Medical Laboratory Science Workforce Shortage

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History of Medical Laboratory Science

Prior to 1900, laboratory tests were rudimentary, few in number, and often performed by a physician in his office or by a pathologist in hospitals. Epidemic outbreaks of diphtheria, pneumonia, typhoid, and tuberculosis created a demand for additional laboratory tests and individuals to perform them. The increase in civilian and military clinical (hospital) laboratories during World War I and the new American College of Surgeons requirement that hospitals establish a clinical laboratory contributed to a severe shortage of laboratory personnel (Kotlarz, 1998a).

The shortage led to on-the-job training, by pathologists, as there were no established training standards or educational requirements (Southern, 1999). In order to address the lack of standardized training/educational requirements the American Society of Clinical Pathologists (ASCP) formed the Board of Registry (BOR), in 1928, to classify laboratory personnel and to certify those who met the standards set forth (Kotlarz, 1998a; Southern 1999). Those certified by the BOR were known as "Medical Technologists" (MTs) and were initially required to complete one year of college-level courses in basic sciences, plus one year of clinical laboratory experience.

In 1932, a group of MTs met during an ASCP meeting and "determined that a separate professional organization was necessary to represent the specific interests of clinical laboratory personnel" (Kotlarz, 1998b). In 1936, this group took its first steps toward independence when it incorporated as an organization with the name of American Society of Medical Technologists (ASMT) (Kotlarz, 1998b). In 1993, ASMT became the American Society for Clinical Laboratory Science (ASCLS) because many medical laboratory professionals felt that "medical technology" was an outdated term.

During World War II civilian and military hospitals experienced another shortage of clinical laboratory personnel due to: a) an increase in the number of patients seen, b) required physical examination of military personnel, c) a growing test volume as laboratory tests were increasingly demonstrated to aid in diagnosis, and d) growth in public health laboratories (Kotlarz, 1998c). The BOR addressed the shortage by: a) allowing accredited educational programs to increase enrollment, b) creating certification categories, and c) creating specialist certifications (Kotlarz, 1998c).

After World War II, the field of medical technology continued to grow and the BOR continued to increase the requirement of college credit. From 1933 to 1972, the requirement went from one year of college, to two years, to three years, and ultimately requiring a baccalaureate degree for certification (Butina & Leibach, 2014). Additionally, ASMT began offering continuing education and medical technologists sought governmental recognition by pursing personnel licensure laws.

During the 1960's and 1970's advances in scientific knowledge and technology led to the development of new laboratory tests and methods of analysis. Automated instruments were developed and began appearing in clinical laboratories in the early 1960's. Laboratory expansion created a need for administrative clinical professionals, and the number of medical technology graduate-level programs blossomed from 3 in 1961 to over 100 by 1970 (Kotlarz, 2000). The BOR created a new category, the medical laboratory technician (MLT), for those with an associate degree in medical technology (Kotlarz, 2000).

The body within ASCP that set educational standards and accreditation of MT programs, Board of Schools, was replaced by an independent agency. In 1973, the National Accrediting

Agency for Clinical Laboratory Science (NAACLS) was created (Kotlarz, 1999). NAACLS continues to be the premiere accrediting agency for numerous clinical laboratory professions.

In 1978, ASMT established an autonomous certification agency, the National Certification Agency for Laboratory Personal (NCA) (Kotlarz, 1999). Thus for a few decades there were two certifying agencies, the ASCP BOR utilized the credential names "Medical Technologist" and "Medical Laboratory Technician", whereas the credential names of NCA were "Clinical Laboratory Scientist" (CLS) and "Clinical Laboratory Technician" (CLT) for the associate degree. In 2009, the BOR and NCA reorganized to form a single certification body, the Board of Certification (BOC) thereby creating the credential names "Medical Laboratory Scientist" (MLS) in place of MT/CLS and maintaining the term "Medical Laboratory Technician" (Butina & Leibach, 2014).

Shortage of Laboratory Professionals

Today, the typical hospital laboratory consists of four major departments a) hematology and hemostasis, b) clinical chemistry, c) microbiology, and d) immunohematology or blood banking. All testing within each clinical laboratory department is predominantly performed by trained and certified MLSs and MLTs. The foremost challenge facing the medical laboratory science profession is a chronic personnel shortage that has been continuous for decades. The U.S. Bureau of Labor Statistics reports that employment of medical laboratory scientists and technicians is expected to grow by 13%, from 330,600 in 2010 to 373,500 in 2020. The Kentucky Office of Employment and Training, reports that Kentucky's overall employment of Medical Laboratory Scientists is projected to grow 31 percent from 2014 to 2024. Medical Laboratory Scientist is listed as one of the occupations in Kentucky with the most annual job openings requiring a Bachelor's Degree. Unfortunately, the programs preparing tomorrow's

laboratory workforce are training only about a third of what is needed. Fewer than 5,000 individuals are graduating each year from accredited training programs.

Numerous reasons are proposed for the current workforce shortage. First is increasing retirement rates, as the ASCP 2016-2017 Vacancy Survey indicated that the number of qualified laboratory professional applicants is extremely low in comparison to the high number of professionals retiring. The estimated retirement rates (anticipated in the next 5 years) range from 20-24% dependent upon department (Garcia, Kundu, Ali & Soles, 2018). Second, is the decrease of educational programs as in 1975, there were 770 NAACLS-accredited medical laboratory scientist programs, but by 2017 there were only 234. Third, is the retention of medical laboratory professionals as it is estimated that 5% of employees leave their job annually (Beck & Doig, 2005). Other reasons proposed for the shortage of personnel include lack of awareness of the profession, more career options available for women, and lack of flexible scheduling (Epner, 2007; Hansen & Lavanty, 2001).

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