BUILDING A LABORATORY WORKFORCE TO MEET THE FUTURE

ASCP TASK FORCE ON THE LABORATORY PROFESSIONALS WORKFORCE
ACKNOWLEDGEMENTS

ASCP’s Institute for Science, Technology, and Policy is dedicated to advancing health through focus on patient-centered outcomes, evidence-based practice, and scientific ambassadorship. The Institute is home to the Center for Public Policy, the Center for Science and Technology, and the Center for Global Health. These Centers allow ASCP to work diligently on your behalf of patients through advocacy, government relations, and collaborations as the landscape of U.S. health care continues to evolve.

ASCP appreciates the research, analysis, and expertise provided by the members of the 2013 Task Force on the Laboratory Professionals Workforce and the staff of the ASCP Center for Public Policy in the development of this report.

E. Blair Holladay, PhD, SCT(ASCP)CM
Executive Vice President
American Society for Clinical Pathology

Steven H. Kroft, MD, FASCP
ASCP President
Professor and Vice Chair for Clinical Pathology
Department of Pathology
Medical College of Wisconsin
Senior Associate Medical Director, Dynacare Laboratories Milwaukee

Mark Bailey, MA, HTL(ASCP)CM
Assistant Professor
Program Director – Histotechnology
School of Health Professions
UT MD Anderson Cancer Center

Andrea T. Bennett, MT(ASCP), MPH
Task Force Chair
Director, Center for Public Policy
American Society for Clinical Pathology

Kay Doyle, PhD, MLS(ASCP)CM
Professor Emeritus
Clinical Laboratory and Nutritional Sciences
University of Massachusetts Lowell

Willam G. Finn, MD, FASCP
Medical Director
Warde Medical Laboratory/Michigan Cotenancy Laboratory

Dave Glenn MASCP, MLS(ASCP)CM
Laboratory Manager/Consulting Technologist/Chief Pilot
Pathology Services, P.C.

Jeff Jacobs, MA
Senior Vice President
Institute for Science, Technology and Policy American Society for Clinical Pathology

Sara S. Patterson, MSJ
Director of Communications
American Society for Clinical Pathology

Junell Petersen, MS, MLS(ASCP)CMSHCM
Laboratory Outreach Coordinator
Rice Memorial Hospital

Patricia A. Tanabe, MPA, MLS(ASCP)CM
Executive Director
ASCP Board of Certification

Sue Zaleski, MA, SCT(ASCP)HT
Lean Management Engineer
Department of Pathology
University of Iowa Hospitals and Clinics

Edna Garcia, MPH
Senior Manager, Scientific Engagement and Research

Matthew Schulze
Director, Government Relations

**ASCP Task Force on the Laboratory Professionals Workforce**

**Staff, Center for Public Policy, Institute for Science, Technology and Policy American Society for Clinical Pathology**
Our nation’s laboratory professionals have a bright future in patient care. At ASCP, we believe there will be countless and diverse job opportunities in the future provided that the field of pathology and laboratory medicine continues to evolve and is duly recognized for its vital contributions to patient care. How can we ensure that our professionals are prepared to function in a healthcare system that is undergoing a major transition?

The 2013 ASCP Task Force on the Laboratory Professional Workforce spent the past year examining the complexities that surround this question. I urge you to study this report carefully and join with us in the implementation of its recommendations. Remember, we are “Stronger Together” and unifying our voices will provide the necessary vehicle to influence the policy makers to consider our critical professionals when determining staffing to meet needs of 21st century medicine.

The healthcare system in the United States is undergoing a major transformation and there is no longer a status quo. Leaders within health systems have been tasked with maximizing efficiency in a fiscally prudent environment. Budgets are being critically analyzed in every major hospital and laboratory system across the country and reimbursement for our services is being scrutinized as patient populations increase as part of the Affordable Care Act. There is no single global solution to these problems; therefore, ASCP is approaching the impending shortage of laboratory professionals from a multi-disciplinary perspective that includes support for STEM Initiatives, expansion and modernization of traditional curriculums, and the development of new educational products to ensure that future students and current professionals have access to advanced analytics and are viewed as the provider for these essential services.

ASCP will forge ahead with substantive dialogue with healthcare leaders, policymakers and our own professionals to address the needs of our patients. It is essential that we leverage our provocative knowledge and vision to ensure that the laboratory professional workforce is prepared to significantly enhance patient care, but more importantly, improve outcomes. As the largest organization in pathology and laboratory medicine in the U.S., we must ensure that our laboratories are appropriately staffed with gold standard practitioners. It is our job to help both patients and policy makers alike to see our workforce—and our profession—as the center of diagnostic medicine.

E. Blair Holladay, PhD, SCT(ASCP)CM
ASCP Executive Vice President
As the largest professional organization in the laboratory community and the only organization whose membership represents all the clinical laboratory professions, ASCP has made workforce issues a top priority. All of ASCP’s workforce-related programs and activities are predicated on and driven by the latest data. The ASCP Wage and Vacancy Surveys, administered biennially for the past 24 years, serve to not only monitor supply and demand but also identify underlying factors. In addition to efforts to monitor and more clearly define the workforce needs, ASCP asserts its influence and broad reach to affect change through other venues — advocacy, education, certification, communication, and collaboration.

ASCP’s active workforce advocacy agenda supports funding for laboratory professional training, graduate medical education in pathology, pay for performance initiatives, and recognition of pathologists and laboratory professionals as an integral part of the multidisciplinary healthcare team. Our education programs prepare young professionals to begin their careers, while continuing education programs keep seasoned professionals current on the latest technologies. Our certification program ensures employers and the public that an ASCP credentialed laboratory professional has demonstrated the necessary competence to provide patient care at the highest standards of quality.

While ASCP’s current and on-going initiatives on workforce development have shown measureable success and are well received by both the ASCP membership and the laboratory community at large, the coming convergence of a multitude of variables within both the laboratory workforce itself and the nation’s patient population coupled with numerous and rapidly occurring advances in the practice of medicine, warrant an in-depth comprehensive review at this time. Periodic evaluation of the workforce landscape and the organization’s activities is essential to fulfill ASCP’s role as a leader in the promotion of patient-centered care and the profession. ASCP is committed to ensuring that the nation’s clinical laboratories are adequately staffed with qualified laboratory professionals.

**MISSION AND SCOPE OF THE TASK FORCE**

The mission of the *ASCP Task Force on the Laboratory Professional Workforce* was to recommend a comprehensive organizational strategy to address the future workforce needs of the nation’s medical laboratories to provide timely, accurate and safe patient care, and fully realize the benefits of personalized medicine. The charges of the Task Force were as follows:

1. Review and evaluate the current data on all laboratory professions, identify gaps, and make recommendations for future data collection initiatives.
2. Review ASCP’s role in workforce development and current initiatives.
3. Examine how ASCP might leverage its resources and standing among other pathology/laboratory medicine organizations/industry, government, and the broader health care system to develop long-term initiatives that will provide meaningful, measurable impact.
4. Provide the ASCP Board of Directors a report of its findings with recommendations.

