
California's Medical Laboratory Technician (MLT) Workforce: Opportunities and Key Policy Issues

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CAMLT Conference
September 17, 2017

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Overview of Presentation

- Clinical laboratory workforce overview
- UCSF studies of the clinical lab workforce
- Medical laboratory technicians
 - Who are they? What do they do?
- Recent study of MLTs in CA and national comparative data
- Key Findings
- Policy Implications and next steps

Background

Clinical laboratory professionals are critical to health care delivery and efficiency

Previous studies- UCSF

HRSA study focus on shortages

- 2003 study of Clinical Lab Workforce; supply, demand, training, certification, roles, key policy issues

MLTs in California:

- Case studies; where and how were MLTs being used in the state

Current study of MLT national scope of practice

- Mixed methods- how do CA MLTs compare nationally

Background

- Laboratory workforce shortages are worsening
 - Laboratory workforce vacancy rates have increased
 - Clinical Laboratory Scientist (CLS) workforce is aging
 - Anticipated retirement rates have increased for CLS workforce (Garcia, 2015)
 - CHA study showed many planned retirement in 5 years

Background

- Laboratory workload is increasing
 - Aging population, growing chronic disease burden, changes in access to care (ACA, 2010; Bodenheimer, 2013, Rosenblatt, 2006)
 - Increasing volume of diagnostic testing (Shahangian, 2014)

This Problem is Severe in California

California employs fewer clinical laboratory workers per population compared to other states (Chapman, 2003)

In 2007 63% of hospitals in CA planned to use Medical Laboratory Technicians (MLTs) to help address shortages in the CLS workforce (CHA: HLWI, 2008)



Who are MLTs?

Medical Laboratory Technicians (MLTs)

- Formally regulated in California in 2007- long lead-in time
 - First Associate Degree program in early 2000's
- Associate Degree trained
- Scope of practice regulated at the state level
- Certified at national level; ASCP, AAB

MLT Study Goals

Count the supply of MLTs in California compared to other states that also regulate MLT practice

Compare the scope of practice laws regulating MLTs in California with other states that also regulate MLTs

Understand how the use of MLTs impacts quality, safety, and productivity in other states that license them

Study Methods

Data source for nationally certified MLTs

- American Society of Clinical Pathology (ASCP)

