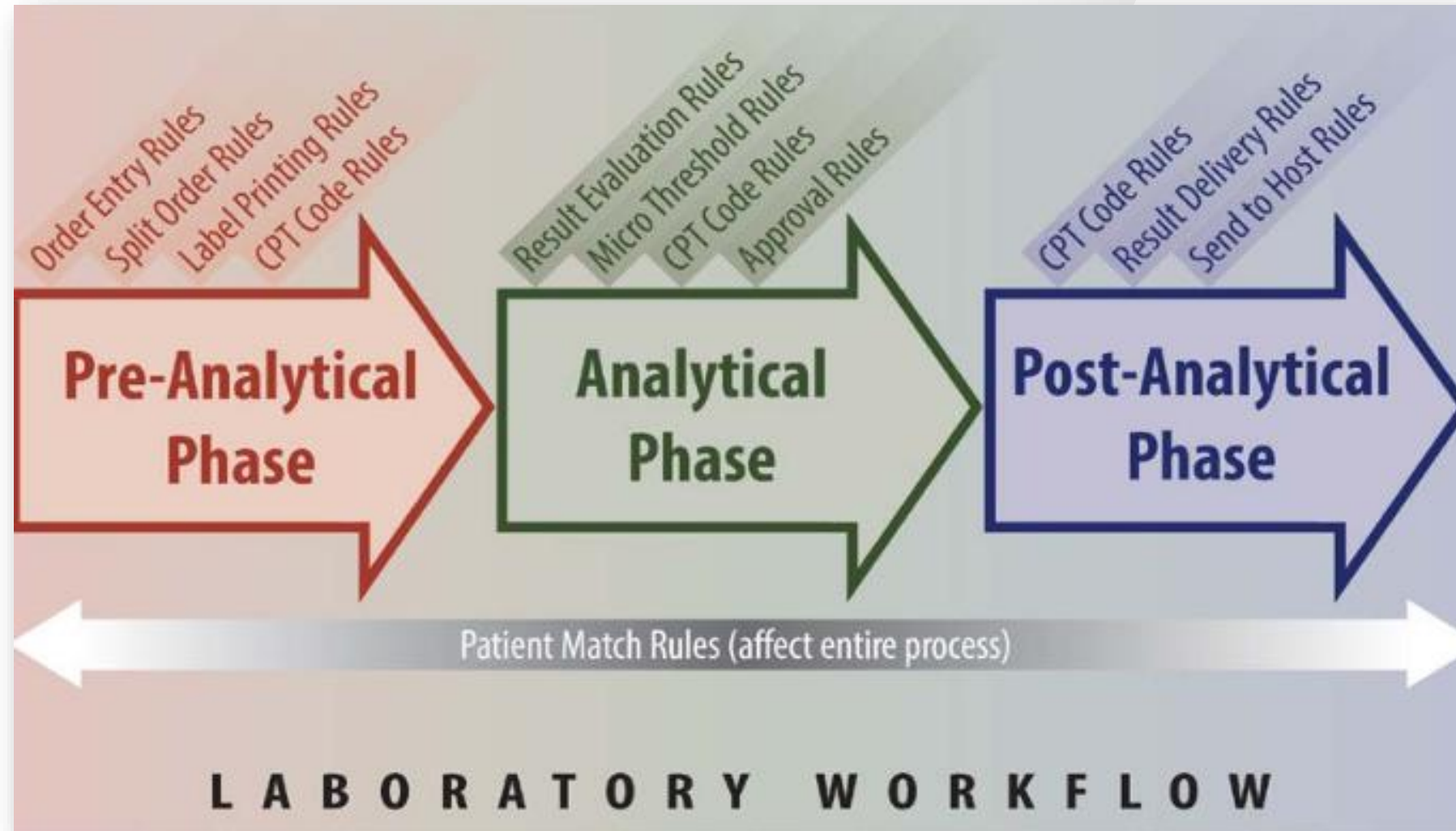
**Effective Use
of your LIS**

Workflow Management

- **Audit trails & sample tracking**
 - tools to organize & track laboratory samples throughout the testing continuum
- **Connectivity** for centralized & decentralized labs
 - interfaced lab analyzers allow test results to be stored & shared across facilities in an automated manner



Decision-support Rules



Performance Metrics

Data that lives in your LIS should be available to help achieve quality goals, promote population health management, and close care gaps.

