The American Society for Clinical Pathology’s 2016-2017 Vacancy Survey of Medical Laboratories in the United States


From the Institute of Science, Technology, and Policy, American Society for Clinical Pathology (ASCP), Washington, DC; and ASCP Evaluation, Measurement, and Assessment Department, Chicago, IL.

Key Words: Anatomic pathology; Clinical pathology; ASCP Vacancy Survey; Laboratory; Certification; Laboratory departments; Laboratory staff; Laboratory workforce

ABSTRACT

Objectives: To determine the extent and distribution of workforce shortages within the nation’s medical laboratories.

Methods: The 2016-2017 Vacancy Survey was conducted through collaboration between the American Society for Clinical Pathology’s Institute of Science, Technology, & Policy in Washington, DC, and the Evaluation, Measurement, and Assessment division and Board of Certification in Chicago, Illinois. Data were collected via an internet survey that was distributed to individuals who were able to report on staffing and certifications for their laboratories.

Results: Results of the 2016-2017 Vacancy Survey shows decreased vacancy rates for laboratory positions across all departments surveyed compared with 2014. While overall, the data show that vacancy rates are decreasing, overall retirement rates and certification requirements are higher.

Conclusions: Focus on the qualifications and certification status of laboratory professionals would be crucial factors in addressing the needs of the laboratory workforce. The field needs to intensify its efforts on recruiting the next generation of laboratory personnel.

Since 1988, the American Society for Clinical Pathology (ASCP) has conducted its Vacancy Survey to determine the extent and distribution of workforce shortages within the nation’s medical laboratories. This confidential survey has been administered every 2 years and has served as the primary source of information for academic, government, and industry labor analysts. Results from past surveys show that laboratory medicine is a rapidly evolving field. Although the ASCP recognizes the importance of continuity, each administration of the Vacancy Survey represents an opportunity to improve its method to collect the most current relevant data while maximizing survey participation. The survey has evolved in response to changes within the profession; new questions were added to the 2016-2017 survey to examine some of the factors affecting vacancy rates. The ASCP continues to gather questions, comments, and suggestions from our members regarding the profession with the goal of addressing them through this important survey.

Materials and Methods

The 2016-2017 Vacancy Survey was conducted through collaboration between ASCP’s Institute of Science, Technology, & Policy in Washington, DC, and the Evaluation, Measurement, and Assessment division and Board of Certification in Chicago, Illinois. The Vacancy Survey Working Group, whose members work in the field of laboratory medicine, reviewed the survey questions and critiqued the report. Partner organizations...
were also invited to participate in completing the survey to get a larger scope of the current issues faced by the laboratory workforce. Electronic survey invitations were sent on October 24, 2016, via Key Survey (an online survey tool). The survey was closed on January 10, 2017. To maximize response, this survey used snowball sampling, in which respondents were asked to forward the invitation email message to other individuals currently practicing in the field.

Most of the names on the initial email recipient list were derived from the ASCP database and included individuals from the following categories: lead, supervisor/manager, educator, laboratory director, and educator/laboratory director who can report on vacancies, anticipated vacancies, and certifications of staff.

The following partnering entities also participated in the survey:

- AABB (formerly the American Association of Blood Banks)
- American Association for Clinical Chemistry
- American Society of Cytopathology
- American Society for Clinical Laboratory Science
- American Society for Microbiology
- Clinical Laboratory Management Association
- National Society for Histotechnology
- Philippine Association of Medical Technologists–USA
- St Louis University

The 2016-2017 Vacancy Survey sought to collect staff- and supervisory-level data for the following laboratory areas:

- Anatomic pathology (including non-MD professionals)
- Blood bank (immunohematology)
- Chemistry/toxicology
- Core laboratory
- Cytogenetics
- Cytology
- Flow cytometry
- Hematology/coagulation
- Histology
- Immunology
- Laboratory information system/quality assurance/performance improvement (LIS/QA/PI) (new laboratory area surveyed)
- Microbiology/virology/infectious disease
- Molecular biology/diagnostics/molecular pathology
- Phlebotomy
- Point-of-care
- Send-outs
- Specimen processing

ASCP survey administrators recognize that there is no standard approach for how laboratories are organized and that laboratory areas hire staff with a variety of certifications. The ASCP provided survey participants with the opportunity to report on the certifications that exist or are sought after for the laboratory area under their supervision.