Data sources to compare MLT regulations

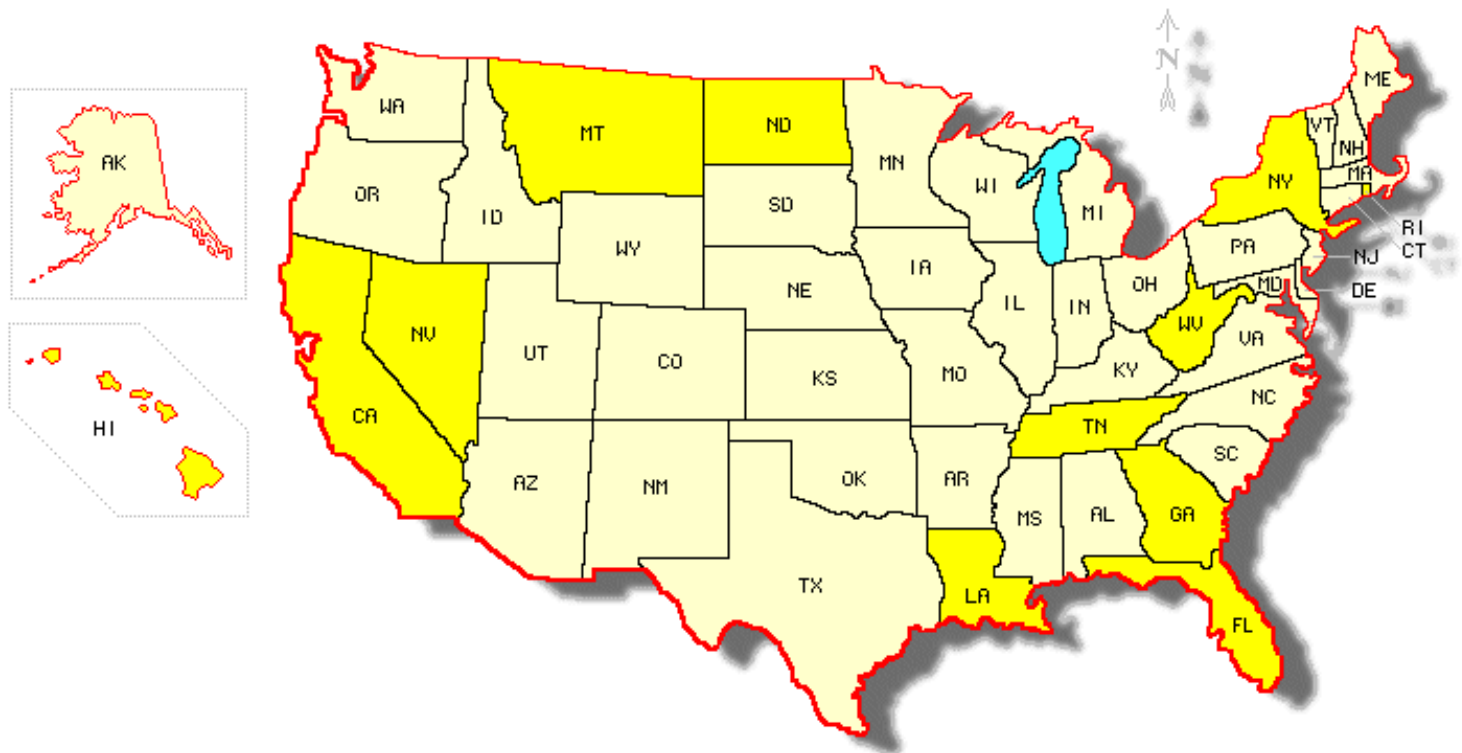
- Scope of practice, supervision
- Clinical Laboratory Improvement Amendments (CLIA) of 1988
- Federal law for states that don't have MLT regulations
- Individual state laws (in regulated (licensed) states only)

Interviews to understand impact of MLTs

- 10 interviews other states
- CLSs, MLTs, and lab directors in regulating states
- Thematic analysis of responses