Set up automated reports to track laboratory metrics on a consistent basis

Utilization monitoring

Staff productivity

TAT tracking



Inspection-ready QC & QA

Quality Control

Track qualitative & quantitative QC with L-J graphs & Westgard rules

Allow inspectors to view QC graphs on LIS (do not need to print)

See multiple L-J graphs on one screen for comparison

Perform required weekly QC review – automate documentation of review

Quality Assurance/Assessment

Standardize comments for unacceptable specimens, rejected tests – rejected orders log

Create error reports with corrective action comments (by provider)

Track remedial action reports by pre-, analytical, post-

Track TAT for time-sensitive tests

Spotlight on Autoverification

Autoverification Defined

Autoverification is a laboratory process in which acceptable patient result parameters are defined for results generated from interfaced instruments and sent to the LIS.



Results that fall within the defined autoverification parameters automatically release into the EHR without any additional laboratory staff review or intervention.



Results that are not within the defined parameters are saved for technologist review prior to reporting.

Poll Question 3

Have you implemented autoverification in your laboratory?

- Yes
- No
- Not yet, but would like to
- Not sure

Autoverification Benefits

Helps improve quality,
reduce costs, & simplify
processes

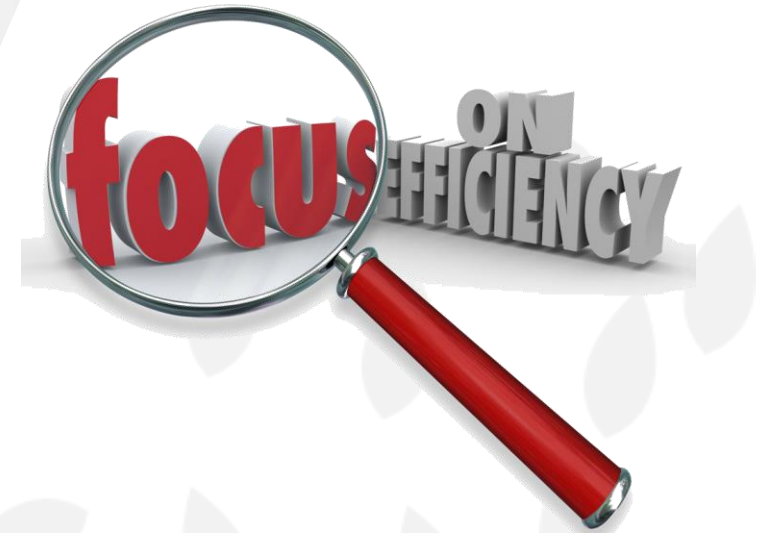
Provides consistent test
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dramatic
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Autoverification Benefits