While parallel concern exists over a possible shortage of pathologists in the coming years, the primary focus of this Task Force is the non-physician laboratory professions. Workforce dynamics and projected needs in the pathologist workforce will be considered separately as the demographics of each group, the challenges to recruitment and retention, educational requirements, and the body of available workforce data for each group differs significantly. See the statement from ASCP President-Elect Steven H. Kroft, MD, FASCP, regarding the pathologist workforce on page 25.
HEALTH CARE: Undergoing Dramatic Transformation

Increasingly, the U.S. economy is being defined by its health care sector. Health care currently accounts for 17 percent of the U.S. gross domestic product (GDP), compared to just 5 percent in 1960. By 2020, health care is anticipated to account for 20 percent of all the goods and services produced in the nation. With health care costs exceeding $9,000 per capita, the U.S. consistently spends more per capita on health care than other developed countries, and that figure is expected to increase 6 percent annually over the next decade.

Currently driving this growth are large scale and transformational changes that promise to dramatically impact patient care delivery. Among the factors causing this change, is an aging population. According to U.S. Census Bureau projections, the population age 65 and older is expected to more than double between 2012 and 2060, from 43.1 million to 92.0 million. The older population would represent just over one in five U.S. residents by the end of that period, up from one in seven today. The increase in the number of the “oldest old” would be even more dramatic – those 85 and older are projected to more than triple from 5.9 million to 18.2 million, reaching 4.3 percent of the total population. The ramifications of this dramatic demographic age shift of the population will be profound for our health care system as older people use more health care services than younger people. Adults aged 75 to 84 use three times more health care as everyone else combined.

Major changes are also anticipated in the delivery of health care services as the numerous provisions of the Patient Protection and Affordable Care Act (PPACA) take effect. Estimates from the Congressional Budget Office (CBO) and the Joint Committee on Taxation (JCT) indicate that the PPACA will reduce the number of nonelderly people without health insurance coverage by 14 million in 2014 and subsequent years by 29 million or 30 million, bringing a surge in the demand for primary care.

While the demand for services is poised to grow, the way medicine is practiced is also in transition. Completion of the Human Genome Project and the advent of new technologies have made personalized medicine a tangible reality with the potential to completely transform patient care over the next several decades. New diagnostic and prognostic tools will increase our ability to predict the likely outcomes of drug therapy, while the expanded use of biomarkers could result in more focused and targeted drug development. Personalized medicine also offers the possibility of improved health outcomes and has the potential to make health care more cost-effective.

The U.S. healthcare system is an inherently complex environment and projecting the future workforce of all its various professions is exceedingly challenging. Our healthcare sector is characterized by a complex interdependent network of multiple stakeholders at the national, state, and local levels, and within professional, educational, and other jurisdictions. Efficient and effective workforce planning and deployment is inextricably tied to changes in demand for services. Additional factors include clinical technologies to facilitate diagnosis and treatment, payment systems that influence provider behaviors, workforce policies that frame personnel standards and scopes of practice and the overall structure of the system. The complexity increases when considering...
how the Patient Protection and Affordable Care Act (PPACA) of 2010 may affect each of these aspects of our health system. In fact, the PPACA emphasizes the need for workforce development strategies to ensure an adequate supply of qualified professionals who are able to meet the changing demands of the healthcare system. Numerous uncertainties affect workforce supply and demand. Estimates of demand for health care are based on assumptions about the health needs of an aging population, the growing prevalence of chronic disease, the cost burden of chronic disease and co-morbidities, population risk profiles, and anticipated increased utilization due to the PPACA provisions intended to expand access to care. Unlike other sectors of our economy in recent years, the healthcare industry has continued to offer consistent job growth. Employment in the healthcare industry rose from 8.7 percent in 2000 to 11.5 percent of the total U.S. civilian workforce in 2010. It is projected to increase to 13.5 percent by 2020. While these numbers reflect substantial job growth, it is essential to identify workforce policies and priorities that ensure an effective, properly trained workforce that leverages efficient operating models and the latest technologies. Moreover, as these policies and priorities are identified, they need to be coupled with sustainable advances in educational curricula, continuing education, ongoing competency assessments, and credentialing requirements.

THE MEDICAL LABORATORY WORKFORCE

Medical laboratory testing is an integral part of quality health care. Laboratory testing provides physicians, nurses, and other healthcare providers with objective information that aids in the prevention, treatment, and management of disease. Pathology and laboratory medicine perform numerous functions in patient care and public health. These medical specialties help in identifying risk for developing disease, detecting disease early, planning disease management strategies, selecting safe and effective treatments, monitoring treatment response, pinpointing threats to patient safety and public health, protecting the blood supply and transplant recipients from harmful pathogens, and testing for drugs of abuse to support clinical care and to ensure public safety.

Pathology and laboratory medicine also serve as the foundation for many clinical guidelines. A review of clinical practice guidelines across 23 main condition/disease categories found that 37 percent relied on laboratory tests. In addition, clinical laboratory data are now used to measure provider performance, both individual and organizational, as well as to inform value-based purchasing that optimizes healthcare resources and decreases costs.

The medical laboratory workforce includes multiple categories of laboratory science practitioners, who have various levels of education and training ranging from on-the-job training to associate, bachelor, and graduate or professional degrees. Medical laboratory practitioners include pathologists, doctoral-level clinical scientists, technologists/scientists, and technicians, and each has a vital role in the healthcare system, managing and applying evidence-based, scientific testing that supports patient care and protects against public health threats.

For years there has been growing concern among educators and those responsible for recruiting and hiring, that there is a shortage of qualified medical laboratory professionals entering the field. This report will examine the current landscape, prevailing factors impacting and contributing to the supply and demand for laboratory professionals, as well as the multitude of changes that will imminently and profoundly impact our healthcare system and patient care deliver.
BACKGROUND continued...

ASCP provides the principal source of data on the medical laboratory workforce for the nation through its Wage and Vacancy Surveys. These surveys, administered biennially since 1988, attempt to determine the extent and distribution of workforce shortages across the country. Laboratory medicine is a complex and rapidly evolving field. With each administration of the survey, ASCP seeks to improve its methodology to collect the most current and meaningful data.

Compared with the results of ASCP’s 2010 Vacancy survey, this year’s data reveal decreased overall vacancy rates for the blood bank, cytology, hematology/coagulation, histology, immunology, and microbiology departments. (Figure 1) Data also show a slight decrease in staff (nonsupervisor) and supervisor vacancy rates by department except for the cytology department, whose staff vacancy rate has doubled since 2010. (Figures 2 & 3) Overall, the rate of certified laboratory professionals is higher this year. Hematology/coagulation and histology departments reported a slight decrease in the rate of certified staff; the number of certified staff and supervisors decreased this year for microbiology compared with the most recent Vacancy Survey. This year, the Vacancy Survey asked about the total positions anticipated to open in the next 24 months

Figure 1. Overall vacancy rates by laboratory department.
*Sample sizes for Reproductive Medicine and Genetics and Tissue Typing/Histocompatibility did not allow for statistically significant comparisons.
due to the retirement of personnel. Results show that the projected retirement rate for supervisors is higher than that for staff. In comparing the anticipated rate of vacancies by December 2012 among all the departments surveyed, staff rates are generally higher than supervisory rates. The rate of staff positions that take longer to fill (i.e., those that remain open for longer than six months) is highest for the molecular biology and diagnostics department, and the rate for the corresponding supervisor positions is highest for blood banks. The cytology department has the lowest rate of positions that remain open for longer than six months.

