



Medical Laboratory Technicians in California: Lessons from the Field

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INTRODUCTION

Licensed Medical Laboratory Technicians, or MLTs, are a relatively new occupation in California.ⁱ In 2002, California legislation authorized the creation of the MLT job category (SB 1809) and delineated educational and licensing requirements. Although all other states and the U.S. military have employed this classification of worker for years,ⁱⁱ it was not until December 2007 that “Medical Laboratory Technician” became an officially licensed occupation in California. The first MLT license was issued in 2008.ⁱⁱⁱ As of March 2014, about 447 California MLT licenses had been issued.

Part of the rationale for authorizing this licensure had to do with the decline in the number of clinical laboratory scientists (CLS) trained in the state and projected workforce shortages related to both the decline in production of new CLSs and aging of the existing CLS population. The average age of California CLSs in 2010 was 48.5 in urban hospitals and 50.5 in rural hospitals.^{iv}

In 2007, the California Hospital Association surveyed member hospitals and found that 63% planned to use MLTs to address projected shortages.^v A recent survey^{vi} of California medical laboratory technicians conducted by the Healthcare Laboratory Workforce Initiative of the California Hospital Association concluded that while CA MLTs are employed and predominantly working in large laboratories, job openings continue to be scarce as many hospitals are just beginning to integrate MLTs into their laboratory workforce.

PURPOSE AND METHODS

The objectives of this study were to identify and profile several California hospitals that have successfully incorporated MLTs into their laboratory workforce so that others might learn from their experience.

Five hospital sites were selected via a series of phone interviews with employers, community college representatives, and workforce experts across the

state. Selection criteria included more than one MLT on staff, the intention to maintain or expand the number of MLTs, and geographic diversity representing different regions across California, and willingness to participate in the study.

Site visits at selected laboratories included a tour of the laboratory and interviews with laboratory directors, CLSs working with MLTs, education coordinators, and MLTs.

FINDINGS

MLTs are working in various laboratory settings across California. Relative to CLSs, MLTs are still a small profession, and most labs that use MLTs generally employ small numbers of them. California state law permits up to four MLTs to work under one CLS at a time and all sites are well within the staffing ratio laws.

Hospital laboratory directors who were interviewed reported hiring MLTs for two main reasons:

1. Concerns about shortages of CLS applicants – both current and pending
2. Opportunity to cut labor costs, while maintaining quality and meeting increasing demands for moderate complexity testing.

At all but one case study site, laboratory directors and CLSs reported some opposition to hiring MLTs from incumbent CLSs. At the same time, most CLS study participants were impressed with many of their MLT colleagues. They noted that when MLTs were first introduced, some CLSs were concerned that MLTs would be used to replace them and worried that MLTs would have a negative impact on quality and safety. Laboratory directors’ policies of bringing on MLTs in addition to, rather than in place of, CLSs—or converting CLS positions only by attrition—helped assuage some of those concerns. For their part, MLTs were eager to prove themselves, and the quality of their work and enthusiasm helped win over their colleagues in the lab. Laboratory directors noted no compromise in safety or quality outcomes resulting from the employment of MLTs.

All laboratories profiled in this report hosted MLT internship programs. Clinical internships, which are tied to college-based MLT training programs but conducted at hospital sites, are a vital component of MLT training. Laboratory directors at case study sites expressed concern that not enough other hospital laboratories were hosting internship programs or hiring MLTs, threatening the viability of MLT training programs that could supply new laboratory workers.

“In this region of the state, the hospitals took the initiative; they are proactive and involved in the process (of training MLTs). The only downside is that I have several hospitals that don’t want to participate. Although they are in the minority, they have impacted our growth...We will end up turning away qualified students.”

--Community College MLT Program Director

Limited availability of CLS college training programs and hospital internship sites was also repeatedly mentioned as problematic. As one laboratory director interviewed for this study observed, some laboratories have the budget to hire CLSs and no local workforce shortage yet. As such, it is easier for them to employ CLSs than to take proactive measures and invest in training programs or revise workflows in anticipation of future staffing needs. According to this observer, shortsightedness or complacency might lead to rising costs and competition among hospital systems for an increasingly limited CLS labor pool.

Lessons Learned

Automation

According to a number of laboratory staff interviewed for this study, although automation in general has reduced the number of laboratory staff

over time, it has also changed some laboratory processes, creating new opportunities for MLTs to handle the growing volume of moderate complexity testing and to set up more complex tests for CLS to complete. Lab directors interviewed suggested that strategic selection of laboratory equipment can facilitate the incorporation of MLTs and provide an additional return on investment.

Communication

The “messaging” from management played a role in CLS acceptance of MLT staff. Clear communications about staffing shortages and succession planning helped to persuade some CLSs of the need for action to fill impending vacancies. Many directors noted that it was important to stress the continued value of CLS employees, noting that MLTs were being hired to address the shortage of CLSs. In some instances, MLTs were added to support CLSs rather than as replacements for retiring CLSs. As one CLS noted, the inclusion of MLTs decreased stress in the lab as the new MLT staff helped pick up some of the increasing volume of tests and freed CLSs to concentrate on blood bank and other high-complexity tasks.

“It is a win-win situation, at least in our environment. As CLSs retire, we would consider replacing some of them with MLTs to maintain some sort of balance. For the scope of testing we have, it works. Are MLTs prone to making any more mistakes? I have not seen any differences, and it would be beneficial from the budget point of view (to hire more).”

--Medical Director

Recruitment and Selection

Because they serve as ambassadors for their profession, the quality of MLT first hires is key. Laboratory directors observed that CLSs were more

likely to accept and trust incumbent staff, such as experienced laboratory assistants who have obtained MLT training and licensure, than MLTs who are new to the laboratory. Some laboratories have encouraged incumbent laboratory staff to attend MLT programs.

Clinical Internships

Hosting interns and acting as a clinical training site may also facilitate buy-in from existing staff, if provisions are made for adequate training time and support. As one interviewee noted, student internships are a “6-month job interview” and can help acquaint CLSs with new MLTs and their capabilities. CLS involvement in MLT internship training also engages and empowers CLSs by validating their experience and knowledge and includes them in preparing the next generation of laboratory staff.

A strong relationship with a community college training program has played a vital role in MLT adoption at many laboratories by helping laboratories set the agenda for clinical internship curriculum and training, and providing them with the tools to train and assess potential employees. Community college MLT program directors interviewed for this study reported putting considerable effort into recruiting hospitals to host internship sites.

Career Ladders

At the case study sites, MLTs work side-by-side with their CLS colleagues. In some labs visited, the addition of the MLT position created a career step for laboratory assistants who were willing to seek further education. MLTs interviewed expressed great interest in laboratory work, and some aspire to become CLSs, hoping their laboratory experience will eventually help them gain entrance to the increasingly competitive CLS training programs. This suggests that the creation of the MLT occupation may help produce a career ladder for laboratory workers.

Cost-Benefit Considerations

Filling new openings with MLTs may result in cost savings for a hospital, but the cost-benefit analysis is complex. There are many factors to consider in such an analysis, including the time and resources necessary to assess and rearrange workflow and equipment, the cost of hosting a CLS trainee compared to an MLT, the time and productivity lost due to job vacancies, the cost of recruiting and training new staff, and the value of experience. Hence, a simple one-to-one contrast between MLT and CLS salaries cannot capture all of the costs and benefits of changing the composition of the laboratory workforce. Laboratory directors in this study had prepared careful analyses of projected retirements, educational pipeline, laboratory trends, and costs in developing a business case for developing what one called a greater “skills mix” in the laboratory. As described in the pages that follow, at least two directors were able to describe an overall return-on-investment resulting from changing their laboratory’s equipment, workflow, and staffing—including hiring MLTs.