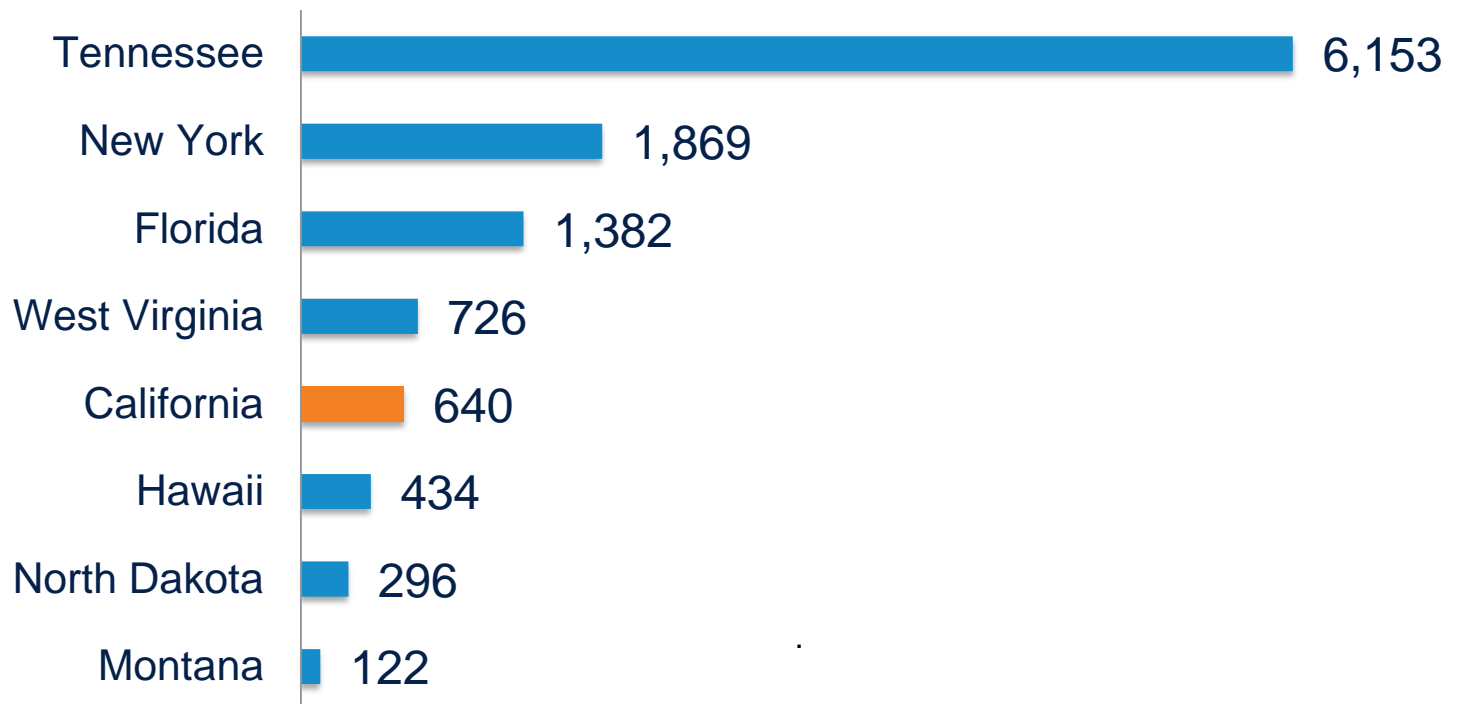
States that Regulate MLT practice

- California
- Florida
- Georgia
- Hawaii
- Louisiana
- Montana
- Nevada
- New York
