

Workforce in the Shadow of Healthcare –An Update on the Survival Status of Laboratory Medicine and Public Health

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ABSTRACT

Abbreviations: MLS: Medical Laboratory Scientists; MLT: Medical Laboratory Technicians; ASCP BOC: Acquire Nationally Professionally Recognized Board Certifications; DCLS: Doctor of Clinical Laboratory Science; BLS: Bureau of Labor Statistics; APHL: Association of Public Health Laboratories; MPHLWC: Medical and Public Health Workforce Coalition; SALSA: Saving Access to Laboratory Services Act; PAMA: Protecting Access to Medicare Act; YSIT: Young Scientist in Training

Introduction

Most of society by now are at least somewhat aware of the severe shortages of frontline nurses and doctors. Workforce shortages were here even before the pandemic – but now, like most professions, the healthcare and public health workforce shortage has reached dangerously low staffing levels. In a recent 2023 Definitive Healthcare report, the authors state that since 2020, nearly one in five healthcare workers have quit their jobs, and research suggests that up to 47% of healthcare workers plan to leave their positions by 2025. The U.S. is suffering from a significant healthcare worker shortage, and the data shows that this is going to have near-term and long-term effects on patient care and safety, and hospital and physician performance. Anthony Klotz, a management professor at London's UCL School of Management, predicted in May 2021 that the Covid-19 pandemic would

lead to pent-up resignations. “The pandemic brought the future of work into the present of work,” he said. Challenges faced include burnout/ bullying/ stress/ workload/ lack of recognition / lack of respect/ lack of compensation for education and experience/ the ‘Great Resignation’ with baby boomers retiring outpacing the new graduates/ and the fiscal crisis of healthcare. And the issues will likely get worse before better [1-10].

Behind the Scenes Shortages!

While we all hear about physician and nursing shortages, the issue goes far deeper into dozens of healthcare professions. In particular is the medical laboratory and public health workforce. The public rarely gets a glimpse of the monumental lifesaving work they do in the shadows of healthcare. What of these medical laboratory professionals behind the curtain. Society unfortunately is mostly unaware

– if even at all – of the dramatically severe shortages shared by the behind-the-scenes Medical Laboratory and Public Health Professionals. This element of an almost total lack of general familiarity of the laboratory is devastating and debilitating to its survival. Compounding the situation has been the increased demand for laboratory services along with improved patient access with an unprecedented aging population as well as advanced specialty esoteric molecular laboratory testing. One must venture behind the walls of the Laboratory to the unknown and unseen Medical Laboratory Professionals of Healthcare & Public Health. Here the lack of visibility and attention and recognition has exacerbated the shortages dramatically. These include the diverse group of nationally board-certified 4 yr. Medical Laboratory Scientists (MLS)- (previously known as Medical Laboratory Technologists and still referred to as Clinical Laboratory Technologists) - and 2 yr. Medical Laboratory Technicians (MLT) [11-20].

These Medical Laboratory Professionals perform and manage the highly regulated quality standards of laboratory testing for patient care. And aside from these generalists in Hematology/ Coagulation/ Urinalysis/ Immunohematology/ Immunology/ Chemistry/ Microbiology – there are specialty areas in Clinical Pathology (Cytogenetics and Molecular) as well as Anatomic Pathology (Cytology, Histology, Grossing/ Frozen Section – Pathologist’s Assistants). These Medical Laboratory Professionals ‘aid in the detection, diagnosis and treatment of disease through complex laboratory methodologies and sophisticated instrumentation and analyzers often interfaced with computers. ‘Most are graduates of Medical Laboratory Science NAACLS nationally accredited educational curriculum programs and pursue and acquire Nationally Professionally Recognized Board Certifications (ASCP BOC/ AMT). Those in management and education continue with Master’s and PhDs along with the DCLS (Doctor of Clinical Laboratory Science) [21-30].

Surveys/ Statistics!