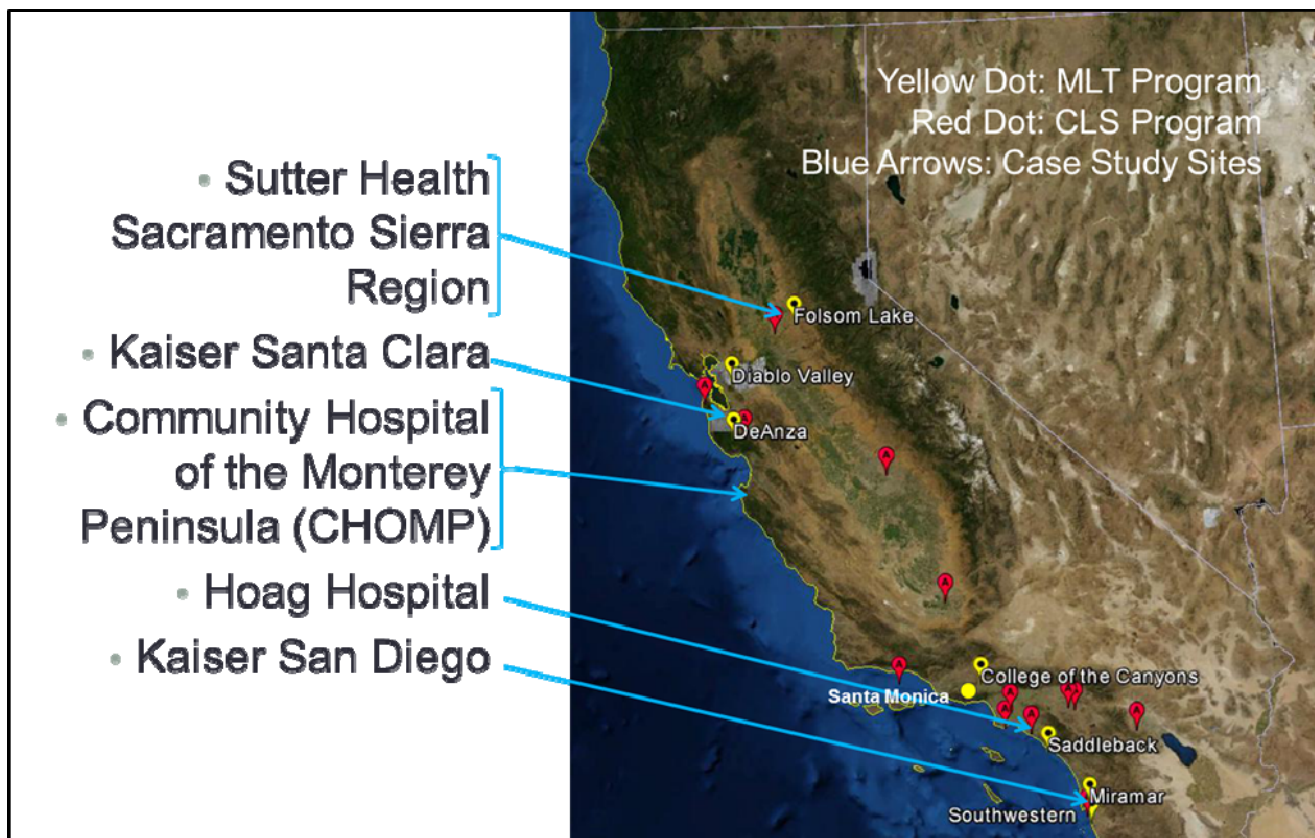


CASE STUDY SITES

The following map and tables briefly describe the MLT case study sites. The case studies follow this section.

All of the case study sites serve, or have served at some time, as clinical internship sites for MLT education programs. As the following map illustrates, all sites are located close to community college MLT programs. However, preliminary interviews suggested that hospitals around the state, from as far south and east as the El Centro area, to at least as far north as Shasta-Redding, were employing at least one MLT.

Figure 1. Map of Case Study Sites and College Education Programs



Case study sites varied in size from a relatively small community hospital (CHoMP), to a regional health network (Hoag), to medical centers representing very large statewide and national health systems. Sutter Health Sacramento Sierra conducts regional laboratory workforce planning. This makes it slightly more difficult to compare to the other case study sites, which were largely single-hospital-focused.

Some sites were part of health systems with a regional laboratory that handled some of their testing. This also had an impact on the willingness and ability of laboratories to employ MLTs.

Table 1. Details of Case Study Sites

	Hospitals	Beds	Satellites	Annual Tests	Uses Regional lab
CHoMP	1	205	5	1.8 million	No
KP Santa Clara	1	327	3	1.9 million	Yes
Sutter Roseville*	1 (6)	328	6+	1 million +	Yes
KP San Diego	1	414	14	3 million	Yes
Hoag Health	2	639	12	1.5 million	No

*Sutter Roseville Medical Center is part of the Sutter Sacramento Sierra Region, encompassing 6 hospitals, 30 patient service centers, and 4 million annual tests

Table 2. MLTS at Case Study Sites

	First hired MLTs	# MLTs	# CLSs	Union	MLT on Night Shift
CHoMP	2007	11	39	No	Yes
KP San Diego	2010	5	45	Yes	Yes
KP Santa Clara	2011	5	50	Yes	Yes
Hoag Health	2012	5	90	No	No
Sutter Roseville	2013	2*	23	No*	Yes

**Some hospital laboratories within the system are unionized, but not all.



Courtesy of Community Hospital of the Monterey Peninsula

Case Study 1: Community Hospital of the Monterey Peninsula

Community Hospital of the Monterey Peninsula (CHoMP) is situated amid the Monterey pines on a hill high above Pacific Grove. Designed by architect Edward Durell Stone and completed in 1962, the hospital was intended to enhance healing through incorporating natural elements into the design. The hospital is gleaming white and filled with peaceful light. A large interior koi pond with a bubbling fountain in the open Garden Pavilion is topped by a glass dome. It serves as a pleasant gathering place for staff and patients who watch the fish and enjoy snacks from the café. An extensive collection of local art graces the walls throughout the facility.

The physical space of CHoMP's clinical laboratory is equipped with state-of-the-art equipment, including an automation line. CHoMP's laboratory also stands out by employing what is probably the largest number of Medical Laboratory Technicians (MLTs) of any hospital facility in the state of California. While most hospital sites with MLTs hire one or two at best, CHoMP currently has eleven, and has had a number of MLTs on staff since they were first licensed in 2008. This is still well below the maximum ratio permitted by the state of four MLTs per one clinical laboratory scientist (CLS). CHoMP's laboratory staff are not unionized.

The hospital has a busy laboratory, five satellite sites, a mobile phlebotomy program, and its own full-service blood center. The latter is relatively unusual for a hospital of CHoMP's size—many blood centers closed during the HIV epidemic. The hospital also has an outreach laboratory testing program. The hospital processes approximately 1.8 million lab tests a year.

Background and History

CHoMP's laboratory director, Jay Wilkerson, CLS, started hiring MLTs under a mandate from the hospital to lower labor costs. One factor in this decision was competition from reference laboratories, which can often charge less than hospital laboratories due at least partially to lower personnel costs.

With this in mind, CHoMP invested in the, now closed, Hartnell Community College Medical Laboratory Technician training program in nearby Salinas. CHoMP provided equipment and instructors for the program. A number of CHoMP CLSs, with the encouragement of their director, taught classes in the Hartnell program and mentored MLT students at CHoMP. This strategy enhanced CLSs' acceptance of their new MLT workmates.

The Hartnell program started in 1999 before the MLT occupation was licensed by the state. Hartnell graduated a total of 25 MLTs. CHoMP served as the internship site for most of them and hired ten. A number of the

Hospital Overview

- 205 patient beds
- 5 satellite sites
- 2,200 total employees
- Not a trauma center

Patients

- 70% outpatient
- 70% government payer, including Medicare (62%), TriCare for military, some MediCal.

hospital's current MLT staff started as laboratory assistants in specimen processing, completed their degrees, and then moved up to MLT once the occupation was recognized by the state licensing board. According to staff interviewed for this case study, the Hartnell program closed in 2007 due to low enrollment and insufficient clinical internship sites.^{vii}

To meet its ongoing staffing needs, the lab has started to work with De Anza College's MLT program and has hired one student. De Anza is approximately 75 miles north of Pacific Grove.

Workflow and Staffing

One factor that allows CHoMP to employ a relatively large number of MLTs is its selection of laboratory equipment. Equipment is chosen specifically so that it will allow MLTs to run and 'result' tests. The automation line removes the necessity of 'pipetting' for the most part. The computer auto-verifies any normal results, and then distributes results electronically, including directly into the electronic medical record.

Staffing

120 laboratory employees

- 39 CLS
- 11 MLTs
- 50 phlebotomists
- 20 other (RNs & AAs)
- 4 contracted pathologists

Shifts

PM: 4 CLSs/2 MLTs

Day: 7 CLSs/ 4 MLTs

Night: 2 CLS/ 1 MLT

Weekend shifts also include MLTs.

In addition, a newly installed automated tuberculosis analyzer will allow MLTs to load and unload the machine—a test that currently requires a CLS. The CLS still needs to read the test at the end, but more of the routine work can be done by the MLT. In other areas, like chemistry, the MLTs can work almost entirely on their own as a result of new analyzers. MLTs can do jobs that are not as sensitive, which frees time for the CLSs to do more sophisticated and technical projects.

The change in equipment and the inclusion of a new layer of staff in the workforce necessitated a change in workflow. The lab at CHOMP was remodeled to make space for the automation line. However, the payoff was great: the laboratory was able to realize a complete return-on-investment in new equipment and staff within one year. This is largely due to a decrease in staffing costs, but also a reduction in repetitive stress injuries associated with older, more manual equipment.