The 2010 ASCP Vacancy Survey report showed that overall, the most difficult work shift to fill was the night shift. In addition to challenges in staffing the night shift, the previous report had also pointed out that the immunology and phlebotomy departments also had difficulties in hiring for the day shift. This year’s survey results, however, reveal that overall, laboratory departments are not experiencing difficulties in hiring staff for any work-shift. At the staff level, most laboratories filled most positions within three months of posting. Supervisor positions were usually filled within three to six months after posting. While it appears that vacancies are low, factors such as the economy, aging workforce, innovations in science and technology, and laboratory education program closures must be taken into consideration. Laboratory professionals are taking extra shifts and/or second jobs within the lab. Facilities also indicate due to funding issues, some positions left open are eliminated or creating new positions becomes difficult.

Results from the 2013 ASCP wage survey show increased average hourly salary for laboratory professionals compared to the 2010 survey.
(Figure 4) Where data allowed for comparisons between certification, wages continue to be higher for certified laboratory personnel. (Table 1) Based on age data collected from the survey participants, the average age of laboratory personnel is 44.32 years.

Within the 25-year period of the ASCP Wage and Vacancy Surveys, data indicate that compared to the U.S. nonfarm sector, the field of laboratory medicine has remained stable even with major economic downturns. Since 2005, there has been a steady increase in rates of pay for staff and supervisor MT/MLS/CLTs, as well as for staff HTLs and HTs. In addition, there is an upward trend in the demand for staff MT/MLS/CLTs, while the demand for staff MLT/CLT, HTL, CT, and PBT has remained steady since 2005. As the healthcare industry continues to “serve as a beacon of job opportunities,” so does the field of laboratory medicine. Analysis of the profession as a whole indicates a discipline that continues to progress. While the job outlook for laboratory medicine personnel is promising, additional challenges are facing the profession in the future. Each position in the medical laboratory field has unique issues that need to be addressed.

For the medical laboratory professions, establishing a threshold vacancy rate that could be used to define a workforce shortage is challenging due to the wide variance of efficiencies under which medical laboratories operate. Laboratory management has long...
struggled with the challenge of staffing. Other healthcare professions have focused on patient care indicators to define demand. Mean wait times for new patient appointments have been employed to gauge the shortage of neurologists\textsuperscript{16} and dermatologists,\textsuperscript{17} while the existence of a shortage of endoscopists was revealed by attempts to enact a national colorectal cancer screening program.\textsuperscript{18} The shortage of nurses was identified, in part, utilizing data that indicated that low birth weight infants were at increased risk of nosocomial infections in neonatal intensive care units that failed to meet nursing staffing guidelines.\textsuperscript{19}

Unlike nursing and other professions that use patient ratios, the development of a sound staffing formula for medical laboratories remains elusive because of the varied and complex nature of the tasks laboratory professionals perform.

The U.S. Bureau of Labor Statistics (BLS) maintains data for only two categories of laboratory professionals: medical/clinical laboratory scientists and medical/clinical laboratory technicians. According to the most current BLS report, in 2010 there were 330,600 employed clinical laboratory technologists and technicians. Using estimates of future size and composition of the labor force, aggregate economic growth, detailed estimates of industry productivity, and industry and occupational employment, BLS reports that employment of medical laboratory technologists and technicians is expected to grow by 13 percent between 2010 and 2020 to 373,500.\textsuperscript{20} It is important to note that these numbers represent new jobs and not positions created by attrition.

<table>
<thead>
<tr>
<th>Occupational Title</th>
<th>Average Hourly Wage ($)</th>
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<tr>
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<td>SBB</td>
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*Sample size was less than 30 (n<30) and did not allow for statistically significant comparisons.
KEY ISSUES

Affecting the Laboratory Workforce

Workforce supply and demand in our nation’s medical laboratories continues to be determined by a myriad of influences. On the supply side, the profession faces challenges with the three Rs—recruitment, retention and retirements. On the demand side, the convergence of profound shifts in population demographics, legislative and regulatory reforms, and major advances in medical diagnostics and treatments, will be significant influences. There continues to be much debate among policy makers. Some think these factors will create an unprecedented demand for services, while others believe the demand will be tempered by more efficient utilization.

SUPPLY SIDE ISSUES

Education and Training Programs
The different types of medical laboratory professionals are distinguished both by their areas of specialization and the degree of education and training required. This education and training is received in an array of settings, including colleges and universities, community colleges, adult schools, and on-the-job training programs.

Closures of Clinical Laboratory Programs
The number of new students graduating is closely monitored as a major factor influencing the supply of laboratory professionals. These students come from bachelor and associate degree programs, certificate programs and on-the-job training programs. However, our nation’s capacity to train new laboratory personnel has declined in recent decades. Program closures have been the result of a multitude of factors including declining enrollment and cost. For many hospital-based programs, the implementation of the Medicare Prospective Payment Systems changed the hospital payment structure so that medical laboratories (including outreach testing), once a source of revenue, became cost centers. Increases in treatment by outpatient venues further decreased hospital revenue by diminishing the number of inpatients requiring laboratory tests. This decreased the revenues used to support training programs ultimately resulting in their termination. Besides reducing our ability to train new medical laboratory professionals, fewer training programs can have profound...
impacts on rural areas, where prospective laboratory practitioners often seek training close to home. Idaho, for example, has only one medical laboratory educational program. Coincidently, data provided by the Bureau of Labor Statistics (BLS) indicates Idaho has one of the lowest concentrations of laboratory professionals per resident (60 per 100,000 residents) in the United States.22

According to the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS), school closings in the last 15 years have reduced the number of MLS/CLTs and MLT/CLTs being trained annually. The number of individuals graduating from these programs declined from approximately 7,000 graduates in 1994 to approximately 6,000 in 2009.23

In the 20 years since 1990, the number of laboratory training programs has decreased from 720 to 552, a decrease of almost 25 percent. However, since 2009, the number of NAACLS accredited and approved programs has grown slightly, with the most significant increase occurring in the number of MLT programs. The data suggest, and anecdotal information from program directors supports, that programs have increased enrollments through more effective student recruitment strategies, adapted education delivery models, and cultivated clinical experience opportunities that allow greater numbers of students to complete programs. Programs appear to be responding to the national deficit of medical laboratory professionals and the greater demand for services by expanding enrollments. Their efforts are paying off. The numbers of graduates have been slowly increasing since 2009. In 2010, there were 6,125 graduates from MLS/CLS and MLT/CLT programs.24

Lack of Federal Funding
Moreover, there is little understanding and thereby a lack of resources allocated to the field of laboratory medicine by Congress and federal agencies. Familiar with the plight of physician and nursing shortages, Washington has put funding into training for these healthcare careers but appears to be unaware of what a critical part of the healthcare team the laboratory professional plays and therefore has been unwilling to commit resources to revitalizing and maintaining a highly qualified, adequately staffed laboratory workforce. Throughout the years, millions of dollars have been allocated for the training of various health professions. However, training and/or funding for laboratory personnel is virtually nonexistent. For example, under the American Recovery and Reinvestment Act of 2009, of the $200 million designated for the Health Professions Training Programs Implementation Plan, little or no money was allocated to recruit, train, or retain laboratory professionals.25

In recent years, funding for allied health has basically focused on nursing through the Title VIII program and three Title VII initiatives: the chiropractic demonstration program; mental/behavioral health funding; and state dental health improvement grants. These initiatives are authorized under Sec. 340G of the Public Health Services Act, leaving all other disciplines under allied health stagnant. This, however, demonstrates a pattern of Congressional funding that fails to take into account the critical role of the laboratory and the need to assure that there is available training to continue to feed the pipeline with qualified laboratory professionals.
Innovative Partnerships the Key to Solving Minnesota’s Laboratory Workforce Shortage

Minnesota, like the rest of the nation, is faced with an aging workforce looking to retire, and an aging population needing more healthcare services. Minnesota’s laboratory workforce, however, is working at increasing capacity and stands prepared to meet the needs of its citizens.