Surveys and statistics continue to be published by most medical laboratory professional associations and societies including ASCP and Lighthouse Lab Services on the challenges facing the medical laboratory professionals. While most people understand the workforce occupations of physicians, nurses, physical therapists, and similar direct patient care professionals – the critical professions of the medical laboratory and public health are rarely visible or understood by the public [31-40].

Why Should Anyone Care?

These professionals form the backbone of health care, medical laboratories, and the public health system. They conduct some 14 billion laboratory medicine tests annually in the US. As of November 2023, these individuals had also performed more than 1.15 billion COVID-19 tests and counting since the pandemic. Laboratory testing is the single highest volume medical activity affecting every Ameri-

can from cradle to grave. Turnaround time of accuracy (how close to true value) and precision (reliability of data) is crucial and critically important quality standards – as laboratory testing drives about two-thirds of all medical decisions made by doctors and other health care providers. Simply put, every time you enter a hospital or health care facility for care, your life is in the hands of a medical laboratory or public health professional. Similarly, to medical professionals at the forefront, there is an equally dangerous staffing shortage of these vital medical professionals behind the scenes.

If the pandemic has taught us nothing else, the ability to create and deliver diagnostic laboratory testing is the foundation of all patient safety and quality. Likewise, without the laboratory medical data that is produced and interpreted by these experts, the world will not be able to understand where a pathogen is found geographically (surveillance), nor track in real-time the ongoing changes in pathogen evolution [41-50]. Without laboratory data, the overall healthcare of any nation is flying blind with respect to prevention, treatment, and the prediction of unfolding infectious disease agents.

The Bureau of Labor Statistics (BLS) projects a 13% increase in medical laboratory scientists (technologists) and technicians up to 2026 – nearly double the average 7% in most occupations. The critical shortage of Medical Laboratory Professionals is estimated in the USA and Canada to be roughly 7-11% up to over 25% in more rural remote areas. This calculates roughly to about only one medical laboratory scientist per 1,000 people. According to the Bureau of Labor Statistics – approximately 4,900 students graduate from medical laboratory science (bachelors MLS) and medical laboratory technician (associate MLT) programs in the US every year. But there are 9,000+ job openings, leaving a 46% vacancy rate. The Association of Public Health Laboratories (APHL) 2022 Laboratory Workforce Profile shows us more troubling data, including 42% of the public health workforce intends to leave their laboratory within four years and 62% of the workforce have worked in their current laboratory in the past 10 years or less. This ‘double hit’ of losing workforce in staffing and decades of experience leads to dangerous gaps in knowledge. Likewise, this creates ongoing holes in expertise because less experienced professionals are training the new generation of medical laboratory and public health professionals. These professionals face unique challenges due to the lack of awareness and visibility in media and public and industry and legislation. In education alone – this career is mostly overlooked in middle schools, high schools, community colleges and early university candidates [51-60].

And this lack of visibility issue at a student-facing perspective continues unfortunately into leadership and administration lending to a lack of scholarships, lack of recognition and appreciation, lack of higher paying wages - as compared to the direct patient care professions.

But Enough of Statistics and Surveys!

The facts are too well known to the medical laboratory professionals who are experiencing and adjusting – or worse – vacating in a tsunami exodus.

Focus on Solutions!

And there are solutions to shortages! Essential is a microscopic high-power focus to spotlight Laboratory Medicine. The challenges for an out of sight out of view medical profession must not continue the path of short-term band-aids being offered. On the job training with reduced entry level personnel standards is never the answer for any profession - especially where quality standards of care must be maintained. On the contrary – only long-term solutions will maintain quality standards of laboratory testing by qualified laboratory personnel [61-70]. The HOW does indeed exist to solve – but the Medical Laboratory and Public Health Professions need strategic assistance from:

- Media attention
- Public awareness
- Industry respect
- Legislative support

And Laboratory Medicine and Public Health also needs each and every one of us within and outside the medical field to play a role and contribute.

Solutions! (Attract! – Recruit! – Retain!)