All schedules and protocols had to be written to incorporate the MLT into the workflow and specify what the MLT could do in conjunction with the CLS. Lab staff for the most part are expected to be generalists and rotate through the different benches as appropriate to their licensing. MLTs work in chemistry, where they have the most

scope, in hematology processing specimens and reviewing for flagged tests that need to be double-checked by the CLS, in microscopy doing set-ups, in urinalysis, and in coagulation.

Moving up a career ladder in the laboratory is common at CHOMP. A number of MLTs started as lab aides or CPTs (certified phlebotomy technicians). A couple of CLSs reportedly moved up from MLTs after additional training. One MLT was promoted to phlebotomy supervisor based on years of experience and skill level. She supervises all of the offsite locations and manages the mobile phlebotomy program for homebound and nursing home patients. According to their scope of practice, MLTs can supervise in the lab as long as they do not supervise complex testing.

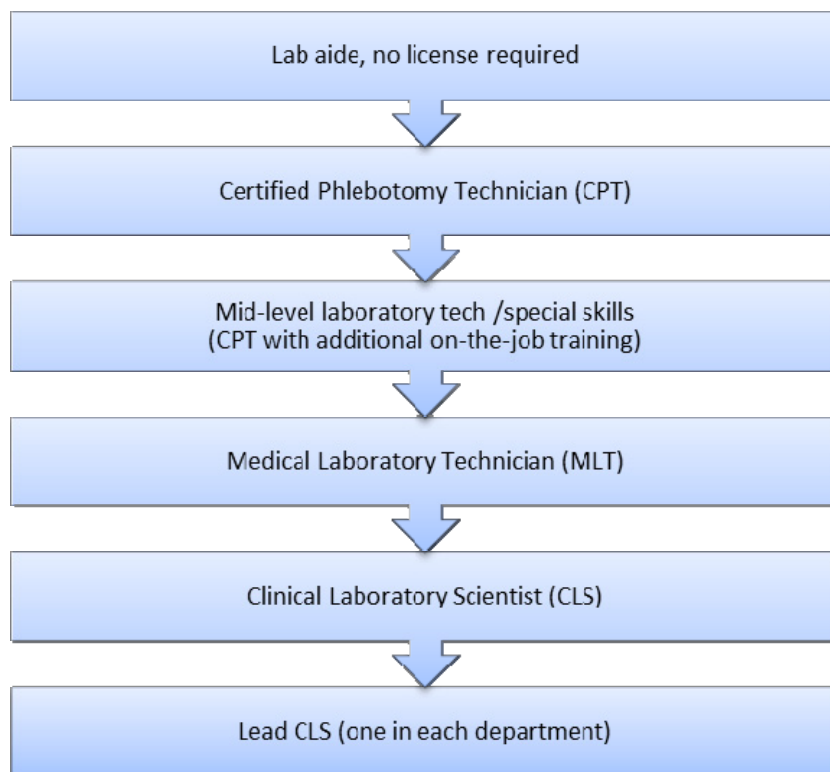
CHoMP staffs MLTs on all shifts, including night shift. MLTs work at the top of their scope alongside CLSs; however, MLTs are precluded by law from certain processes, including blood bank, which limits their use on night shifts, where they are always used in addition to, rather than in place of, a CLS.

All lab staff have competency checklists, and the CLSs take part in annual competency testing for MLTs.

Challenges

Some CLS were initially concerned about the hiring of MLTs, fearing they would be replaced by a lower-wage worker. There was also some concern about compromises to safety, quality, and professionalism. This latter fear was bolstered by an instance where an MLT was let go for poor performance. However, some interviewees noted that a few CLS have also been let go for the same reason in the past.

Figure 2. Informal Career Ladder



Testing Types

- Hematology
- Urinalysis
- Chemistry
- Immunology
- Coagulation
- Microbiology
- Transfusion Service
- Surgical Pathology
- Blood Center
- Pre-Employment drug testing
- Point-of-Care

The lab director has adopted a “zero tolerance” policy towards workplace bullying among staff, and also provides management and leadership training for CLSs. According to several interviewees, CLSs in general welcome the work of their MLT colleagues, and MLTs repeatedly noted that they were eager to “prove themselves” as valuable members of the laboratory team.

The economy has proven to be a significant challenge in recent years. Despite the anticipated shortage in clinical laboratory scientists, the hospital was forced to make some layoffs, including several CLSs. No MLTs were let go, and this caused some dissension.

For their part, MLTs reported that they were happy to work for CHoMP. Some had heard that MLTs had difficulty finding employment in the field elsewhere and recounted stories of acquaintances and fellow students being underemployed as phlebotomists or lab aides, or as MLTs in labs where the CLSs were not welcoming.

Benefits

MLTs at CHOMP earn roughly 75-80% of what CLSs earn, which should translate into cost savings. The presence of MLTs in the laboratory frees the CLS to do more sophisticated and technical projects as the MLTs take on more of the routine tasks. Finally, many CLSs are older and nearing retirement age. Hiring MLTs brought a new generation of younger skilled workers into the laboratory workforce.

Success Factors

Having CLSs teach MLT classes, conduct competency exams, and mentor interns allows them to assess the skills of the MLTs for themselves. Hosting MLT students onsite introduces the students to the site, gives them experience with this specific laboratory, and allows the existing staff to determine if the students are a good fit for the lab. This helps remove most concerns that CLSs have about MLT qualifications and skills.

The automation line and selection of equipment to fit the skills and scope of MLTs has enhanced the ability of the lab to use MLTs efficiently in a number of areas. CLSs became more comfortable with MLTs due to the number of safety and quality checks and balances in place.

Support from top management and an ongoing effort to create harmony and professional relationships in the laboratory helps to set the tone for workforce integration.



Courtesy of Community Hospital of the Monterey Peninsula

Case Study 2: Kaiser Permanente Santa Clara Medical Center

Built in 2007, Kaiser Santa Clara Medical Center replaces an older facility that served this growing Silicon Valley community for more than 40 years. When it was built in 2007, this was the largest construction project in Kaiser Permanente's history. The 52-acre campus incorporates both inpatient and outpatient facilities, including a regional pediatric specialty center and an emergency department. Three satellite clinics are located in the nearby cities of Milpitas, Campbell, and Mountain View.



Photo Courtesy of Kaiser Permanente

While the Medical Center and each of its satellite sites has laboratory services, complex testing for all of the medical centers in the Kaiser Permanente Northern California (KPNC) region is processed in a regional laboratory in Richmond, CA. The relatively limited on-site testing menu, due to the centralization of complex testing, has facilitated the hire of five Medical Laboratory Technicians (MLTs) at the Santa Clara Medical Center. For perspective, there are only two other MLTs in the KPNC region, one in the regional laboratory and one at the Kaiser Antioch Medical Center.

Background and History

The Santa Clara Medical Center's laboratory director had long been aware of the pending workforce shortage of clinical laboratory scientists (CLS) in California. She was involved with Kaiser's workforce planning group which noted with concern that the average age of the CLS workforce was 55 years. Analyses of the laboratory science educational pipeline suggested that even between the two local California State University programs training CLSs, there might not be enough CLSs produced in northern California to meet demand at Kaiser facilities alone.

When the nearby San Jose State University (SJSU) CLS program closed in the '90's, it was a real crisis for local hospitals. Concerned about the growing shortage of trained laboratory staff, the Northern California Hospital Council encouraged local hospitals to donate to restart the SJSU CLS program, which resumed classes in fall of 2002. This effort also helped to start the MLT program at DeAnza College.

The laboratory director discussed this issue with her staff and decided to start training CLS students to prepare for the future and avoid shortages. In fall 2002, their site was one of the first Kaiser sites to start hosting CLS student interns, realizing that if they didn't start training immediately, they might be left short in the future. Higgins also started looking into training and hiring MLTs even before the state licensure passed.

Hospital Overview

- 270-provider medical office building
- 327 bed acute care hospital
- 3 satellite sites
- 3,500 total employees onsite (hospital and health plan)
- More than 5,000 across sites

Patients

- 289,000 across sites

However, it was not until January of 2011, several years after the California licensure of MLTs, before KP Santa Clara hired its first MLT. Kaiser has a strong commitment to its labor-management partnership, and working out union representation for the new MLTs was very important. The Engineers and Scientists of California [Local 20, International Federation of Professional and Technical Engineers AFL-CIO & CLC](#) (ESC Local 20), now represents both the CLSs and MLTs at KP Santa Clara.

Once an agreement was reached and a job description generated, the laboratory director requested two MLT positions, not as replacements for CLS vacancies, but as new FTEs (full-time equivalent positions). Once she received authorization, she approached the MLT program director at De Anza College about hiring graduates.

The two De Anza hires were reported to be “first-rate” MLTs, which helped win over the other laboratory staff to the idea of having MLTs as part of the team. The lab director was able to make the case that with the growing volume of largely moderate complexity tests, it made sense to create new positions for MLTs rather than CLSs. The existing CLSs would receive needed support on moderate complexity testing, allowing them to concentrate on more complex work. Additional MLTs were hired in 2012 and 2013.