The key to Minnesota’s success comes from the efforts of a long standing consortium of healthcare partners from industry and education that includes both two and four-year colleges and universities. With a $2 million Department of Labor Community-Based Job Training Grant that grew to $3.2 million through leveraged resources from industry partnerships, enrollment in laboratory science education programs have expanded and Minnesota is now graduating enough laboratory professionals to meet demand.

The partners used the funding to develop an online curriculum to widen access to the program, renovate a Saint Paul College training laboratory, expanded and streamlined clinical rotation experiences, and develop initiatives that allowed middle and high school students, as well as adults the opportunity to explore careers in the laboratory sciences. In addition, a state-of-the art laboratory was built at Winona State University to prepare students for the clinical environment.

ASCP’s Commitment to Action with the Clinton Global Initiative (CGI) seeks to alleviate the shortage of laboratory professionals in New York State by building off a model similar to that in Minnesota.

For example, in 2006, Congress slashed the Title VII Allied Health Professions program by 68 percent. Funding for the establishment and expansion of allied health training programs was reduced from $300 million in fiscal year 2005 to $94 million for the 2006 fiscal year. The allied health and other disciplines account, which included grants for a small number of laboratory training programs, was specifically reduced from $11.8 million to $4 million for the 2006 fiscal year. And Congress altogether eliminated funding for the allied health special project grants that supported a very small number of medical technology education programs under Title VII of the Public Health Service Act. Over the years, the allied health special project grants, as part of Title VII, provided a few hundred thousand dollars for medical technology and medical laboratory science programs in academic settings; however this line item has now been eliminated and each allied health discipline is looked as its own entity.

On a more positive note, federal grants provided through the Department of Labor (DOL) to train laboratory personnel has helped alleviate the laboratory personnel shortage in Minnesota. These grants (more than $5 million) were provided through the Workforce Investment Act (WIA) and have provided a model that should be replicated nationwide. The DOL also recently awarded two $5 million grants to two state universities in California—San Jose State University and San Diego State University—to train laboratory professionals.

Therefore, efforts must be undertaken to widen the scope of knowledge that lawmakers have about pathology and laboratory medicine. There needs to be a concentrated attempt to address the laboratory workforce shortage across the nation by securing support from Congress, federal agencies, state government, hospitals, the laboratory community, academic institutions, and other stakeholders interested in workforce development. On numerous occasions, ASCP has joined forces with various partners in the laboratory community to support Congressional reauthorization of the Workforce Investment Act (WIA) and restoration of Title VII funding to offset the enormous costs of allied health education, as well as other national, state, and local efforts to ensure that there is a qualified, adequately staffed laboratory workforce to meet the needs of our nation.

Recruitment Challenges: Finding and Supporting the Next Generation Laboratory Professionals

The medical laboratory professions have long suffered from a lack of recognition, from both the public and within health care. Despite the critical role that laboratory professionals play in healthcare delivery through the collection and analysis of patient specimens, many potential candidates remain unaware of the profession. Student recruitment has become more difficult as competing opportunities draw from the pool of qualified students. Perceptions that a career in laboratory medicine offers few opportunities for advancement coupled with the fact that for many years, salaries for laboratory professionals remained flat in comparison to comparably educated professionals in other healthcare or science professions, have added to the challenge.
Targeting the STEM Pipeline
For the most part, the medical laboratory professions require highly technical skills and a solid foundation in the sciences. For this reason, students with backgrounds in science, technology, engineering, and mathematics, or the STEM fields, are aptly prepared for the specialized education and training necessary for a career in laboratory medicine. Professional healthcare occupations jobs, such as the medical laboratory professions, and STEM occupations have been shown to share significant skill set similarities. While the numbers indicate that there are enough STEM graduates for STEM occupations, a scarcity remains in some occupations because STEM capable workers divert into non-STEM occupations, particularly the healthcare professional occupations. To meet our nation’s labor needs for both the traditional STEM occupations as well as for the healthcare professional occupations, including medical laboratory professionals, will require a concerted effort to improve the pipeline into the STEM fields for sub-baccalaureate students, as well as bachelor degree and advanced degree holders, for youth moving toward employment, and adults already in the workforce, for those already employed in STEM fields, and for those who would like to change careers to secure better employment and earnings.

Opening the Door to Nontraditional Students & Career Changers
While the Bureau of Labor Statistics does not collect data on how often individuals change careers, they do report that the “younger baby boomers,” those born between 1957 and 1964, will change jobs on average, 11 times.30 Given these statistics, strategies to address a clinical laboratory workforce shortage may need to focus on developing additional venues by which qualified candidates considering a laboratory career can enter the field. On-the-job training and career paths are among the avenues ASCP has identified as priority areas to attract both nontraditional students and career changers to the field.

ASCP Career Ambassadors Raise Awareness
A few years ago the Coordinating Council for the Clinical Laboratory Workforce (CCCLW) conducted a survey of individuals who were either enrolled in a laboratory science program or had been working in the field for less than five years. The survey showed that 75 percent of the more than 4,500 respondents were completely unaware of the profession upon graduating from high school. Awareness of the profession continues to stymie recruitment efforts.

The ASCP Career Ambassador Program, generously supported by Roche, was created to boost awareness of the profession among pre-college students. Each year, ASCP selects laboratory professionals share their personal stories about why they became laboratory professionals. The goal of the program is to expose high school students to the critical role that laboratory professionals play as members of the healthcare team and in delivering patient care.

“I know that I am helping to save a life. Every time I work on a specimen, I know there is a life behind it. I want to get the word out to young people about these careers because I feel that laboratory professionals play a vital role in patient care.”

—Ka Pou “Emily” Iong, MLS(ASCP)CM

Above: Ms. Iong (at right) talks with students about her job at a career fair at Oak Ridge High School, in El Dorado Hills, Calif.
Higher Pay Has the Potential to Reduce Costs

The cost of employee turnover is high. In our lab, we spend at least three months orienting and training new personnel, resulting in the trainer and the trainee doing the work of one employee for most of those three months. Adding to that the costs of separation pay, overtime, recruiting, interviewing, background checks, administrative functions, supplies, and materials results in an estimated turnover cost of 50 percent of an employee’s annual salary.

Recruiting excellent personnel is like panning for gold – a recruiter has to sort through a lot of possibilities to find an actual nugget. The laboratory strives to retain excellent personnel by providing bonuses and generous pension and profit-sharing plans. However, employees generally have a wait time before they receive these benefits. While many management gurus talk about the importance of providing employees with interesting, fun work; treating them with respect; and showing appreciation for them, in my experience, the most important factor is good pay that will get them in the door and keep them from looking elsewhere for higher wages.