- North Dakota
- Rhode Island
- Tennessee
- West Virginia



Findings

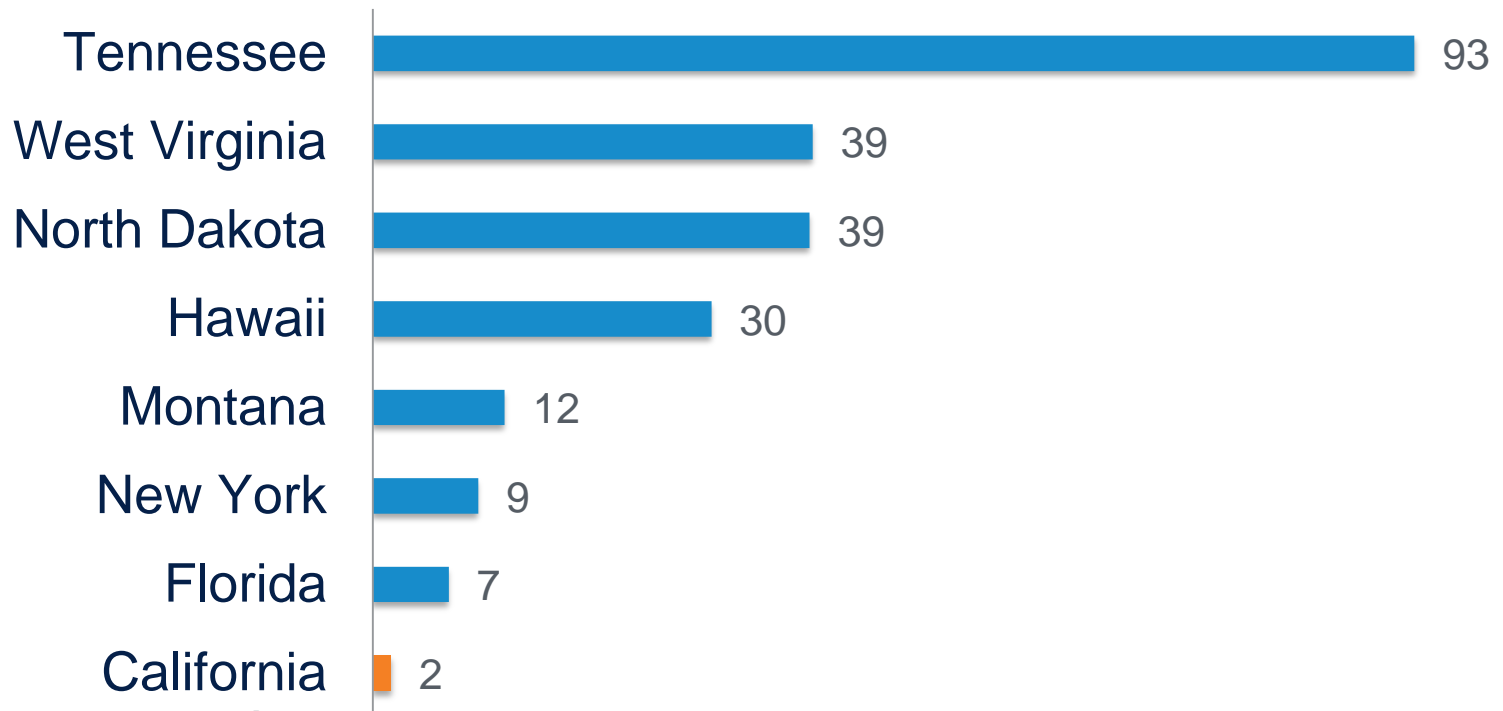
Figure 1: Number of Licensed MLTs in Regulated States, 2016