Workflow and Staffing

Kaiser facilities in Northern California have a much more limited test menu than some hospitals because they send some of their testing, including some microbiology and common non-stat testing like cholesterol and triglycerides, to the regional Kaiser Permanente laboratory in Richmond, California.

The Santa Clara lab is very busy supporting the hospital and its three satellite clinics. Serving as an expanded stat lab for inpatient and outpatient emergencies, Kaiser Santa Clara performs a large number of moderate complexity tests. The testing for the three satellite clinics is mostly urgently-needed as the patients’ are currently waiting for the results in the physician’s office. The lab also has automated instruments (although not an automation line) to process these tests. These factors allow it to hire medical laboratory technicians (MLTs) because MLTs are technically and legally capable of doing half of the work that the lab takes in.

The Santa Clara laboratory employs five MLTs, including one that works the night shift. The latter is possible because the laboratory has enough volume and staffing. There are four CLS on the night shift: one in the blood bank, one in chemistry, one in hematology, and one in urinalysis. There is also an MLT who can move between hematology and chemistry. Sometimes the chemistry department can be split into two benches, coagulation and immunology, to allow two people to cover that area.

All MLTs at KP Santa Clara are full-time staff working at the top of their scope of practice. They have very similar rotations to the CLS, although MLTs are limited to chemistry and hematology. Most of the staff rotate between areas so they can keep their skills current. MLTs can only help with the set-up in urinalysis because the equipment utilized includes use of a microscope, an activity outside of the MLT scope of practice. MLTs

Testing

- Hematology
- Urinalysis
- Chemistry
- Immunology
- Coagulation
- Transfusion Service

Shifts and Staffing

Day: 16 CLS/3 MLTs

PM: 9CLS/1 MLT

Night: 4 CLS/1MLT

do not hold supervisory positions at this site. Kaiser Santa Clara continues to be committed to high quality in its laboratory; and leadership notes no compromises in quality or safety with the integration of MLT staff.

The laboratory continues its commitment to training the next generation of laboratory staff and serves as a clinical internship site for CLS, phlebotomy, and MLT students. The laboratory must also train newly hired staff, which means training is ongoing.

There are two CLS students at all times for their one-year placement, and three MLT students. However, the MLT students do the blood bank part of their internship at DeAnza College and some at KP's regional lab. This means they do not spend their full six-month internship at the Santa Clara site and there is only one MLT student on-site at any given time.

KP Santa Clara also supports career development in laboratory staff. The laboratory has one lab assistant who is training to move up to an MLT position. Because she is a Kaiser employee, she will receive tuition reimbursement of up to \$1,200 and paid education hours up to 40 per year.



Photo Courtesy of Kaiser Permanente

Challenges

Initially some CLSs were concerned that MLTs would be used to replace them. Some of the concern was addressed early on by the laboratory director talking to the staff upfront about workforce shortages and the need for taking on students and adopting a more flexible staffing model. The resistance was short-lived as the first two MLTs hired, both of whom had bachelor's degrees, were reported to be stellar performers. As one interviewee noted, "At first the CLSs were saying, 'No, no, no'-- and now they love them (the MLTs)."

Another challenge identified here, and at other sites contacted during this study, had to do with shift assignments. Because many laboratories need at least two CLSs to run a blood bank at night—a role that cannot be covered by an MLT, MLTs are often assigned to day shifts and swing shifts. This has caused some tension over MLTs being perceived as getting the more desirable shifts. Due to sufficient volume of testing, the KP Santa Clara laboratory now has MLTs on the night shift to support the CLSs.

One of the biggest challenges has been providing clinical internships to MLT, CLS, CPT (certified phlebotomy technician) students, and new staff. This can be taxing for lab staff; however the organization learned the hard way when it faced a shortage of staff in nuclear medicine and ended up hiring 'travelers' or 'flyers' who required a higher wage and all lodging and travel costs covered. This was very demoralizing for permanent staff, who received a lower wage while working alongside these temporary employees.

Space is another challenge as there are some stations at the Santa Clara laboratory where MLTs could assist but there is not enough space to work another person in. Equipment is also a challenge since some models of analyzers require a CLS, and until those are replaced, the role of the MLT in that area will be limited.

Benefits

MLTs earn roughly 80% of what CLSs earn, which translates into cost savings for new positions. The presence of MLTs in the laboratory frees the CLS to do more sophisticated and technical projects as the MLTs take on more of the routine tasks. Hiring and training MLTs, as well as CLSs, may help Kaiser Santa Clara avoid or alleviate future workflow shortages. Taking on students helps to ensure that the MLT and CLS programs stay open by providing clinical internship sites for the next generations of laboratory workers.

MLTs can be trained in half the time it takes to train CLSs, so it is less effort on the part of the laboratory to facilitate their quick transition into the laboratory workforce. Unlike CLSs, MLTs are not paid a stipend during their clinical internship, which is also a cost-savings to the institution.

Finally, supervisors noted that CLS staff benefited from participating in training students. Teaching required that they review their own skills and draw on their many years of experience. It also gave them a chance to celebrate their own accomplishments and pass on their knowledge to another generation, which reportedly had beneficial impacts on the morale at the lab.

Success Factors

The nature and volume of the testing at the Kaiser Santa Clara Medical Center has facilitated the use of MLTs in that the lab conducts a large amount of moderate complexity testing that falls within the scope of the MLT.

Hiring very capable MLTs at the outset helped to instill confidence among the CLSs about the skills of MLTs. Hosting MLT (and CLS) students onsite introduces the MLTs to the site, giving them experience with this specific laboratory and allows the site staff to determine if the MLTs are a good fit for the lab. This also helps remove some concerns that CLSs might have about MLT qualifications and skills.

Adding MLT positions to support the growing volume at the lab, rather than converting CLS positions, has also enhanced the reception of this staffing change.

Hiring more than one MLT at once has also been a good idea—it normalizes the role and gives the MLT the support of colleagues in a similar role.

Good communication and outreach on the part of the laboratory director and other administrative staff has helped to broker good relationships between staff, between the laboratory and administration, and between the laboratory and the union that represents its staff. Listening to, and addressing laboratory staff's concerns, and keeping them informed of workforce planning and challenges is very important. This communication has played a key role in facilitating the hire and acceptance of MLTs into the Kaiser Santa Clara workforce.

Case Study 3: Sutter Health Sacramento Sierra Region

Sutter Health's Sacramento Sierra Region includes hospitals in Sacramento, Roseville, Auburn, Davis, Vallejo and Amador. Sacramento is the headquarters of Sutter Health, and where the organization started in 1923 as Sutter Hospital. Sutter Health grew through the inclusion of various urban and rural sites in the Sacramento region, some of them dating back to the Gold Rush (for example, Amador County Hospital in Jackson). In 1996, the growing Sacramento-based Sutter Health merged with the Bay Area-based California Healthcare System into the larger system that it is today.

The Sutter Health Sacramento Sierra Region Laboratory Services has operated as a regional service since 2000, with oversight and direction provided by a Regional Executive for Laboratory Services. It is comprised of 6 hospital clinical laboratories, a regional microbiology laboratory, and 30 Patient Service Centers (PSCs) or outreach laboratories. The PSCs serve 1,600 outpatients each day and provide more than 4 million tests annually.

Overall, Sutter Laboratory Services employs approximately 450 laboratory professionals, including clinical laboratory scientists (CLSs), limited license clinical microbiologist scientists (CMSs), certified phlebotomy technicians (CPT-1s), and more recently, medical laboratory technicians (MLTs).

Because there is a regional office, Sutter Health has been able to do regional planning around laboratory equipment and procedures. A workgroup has introduced some degree of standardization across the different sites. The regional direction has also allowed Laboratory Services to coordinate across sites regarding training and workforce issues.

Sutter Health participates in training CLS interns through the UC Davis Medical Center program and has its own program to train CMSs. MLT interns are trained through Folsom Lake College, and CPT-1 interns (certified phlebotomy technicians) are trained through MTI Vocational Colleges. These efforts are coordinated by a Sutter employee whose role is regional education coordinator.