Funding Opportunities for Students/Scholarships

Like all post-secondary degree programs, the cost of completing a clinical laboratory education program continues to escalate. Increasing access to pursue opportunities in the field will be essential to reach, recruit, and retain qualified students. As the racial and ethnic diversity of the nation’s population is changing, so too is the diversity of the healthcare workforce (Table 2). This trend towards increased diversity will help the healthcare industry meet the needs of an increasingly multicultural population. While the medical laboratory professions have traditionally been and continue to be female-dominated (Table 3), current BLS data indicates race and ethnicity distribution among laboratory workers to be fairly representative of the nation’s population. While the medical laboratory professions have traditionally been and continue to be female-dominated (Table 3), current BLS data indicates race and ethnicity distribution among laboratory workers to be fairly representative of the nation’s population.

However, given the tendency for minorities to be underrepresented in higher income health professions, it is likely that ethnic or racial minorities are underrepresented among the higher skilled, higher paid medical laboratory science professions such as medical laboratory scientists or cytotechnologists.

Increasing funding opportunities through scholarships and grants to qualified students serves to widen access to the field and promote all the laboratory professions to underrepresented groups.

Pathways to the Profession

Medical laboratory professionals receive their training through a combination of academic education and clinical training. Academic programs for the laboratory professions are available at community colleges, colleges, universities, and clinical training is available either via accredited training programs or through on-the-job (practical) training programs.

Access to Training Opportunities

The availability of training programs, particularly those that can offer online and distance education, can be critical to the development of an adequate, stable,
Siemens–ASCP Scholarships Provide Students with a Lifeline to Education

One student in the histotechnology program at the University of Texas in Houston was close to withdrawing from his studies when he received a Siemens–ASCP scholarship for $1,000. Those funds kept him in the program until graduation. Another student had changed from a full-time to a part-time job as a medical laboratory technician. Three months into the histotechnology program, the employer laid off the student. Fortunately, the student had just received the $1,000 Siemens–ASCP scholarship and had a financial buffer to find another part-time job.

“The Siemens-ASCP scholarships are a vital resource for today's laboratory professional students,” says Mark Bailey, HTL(ASCP)CM, ASCP Chair of the Scholarship Committee and Program Director of the Histotechnology Program at the University of Texas/MD Anderson in Houston. “I walk all my students through the Siemens-ASCP scholarship program application process and strongly encourage them to apply. Currently, laboratory professional students nationwide have about a 50-percent chance of receiving one of these scholarships, although applications have increased from 95 to 393 during the past six years.”

This year, Siemens Healthcare Diagnostics and ASCP commemorate the 10-year anniversary of its annual joint scholarship program, helping address the nation’s shortage of qualified medical laboratory professionals by promoting the profession and defraying students’ education costs. Since 2003, more than $1.4 million in scholarships to over 1,200 students has been awarded through the Siemens–ASCP Scholarship Program to deserving students pursuing bachelor’s or master’s degrees in medical laboratory science or other areas of laboratory medicine.

Andrew Abdella, MLS(ASCP)CM

“The Siemens-ASCP Scholarship helped a lot with defraying living costs, room and board. I was going to school 40 hours a week, studying, and doing an internship at the hospital as a medical laboratory scientist 10 hours a week.”

—Andrew Abdella, MLS(ASCP)CM
Faculty
Clinical laboratory training programs typically have low student to faculty ratios because clinical training requires intensive instruction and oversight. Faculty shortages have been reported in many allied health professions, thought to be due to the disparity in salary with academic salaries being lower than those in medical practice. Concern exists that faculty shortages in the medical laboratory professions might also become an issue as older current faculty retire. More pointed data will be needed to determine if this is indeed the case. While ASCP’s Wage and Vacancy Surveys collect data on 12 different staff and supervisory level laboratory occupations, it does not survey faculty. Faculty members of laboratory science education programs often have other clinical responsibilities besides teaching, such as administrative or supervisory roles. Administration of a separate survey would be necessary to decipher a shortfall of faculty.

Personnel Standards
There are a number of standards used as benchmarks for assessing the qualifications of medical laboratory personnel. These standards stem from federal and state law, as well as private sector efforts such as personnel certification and the accreditation of clinical training programs. This section provides an overview of these differing forms of occupational regulation.

Federal Requirements: Clinical Laboratory Improvement Amendments of 1988
Under a federal statute, known as the Clinical Laboratory Improvement Amendments of 1988 (CLIA), the federal government has created a set of regulations imposing differing personnel requirement, depending on the complexity of the laboratory tests involved. CLIA breaks test complexity down into four areas: high complexity, moderate complexity, provider performed microscopy, and waived testing. To perform any laboratory test, testing personnel must meet the CLIA high complexity standards. For most laboratory personnel, the applicable standards are outlined in 42 Code of Federal Regulations (CFR) 493.1489. Cytotechnologists, however, must meet the personnel outlined in 42 CRF 493.1483. There are no federal personnel requirements specified for persons involved in histotechnology.

A precise enumeration of the full CLIA high complexity requirements is beyond the scope of this report. That said, in essence, for testing personnel to perform high complexity, they generally need to possess, at a minimum, (1) an associate degree in laboratory science or medical technology, or (2) at least 60 semester hours, or equivalent, from an accredited institution and either (a) 24 semester hours of clinical laboratory technology courses or (b) 24 semester hours of science, including six semester hours of chemistry, six semester hours of biology, and twelve semester hours of biology, chemistry or medical laboratory technology. In addition, individuals who have less than a bachelor’s degree must (1) graduate from a clinical laboratory training program accredited by a program recognized by the U.S. Department of Health and Human Services, or (2) complete three months of documented laboratory training in each specialty of the laboratory, e.g., chemistry, in which they perform testing. Oddly, CLIA does not require testing personnel with appropriate bachelor’s degree (or higher degree) to satisfy a clinical training requirement.
Licensure
Usually conferred by state governments, licensure is a government-provided authorization to work in a designated profession, provided the individual in question can satisfy the necessary requirements.38 Currently, 13 states license clinical laboratory personnel. All of the states requiring laboratory personnel impose personnel standards that are more stringent than CLIA’s minimum requirements. While state requirements differ, state licensure generally requires medical laboratory scientist-level laboratory professionals to possess a bachelor’s degree in a natural science, graduation from an accredited training program or completion of work experience, and passage of an appropriate certification examination, such as that offered by the ASCP Board of Certification (BOC). Technician-level personnel, generally must possess an acceptable associate degree or equivalent, graduation from an accredited training program or completion of work experience, and passage of an appropriate certification examination, such as that offered by the ASCP BOC.

Certification
Like CLIA and state licensure, certification requires laboratory personnel to meet certain personnel standards, i.e., academic and clinical training. However, in contrast to CLIA and state licensure, certification provides no right to work; it is a voluntary form of occupational regulation. Certification can have many forms, but within the medical laboratory setting, certification requires the passage of an examination pertinent to laboratory testing. The ASCP BOC provides a number of examinations, including generalist examinations for medical laboratory scientists and medical laboratory technicians and categorical technologist examinations in chemistry, microbiology, etc. While it may not be true of all certification examinations, ASCP’s examinations assess competency. That is one of many reasons why ASCP certification is recognized as the gold standard for the medical laboratory workforce.