**Key Findings**

The primary objective of this research was to estimate the rate of shortages within medical laboratory departments. Overall, this survey presents data from 1,340 respondents across the United States who currently hold a management-level position or human resources position and are able to discuss the vacancies, anticipated vacancies, and certifications/expertise of medical laboratory staff at their current place of employment. These respondents represent 51,586 employees (a 55.56% increase in employee representation compared with 2014) across the United States.

The respondents came from various laboratory facilities (from academic and nonacademic hospitals with fewer than 100 beds to those with more than 500 beds, physicians’ office laboratories, private laboratories, reference/independent laboratories, academic institutions, government, health systems, outpatient clinic laboratories, blood centers or blood banks, military/Veterans Affairs/Veterans Health Administration, pathologists’ laboratories, public health laboratories, industry, and retail laboratories), most of them employed at hospitals. Of all the departments surveyed, the chemistry/toxicology department employs the most medical laboratory personnel at 34.38%, while the molecular pathology and cytogenetics department employs the least at 3.92%. By region, the South-Central Atlantic had the highest number of respondents at 25.48%, and the Central Northwest had the least number of respondents at 10.11% Figure 1. The top 10 states with the most respondents were (in descending order) Texas, California, New York, Pennsylvania, Florida, Illinois, Michigan, North Carolina, Ohio, and Tennessee. One department was added in the latest ASCP Vacancy Survey—LIS/QA/PI, in addition to the 16 laboratory areas surveyed in 2014.

Across the nation, the overall vacancy rate was highest for LIS/QA/PI department (10.98%) and lowest for anatomic pathology department (4.70%) Figure 2. According to the survey results, LIS/QA/PI (11.68%) has the highest staff vacancy rate in the nation while anatomic pathology (5.00%) has the lowest staff vacancy rate Figure 3. The highest supervisor vacancy rate occurred in the immunology department (10.39%), and the lowest
supervisor vacancy rate occurred in the send-outs department (1.65%) [Figure 4].

According to the survey findings, the LIS/QA/PI department has the highest overall percentage (28.30%) of employees anticipated to retire in the next 5 years. Phlebotomy has the lowest rate of employees expected to retire in the next 5 years, at 10.76% [Figure 5]. The staff retirement rate is highest in the LIS/QA/PI department (24.76%) and lowest in the phlebotomy department (8.74%) [Figure 6]. The supervisor retirement rate is highest in the cytogenetics department (47.69%) and lowest in the molecular biology/diagnostics/molecular pathology department (23.02%) [Figure 7].

Overall, survey results show that it takes less than 3 to 6 months to fill positions in the departments surveyed. On average, hiring staff (nonsupervisory [for the purposes of this report, the term staff means nonsupervisory-level personnel]) for most departments takes 3 to 6 months, while hiring supervisors takes 3 months to a year. Phlebotomy, send-outs, and specimen processing departments take less than 3 months to fill for staff, while it takes 6 months to a year on average to hire a supervisor in the blood bank, core laboratory, cytology, flow cytometry, hematology/coagulation, histology, immunology, LIS/QA/PI, and microbiology departments.

The Northeast region reported the highest overall vacancy rate compared with other regions (9.44%); the South-Central Atlantic had the lowest vacancy rate (6.31%) [Table 1]. Taking vacancy rates of the five departments with the most respondents by region, data revealed that vacancy rates in the blood bank department are highest in the Northeast (13.23%) and lowest in the Central Southwest (6.29%). In the chemistry/toxicology department, the Northeast (18.15%) has the highest vacancy rates, while the Central Northwest has the lowest (4.56%). The hematology/coagulation department has the highest vacancy rate (24.76%).

[Figure 1] Percentage of responses by region.

[Figure 2] Overall vacancy rates by laboratory department. LIS/QA/PI, laboratory information system/quality assurance/performance improvement. *Molecular biology/diagnostics/molecular pathology.
vacancy rates in the Northeast (12.70%) and lowest in the South-Central Atlantic (6.35%). The vacancy rates in the phlebotomy department are highest in the Central Northwest (9.69%) and lowest in the Central Southwest (6.93%) Figure 8. Vacancy rates in specimen processing department are highest in the Central Northwest (12.44%) and lowest in the South-Central Atlantic (6.05%) and Northeast (6.02%). The regional distribution of states is shown in Figure 1.

### Laboratory Departments

**Anatomic Pathology, Non-MD Professionals**

The total vacancy rate for anatomic pathology is 4.70%, the lowest rate among all departments surveyed (Figure 2). Of all the departments surveyed, this department has the lowest vacancy rates for staff at 5.00%; the supervisory vacancy rate is 2.16% (Figures 3 and 4).
Results also reveal that 15.83% of all anatomic pathology employees are expected to retire in the next 5 years. Staff and supervisor retirement rates for anatomic pathology are 11.00% and 30.25%, respectively (Figures 5, 6, and 7).