Data Source: Individual State Licensing Boards, Proprietary data on number of licensed MLTs as of December 2016. Data unavailable for Georgia, Nevada, Rhode Island, & Louisiana. No information on year when licensure began in each state

Findings

Figure 2: Licensed MLTs per Capita* in Regulated States, 2016

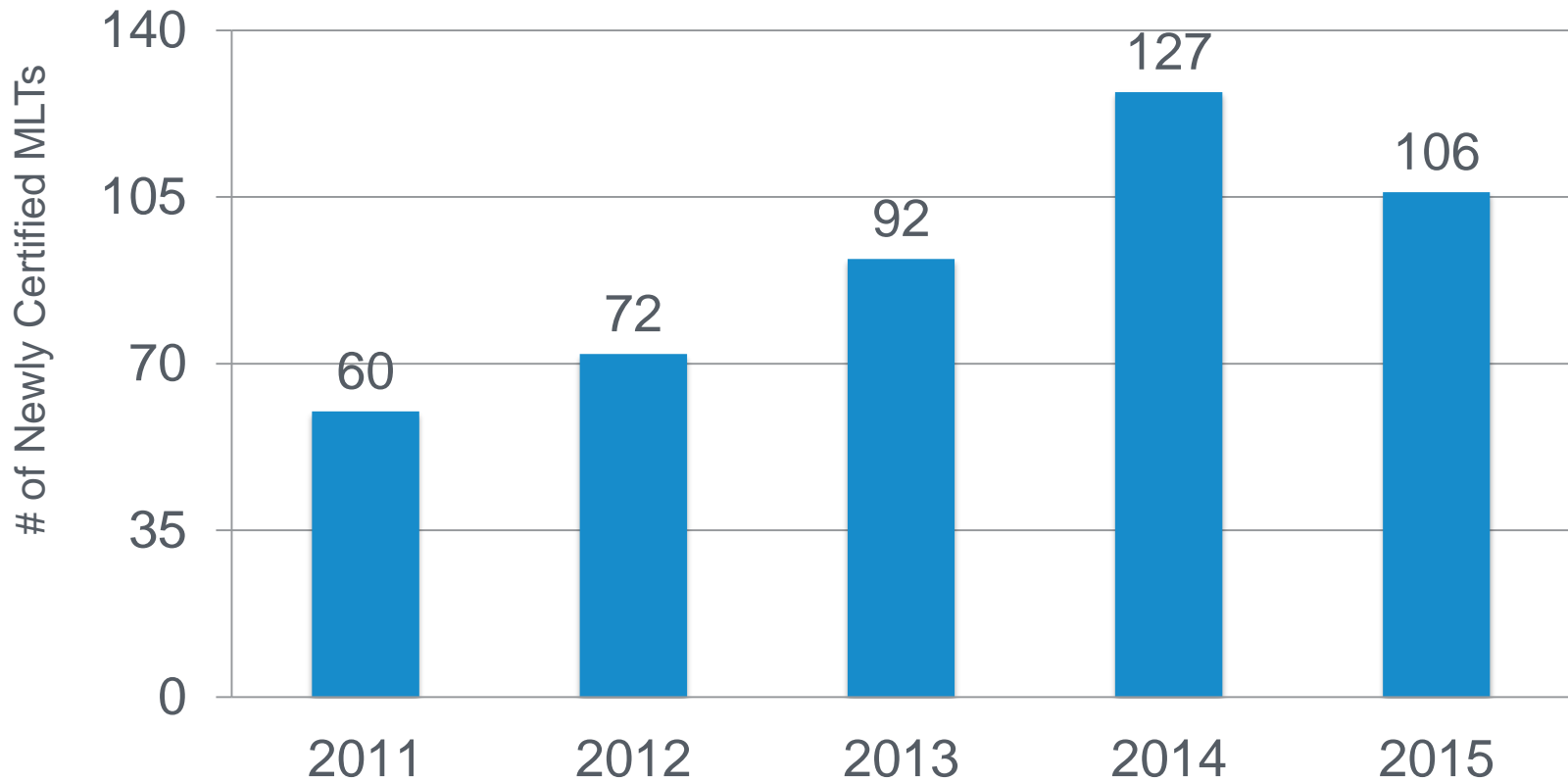


* Per 100,000 population

Data Source: Individual State Licensing Boards, Proprietary data on number of licensed MLTs as of December 2016. Data unavailable for Georgia, Nevada, Rhode Island, & Louisiana.

Findings

Figure 4: Growth in Newly Certified MLTs in California, 2011-2015



Data Source: American Society for Clinical Pathology. Proprietary data on newly certified MLTs from 2011-2015.