Accreditation
Not every laboratory professional secures their clinical training via a clinical training program. Some receive their training through on-the-job (OJT) or practical experience. If an individual plans to receive their clinical training through a clinical training program, it should be one accredited by an accrediting agency approved by the U.S. Department of Health and Human Services.39 The largest group accrediting clinical laboratory training programs is the National Accrediting Agency for Clinical Laboratory Personnel (NAACLS). In addition, the Commission on Accreditation of Allied Health Education Programs (CAAHEP) accredits cytotechnology programs as well as Specialist in Blood Bank Technology/Transfusion Medicine programs. Both NAACLS and CAAHEP, like other accrediting agencies, have developed a set of requirements designed to ensure that individuals completing training through an accredited program receive a well-structured, quality experience and are optimally prepared to work in a medical laboratory once they graduate from the program. It should be noted that ASCP’s experience has been that graduates of accredited clinical laboratory programs tend to have higher pass rates than individuals who complete their clinical training through OJT or practice experience.40

“While it may not be true of all certification examinations, ASCP’s examinations assess competency. That is one of many reasons why ASCP certification is recognized as the gold standard for the medical laboratory workforce.”
DEMAND SIDE ISSUES

**Delivery Systems and the Impact of Health Reforms**

On March 23, 2010, President Barack H. Obama signed into law the Patient Protection and Affordable Care Act (PPACA), also known as the "Affordable Care Act (ACA)." The law has three overriding goals: (1) to increase access to health care; (2) to decrease the cost of health care and insurance; (3) to improve the quality of healthcare services. This section of this report will focus here on two of these three goals: access and cost. Quality is dealt with elsewhere in this report.

The Affordable Care Act and the Demand for Health Care

One of the driving forces behind the enactment of the Affordable Care Act (ACA) was to increase access to health care, particularly for those without insurance. In 2013, an estimated 16 percent of all Americans were uninsured. In contrast, Massachusetts, which several years ago enacted a set of health reforms that served as the model for the ACA, has been able to lower its uninsured rate to only 2 percent. Scores of uninsured Americans are about to join the ranks of the insured, and when they do the demand for healthcare services is expected to increase significantly.

In 2014, several of the most important provisions of the ACA will begin taking effect. These provisions include the insurance mandate requiring individuals to buy insurance; tax credits to help individuals purchase insurance; and health insurance exchanges designed to help lower the cost of insurance by pooling insurance purchasers together. The Congressional Budget Office estimated in 2012 that these changes will significantly lower the uninsured population, reducing "the number of nonelderly people without health insurance coverage by 14 million in 2014 and by 29 million or 30 million in the latter part of the coming decade.” As one would expect, this will increase demand for healthcare services.

In April 2013, the Commonwealth Fund reported in its Biennial Health Insurance Survey that many Americans are having difficulty paying medical bills. According to the report, "80 million people reported that, during the past year, they did not go to the doctor when they were sick or did not fill a prescription due to cost.” The report also noted that “eighty-seven percent of the 55 million people who were uninsured for some time during the year in 2012 have incomes that would make them eligible for subsidized health insurance through the insurance marketplaces or expanded Medicaid under the law.” These findings set a backdrop of the potential increase in demand for healthcare services that could occur once these individuals join the ranks of the insured. This dynamic could overwhelm the healthcare system, including medical laboratory operations, if it is not adequately prepared to handle the massive influx of newly insured patients.

**Cost Concerns**

The cost of health care and the appropriate utilization of health care services has been a major concern for years, and the ACA is one of many federal efforts or initiatives aimed at reducing the cost of care. The ACA attempts to rein in healthcare costs and utilization using a variety of initiatives. Some of these initiatives are intend to lower the rate of growth in cost of care, particularly Medicare,
while others are intended to alter the way health care is provided to improve quality and efficiency. Certain initiatives, such as Medicare provider payment cuts, bundling initiatives, Accountable Care Organizations, and quality reporting initiatives (Electronic Health Records Incentive Program, Physician Quality Reporting System, etc.) will directly affect anatomic pathology and laboratory medicine. But others, such as managed competition in health insurance exchanges and the excise tax on high cost health insurance plans, will impact laboratory operations in a less direct manner.

In addition to the ACA initiatives, several other initiatives have surfaced to address the cost of care. In 2013, President Barack Obama’s budget blueprint for CY 2014 proposed cutting the clinical laboratory fee schedule by 1.75 percent each year for the years 2016 to 2023 in an effort to cut the CLFS by almost $10 billion. CMS has undertaken a number of reviews of high cost medical services, such as the surgical pathology codes—including CPT Code 88305—resulting in significant cuts in the technical component of many of these services. Also, one recent report by the Office of the Inspector General of the U.S. Department of Health and Human Services has suggested that the CLFS may be overvalued and that CMS should consider cutting or imposing a co-pay on the fee schedule, and/or instituting competitive bidding of Medicare reimbursed laboratory procedures. Moreover, as discussed elsewhere in this report, federal funding for allied health training programs are increasingly viewed as targets for additional budget cuts.

It is already believed that the provisions of the ACA are reducing the cost of health care. Actuaries for the Centers for Medicare and Medicaid Services and the Congressional Budget Office have already attributed, at least in part, of the reduced rate of growth in health expenditures to the ACA. Moreover, given increased concern about the cost of health care, and the demands of several federal policymakers to re-address the cost of federal health care benefits, it is conceivable that there may be additional federal initiatives to cut federal and state healthcare programs, such as Medicare and Medicaid.

Though some of these efforts, like ACOs, could have positive implications for some laboratories on net, additional cost savings measures could have direct implications for the laboratory industry. Laboratory Economics’ 2013 Anatomic Pathology Market Trends Survey identified declining reimbursements as the greatest challenge over the next five years. Whatever shape cost cutting measures take, they are likely to have implications for the laboratory workforce. Laboratory Economics noted in relation to the CMS-imposed cuts to the surgical pathology codes that laboratories are considering a number of measures, such as reducing or holding steady staff salaries or reduce staff size, to cope with these cuts.

“Laboratory Economics’ 2013 Anatomic Pathology Market Trends Survey identified declining reimbursements as the greatest challenge over the next five years. Whatever shape cost cutting measures take, they are likely to have implications for the laboratory workforce.”

New Technologies, New Opportunities, and New Skills

For the past few decades, the medical laboratory has been characterized by ongoing rapid and dramatic innovation. There has been remarkable growth in the range and complexity of available tests and services, a trend that is fully expected to continue. Laboratory technology is often at the forefront of medical advances. In some cases, testing techniques to diagnose or screen for a particular condition are available before effective treatment.
Innovation in laboratory technology, which includes both new tests and advances in equipment and testing techniques, has made testing more efficient and automated. Information technology has revolutionized the transfer of data by decreasing the time it takes to order and receive test results and by creating opportunities for research on large datasets. Medical laboratory technology is playing a more important role than ever in the delivery of health care. Likewise, these numerous new technologies are having a profound impact, both in challenges and opportunities, on the medical laboratory workforce.

Molecular Diagnostics
Many new diagnostic techniques and laboratory tests have been introduced as a result of both research on the fundamental pathogenesis of diseases and the development of new methods in themselves. Explosive advances in the areas of molecular-level and genetic testing are dramatically changing clinical practice. The NIH Genetic Test Registry currently has more than 7,000 orderable tests for approximately 3,000 conditions and 6,300 genes. The number of conditions for which genetic tests are available has nearly doubled in the past two years!