When hiring for the anatomic pathology department, most respondents report the preferred credential or certification are cytotechnologist (CT), histotechnician (HT), histotechnologist (HTL), medical laboratory scientist (MLS)/medical technologist (MT), medical laboratory technician (MLT), and pathologists’ assistant. In this survey, 57.60% of the respondents from the anatomic pathology department indicated that they are required to hire certified individuals.

Within anatomic pathology, data show that 53.28% of staff and 79.42% supervisors are certified. Night, evening, weekend, and double shifts are most difficult to staff in the anatomic pathology department.

![Figure 5](https://academic.oup.com/ajcp/article-abstract/149/5/387/4924356)

**Figure 5** Overall retirement rates (anticipated in the next 5 years) by laboratory department. LIS/QA/PI, laboratory information system/quality assurance/performance improvement. *Molecular biology/diagnostics/molecular pathology.

![Figure 6](https://academic.oup.com/ajcp/article-abstract/149/5/387/4924356)

**Figure 6** Staff (nonsupervisory) retirement rates (anticipated in the next 5 years) by laboratory department. LIS/QA/PI, laboratory information system/quality assurance/performance improvement. *Molecular biology/diagnostics/molecular pathology.
Blood Bank (Immunohematology)

The vacancy rate for the blood bank is 8.42% (Figure 2). Staff and supervisor vacancy rates are 8.99% and 4.62%, respectively (Figures 3 and 4). Survey respondents working at blood banks indicated that they anticipate a 20.97% overall retirement rate in the next 5 years. Staff members have an anticipated retirement rate of 17.58% compared with 33.73% for supervisors (Figures 5, 6, and 7).

Respondents from blood banks prefer the following certifications when hiring employees: technologist in blood banking, specialist in blood banking, MLS/MT, and MLT. In this department, 74.30% of the respondents reported that certification is required of candidates for laboratory positions. According to the survey results, 80.07% of staff and 79.05% of supervisors working in blood banks are certified. Night, evening, weekend, and double shifts are the most difficult to fill in the blood bank department.

Chemistry/Toxicology

The total vacancy rate for chemistry/toxicology is 8.98% (Figure 2). The vacancy rate is 9.23% for staff and 6.95% for supervisors (Figures 3 and 4). Results also reveal that 22.89% of chemistry/toxicology employees are expected to retire in the next 5 years. Retirement rate for staff is 18.45% and 44.47% for supervisors (Figures 5, 6, and 7).

Most of the respondents from the chemistry/toxicology department prefer to hire employees with MLS/MT, technologist in chemistry, and specialist in chemistry certifications. Also, 69.90% of the respondents indicated that certification is a prerequisite for all candidates for hire. Within chemistry/toxicology, data show that 73.86% of staff and 82.42% supervisors are certified. Night, weekend, and double shifts are most difficult to staff in this department.

Core Laboratory

Laboratory workflow models that include a core laboratory in the organizational structure have gained wide popularity in the past 20 years. Although specific test menus for core laboratories vary from facility to facility, those facilities generally handle hematology, chemistry, and, in many cases, microbiology. Core laboratories may serve one or more hospitals, physician offices, and nursing homes.

The vacancy rate for the core laboratory is 7.54% (Figure 2). The total vacancy rate for staff is 7.80%, and the supervisor vacancy rate is 5.64% (Figures 3 and 4).
Results also reveal that 20.72% of the total core laboratory department employees are expected to retire in the next 5 years. Retirement rate for staff is 16.78% and 31.94% supervisors (Figures 5, 6, and 7).

When hiring employees for core laboratories, most respondents report clinical laboratory assistant (CLA), medical laboratory assistant (MLA), MLT, MLS/MT, and phlebotomy technician (PBT) as the preferred credentials or certifications. In this department, 76.10% of the survey participants reported that certification is a prerequisite for candidates for hire. Survey results show that 83.08% of staff and 83.45% of supervisors are certified. Night, weekend, and double shifts are most difficult to staff in this department.