Helps improve quality, reduce costs, & simplify processes

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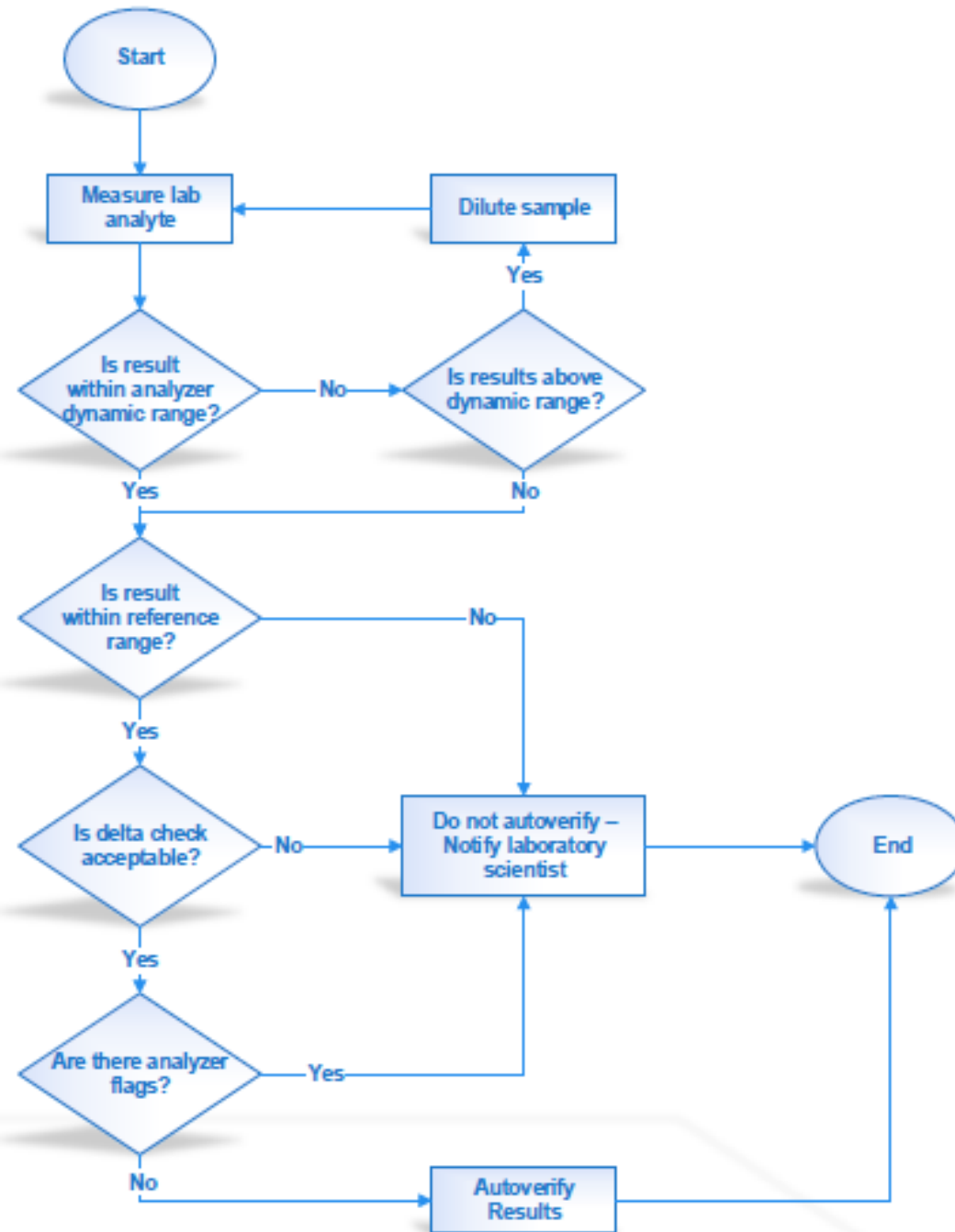
Depending on your lab menu and patient population, 40% to 80% of results could qualify for autoverification.

Washington Health System



“Autoverification setup was easy in hematology because the flags are defined, and the rules are easy to write. We autovalidate about 80% of our hematology results.”

- Carrie Lough, LIS Specialist



Autoverification Flowchart Example

Select one test to begin autoverification.

Determine your acceptable parameters or result evaluation monitors.

Build the result evaluation rules in the LIS.

Turn on autoverification rules for that one test only.

Test the new autoverification rules on real patients.

Test the new autoverification rules on "test" patients.

Monitor results closely until you verify a sufficient volume of that test has properly transmitted into the EHR.

Prottime/INR	
Will NOT Auto Approve if:	
INR >4.0	>4.0 call alert; >6.0 results
INR < 0.8	Check sample; if no clot detected, release
Delta +/- 50% within 50 days	Review history; repeat if indicated
Any analyzer flags will not transmit to LIS; troubleshoot and repeat as necessary	

EXAMPLE

Start Small

Autoverification Steps 1&2

Happy Laboratory Autoverification Policy

Principle

Autoverification (or auto-approval) is the process by which patient results are generated from interfaced instruments and sent to the laboratory information system (LIS), where they are compared against laboratory-defined acceptance parameters (or result monitors). If the results fall within these defined parameters, they are automatically approved without any additional laboratory staff intervention. The defined parameters may be different for each analyzer interface or each individual test. The parameters defined by the policy can include, but are not limited to:

- Holding specimens outside of linear range
- Holding a test or specimen that is flagged as a critical value
- Holding a test or specimen that is flagged as a delta check, when delta checking is appropriate
- Holding results when there is an instrument error flag
- Holding a test or specimen that falls outside of reference range (test specific)

Any data that falls outside the defined parameters must be reviewed by a technician/technologist prior to manual approval. Auto-approval must be validated prior to implementation.