New testing techniques are more sensitive and specific, allowing clinicians to detect, diagnose, and manage disease more effectively than ever before. Technologies that analyze DNA, RNA, and protein composition evaluate disease at the molecular level, permitting earlier detection and a more personalized approach to patient care. In addition, new methods in diagnostic imaging will cross over the traditional boundaries that separate the diagnostic specialties of anatomic pathology, radiology, and molecular diagnostics. The resulting convergence of high-density data streams will offer patients the potential for a truly personalized form of diagnostic medicine. However, patients will only fully realize the benefits of this rapidly developing technology if we have an adequate laboratory workforce equipped with the skills required to perform the complex assays of the future.

Information Technology
The American Recovery and Reinvestment Act of 2009 (ARRA) has made promoting a national interoperable health information system a priority, authorizing significant resources to achieve this goal. While the nation’s laboratories have nearly three decades of experience generating patient test results electronically, emerging technologies have continued to revolutionize laboratory operations. There continues to be new and more efficient ways to communicate and provide services; educate staff and their clients; market products; and manage data and information.

Advances in laboratory information management systems have lead to new career opportunities throughout the laboratory, for which experienced laboratory professionals with a proclivity for informatics are ideally suited. A thorough understanding laboratory diagnostics, work flow, and the specific needs of other clinicians providing patient care, are essential for developing systems that will streamline data housing and transfer, reduce error, monitor and improve work processes, and serve as a tool to better inform both clinicians and patients.

Automation
New testing methods and processing coupled with sophisticated laboratory information
systems have segued into the development of laboratory automation systems. While total laboratory automation of testing processes may not be possible for all medical laboratories, namely due to the prohibitively large up-front investment for equipment and laboratory redesign, many have automated some portion of their operations. The extent to which automation affects the need for certain types of laboratory professionals is thus far lacking consensus. While some sources report significant increases in laboratory productivity without having to incur higher labor costs, others report that while new laboratory technologies potentially decreased the need for as large a staff, workload have increased. Approximately 73 percent of laboratory hiring managers have indicated that new technologies have not precipitated changes to their staffing needs.

**Practice Issues**

Advances in science continue to dramatically affect the practice of medicine and patient care. Likewise, innovative technologies are changing the practice of laboratory medicine, and in turn, the educational requirements and qualifications needed to provide quality testing services.

Technological advancement of laboratory testing, emerging pharmacogenomic and proteomic testing, digital imaging, and greater laboratory automation could significantly change the qualifications required of the next generation of laboratory professionals.

The increased volume of clinical testing and the growing menu of available clinical tests, often using new testing platforms, have the potential to influence not only the numbers and types of laboratory professionals needed but also their knowledge and skill set. Increasingly sophisticated diagnostics will require interpretation management. The coming milieu could necessitate the need for both generalists as well as specialists. The evolution could mean the opening up of new and different career paths and scopes of practice.

The key participants of the laboratory sector—leaders in the laboratory community, state and federal policymakers, and educators—will need to continually monitor and review of the roles of the various laboratory professionals to ensure staffing qualifications and workforce level requirements are clearly and logically defined to meet these forthcoming advancements. While the field applauds innovation and progress, continual self-scrutiny will be the key to effective deployment of the laboratories most valuable resource—its laboratory professionals.

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**Cytotechnologists Remain at the Forefront of Women’s Health**

Advances in molecular technology have affected every area of medicine, and cytopathology is no exception. An expanding scope of practice for pathologists has in turn meant new opportunities for cytotechnologists. In recent years, liquid-based specimens, a vaccine for cervical cancer, and the development of molecular diagnostics, have had a profound impact on the field and the cytotechnologist profession.

While cytotechnologists still perform almost 30 million PAP smears every year, high-risk human papillomavirus (HPV) testing has proven to be a valuable asset to prevent cervical cancer or detect it early. With their background in biology and genetics, prerequisites for laboratory training programs, cytotechnologists possess the knowledge base required for molecular testing. In response to this change in practice and increased demand cervical cancer screening utilizing molecular techniques, cytotechnology education programs will be instituting a new curriculum in the coming years, designed to provide graduates the relevant skills to continue as key health care professionals in women's health.

ASCP is a sponsoring organization of the Cytotechnology Program Review Committee (CPRC) which is convened by including the American Society for Cytopathology and also includes the American Society for Cytotechnology (ASCT) and the College of American Pathologists (CAP). The CPRC is expected to make its recommendations for a modernized cytotechnology curriculum in the near future. To that end, ASCP has made specific recommendations to the Committee urging that modernization be incorporated as soon as possible.
Test Utilization
Another issue that can have a profound impact on the demand for laboratory professionals is test utilization. It is well recognized that many of the medical services provided each year are unnecessary or of limited clinical value. In fact, it is estimated that approximately $250-300 billion are spent each year on unnecessary or outdated health care services.

Given the concern about the cost of health care, many of the federal and state policy initiatives to address cost have been focused on utilization.

As discussed earlier, the ACA includes several initiatives to address the cost of care, in large part to address the issue of utilization of health care services. ACA’s interest in ACOs and to a somewhat lesser extent Patient Centered Medical Homes (PCMH) is hoped to reducing unnecessary utilization of such services as laboratory tests. It is anticipated that ACOs and possibly PCMHs may provide key roles for pathologists and other experts in laboratory medicine by informing clinicians and other health care providers of appropriate use of laboratory testing.

Electronic Health Records Incentive Program, quality reporting programs (Physician Quality Reporting Program) and comparative effective research are other examples of ACA initiatives to address utilization.

Another federal initiative to address utilization (and cost) is the Obama Administration’s recent proposal to reform the physician self referral law’s in office ancillary services (IOAS) exception. Self referral arrangements are well-documented to increase utilization and cost of health care services. Reforming the IOAS exception could save more than $6 billion over the next 10 years.

Indeed, initiatives to address utilization are springing up as within the public sector as well, such as the Choosing Wisely Campaign. The initiative, spearheaded by the ABIM Foundation with ASCP representing pathology and laboratory medicine, aims to “help physicians and patients engage in conversations about the overuse of medical test and procedures, and support physician efforts to help patients make smart and effective care choices (Choosing Wisely RFP, 2013).”
Perspectives from the ASCP Pathologist Workforce Round Table

Just as the laboratory and pathology communities are grappling with the challenges of defining and determining how best to meet the future workforce needs of its laboratory professionals, it is also faced with similar challenges with regard to Pathologists.

ASCP recently convened a Pathologist Workforce Round Table, bringing together a distinguished cadre of leaders in pathology from across the country with expertise in education, new care delivery models, hospitals, and industry, for a multidimensional examination of the current trends affecting the field as well as projections for the future.

The numbers help to paint the picture. There are currently 14,971 active pathologists, of which 57.3 percent are age 55 or older. From 2005 to 2020, 23 percent more pathologists (5,400) will be needed compared to the baseline number practicing in 2000. By these projections, there could be a shortfall of pathologists of 4,400, although other workforce models project an even greater deficit.

What is an adequate supply of pathologists? It could be defined as having the right number with the right skills in the right place at the right time. Baseline projections assume that patterns of healthcare use and delivery of care remain static over the projection horizon and that changing demographics are the primary driver of changes in physician workforce needs. But many other factors are now at play from both a clinical and an economic framework. Projections must take into account both healthcare use and workforce implications of:

- Paradigm shifts in care delivery—ACOs, PCMHs, changes in technology, and team-based care;
- New policies—healthcare reform and expanded scopes of practice;
- Interventions for specific subsets of the population;
- Changing economic conditions; and
- Changing demographics.