**Cytogenetics**

The vacancy rate for cytogenetics is 5.04% (Figure 2). The staff vacancy rate is 5.31%, and the supervisor vacancy rate is 2.63% (Figures 3 and 4). Survey respondents from the cytogenetics department indicated that they anticipate a 19.86% retirement rate within the next 5 years. Staff retirement rate is 13.79% and supervisor is 47.69%, the highest supervisory retirement rate out of all the departments surveyed (Figures 5, 6, and 7).

The certification of choice when hiring employees in the cytogenetics department is technologist in cytogenetics. Survey results show that 47.50% of the respondents from this department indicated that certification is a prerequisite for candidates for hire. Also, 72.48% of staff and 93.22% of supervisors are certified. This department has the highest rate of certified supervisors among all the departments surveyed. Evening, night, weekend, and double shifts are most difficult to staff in this department.

**Cytology**

The vacancy rate for cytology is 4.75% (Figure 2). Total staff and supervisor vacancy rates are 5.08% and 2.53%, respectively (Figures 3 and 4). Survey respondents from the cytogenetics department indicated that certification is a prerequisite for hire. This is the department that has the highest rate of respondents reporting they require certification for candidates they hire. Survey results show that 70.33% of staff and 86.43% of supervisors are certified. Nights, evening, weekends, holidays, and double shifts are the most difficult to fill in this department.

**Flow Cytometry**

The vacancy rate for flow cytometry is 9.17% (Figure 2). The staff vacancy rate is 9.12%, and the supervisory vacancy rate is 9.52% (Figures 3 and 4). Survey respondents from the flow cytometry department...
indicated that they anticipate a 17.39% retirement rate in the next 5 years. Staff retirement rate is 14.67%, compared with 33.90% for supervisors (Figures 5, 6, and 7).

Respondents from the flow cytometry department prefer MLS/MT certification when hiring employees. Also, 67.70% respondents from this department indicated that certification is a prerequisite for candidates for hire. Survey results show that 67.46% of staff and 71.19% of supervisors are certified. Night and evening shifts are the most difficult to staff in this department.

**Hematology/Coagulation**

The vacancy rate for hematology/coagulation is 8.47% (Figure 2). Total staff and supervisor vacancy rates are also 8.39% and 9.15%, respectively (Figures 3 and 4). Survey respondents from the hematology/coagulation department indicated that they anticipate a 23.78% overall retirement rate in the next 5 years. Staff members have a retirement rate of 19.06% compared with 42.75% for supervisors (Figures 5, 6, and 7).

Most of the respondents from the hematology/coagulation department prefer to hire employees with MLT, MLS/MT, technologist in hematology, and specialist in hematology certifications. In this department, 74.50% of the respondents reported that certification is required when hiring staff. According to survey results, 79.67% of staff and 83.60% of supervisors are certified. Night, evening, and double shifts are the most difficult to fill in this department.

**Histology**

The total vacancy rate for histology is 5.60% (Figure 2). The staff vacancy rate is 5.97%, and the supervisory vacancy rate is 3.03% (Figures 3 and 4). Results show that in the next 5 years, the department anticipates a retirement rate of 17.02%. Staff members have a retirement rate of 14.10%, compared with that of supervisors, which is at 23.12% (Figures 5, 6, and 7).

When hiring employees in the histology department, most respondents report HT, HTL, and qualification in immunohistochemistry as the preferred credential or certification. Also, 44.60% of the respondents from this department indicated that certification is a prerequisite for candidates for hire. Survey results show that 57.15% of staff and 81.15% of supervisors in the histology department are certified. Night, evening, and double shifts are the most difficult to fill in this department.

**Immunology**

The vacancy rate for immunology is 6.65% (Figure 2). The total vacancy rate is 6.11% for staff and 10.39% for supervisors, the highest vacancy rate for all departments (Figures 3 and 4). Results show that in the next 5 years, the department anticipates an overall retirement rate of 22.13%. The staff retirement rate is 17.37% while the supervisor retirement rate is 37.24% (Figures 5, 6, and 7).

The certifications of choice when hiring employees in the immunology department are MLT and MLS/MT. In this department, 73.70% of the survey participants reported that certification is a prerequisite for hire. According to survey results, 70.97% of staff and 79.66% of supervisors are certified. Night, evening, and double shifts are the most difficult to fill in this department.

**LIS/AQ/PI**

Introduced in early 1980s, LIS has constantly evolved over the years from a centralized automated reporting tool to an integrated informatics solution with multiple functionalities.1 The key functions include management of laboratory information, streamlining laboratory workflow, and integration with devices and manufacturing computer systems:2 QA is an ongoing, comprehensive way to analyze every aspect of an operation. In laboratory setting, it involves all steps of the testing process: preanalytical, analytical (testing), and postanalytical.3 PI is the process of continuous monitoring and improvement of quality of health services provided to the patients and others. Most performance improvement strategies are based on a plan-do-check-act cycle, a four-step model for carrying out change.4 This department was added because it has been a vital part of the laboratory field.