Documentation of the validation must include samples that challenge the rules of the auto-approval process and can include, as appropriate the following:

- Instrument parameters
- Instrument failures
- Instrument flags
- LIS flags
- LIS functions

Procedure: This section defines criteria that will be used to manage the autoverification process; this criterion is not instrument or test specific.

- 1 Initially, each result monitor is individually tested in the Harvest test system as a 'test' rule. A 'test' lab test, a 'test' order choice and 'test' rules are created. Ten test patients are ordered with at least one that does not meet the auto verification criteria.
- 2 After the 'test' rule has worked successfully, each result monitor is individually tested in the Harvest test system by verifying 10 samples daily for three consecutive days, to include at least one sample that does not meet the criteria being assessed. The 'test' rule is edited to incorporate the real lab tests. The results will be documented and signed by the laboratory supervisor before implementation.

1. Do your research.
2. Review your current result approval workflow and use it to create a basic autoverification policy that fits the specific testing menu and volume of your laboratory.

Autoverification Step 3

3. Determine the acceptable autoverification range.

- analyzer linearity
- analyzer auto-dilution procedures
- critical values
- delta checks
- QC requirements
- instrument flags & how they interact within your interface
- rerun policy
- reference ranges, including age- and gender-specific
- calculations
- reflex policies
- integrity checks

Autoverification Steps 4-7

4. Create autoverification rules in your test system.
5. Create the autoverification rules in your live system while still reviewing result transmissions to verify accuracy.
6. Train staff throughout the process.
7. Verify annually.



Autoverification Resources



CLSI standard - AUTO10 - Autoverification of Clinical Laboratory Test Results; 1st Edition



CLSI standard - AUTO15-Ed1 – Autoverification of Medical Laboratory Results for Specific Disciplines, 1st Edition



Krasowski MD, Davis SR, Drees D, et al. Autoverification in a core clinical chemistry laboratory at an academic medical center. *J Pathol Inform.* 2014;5(1).
doi:10.4103/2153-3539.129450



Marquardt B. A step-by-step process to 95% autoverification. 2015. *CAP Today.*



Shih M, Chang H, Tien N, Hsiao C, Peng C. Building and validating an autoverification system in the clinical chemistry laboratory. *Laboratory Medicine.* 2011; 42(11): 668–73.
doi: 10.1309/LM5AM4IIXC4OIETD

Regulatory Tips

- Laboratory director must approve & sign autoverification policy/procedures
- Laboratory audit trail must indicate test results that are auto-verified and date/time stamp of autoverification.
- Need process to ensure acceptable QC for auto-verified tests



- Verification must be performed initially & annually

More Regulatory Tips

Significant changes in analytical procedures that affect autoverification require repeat of verification process

Autoverification setup should include delta checks

Autoverification policy must include a rapid suspension procedure so that in the event of a problem, staff can turn off autoverification

QA program should include evaluation of the autoverification process

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Change in
analytical
procedures

Delta
checks

Rapid
suspension

QA

In Summary

- Our healthcare industry continues to flux with lab reimbursements likely to decline.
- Technology advances will continue to dictate changes in laboratory knowledgebase requirements.
- There is a laboratory workforce shortage that is not likely to be resolved in the near future.
- COVID-19 has brought some well-deserved recognition to the profession & we want that to continue.

In this terrain, it is prudent for laboratories to find every opportunity to boost productivity & efficiency.

Key Takeaways



Be flexible and be prepared for change



Maximize use of the tools you have at hand



Focus on staff retention efforts, employee satisfaction



Train LIS users to take advantage of LIS functionality



Take every opportunity to showcase your lab's value & improve visibility of the profession



Take time to take care of yourself



Thank you

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