Because patient care is accomplished by teams of different professionals, workforce projections must take into account all members of the team. Pathologists’ Assistants (PAs) are a crucial extension of the pathologist in the healthcare setting, working as a liaison to other departments and laboratories to ensure quality healthcare. PAs contribute to the overall efficiency of the laboratory or pathology practice in a cost-effective manner. With increased pressure on healthcare systems to control costs, the demand for qualified pathologists’ assistant continues to grow each year. Likewise, doctorate-level Clinical Scientists, whose pipeline has been acutely constrained by cuts in National Institutes of Health funding, play an integral role in laboratory operations, directing and overseeing medical laboratories, rendering the interpretative services of patient tests, and even developing next generation diagnostic services to improve the quality of laboratory diagnostics.

Steven H. Kroft, MD, FASCP
ASCP President
Professor and Vice Chair for Clinical Pathology
Director of Hematopathology
Department of Pathology
Medical College of Wisconsin
Senior Associate Medical Director, Dynacare Laboratories Milwaukee
KEY FINDINGS

THE CURRENT LANDSCAPE:
Key Findings of the 2012 ASCP Wage & Vacancy Surveys

The following findings are a result of a comprehensive examination of the current data for the laboratory professional workforce, as well as the multitude of factors influencing their supply and demand.

The latest results from the primary data sources for the medical laboratory professional workforce, including ASCP’s Wage and Vacancy Surveys, the NAACLS/ASCP BOC Program Survey, and the BLS provide some positive indicators—lower vacancy rates, lower current workforce average age, and program growth and increasing enrollment. However, using these indicators solely to conclude that the workforce shortage is waning is dangerously premature.

The impact of a number of factors must be considered. The recession has delayed retirement for many, and budget constraints have resulted in hiring freezes and elimination of positions through attrition. With the nation’s healthcare system on the brink of tremendous change, even if these positive trends hold, will they be sufficient to meet the demand? It is doubtful that these relatively minor gains are sufficient to handle the inevitable onslaught of new patients and new diagnostics.

ASCP strongly believes in building policy and programming on quality data. While ASCP’s Wage and Vacancy surveys have produced widely cited trended data on the medical laboratory workforce for the past 25 years, the laboratory field and the services it provides has grown increasingly complex. Measures of workforce sufficiency have focused on laboratory operations—having enough adequately qualified laboratory professionals to perform patient testing in a timely fashion.
“Our ever-increasing knowledge of disease prevention and management, coupled with new diagnostics, automation, and information technology, is continually changing the services laboratory professionals provide. Scope of work is changing. While these developments present workforce challenges, they are also opportunities. The cytotechnologists provide an excellent example of adapting to a changing clinical landscape with modernization of their curriculum to meet the growing demand for molecular testing.

Federal funding for laboratory science education programs continues to be sparse. As with student recruitment, there continues to be a dearth of knowledge among policymakers regarding the laboratory professions and their critical contribution to the delivery of quality patient care.

However, there is a paucity of data on the impact of staffing on patient care and patient outcomes. While identifying and measuring such metrics is challenging, this kind of data may have more impact with policymakers and the public in the current patient-centric environment. The development of staffing guidelines based on patient care have proved helpful to other professions in health care in securing resources for workforce development.

Educational preparation in laboratory science requires a solid background in the basic sciences. The laboratory competes with other healthcare professions, as well as other professions in the sciences to recruit students with both the appropriate background and aptitude to succeed in the laboratory science profession. Lack of awareness about laboratory science careers in pre-college students continues to be a major obstacle.
How can the laboratory/pathology communities ensure that its workforce will be prepared to meet the future demands of our health care system? Given the predicted demographic and systematic scenarios, how many and what types of laboratory professionals will be needed? What role can today’s laboratory professionals and pathologists play in providing more patient-centric quality care? What skills and knowledge base will tomorrow’s laboratory professionals need to have?

While ASCPs Task Force on the Laboratory Professionals Workforce considered these questions and offered specific recommendations, it is clear that collaborative effort of multiple stakeholders will be critical to ensuring that our nation’s medical laboratories are adequately staffed with appropriately qualified laboratory professionals. Our nation’s medical laboratories employ an array of laboratory professionals, with differing educational backgrounds and credentials, performing a variety of clinical and administrative functions. The complexities of this workforce and the laboratory environment within the healthcare system are not easily understood. Increasing awareness about this profession is critical to recruitment, and program funding, realizing the full benefit of these professionals as an essential member of the care delivery team.

Initiatives must be data-driven. Continual review of the rapidly evolving laboratory environment and its role within the healthcare system, workforce, and patient demographics, as well as clinical and economic impacts, are essential to identify and gather relevant, high quality data that can be used to inform and engage policy makers. One example of a current gap in workforce data involves educators for the field, many of whom often have clinical responsibilities beyond teaching. Administration of a separate survey on faculty would be helpful to understanding the challenges education programs face, particularly with regard to clinical rotations.

The pipeline of future laboratory professionals must be nourished and promoted. Increased efforts must be made to reach high school or younger students prior to the critical period of their education when they begin to consider career options.
1. Promote the role of laboratory professionals to patients, other providers, healthcare administrators, educators, policy-makers, and the public at large, as an integral part of the clinical care team in a transitioning healthcare system. Challenge current paradigms of laboratory service delivery to develop and implement novel approaches capable of guiding quality patient care in a more effective and efficient manner.

2. Conduct and disseminate original health services research that supports laboratory workforce policy and compels the nation toward an adequate supply of qualified laboratory professionals, with the appropriate skills and education, to ensure access to quality care for all citizens. Utilize high quality, objective, care-driven data to assess workforce supply and demand to provide projections for future needs to inform programs and policies that will meet the needs of an evolving healthcare system.

3. Engage in outreach opportunities that promote Science, Technology, Engineering, and Mathematics (STEM) education to support and promote the development of high-level skills critically important to the performance of quality laboratory testing and management, and to bolster the pipeline of potential candidates for the profession and leadership in health care.

4. Develop and incorporate future-based products and information into educational programming via multiple platforms (web, conferences, publications, etc.) that will enable laboratory professionals and pathologists to be at the forefront of health care.

5. Seek and support initiatives that promote the development of a qualified workforce through quality education programs that reflect advancing technologies, maintaining high standards for certification of laboratory professionals and laboratory accreditation programs that incorporate personnel standards.

6. Promote a legislative and regulatory agenda that strives to increase interest and access to training leading to careers in pathology and laboratory medicine. Harmonize state and federal personnel and testing standards to remove unnecessary barriers to intrastate employment of well qualified laboratory professionals.
REFERENCES


4. U.S. Census Bureau


22. ASCP Analysis of Bureau of Labor Statistics data on Occupational Employment by State


36. That said, individuals performing the gross examination of an anatomic specimen must meet the CLIA’s high complexity requirements.

37. ASCP does not intend this report to constitute legal advice toward satisfying the CLIA requirements. To ensure compliance with the CLIA regulations, ASCP urges interested parties to examine the exact language of the CLIA regulations. These can be accessed via the following link: http://wwwn.cdc.gov/clia/regs/toc.aspx.


39. According to 42 CFR 493.1489(b)(2)(i)(B)(1) (Standard; testing personnel qualifications), testing personnel must complete “a clinical laboratory training program approved or accredited by ABHES, CAHEA, or other organization approved by HHS.”


43. Ibid.


54. 2012 physician specialty data book. Association of American Medical Colleges (AAMC)