The vacancy rate for LIS/QA/PI is 10.98%, the highest vacancy rate out of all departments surveyed (Figure 2). The vacancy rate is 11.68% for staff position, the highest for all departmental staff vacancy rates surveyed, and 8.55% for supervisors (Figures 3 and 4). Survey respondents from the LIS/QA/PI department indicated that they anticipate a 28.30% overall retirement rate in the next 5 years, the highest overall retirement rates among all departments. Staff members have a retirement rate of 24.76%, the highest staff retirement rate among all departments surveyed; supervisor retirement rate is at 38.54% (Figures 5, 6, and 7).

Most of the respondents from the LIS/QA/PI department prefer to hire employees with MLT and MLS/MT certification. In this department, 56.70% of the respondents reported that certification is required when hiring staff. Survey results show that 73.88% of staff and 87.06% of supervisors are certified. Night, evening, weekend, and double shifts are the most difficult to fill in this department.
Microbiology

The total vacancy rate for microbiology is 5.93% (Figure 2). The staff vacancy rate is 6.25%, and the supervisor vacancy rate is 3.72% (Figures 3 and 4). Results also reveal that 20.14% of microbiology department employees are expected to retire in the next 5 years. The staff retirement rate is 17.05%; for supervisors, it is 32.83% (Figures 5, 6, and 7).

When hiring staff-level employees in the microbiology department, most respondents report MLT, MLS/MT, technologist in microbiology, or specialist in microbiology as the preferred credential or certification. Also, 74.90% of the supervisors indicated that certification is a prerequisite for candidates for hire. Survey results show that 77.13% of staff and 90.57% of supervisors in the microbiology department are certified. Night and double shifts are the most difficult to staff in this department.

Molecular Biology/Diagnostics/Molecular Pathology

The vacancy rate for molecular biology/diagnostics/molecular pathology is 5.32% (Figure 2). The vacancy rate for staff position is 5.88%; for supervisors, it is 1.85% (Figures 3 and 4). Survey respondents from the molecular biology/diagnostics/molecular pathology department indicated that they anticipate a 14.68% retirement rate in the next 5 years. Staff members have a retirement rate of 12.51%, while supervisors are at 23.02%, the lowest among all departments surveyed (Figures 5, 6, and 7).

Most of the respondents from the molecular biology/diagnostics/molecular pathology department prefer to hire employees with MLS/MT and technologist in molecular biology/molecular pathology certifications. Also, 63.30% of the respondents from this department indicated that certification is a prerequisite for candidates for hire. Survey results show that 77.99% of staff and 90.57% of supervisors in the molecular biology/diagnostics department are certified. Night shift is the most difficult to fill in this department.

Phlebotomy

The vacancy rate for phlebotomy is 8.11% (Figure 2). The vacancy rate for staff position is 8.49%; for supervisors, it is 3.45% (Figures 3 and 4). Results show that 10.76% of employees in phlebotomy are anticipated to retire in the next 5 years, the lowest overall retirement rate among all departments. The staff retirement rate is 8.74%, the lowest staff retirement rate among all departments; the rate for supervisors is 27.80% (Figures 5, 6, and 7).

The certifications of choice for new staff-level employees in the phlebotomy department are CLA, medical assistant (MA), MLA, PBT, MLT, and MLS/MT. In this department, 29.6% of the survey participants indicated that certification is prerequisite for candidates for hire. Results show that 42.14% of staff and 68.12% of supervisors (the highest rate of supervisors who are certified) in the phlebotomy department are certified. Double and night shifts are most difficult to staff in this department.

Point-of-Care

The total vacancy rate for point-of-care is 6.18% (Figure 2). The staff vacancy rate is 6.76%, and the supervisor vacancy rate is 4.00% (Figures 3 and 4). Results also reveal that 24.72% of point-of-care department employees are expected to retire in the next 5 years. The staff retirement rate is 18.27%; for supervisors, it is 36.48% (Figures 5, 6, and 7).

When hiring staff-level employees in the point-of-care department, most respondents report the preferred certification are PBT, MLT, and MLS/MT. Also, 63.20% of the supervisors indicated that certification is a prerequisite for candidates for hire. Survey results show that 77.99% of staff and 87.14% of supervisors in the point-of-care department are certified. Evening, night, weekend, double overtime, and holiday shifts are the most difficult to staff in this department.