Findings

Figure 5a: Mean Wage

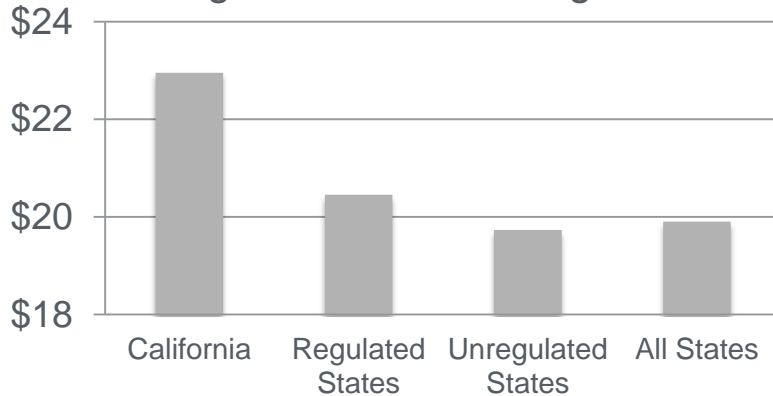


Figure 5b: Mean Age

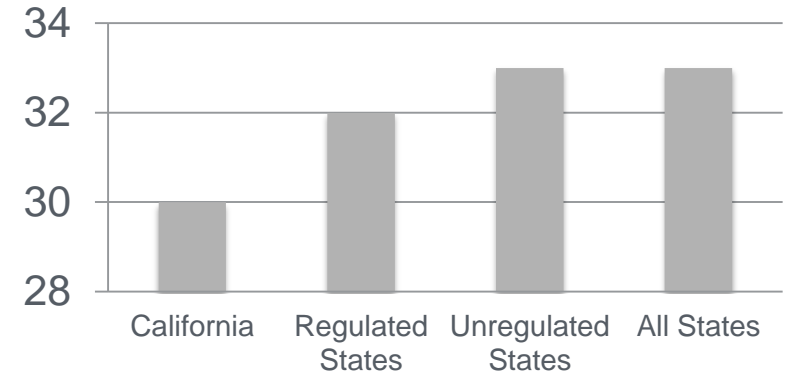
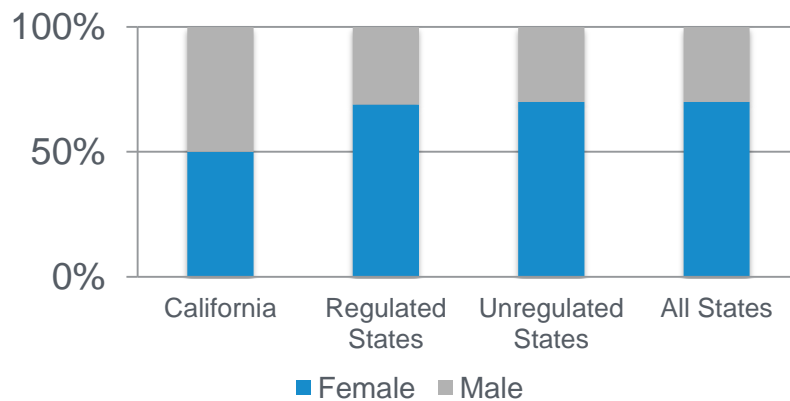


Figure 5c: Gender



Newly certified MLTs in California

Earn a higher wage

Younger

More equal male and female

Data Source: American Society for Clinical Pathology. Proprietary data on newly certified MLTs from 2011-2015.

Findings: MLT Scope of Practice Comparison by State, 2016

State	Simple	Moderate Complexity	High Complexity	Blood smear reviews	Microscopic Urinalysis	Blood Typing
California	yes	yes, prohibits microscopy or immunohematology	no	no	no	no
Florida	yes	yes	yes, with training	yes	yes	yes
Georgia	yes	yes	yes, with training	yes	yes	yes
Hawaii	yes	yes	yes, prohibits if the results need interpreting	yes	yes	yes
Louisiana	yes	yes	yes, with supervision	yes	yes	yes
Montana	yes	yes	yes, with training	yes	yes	yes
Nevada	yes	yes prohibits if the results need interpreting	yes, prohibits if the results need interpreting	yes	yes	yes
New York	yes	yes	yes, with training	yes	yes	yes
North Dakota	yes	yes	yes, with training	yes	yes	yes
Rhode Island	yes	yes	yes, with training	yes	yes	yes
Tennessee	yes	yes	yes, with training	yes	yes	yes
West Virginia	yes	yes	yes, with training	yes	yes	yes
Unregulated States- CLIA	yes	yes	yes, with training	yes	yes	yes

Data Sources: Individual State websites, see References for details. Unregulated states default to federal CLIA regulation

Results: MLT Supervision Regulations Comparison by State, 2016

State	Supervision Ratio	Maximum test level without supervision	Maximum test level with supervision	On site supervision required?	Microscopic Urinalysis	Blood Typing
California	4:01	simple	moderate complexity testing in chemistry, hematology, immunology and microbiology	yes for all moderate complexity testing	no	no
Florida	none	moderate	high	yes	yes	yes
Georgia	none	varied	varied	varied	yes	yes
Hawaii	none	High, if no interpretation and no intervention needed	high	yes for high complexity	yes	yes
Louisiana	none	moderate	high	yes	yes	yes
Montana	none	varied	varied	varied	yes	yes
Nevada	none	High, if no interpretation and no intervention needed	high	yes for high complexity	yes	yes
New York	none	moderate	high	yes for high complexity	yes	yes
North Dakota	none	moderate	high	yes	yes	yes
Rhode Island	none	moderate	high	yes	yes	yes
Tennessee	none	moderate	high	yes for high complexity	yes	yes
West Virginia	none	moderate	high	yes for high complexity	yes	yes
Unregulated States	none	moderate	high	yes for high complexity	yes	yes

MLT Comparative Study: Focus on a Few Tests

Using data from previous study HLWI identified three possible areas for expanding the MLT scope of practice in California:

- microscopic blood smear reviews – morphology and manual white blood cell differential
- microscopic urinalysis
- immunohematologic blood typing – moderately complex ABO/Rh testing