Regional Overview

Regional administrative office

- 6 hospital clinical laboratories
- 1 regional microbiology laboratory
- 30 patient service centers (blood draw sites)
- More than 1,600 patients per day
- More than 4 million tests annually

Hospital-based Tests

- Chemistry
- Coagulation
- Hematology
- Urinalysis
- Transfusion Service
- Pathology (Histology and Cytology are outsourced)

Background and History

The Regional Executive for Laboratory Services became concerned about retirement and replacement projections for the organization's CLSs more than 10 years ago. At the corporate level, the region had been focused primarily on addressing the nursing shortage. The organization eventually shifted to a broader focus to encompass workforce planning for the allied health professions. The Sutter Sacramento Sierra Regional Workforce Development Program Manager served on the California Hospital Association's (CHA) Workforce Committee, which in 2007 surveyed its hospital and health system members to determine which health professions have the greatest impact on access to care and hospital efficiencies when vacancies exist. In the resulting report on *The Hidden Health Care Workforce*, the authors observed that, "The shortage of clinical laboratory scientists (CLS) and medical laboratory technicians (MLT) is one of the most pressing workforce issues currently facing hospitals."^{viii}

In 2010, the Los Rios Community College District received a \$5 million grant for workforce development from the US Department of Labor (DOL). This funding was used to start the Healthforce Institute, a partnership between a number of agencies and employers including: Sutter Health, BloodSource, Sacramento Employment & Training Agency (SETA), University of California at Davis, UC Davis Medical Center; California State University, Sacramento; Kaiser Permanente, Marshall Hospital, and Dignity Health. The purpose of this grant was to "teach workers necessary skills for, and help them pursue careers in, high growth health care sector jobs."

Folsom Lake College (FLC) used part of the funding to create a Medical Laboratory Technician program. According to the grant award,^{ix} the goal of this program was to "Develop, launch, and deploy a new regional training program for Medical Laboratory Technicians using existing curriculum. This program will allow regional healthcare providers to control costs of the increasing needs of diagnostic testing by providing skilled technician level workers to augment the work of professional level clinical laboratory scientists."

This program graduated its first cohort of 11 students in 2012. While Sutter did not have a part in training these students, its regional workforce development representative was involved with the Healthforce Initiative and the MLT program at Folsom Lake and advocated for MLT positions within Sutter.

The major reason Sutter Health became interested in the MLT occupation had to do with its aging laboratory workforce and lack of a sufficient number of replacements for retiring CLSs. While Sutter trains two CLS students from UC Davis every year, and has hired every one of the last 12 they have trained, they will probably not be able to replace all of their CLSs as they retire. Many are scheduled to retire within the next five to ten years. Already, an opening for a CLS might go unfilled for six months or more because CLSs are in high demand and in limited supply. Sutter Laboratory Services is mindful of the need to grow their laboratory workforce to maintain productivity for its growing patient population, and not overworking its current staff so that it can maintain a high level of quality. Decreasing the cost of labor was not a reason for the decision to hire MLTs.

Sutter Roseville Laboratory

Staffing—57 FTEs:

- 40 lab assistants
- 23 CLSs
- 2 MLTs

Tests: over a million a year,
30% from outpatient PSC

The Regional Executive for Laboratory Services and the Regional Workforce Development Program Manager spoke regularly about strategies for addressing the impending laboratory workforce shortage. One strategy was to reopen the Sutter Sacramento Sierra Region's CLS internship training program, which had closed. Another was to explore becoming an internship site for and employer of these locally-trained MLTs. In addition to re-opening and expanding the CLS training program, the Regional Executive for Laboratory Services was able to make the case for MLTs as a viable workforce strategy at the regional executive level, as well as the administrative level of each affiliated hospital.

The Regional Executive stressed that the cost-benefit analysis for hiring MLTs is complex. "The salary for an MLT is less than for a CLS, but that is only one factor in forecasting benefit. There are secondary considerations that are less tangible such as the length of time a position remains vacant, the cost of recruiting, and the cost of training a newly hired licensed lab professional. For example, the post-hire training could be up to four weeks or less for a newly hired MLT that did his or her (internship) training at our hospital, as compared to up to ten weeks for a CLS coming from outside the organization."

The Folsom Lake MLT program director approached local hospitals looking for clinical sites for its MLT students. Sutter Health became interested in hosting students and supporting the program, as did other local hospitals like Kaiser Permanente and Mercy San Juan Hospital (a Dignity Healthcare affiliate) in Sacramento. Sutter Roseville Medical Center, Mercy San Juan, and Dameron Hospital in Stockton all hired students from the first cohort of MLT graduates.

Sutter Roseville hired its first MLT in January 2013. The Regional Laboratory Executive had been talking with staff and administrators about MLTs and the Folsom Lake program, so the Roseville laboratory director decided to get a qualified MLT for their opening since they had had such difficulty finding CLS candidates. Sutter Roseville CLSs had worked with MLTs in other states and knew that other local hospitals had already hired MLTs. Sutter Roseville received a number of applications from out-of-state MLTs, but they preferred a local applicant partially because the candidate was well-qualified and partially because they were interested in supporting their local MLT program.

Sutter Health then became interested in participating as a placement site for MLT students. It accepted its first student at Sutter Auburn Faith Hospital in 2013 and also started training another FLC intern from the second cohort at its Davis location. A second MLT has been hired at Sutter Roseville, and a third will begin working at the region's central microbiology laboratory in Sacramento.

"Part-time workers (in the clinical laboratory) are very common due to the older workforce. The younger staff in the lab prefers to work full-time. At age 50-55, CLSs often opt to reduce days worked to bring more balance into their lives or to explore other interests. Having the option to work part-time actually contributes to retaining our older CLSs. And, working fewer days enables them to still enjoy the pace of clinical laboratory work: you need to make quick and important decisions...that make a huge difference in diagnosis."

-Laboratory Director-

Folsom Lake College plans to start another cohort of 25 MLT students in September 2013. This will be the college's first official cohort since the DOL grant. When these students are ready for a clinical placement site in 2015, Sutter Sacramento region has committed to training four of them.

The role of the regional education coordinator is vitally important in these efforts because of the need to have consistent training throughout the system especially since several sites are utilized for the clinical experience. The education coordinator mentors the student, coordinates the documentation required, designs and maintains the training material, and interfaces with the college and the State to assure that all requirements are met. Because these responsibilities were handled regionally, the local facilities were amenable to taking a student intern.

Workflow and Staffing

The role of the two new MLTs at Sutter Roseville is to support the CLSs in the laboratory and perform independent testing functions as allowed under their legal scope of practice. For example, one MLT is employed in the chemistry department and runs the entire system from start to finish with little need for “hands-on” help from the CLS staff. Having an MLT perform these chemistry functions allows the CLS to concentrate on more complex testing, coordinating workflow, providing direction, and problem-solving tasks. The MLT is assigned to work in the area with the greatest number of tests (chemistry) during the busiest shift (PM) and on the busiest days of the week (weekdays). Coworkers feel that this is a testament to the MLTs skills that she is able to handle this assignment with minimal assistance.

The second MLT will be employed on the night shift on weekends. This MLT role will be particularly critical to weekend demand at this Level 2 Trauma Center. With the MLT drawing blood and handling moderate complexity tests, the CLSs are freed up to work blood bank as the need emerges. The final MLT trainee will have a position at the centralized microbiology laboratory as soon as he finishes his exam and gets his license. He will be performing moderate complexity testing on the PM shift, which will enable the CLSs to focus on high-complexity microbiology testing.

Challenges

When laboratory management introduced the idea of hiring MLTs the CLS staff initially expressed uncertainty and anxiety. Some CLSs were concerned that they would be replaced by MLTs.

Administrators stated that they had open and frank discussions with CLSs, sharing a vision for a laboratory staffing model that includes using MLTs in a purposeful manner. The discussions included clarification of scopes of practice for MLTs and CLSs, CLS-to-MLT staffing ratios, and the ongoing need for CLS supervision in addition to performing high complexity testing. Laboratory management stressed the unique education and expertise of CLSs and their contribution to patient care through clinical judgment and problem-solving. During the staff discussions, some CLS staff shared their experiences in working with MLTs elsewhere in the country.

Laboratory management stressed that positions would only be open for transition to MLT through attrition; there would be no layoffs of CLSs. Finally, staff was apprised of the critical shortage of CLSs state-wide and the anticipated shortage within the organization as many CLSs are expected to retire in the next few years. MLTs were introduced as a means to support the remaining CLSs and take on some of the workload. As one manager told the CLSs, “You are so valuable; you are like gold!”

In the Sutter Roseville lab, there is a plan to cross-train the MLT in other areas that provide moderate complexity testing, which will allow even more flexibility in staffing and allocation of work.

Another challenge mentioned by laboratory managers is figuring out how to rotate students through microbiology without overtaxing the staff at the centralized lab with two CLSs and four MLTs rotating

through. This will require careful scheduling in the future as Sutter takes on more MLT students. There was some concern about a shortage of clinical sites for the first cohorts of MLT graduates, so local hospitals are looking at what they can do to provide clinical opportunities.

Benefits

MLTs earn roughly 80% of what CLSs earn, which translates into some cost savings for hospitals. More significant is the ability to fill laboratory vacancies in a timely fashion. Many of the existing CLS staff work part-time as they approach retirement, whereas younger MLT workers can work their way up to full-time positions.