Send-outs

The total vacancy rate for send-outs is 6.58% (Figure 2). The staff vacancy rate is 7.30%. Of all the departments surveyed, this department has the lowest vacancy rates for supervisors at 1.65% (lowest among all departments surveyed) (Figures 3 and 4). Results also reveal that 18.23% of all send-outs employees are expected to retire in the next 5 years. Staff and supervisor retirement rates for send-outs are 14.18% and 32.43%, respectively (Figures 5, 6, and 7).

When hiring for the send-outs department, most respondents report clinical/CLA, MA, MLA, PBT, MLT, and MLS/MT as the preferred certifications or credentials. In the survey, 35.40% of the respondents from the send-outs department indicated that they are required to hire certified individuals.

Within send-outs, data show that 56.70% of staff and 79.82% of supervisors are certified. Night shift is the most difficult to staff in the send-outs department.

Specimen Processing

The vacancy rate for specimen processing is 9.11% (Figure 2). The staff vacancy rate is 9.69%; the rate for supervisors is at 2.92% (Figures 3 and 4). Survey results show that
14.69% of personnel in specimen processing are expected to retire in the next 5 years. The staff retirement rate is 11.90%; for supervisors, it is 32.26% (Figures 5, 6, and 7).

Respondents from the specimen processing department prefer clinical/CLA, MA, MLA, PBT, MLT, and MLS/MT certifications when hiring staff-level employees. In this department, 24.20% of the survey participants indicated that certification is a prerequisite for candidates for hire, the lowest rate among all departments surveyed (certification rates for this department are low in part because a certification exam for these personnel categories did not exist until 2016, when ASCP created its MLA exam). Survey results show that 34.82% of staff (lowest rate among departments surveyed) and 68.75% of supervisors in the specimen processing department are certified. Double and night shifts are most difficult to staff in this department.

The Current Laboratory Workforce

Results of the 2016-2017 Vacancy Survey shows decreased vacancy rates for laboratory positions (except for cytogenetics, cytology, flow cytometry, hematology/coagulation, point-of-care, and send-outs) across all departments surveyed compared with 2015. Also mentioned earlier, hiring supervisors takes longer (between 6 months and a year) for most departments, even longer than the previous survey results of 3 to 6 months. When asked about the main concern in the laboratory workforce, 24.22% of respondents reported that it is staffing the laboratory with qualified laboratory professionals. They also indicated that the number of applicants is extremely low compared with the number of personnel retiring. But with the increasing workload in the laboratory (compared with the last survey, more respondents indicated having more than 1 million annual testing volume at their laboratories), supervisors are compelled to hire lower level applicants immediately after graduation or those with bachelor’s degrees but not trained in a laboratory training program. Other concerns include low salaries (22.49%), nurses performing high-complexity testing (10.03%), and program closures (9.69%), to name a few.

Retirement rates (for those who anticipate retiring in the next 5 years) for laboratory professionals are also at their highest across the majority of the departments since 2012. Moreover, the change (2016 vs 2014) in supervisory retirement rates is higher compared with staff, especially in the anatomic pathology, chemistry toxicology, cytogenetics, cytology, flow cytometry, hematology coagulation, immunology, microbiology, phlebotomy, point-of-care, send-outs, and specimen departments. Data suggest that these fields will soon be experiencing a drain in personnel who have been working for a long period of time and have a vast amount of experience.

Previous vacancy surveys showed that laboratory professionals accepted shifts that were difficult to fill such as night, double, or weekend shifts for additional income. Current data show that these shifts, along with evening shifts, are in high demand.
Table 2
Overall Retirement Rates by Department Since 2012

<table>
<thead>
<tr>
<th>Department</th>
<th>Overall Retirement, %</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>2016</td>
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<tr>
<td>Hematology/coagulation</td>
<td>23.78</td>
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<tr>
<td>Chemistry/toxicology</td>
<td>22.89</td>
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<tr>
<td>Immunology</td>
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<tr>
<td>Blood bank</td>
<td>20.97</td>
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<td>Core laboratory</td>
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<td>Microbiology</td>
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<td>Cytogenetics</td>
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<td>Send-outs</td>
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<td>Cytology</td>
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<td>Flow cytometry</td>
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<td>Histology</td>
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<td>Anatomic pathology</td>
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<td>Specimen processing</td>
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LIS/QA/PI, laboratory information system/quality assurance/performance improvement.

