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

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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 (MLTMs) 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

- Tennessee: 6,153
- New York: 1,869
- Florida: 1,382
- West Virginia: 726
- California: 640
- Hawaii: 434
- North Dakota: 296
- Montana: 122

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

- Tennessee: 93
- West Virginia: 39
- North Dakota: 39
- Hawaii: 30
- Montana: 12
- New York: 9
- Florida: 7
- California: 2

* 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

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

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

Data Sources: Individual State websites, see References for details. Unregulated states default to federal CLIA regulation.
## Results: MLT Supervision Regulations Comparison by State, 2016

<table>
<thead>
<tr>
<th>State</th>
<th>Supervision Ratio</th>
<th>Maximum test level without supervision</th>
<th>Maximum test level with supervision</th>
<th>On site supervision required?</th>
<th>Microscopic Urinalysis</th>
<th>Blood Typing</th>
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</thead>
<tbody>
<tr>
<td>California</td>
<td>4:01</td>
<td>simple</td>
<td>moderate complexity testing in chemistry, hematology, immunology and microbiology</td>
<td>yes for all moderate complexity testing</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Florida</td>
<td>none</td>
<td>moderate</td>
<td>high</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Georgia</td>
<td>none</td>
<td>varied</td>
<td>varied</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Hawaii</td>
<td>none</td>
<td>High, if no interpretation and no intervention needed</td>
<td>high</td>
<td>yes for high complexity</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Louisiana</td>
<td>none</td>
<td>moderate</td>
<td>high</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
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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?
References


References


The State of the California Medical Laboratory Technician Workforce

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