Laboratory managers and staff described the main benefit of using MLTs in the laboratory is to free the CLSs to do more sophisticated tasks as the MLTs take on more of the routine and automated tasks. One CLS noted that the introduction of the two MLTs at Sutter Roseville had been a great success so far, relieving the demands on CLS time in a way that allowed them to focus on complex tests and critical decisions that can only be performed by CLSs. Because many CLSs in the Roseville and Auburn labs are nearing retirement, they have a critical amount of skill and experience to pass on to the next generation of laboratory staff. As there are not enough CLSs to replace all of the retirees, it is critical for administrators to bring in as many qualified new lab staff as possible so they can benefit from this experience and be ready to step in as needed.

Finally, the introduction of MLTs may help create more of an interest in a career ladder within the non-licensed laboratory workforce. Staff reported that laboratory assistants are becoming interested in obtaining more education as a result of working with the MLTs. Some of the MLT students are also interested in a career ladder to the CLS degree. One laboratory director observed that the MLT experience may help some eventually gain admission to one of the highly competitive CLS training programs in California.

Success Factors

Having CLSs mentor interns allowed them to better assess the skills of the MLTs as potential employees. Hosting MLT (and CLS) students onsite gave the students experience with a specific laboratory that was a potential future employer and allowed the site staff to determine if the MLTs were a good fit for the lab. This one-to-one mentoring relationship removed most concerns that CLSs had about MLT qualifications and skills. The fact that the first two MLTs hired were very motivated and proficient helped enhance their acceptance as team members. At Sutter Auburn, a smaller rural hospital, lab staff reportedly so enjoyed training their MLT intern that they were quite unhappy when there was no immediate position available to hire the student. One administrator noted that the clinical placements are like “a six-month job interview and when you experience someone who adds value to the team, you want to retain them.” The MLTs also expressed satisfaction with their role and also a desire to have more MLTs in the laboratory, “It was initially challenging to be the first MLT because there was no one else to talk to as an MLT. It’s a great job. We need more MLTs!”

The regional structure of laboratory services in Sutter Health’s greater Sacramento area has helped promote the integration of MLTs into the clinical laboratory workforce in a number of ways. First, a regional vision of workforce development allowed administrators to look ahead and assess workforce needs across sites. Standardization of equipment and protocols means that a CLS or MLT trained in one Sutter lab should be able to pick up and work in another Sutter laboratory without much retraining. This regional approach has allowed Sutter Health to work collaboratively across sites in internship and employment efforts.

The collaborative nature of the planning process at the Folsom Lake College MLT program, which encouraged input from local employers in targeting education and training to meet local needs, was also an important success factor. The fact that this program itself emerged out of the efforts of local hospitals to plan for their workforce needs further enhanced the adoption of the program's MLT students into the workforce.

"...a lot of us are getting old, and with a lot of serious retirement coming up, the demand for laboratory workers is going to keep going up. There are so few schools for CLSs, and someone has to fill the gap. If we just look at the workload, a lot of people are going to drift to MLT, and I am not sure what the Affordable Care Act is going to do to that-- 30 million people nationwide and we will get our share. Right now we are feeling the pinch."

-Clinical Laboratory Scientist-



Case Study 4: Hoag Health Network

Hoag Memorial Hospital Presbyterian in Newport Beach was founded in 1952 with funding from the Association of Presbyterian Members and the George Hoag Family Foundation. Today, Hoag Health Network in Orange County is a non-profit regional health care network consisting of two acute care hospitals, one in Newport Beach and one in Irvine; seven health centers; and five urgent care centers.

Hoag has two laboratories with a total of 200 laboratory staff. Starting in 2012 Hoag has experimented with

serving as a clinical placement site and employer of medical laboratory technicians, or MLTs. MLTs were hired in order to reduce costs and address the difficulty in recruiting clinical laboratory scientists, or CLSs. At the same time, the Hoag laboratory has been taking on more point-of-care testing and automation as it strives to improve quality while containing costs.

Background and History

The director of laboratory services was aware that the MLT occupation was being introduced in California and was enthusiastic about developing a diverse skill mix in the laboratory. She initially wrote a job description and planned to hire MLTs while working at a prior institution. She noted that they had no candidates at that time because local community colleges had just begun to graduate MLTs in 2011. When she started her tenure at Hoag Hospital, she met the director of the MLT program at Saddleback College, who reached out to her for clinical placement for MLT students.

Hoag had affiliated with Loma Linda University in San Bernardino to serve as a clinical placement site for CLSs, but found that the program was expensive to run and did not result in hired employees. While the hospital has some CLSs employed who graduated from Loma Linda, trainees often chose to work elsewhere. This is likely due to the distance between San Bernardino, where the university is located, and Newport Beach, where the Hoag Hospital clinical internship program took place. This prompted the laboratory director to re-assess the relative benefits of training CLS interns onsite.

In looking at costs, the Hoag laboratory director noted that an entry-level MLT cost 40% less than an entry-level CLS, producing costs saving of \$27,000 per new hire. CLSs had been the only choice for decades and, due to demand, many of them could choose to work two jobs. In this market, new CLS hires could negotiate wages higher than experienced CLSs, an equity problem that affected morale. In contrast, MLTs were new to the field, energetic about proving themselves, and eager for full-time jobs.

Because several of the lab's CLSs were retiring all at once, the director made a proposal to their vice president to "skill-mix" by hiring four MLTs into some of the vacant CLS positions.

Hospital Overview

- 2 acute care hospitals
 - Newport Beach
 - Irvine
- 639 licensed beds
- 7 health centers
- 5 urgent care centers
- 1,500 physicians across sites

Patients (annual)

30,040 Inpatient
354,099 Outpatient

Laboratory Overview

- 1 main hospital laboratory
- 1 smaller hospital laboratory

Tests

Approximately 1.5 million tests annually

- Chemistry
- Coagulation
- Hematology
- Urinalysis
- Blood bank/donor
- Microbiology
- Anatomic Pathology w/ full Histopathology lab
- Some Anatomic Pathology/ Clinical Pathology tests sent out to reference labs

The move to hire MLTs was part of a larger plan to adopt lean design and automation to streamline processes and cut costs. The lab director notes, “We made an investment of \$248,000 and recognized cost savings of \$54,000 in six months.” She talked to the laboratory managers about the pros and cons of automation and transitioning some positions to MLT, noting that their cost per test needed to be competitive with Quest and other reference laboratories.

The laboratory then started training MLT students in June 2012. The lab hired its first MLT in October of 2012. The next hire was a Hoag laboratory assistant who was encouraged to go back to school for her MLT license.

Workflow and Staffing

As of fall 2013, the Hoag laboratory has four MLTs, including two in fairly traditional MLT roles: one in the smaller Irvine hospital laboratory working as a generalist with a CLS, and the other working in chemistry at the Newport hospital.

Hoag also has two MLTs working successfully in other types of roles. One MLT, the former laboratory assistant, works in the microbiology lab as a supervisor of laboratory assistants. This full-time MLT supervisor performs quality control, coordinates and oversees the training of laboratory assistants, and orders supplies. She takes a great deal of stress off of the

CLSs in this department. Supervisors noted that her years of experience as a lab assistant at Hoag made this role possible; it would not work for a new trainee.

Another fairly unique role for an MLT is in Blood Donor Processing in support of the hospital-based Blood Donor Center.^x This full-time MLT replaced a laboratory assistant and half of a full-time CLS position. He does point-of-care hematology, moderate complexity testing and other tasks, and will be integrated more into transfusion as he continues to be trained.

A potential fifth MLT, a Hoag CPT who recently passed her MLT exam, is being considered for a position on the night shift in chemistry.

Challenges

Overall, the move in the Hoag laboratory has been towards encouraging the CLSs to work at the top of their competence and license, taking on the role of mentor, supervisor, and team leader.

Laboratory Staff

Around 200 across sites:

- 50 Certified Phlebotomy Technicians (CPTs)
- 90 Clinical Laboratory Scientists (CLSs)
- 30 Laboratory Assistants
- 4 Medical Laboratory Technicians (MLTs)
- Clerical staff and others

This was reported to go somewhat against the grain for some CLSs, who prefer a more individualistic and task-oriented role as bench scientists.

Due to the volume and pace at the laboratory, and the number of experienced CLSs retiring, some CLSs found it hard to make time to train any students, whether CLS or MLT. However, Saddleback College has provided Hoag with a comprehensive training manual that delineated what the students were to learn at each bench, making it much easier to train students than if the lab staff had to develop the curriculum themselves.

Some CLSs were uneasy with the fact that the focus was on increasing the number of MLTs, which they feared would jeopardize CLS jobs and laboratory quality and safety. To address these challenges, administrators posted protocols in the different departments delineating the roles and responsibilities of the MLTs.

Initially, retaining MLT interns as employees in the Hoag laboratory after training was a challenge. Neither of the first two MLT interns stayed after their internship; one intern continued on to a CLS program almost immediately and another left for a position elsewhere. This left the remaining staff in the same position they had been in with CLS students—having invested time and resources in training, they ended up with nothing to show for the investment. One staff member noted that many of the MLT students they interviewed for employment or clinical placements had bachelor's degrees and hoped the experience at the lab would help them to qualify for CLS programs – again, a problem for a laboratory that is trying to build a stable workforce of MLTs.