aData from 2012 and 2014 gathered from past ASCP Vacancy Surveys.

shifts, are now once again difficult to fill. Data also show that 95.70% (92.56% in 2014) of supervisors have not laid off any laboratory professionals in the departments they supervise within the past 6 months of participating in this survey. Furthermore, 88.23% (81.79% in 2014) do not anticipate laying off any laboratory professionals in the department they supervise in the next 6 months. The small percentage who have laid off staff, 11.77% (18.21% in 2014), suggests performance-based layoffs as the main reason (19.39%), followed by budget constraints (10.91%), decreased workload and restructuring (9.09%), use of multidiscipline techs (with dual certifications [1.21%]), and other (3.64%).

According to survey participants, responsibilities of positions not filled in a certain amount of time are temporarily assigned to other staff (49.81%; 40.40% in 2014), left open (45.00%; 34.03% in 2014), position reposted (27.97%; new category), or assigned to an agency personnel that is temporarily employed (14.98%; 8.40% in 2014), eliminated (11.06%; 8.18% in 2014), or permanently assigned to other staff (7.74%; 7.03% in 2014).

New Technologies

The percentage of participants who indicated that new technologies have caused changes to their staffing needs has remained steady (40.25% in 2014 vs 39.2% in 2016). ASCP asked respondents to identify the types of technologies that are causing the greatest changes to their staffing needs. They reported automation to cause the greatest change (55.10%), followed by molecular testing (54.92%), LIS (36.31%), point-of-care (25.94%), and electronic medical records (19.14%).

According to the respondents, automation has increased the need for lower level staff to perform routine testing, leaving the technologists to focus on verifying and running tests. While more testing is done with less staff, turnaround time is affected by training staff how to use the instruments, leading many supervisors to actively seek well-educated, trained, and certified technologists. When asked about the

Table 3
2016 vs 2014 Nonsupervisory (Staff) and Supervisory Retirement Rates

<table>
<thead>
<tr>
<th>Department</th>
<th>Nonsupervisory</th>
<th>Supervisory</th>
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<tr>
<td></td>
<td>2016</td>
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<td>Anatomic pathology</td>
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<td>Blood bank</td>
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<td>Chemistry/toxicology</td>
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<td>Core laboratory</td>
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<td>Cytogenetics</td>
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<td>Cytology</td>
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<td>Flow cytometry</td>
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<tr>
<td>Hematology/coagulation</td>
<td>19.06</td>
<td>18.57</td>
</tr>
<tr>
<td>Histology</td>
<td>14.10</td>
<td>16.95</td>
</tr>
<tr>
<td>Immunology</td>
<td>17.37</td>
<td>18.75</td>
</tr>
<tr>
<td>LIS/QA/PI</td>
<td>24.76</td>
<td>—</td>
</tr>
<tr>
<td>Microbiology</td>
<td>17.05</td>
<td>18.18</td>
</tr>
<tr>
<td>Molecular biology/diagnostics/molecular pathology</td>
<td>12.51</td>
<td>17.07</td>
</tr>
<tr>
<td>Phlebotomy</td>
<td>8.74</td>
<td>10.42</td>
</tr>
<tr>
<td>Point-of-care</td>
<td>18.27</td>
<td>15.15</td>
</tr>
<tr>
<td>Send-outs</td>
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<td>13.12</td>
</tr>
<tr>
<td>Specimen processing</td>
<td>11.90</td>
<td>10.91</td>
</tr>
</tbody>
</table>

LIS/QA/PI, laboratory information system/quality assurance/performance improvement.

Bold values represent the change in retirement rates that increased.
effects of point-of-care testing in staffing, respondents indicated that increased point-of-care technologies are driving the need for more point-of-care staff. Demand for point-of-care testing has dramatically increased the workload for laboratory staff due to oversight/regulatory compliance responsibilities as well as overseeing the nurses and testing personnel outside of the laboratory. Molecular testing continues to increase and, with it, the need for more specialized staff to perform them. Respondents report that new molecular tests are requiring additional trained and certified personnel. The use of LIS and electronic medical records will also require increased need for staff in the future that has expertise in software application management, informatics, and interaction with other departments.