Rationale:

- high volume tests that would have a measurable impact on laboratory efficiency
- categorized as moderately complex under CLIA
- performed using instrumentation that is also categorized as moderately complex

Interview Comments



Microscopic Urinalysis

- Respondents were in support of training MLTs and allowing them to perform microscopic urinalysis testing
- Microscopic urinalysis is “not so complex. It is fairly easy to train someone to do urinalysis slide reviews

Blood Smear Review

- Blood smear review is a sophisticated test and complicated skill
- MLTs would be capable of blood smear reviews with on-the-job training and recommended limiting early cell identification along with thorough training and competency testing

Blood Typing (ABO/Rh testing)

- Responses were much less robust for allowing MLTs to perform blood typing MLTs. May not be qualified to do early cell identification in blood smear reviews and advanced blood bank workups like antibody workups, but they are fine for ABO/Rh testing and cross matching

Interview Findings

Productivity

- Most interviewees noted that well-trained MLTs in the right setting provide a good benefit to productivity.
- Some laboratory directors felt “boxed in” by state practice laws that limit their ability to optimally use their staff.
- My hospital no longer hires MLTs because they must be supervised to release results and cannot operate independently. It’s just not cost-effective to have employees that can’t work independently.

Interview Findings

Decision-Making Skills

- Variation exists between CLSs and MLTs ability to problem solve, make decisions, and troubleshoot.
- Lab testing is complex; many pre-analytic, analytic, and post-analytic problems can arise. You need to be able to recognize and solve problems.
- Troubleshooting and decision making is where MLTs don't have the expertise of CLSs due to training and knowledge.
- Some MLTs have the degree to work without supervision or conduct high complexity tests, but may not be cognizant or capable.

Interview Findings

Automation

- Many respondents also pointed to the increasing role for MLTs with the increasing automation of laboratory tests, which have quality assurance built into the machines.
- MLTs are becoming increasingly more productive in our laboratory as more tests become automated.

Accuracy

- Several interviewees noted that properly trained MLTs are as capable as CLSs.
- It has a lot to do with individual training and skill of [the] individual.
- We feel confident in their skills once they have completed our in-house vetting process.

Interview Findings

Challenges to Hiring MLTs

- Lack of available workforce in the region- preceptors
- Tension between CLSs and MLTs
- Variability in quality of individual MLTs and programs
- Limitations to scope of practice by state laws
- Time intensive supervision requirements
- Increasing laboratory test volume
- Increasing laboratory test complexity
- Fear of errors by a lesser trained workforce

Interview Findings

Facilitators to Hiring MLTs

- Increasing automation of laboratory tests that may increase the future role for MLTs
- Hospitals training or partnering with local schools to offer externships
- Training and competency testing in-house
- Expanding opportunities for MLTs in reference labs
- Regulating the scope of practice at the practice level

“Training and competency testing at the practice level is ultimately safer than trying to regulate practice at the state level.”

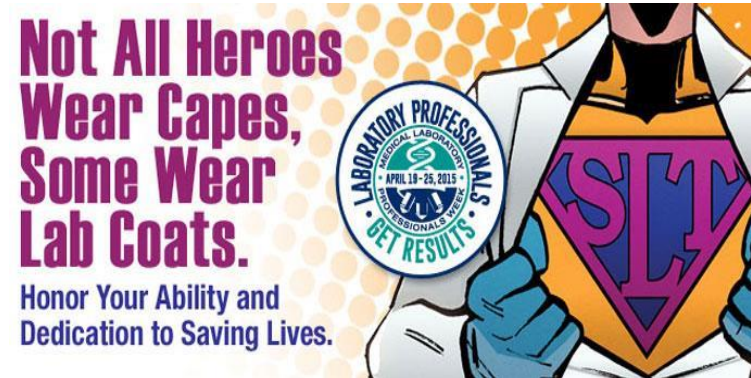
Summary of Key Findings

- California has a small MLT supply relative to the size of the population
- California has the most restrictive scope of practice and supervision laws regulating MLTs compared to all other regulated states
- Laboratory directors in other states that regulate MLTs generally perceived MLTs as beneficial to productivity and quality
- Some concerns were raised about MLTs decision-making and troubleshooting abilities, and the variability in individual MLT skills and knowledge base