1. Expand outreach Healthcare and Career Fairs engaging high schools (reaching out as well to teachers and guidance counsellors) - inclusive of STEM, STEP, HOSA and AHEC in science/ biomedical areas. Enlighten the educators, school advisors / counselors, and students on Medical Laboratory Science - a degree with a career in Laboratory Medicine / Public Health and a solid foundation for various careers beyond. In addition, also encourage and mentor and offer transfer opportunities to general science college students [71-80].
2. Involve Career Ambassador and mentorship programs at colleges and alumni chapters and professional societies.
3. Standardize to one identity: Medical Laboratory Scientists (formerly Technologists) as supported by most professional societies (ASCP/ ASCLS/ AMT).
4. Enhance the visibility and familiarity of medical laboratory – within and beyond the walls of the laboratory - leadership taking a seat with a voice at the C Suite table.
5. Compensate with salaries/benefits commensurate with education and experience – similarly to all other medical professionals who are not invisible to society. Offer flexible scheduling of shifts including per diem and part-time options as

needed. Encourage retirees to remain in the workforce - but on their terms and their time.

6. Expand use of Automation and Auto Verification as tools to aid the Medical Laboratory Professionals minimizing behavioral obstacles to improve workflow.
7. Utilize Laboratory Assistants for preanalytical and postanalytical phases to be valuable assistance along with phlebotomy- registration/receipt - screening phone calls - calling critical - inventory control – reports.
8. Incorporate national Choosing Wisely initiatives to assist with appropriate ordering of laboratory testing to avoid unnecessary medical testing and treatments.
9. Acquire passage of the right to practice profession licensure in all states similarly to nurses and doctors and pharmacists and PAs to mandate entry level standards and body of knowledge and scope of practice with accredited programs and national board certification. (Most states today still fail to license medical laboratory professionals despite federal CLIA limitation in only recognizing Testing Personnel.)
10. Acquire federal legislative action: delays to PAMA (Protecting Access to Medicare Act) approved until Jan 2025 - bipartisan support of SALSA (Saving Access to Laboratory Services Act) needed in 2024 to permanently stop severe cuts to laboratory.
11. Support the expansion of Title VII Authorization or stand-alone legislation to federally fund education of medical professionals to include laboratory.
12. Support the continued efforts such as MPHLWC (Medical and Public Health Workforce Coalition) to address workforce shortages to include laboratory.
13. Support the CLIAC recommendations to HHS and Dept of Education for grant funding opportunities for inclusion of laboratory.
14. Support congressional study of laboratory workforce shortages via interagency agreements through CDC (Center for Disease Control) and HRSA (Health Resources & Services Admin).
15. Support the medical laboratory societies and organizations who lobby to give a voice and face to the medical laboratory professionals. Most medical professionals boast over 90% membership to barely 50% for most medical laboratory professional societies. Medical laboratory professional prognosis is dependent on increased membership for a strong voice in lobbying.
16. Support national NAACLS accredited educational curriculum programs. NACCLS celebrated its 50 yr. anniversary and released data documenting program numbers consistent for the past 2 decades – yet many more programs are needed.

And the programs require expansion of more clinical laboratory internships required at hospitals/reference laboratories. Universities and colleges attracting applicants are unfortunately turning away future students due to lack of available laboratory internships at hospitals and reference laboratories. Many traditional university and college educational curriculum and hospital-based options are still in existence. Congratulations to those accredited programs which have persevered and survived the challenges including:

UTHSC (TN)– over 100 yrs./ UMN (MN) – over 100 yrs./ St Luke’s (MO) -90 yrs. / UND MLS (ND) 74 yrs./ RUSH (IL) – over 60 yrs./ SJU (NY) & WSU (UT) & TXST (TX) – 50 yrs.!

But now more than ever looking forward to newly created as well as innovative collaborative affiliated, online and bridge programs offering new opportunities and options. And along with options of educational transfer credits and life experience credits and facility tuition assistance – there are scholarships and grants offered by professional societies [81-85].

Here is Just a Sampling of Hope for the Future:

Encouraging Students Earlier into Laboratory Careers

- a. WEMOCO HS (NY) – preparing young students in Medical Laboratory skills.
- b. Dunbar HS (FL) -PLTW Biomedical Science program / Neo Genomics affiliation
- c. Dunbar HS (MD) – The Young Scientist in Training (YSIT) Program w/ John Hopkins
- d. Grainger HS (TN) - introductory lab science courses
- e. Boston Children’s Hospital - internship program connecting high school students with hospitals and laboratories to gain exposure to career opportunities.