“Gone are the days that the CLSs can only do bench work. The managers can’t do it all; we need to get the CLSs involved at a higher level.”

Finally, CLSs sometimes attributed poor performance or attitude on the part of an MLT to the fact that the employee was an MLT, whereas the same issues with a CLS were seen as individual character flaws not generalizable to the whole profession of CLSs. This issue was commonly reported by laboratory directors in this study. One Hoag CLS reflected on this, noting that it was hard to train interns because sometimes it felt like the CLS had to “hold their hand” and this left some CLSs feeling like “they would rather just do it themselves.” However, this person acknowledged, “Well, some of the CLSs we’ve had, they weren’t great either.”

Benefits

Hoag employees noted a number of benefits to hiring MLTs. The combination of increased automation and decreased staffing costs should save the hospital a great deal of money—possibly as much as \$540,000 over a five-year period, according to estimates prepared by the laboratory director. Additionally, it is less expensive to train MLTs because, unlike CLS interns, they are not paid a stipend during their clinical internship. Training MLT interns might realize additional cost saving if the laboratory was able to train two or more at the same time, because if one or both were retained as employees, they would already be oriented to the laboratory and be able to start work immediately upon licensure.

Finally, although staff observed that most of Hoag’s laboratory assistants had bachelor’s degrees and were very skilled, one observed that rapid turnover rates among assistants reflected a view of the assistant job as a stepping stone towards other positions. The hope is that MLTs, who are viewed as smart and valuable employees, will stay longer.

Success Factors

Hoag's eventual successful integration of MLTs into the laboratory staff can be traced to several factors. The laboratory encouraged laboratory assistants to complete the MLT training and promoted them once they got their MLT licenses. This allowed the laboratory to provide additional training to existing staff and utilize their skills at a higher level. Having high functioning staff in the MLT position does help encourage acceptance of MLT skills and capabilities.

Being able to train MLTs interns onsite allows staff to assess the quality of potential new hires. Once the laboratory has worked out its training protocol, it should be able to train and hire more MLTs through this mode.

The education coordinator had the MLT interns take part in a two-week general hospital orientation, and then one week of point-of-care testing, and one week of specimen processing offsite before starting in the laboratory. Because some students were fresh out of school with little or no prior hospital training, they benefited from a general overview of hospital and laboratory processes prior to bench work. The additional training helped them to understand how the laboratory fits into the hospital, and allowed them to meet people and become known to hospital staff outside of the laboratory. This also brought them into the lab better prepared for training with CLS mentors.

The laboratory administration conducted workgroups with existing staff, going over the pros and cons of the move toward MLTs and discussed the difficulty in recruiting new CLSs, and the cost reduction imperative brought about by federal health care reform. They made it clear that no CLS would ever be replaced; any CLS positions that were converted to MLT positions would only be done so through attrition.

While the laboratory plans to hire more MLTs in the future, it has temporarily put both its MLT and CLS clinical internship programs on hold as it re-assesses its needs and capacities after its first year of incorporating MLTs into the laboratory's staffing mix. Overall, as the hospital aims toward more automation and efficiency without compromising safety and quality, it intends to continue to explore the use of MLTs and find the best skill mix of MLTs and CLSs working together in the lab.

"We need to think more creatively; we are raising the laboratory professionals of the future. We are not just the people who work in the basement. We need to think outside of the box."



Case Study 5: Kaiser Permanente San Diego Medical Center

Kaiser Permanente San Diego Medical Center was established in 1967. It is a medium size hospital with 414 licensed beds and an 80-bed Emergency Department. Fourteen affiliated clinics also serve the region. Together these sites serve more than 500,000 members. Kaiser plans to open a second hospital in nearby Kearney Mesa in 2017 to address growing demand and will run both hospitals in parallel.

All fourteen clinics serve as draw stations for the main laboratory at the Medical Center, but only six of the clinics have their own laboratories. The clinic laboratory volume is small compared to that of the main laboratory at the hospital. The laboratory menu at Kaiser San Diego is limited to chemistry, hematology, urinalysis, coagulation, and blood bank. There is a small section that handles some microbiology, but any special chemistry, immunology, or bacteriology is sent offsite to Kaiser Permanente's North Hollywood regional laboratory for testing. As one Kaiser representative noted, "We don't do a lot of different tests, but we do a lot of what we do."

The relatively limited on-site testing menu, high level of automation, and a positive relationship with the local community college MLT program, has facilitated the hiring of five Medical Laboratory Technicians (MLTs) at Kaiser San Diego Medical Center.

Background and History

When one of the local community colleges, Southwestern College, started its MLT program, the program director approached local hospitals looking for clinical placement sites for its students. Kaiser San Diego's laboratory director "jumped at the opportunity", realizing that their laboratory could easily manage an MLT internship program onsite. The laboratory would need new, high quality lab staff in the near future, but with its limited testing menu, it was unable to host a clinical laboratory scientist (CLS) internship program.

The laboratory's first two MLT hires (in 2010) were existing employees: two Kaiser laboratory assistants who enrolled in the Southwestern MLT program. One did her clinical rotation at KP San Diego while the other did his internship at another hospital.

The laboratory director herself had originally worked as an MLT in another state prior to obtaining her CLS license, and her experience working with and as an MLT, gave her confidence in their abilities. When a lead lab assistant position opened up, the director decided to see if she could get it upgraded to an MLT position. She was able to make the cost-benefit case to the administration to start adding MLT positions to assist with the laboratory workload.

Hospital Overview

414 bed licensed beds

80 emergency beds

14 clinics

7,700 total employees across sites

1,100 physicians across sites

Patients

500,000 across sites

Laboratory Overview

1 main hospital laboratory
6 laboratories at clinics

Staff

Around 300 across sites:

- 150 laboratory assistants
- 45 CLSs
- 5 MLTs
- Clerical staff

Volume

Approximately 3 million tests annually

As one of the former laboratory assistants reported, it was not difficult to get re-hired at Kaiser San Diego as an MLT after receiving her license: “They (the other laboratory staff) were waiting for me to pass my (MLT) exam. They kept asking, “When are you going to get it? When are you going to get it?”

As one administrator remembered, “The staff wasn’t negative at all. Since they (the MLTs) were former employees, staff was used to them and comfortable with them.”

The first MLT was hired to work at a very busy clinic site supporting the single CLS at that laboratory. Four other MLTs were eventually hired, including one per diem employee who may transition to full-time when the opportunity arises.

MLTs and CLSs at Kaiser San Diego are covered by the same union, UFCW (United Food and Commercial Workers International). Because the MLT position was part of the contract with the union even before the MLT licensure went into law in California, there was no debate about representation once the organization started to hire MLTs.

Workflow and Staffing

As noted previously, the KP San Diego laboratory has five MLTs, including one per diem MLT who works the night shift. The latter is possible because there are a large number of CLSs on the night shift that can cover the blood bank, which cannot be staffed by MLTs under current state law. The night-shift MLT provides additional general support to this busy shift, which includes performing maintenance on the machines prior to the start of the day shift.

The laboratory has automated chemistry and hematology lines, which allow for auto-verification. It also processes a fair amount of point-of-care testing.

The one day-shift MLT is something of a generalist, largely because her shift is less busy and because she has long-term experience in this lab. She can rotate through chemistry, hematology, and coagulation.

The two PM-shift MLTs are more specialized due to the fact that they are on the shift with the heaviest volume. They work primarily in coagulation and hematology.

The fifth MLT works with a CLS at one of the satellite clinic laboratories.

Shifts and Staffing

Day: 5 CLSs/1 MLT
PM: 5 CLSs/2 MLTs
Night: 5 CLSs/1 per diem MLT

(San Marcos clinic:
1 CLS/ 1 MLT)

Challenges

Initially some CLSs were concerned that MLTs would be used to replace them. However, because the first two MLTs were long-standing employees who were both highly skilled and well-liked, they had little trouble

finding acceptance with the CLSs. This smoothed the way for the next MLT hires.

Finding the time to train even one MLT student has been challenging because the lab is busy handling the heavy testing volume. Sometimes the fact that the lab cannot employ all the MLTs they have trained is disappointing to lab staff.

The volume can also limit learning opportunities for existing MLTs because they may need to specialize in one area just to keep up with the volume, making it hard to find the time to have them rotate through and learn other departments. This process can slow down the lab work.

The limitations on the MLT scope of practice can be frustrating to both MLTs and CLSs, although both agreed that the scope is for the most part appropriate. For instance, because MLTs cannot do any complex tests or microscopy, they are restricted to certain areas and pieces of equipment. Sometimes this could result in CLSs feeling out-of-practice when called upon to cover these areas.