Key Policy Issues

Strategies to address the ongoing laboratory workforce shortages in California:

- Increasing MLT supply and demand (job opportunities)
- Increasing CLS supply
- Broaden the duties and responsibilities of MLTs
- Reexamine the scope of practice laws that govern MLT practice in California



Potential Next Steps: Regulatory

Explore process to expand MLT scope of practice to include all moderate complexity testing

- Consistency with CLIA

Explore how to expand training capacity

- Clinical training sites through partnerships/externships

Distance education for didactic content

- This was tried, not sure of results

Assess impact of barriers and facilitators

- Where is strong opposition
- Opportunities to discuss and facilitate discussion

Practice level vetting of competencies and practice (deregulation)

Potential Next Steps: Workforce Education and Research

Study cost benefit of hiring MLTs and ROI in MLT training

- Little research on cost effectiveness of various configurations of lab workforce

Employer collaboration on training

Recruitment

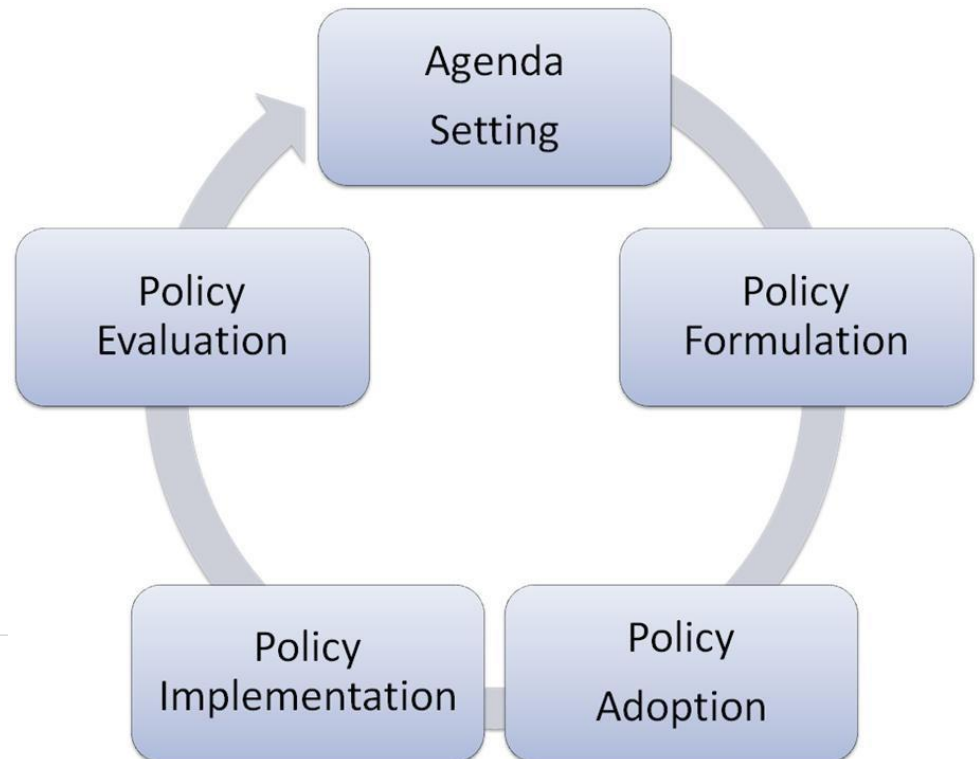
- Which strategies work best

Untapped populations

- Incumbent workers
- Veterans
- Unemployed or underemployed

Next Steps: Policy Discussion

- What is the forum for the policy discussion on scope of practice?
- Who are key stakeholders?
- Do we have enough data and information?
- What questions would you like to have answered about MLT practice?



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The State of the California Medical Laboratory Technician Workforce

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Full Report: <https://healthforce.ucsf.edu/publications/state-california-medical-laboratory-technician-workforce>