A number of universities and colleges have now implemented strategic affiliations and developing innovative programs including:

- a. Weber State University (UT) w/ ASM (American Society of Microbiology)
- b. University of Utah (UT) w/ ARUP for advanced training in MLS
- c. Mayo Clinic (FL/MN) MLS integrated curriculum and training programs for baccalaureate degrees
- d. MLS Cohort Program at Mayo Clinic with University of North Dakota (UND) blends online with on-site training for working laboratory professionals.
- e. Sacred Heart Medical Center (WA) hospital-based option since 1932 doubled student enrollment for 52 hospital system.

f. Neo Genomics Meyers (FL) Histology Training AS Degree program

g. SUNY Cobleskill (NY) w/ Memorial Sloan Kettering Cancer Center for Histology AS

h. Undergrad degrees in biology, chemistry, or another general science may seek specialized Master’s Degrees in MLS educational programs offered at such colleges as LIU CWPOST (NY) and University of New Haven (CT)

i. Mercy County Community College (NJ) affiliations w/ Robert Wood Johnson Barnabas Health System Workforce Development & Grants Division Apprenticeship Model & Atlantic Cape Community College collaboration. 2023.

j. Alverno Labs (IL) w/ Oak Point University – N.O.W. accelerator career hybrid program

k. Geisinger MD/Trinity College (PA) – unveiled new MLS program 2023.

l. Corewell Health Beaumont School of MLS (MI) unveiled new post baccalaureate non-MLS graduates program Jan 2022

m. Adding to the list of NAACLS accreditation programs - Jefferson State Community College (AL) achieved accreditation Oct 2023

n. Texas State University MLS Program highlights faculty, students, and alumni for MLS leadership and active roles in the community via state, national, and international opportunities.

o. Universities are acquiring grants and achieving major upgrades to expand MLS programs: UMASS Dartmouth (MA) received a \$750,000 grant for instrumentation upgrade. Vanderbilt MLS laboratory (TN) major relocation. Shoreline Community College (WA) MLS new building and laboratory space. Wichita State University MLS (KS) granted \$280,000 scholarships. Louisiana Tech MLS (LA) \$100,000.

Newly Introduced in Jan 2024

a. Loyola University Chicago MLS Immersion Experience commences this May 2024

b. Bloomberg Philanthropies announced a \$250 million innovative healthcare-focused initiative with high schools in 10 urban communities across the county: Boston MA, Charlotte NC, Dallas TX, Durham NC, Houston TX, Nashville TN, New York NY, Philadelphia PA and rural areas: Demopolis AL and 6 locations in Northeast TN.

Laboratory Advocacy! – at its Finest!

Most outstanding are the recent revisions related to personnel standards under CLIA published by federal government CMS. These

updates were directly due to an overwhelming medical laboratory community response to safeguard patient care with higher standards. All these solutions to shortages are real and the positive feedback needed to counter any unfortunate negativity medical laboratory professionals often experience. 'One person can make a difference—a group of individuals together can make all the difference.' In summary, the path to recovery exists - but to continue to survive - requires everyone's contribution and participation. Medical laboratory professionals as well as non-laboratory medical professionals along with administrators and managers and educators are being called upon to continue to collaborate and network!!!

Medical Laboratory Science in particular needs the media and public and industry and legislators to focus and support long-term solutions to shortages – quality standards of laboratory testing by qualified board-certified Medical Laboratory Professionals. Patient care deserves no less! Healthcare is struggling. Laboratory Medicine is on life support [86-88].

Medical Laboratory Science desperately needs that dedicated support lifeline! Be part of making a positive difference

- Make a definitive impact
- Make the changes you want to see
- Do not be part of the precipitate
- Become part of the solutions!
- Your Health depends on it!

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Laboratory Legislative Issues-

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