Hiring, Recruiting, and Retaining Laboratory Personnel

When hiring personnel, respondents reported that the top three difficulties they encounter are better pay and/or benefits at other laboratories (48.31%), increasing competition for well-trained personnel (41.74%), and applicants do not possess necessary certification, education, and/or skills to perform the work (38.36%). In recruiting personnel for open positions in the laboratory, hiring managers indicated that their top challenges are better pay and/or benefits at other area laboratories (47.15%), increasing competition for well-trained personnel (41.90%), and applicants do not possess necessary education and skills to perform the work (38.36%). As for retaining staff, the top three issues include better pay and/or benefits at other area laboratories (39.36%), workload/stress (39.25%), and limited potential for advancement and additional compensation (37.42%). The perks offered to all laboratory personnel remain similar to the results of the 2014 survey and include health/retirement benefits, bonuses and premium pay for nontraditional work shifts, and continuing education reimbursements, to name a few. When hiring managers were asked how much budget is allocated on laboratory staff labor/personnel, they indicated that on average it is at 45.98%.

Feedback from the previous survey prompted the ASCP to include questions on voluntary and involuntary terminations. Respondents indicate that on average, 55.14% of terminations have been voluntary. Reasons for leaving voluntarily include leaving for another position within the field (32.82%), relocation (25.12%), retirement (22.47%), leaving the field (10.63%), and higher salary (1.39%). Involuntary termination rate was not as large, at 14.15%.

The ASCP also asked the respondents if they hire foreign nationals under the H1B Visa Program and the type of the certifications they hire. Data show 18.4% do hire foreign nationals with preference toward the following certifications: CT (32.82%), diplomat in laboratory management (25.12%), qualification in cytometry (22.47%), and HTL (10.63%). The ASCP will continue to collect data on this question to analyze trends in the future.

Certification

Overall certification rates are highest among the core laboratory and hematology/coagulation departments, and lowest among phlebotomy and specimen processing. Compared with the 2014 survey report, more departments now require hiring employees who are...
Certification requirement rates went down 0% to 1% in the core laboratory, cytology, hematology coagulation, and microbiology while phlebotomy, histology, and specimen processing went down 1% to 6%.

Data also reveal that 54.40% (56.51% in 2014) of the respondents reported that they hire noncertified personnel to perform the following responsibilities: preanalytic processes (81.16%; 84.10% in 2014), analytical testing of low complexity (47.50%; 44.93% in 2014), analytical testing of moderate complexity (32.53%; 30.65% in 2014), and analytical testing of high complexity (24.32%; 22.35% in 2014). While overall rates show that the rate of hiring noncertified personnel went down, the rate of noncertified staff performing low- to high-complexity testing had an uptick compared with 2014.

The education levels of all staff employed in the laboratory that are not certified are as follows: high school/GED (52.82%; 63.07% in 2014), associate’s degree (37.68%; 40.83% in 2014), bachelor’s degree (56.04%; 52.75% in 2014), and advanced degree (14.33%; 10.55% in 2014). It appears that compared with 2014, supervisors prefer noncertified laboratory personnel with higher levels of education if they are not certified.

### Summary

Overall, the data show that vacancy rates are decreasing overall retirement rates and certification requirements are higher. Results from the qualitative analyses also suggest that vacancies are being filled at a faster rate due to the increasing workload in the laboratory. Respondents indicate that the number of applicants trained in accredited laboratory programs is relatively fixed. Thus, hiring managers are forced into hiring individuals who have not attended an accredited clinical laboratory training program and may have limited training. Respondents also voiced
concerns about competing with nurses for an open position. Compared with the 2014 Vacancy Survey, the percentage of staff employees who work locum tenens (temporary, part-time, per diem, and pro re nata) has decreased for most of the departments. However, for supervisors, there was a slight increase in the percentage of locum tenens employees (median percent change, 1.22). These factors appear to be the contributors to the lower vacancy rates.

In the previous survey, we mentioned that the field should start focusing on the qualifications and certification status of laboratory professionals as these would be crucial factors in addressing the needs of the laboratory workforce. Results from this survey shows that that time is now. Data from this survey strongly suggest the crucial need in the supply of qualified and certified laboratory personnel. The uptick in the rate of noncertified individuals performing low- to high-complexity tests, high retention rates, high retirement rates, and increased rate of staff taking on more responsibilities support this need. For supervisors in rural areas and small community hospitals, vacancies have been open for many months, leaving their laboratories with heavier workloads. As retirement rates continue to increase, the field needs to intensify its efforts on recruiting the next generation of laboratory personnel. This can be accomplished by enrolling more students in accredited training programs or getting more people involved in obtaining experience necessary to become certified. Retention of new graduates is critical, and the staffing needs of rural areas need to be highlighted.

References


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