MLTs do not currently work in blood bank or urinalysis. The latter has largely to do with the analyzer and the workflow setup. Theoretically and legally, an MLT could do a large part of the work in the urinalysis department. However, the department currently uses an IRIS analyzer that requires that someone review the results through a microscope and make decisions about what they mean. This is, and the blood bank work, are beyond the scope of the MLT.

Finally, there is little immediate incentive for training students and/or moving to a new staffing model since staffing cost-savings are not directly realized by the laboratory itself—the laboratory budget is just adjusted accordingly.

“They (MLTs) are new in the profession and they want to make you happy, so sometimes they are better than working with CLSs. Other times what we need is help in microscopy, and they are just sitting there because they aren’t allowed to do it.”

-Clinical Laboratory Scientist-

On a broader level, the incorporation of MLTs into the local workforce has slowed. Some hospitals are not interested in hosting clinical placements or hiring MLTs, which puts additional pressure on existing sites. This situation may eventually impact the local community college MLT program because it must produce and place a certain number of MLTs in clinical internships and then jobs in order to stay viable.

Benefits

MLTs earn roughly 70% of what CLSs earn, which translates into cost savings to the hospital. The presence of MLTs in the laboratory frees the CLSs to do more sophisticated and technical projects as the MLTs take on more of the routine tasks. Kaiser representatives interviewed for this study reported that the MLTs were very efficient, and CLSs appreciated the support they received as a result. There have been no concerns about quality and safety resulting from hiring MLTs.

While the lab does not currently have difficulty hiring CLSs, there is concern that this situation will change in the near future as CLSs retire and competition for skilled staff grows in the San Diego area.

Several Kaiser study participants observed that many CLSs were also moonlighting at other organizations. San Diego’s health care sector continues to grow with a fair amount of new hospital construction.^{xi} As one administrator noted, when a CLS retires, it might technically translate into two losses in the hospital sector –

one at each hospital that employed the CLS. As Kaiser San Diego moves towards constructing a second hospital in the area, it will need even more laboratory staff, and the MLTs will help fill the gap.

Success Factors

The nature and volume of the testing at the Kaiser San Diego Medical Center has facilitated the use of MLTs because there is a large amount of moderate complexity testing within the scope of the MLT and automated equipment that streamlines the process.

Encouraging existing lab assistants to train as MLTs has paid off in that it enhanced acceptance of MLTs in the laboratory. Being able to train MLTs onsite allows staff to assess the quality of potential new hires from outside the system. CLSs take part in MLT competency exams, which furthers their understanding of and respect for MLT capabilities.

Adding MLT positions via new FTEs or attrition (when a position opens because a CLS resigns or retires) has also enhanced the reception of this staffing change. The fact that MLTs were already included in an existing union contract for laboratory workers facilitated easy incorporation of the MLTs into the workforce and helped minimize any concerns about MLTs “taking our jobs”.

Finally, the relationship between the local community college and hospitals has been a strong factor in the success of the introduction of MLTs into hospital laboratories. A number of local hospitals, including Kaiser, originally lobbied the community colleges for an MLT program. Laboratory administration values the fact that the program that was established at Southwestern College is accredited by the National Accrediting Agency for clinical laboratory sciences (NAACLS) and has a very good reputation for producing well-trained students with high pass rates on the national-level exam. The Kaiser San Diego laboratory has been fortunate in that it has been sent very good MLT students who were desirable as employees. This has gone a long way in convincing even the cynics that including MLTs into the laboratory workforce is an acceptable strategy to addressing pending workforce shortages.

“Some CLSs think, “They (MLTs) are going to take my job.” But we are all retiring. When I retire, I want to make sure that there are good people in the lab to take over the work. I tell them, “Let’s make sure that when you retire, you have somebody that you really like ready to take over.”

-Clinical Laboratory Scientist-

SUMMARY

In California, legislation authorizing the licensure of Medical Laboratory Technicians (MLTs) was passed in 2002 and the first MLT license was issued in 2008. Part of the rationale for authorizing this licensure had to do with the decline in the number of clinical laboratory scientists (CLS) trained in the state and projected workforce shortages related to both the decline in production of new CLSs and aging of the existing CLS population.

This report utilized a snowball sample to select five sites that have successfully incorporated MLTs into their workforce. Researchers conducted site visits at these hospitals and developed case studies profiling each site.

While MLTs are working in various laboratory settings across California, MLTs are still a small profession compared to the CLS profession. This report focused on MLTs in hospital laboratories. California state law permits up to four MLTs to work under the supervision of one CLS at a time and all hospital laboratories visited for this study are well within this staffing ratio. While many hospitals have reportedly expressed interest in hiring MLTs to address projected staffing shortages, some laboratory directors and directors of community college MLT training programs interviewed for this study reported a shortage of clinical placement sites and resistance to train and hire MLTs on the part of some hospital laboratories. Some of those interviewed expressed concern that this could jeopardize training programs and impact the supply of laboratory staff in the near future.

Laboratory directors, MLTs, and CLSs interviewed for this study also reported that they had heard of opposition from incumbent CLSs to hiring MLTs. The CLSs feared replacement by lower wage workers and expressed concern over quality and safety issues. In laboratories that had successfully integrated MLTs, laboratory directors had developed a number of strategies to address this opposition. These included:

- Hiring MLTs as add-ons to support CLS positions rather than as replacements;
- Filling former CLS positions with MLT candidates by attrition only;
- Encouraging trusted incumbent laboratory assistants to obtain MLT training and licensure;
- Making sure first-hire MLTs, whether incumbent or new, have prior laboratory experience in order to “break the ice” with CLS;
- Hosting an MLT internship program to encourage buy-in from CLSs and introduce MLTs to the site;
- Ensuring that all staff were aware of MLT scope of practice compared with CLS scope of practice;
- Ensuring to the degree possible equity in assigning shifts (especially night shift);
- Hiring more than one MLT to start in order to ensure that MLTs did not become a “target” for workplace bullying; and
- Positive and transparent messaging about laboratory staffing shortages and the value of CLS experience in training the next generation of laboratory staff.

Laboratory directors also laid the groundwork for incorporating MLTs into the laboratory by preparing a good business case for their administration, working in advance with unions and HR departments to plan job

descriptions and specifications, reviewing and revising workflows to incorporate MLTs effectively, and, in many cases, adopting new technology to allow MLTs to work in the broadest capacity possible.

Possible benefits associated with incorporation of MLTs into the laboratory workforce included:

- Cost savings due to the wage differential between MLTs and CLSs (although savings are tempered by other costs and benefits as described in this report);
- The ability to fill job vacancies faster;
- Extra support for incumbent CLS to focus on high skilled tests that only those with higher degrees are qualified to conduct,
- A career ladder for incumbent laboratory assistants; and
- A venue for refreshing and acknowledging CLSs' skills and experience by encouraging them to train MLT students.

Laboratory directors at case study sites reported no compromises in safety and quality as a result of hiring MLTs. At all sites, most CLS and MLTs interviewed reported that CLSs and MLTs worked side by side with few if any conflicts. In general, the longer MLTs had been employed at the site, the more accepted their role was by CLSs and other laboratory staff.

Endnotes

- i. Centers of Excellence, California Community Colleges. 2009. Environmental Scan: Medical Laboratory Technician: Bay Area 2009
- ii. Centers of Excellence, California Community Colleges. 2009. Environmental Scan: Medical Laboratory Technician: Bay Area 2009
- iii. In order to become licensed, MLTs had to complete a degree program, including six month internship.
- iv. California Hospital Association. 2011. Critical Roles: California's Allied Health Care Workforce—California Hospital Association Allied Health Workforce Survey.
- v. California Hospital Association: Healthcare Laboratory Workforce Initiative. 2008. California's Other Healthcare Crisis: The Clinical Laboratory Workforce Shortage. http://www.canyons.edu/departments/MLT/docs/Laboratory_Workforce_Shortage_White_Paper.pdf
- vi. <http://www.hospitalcouncil.net/post/first-survey-california-licensed-medical-laboratory-technicians>
- vii. The Hartnell program opened in 1999—but because the profession was not yet a licensed occupation in the state of California, graduates found jobs as phlebotomists and laboratory assistants. See COE Greater Silicon Valley Region, 2009.
- viii. The California Endowment. (2009). Allied Health: the Hidden Health Care Workforce. http://www.calhospital.org/sites/main/files/file-attachments/CHA_Allied_Health_Issue_Brief.FINAL_.pdf
- ix. http://www.doleta.gov/brg/grants/pdf/Los%20Rios%20CC%20District_HCOEI.pdf
- x. Blood bank for donor work is not as restricted as work with patient samples.
- xi. California Health Care Foundation. 2013. San Diego: Health Care Providers Expand Capacity as Competition Increases for Well-Insured Patients Read more: <http://www.chcf.org/publications/2013/01/regional-market-san-diego#ixzz2i6rb1KLj>

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