

special report

2000 Wage and Vacancy Survey of Medical Laboratories

Wages on the Upswing, Vacancy Rates Accelerate

Kory Ward-Cook, PhD, MT(ASCP),¹ and Suzanne Tannar²

From the ¹ASCP Board of Registry, Chicago, IL, and ²Morpace International, Detroit, MI

- ▶ Vacancy rates for 5 of 10 key laboratory positions are at an all-time high. According to the Board of Registry of the American Society of Clinical Pathologists, the year 2000 marks the highest vacancy rates reported per position over the 12-year comparison period.
- ▶ The study examined the number of budgeted, unfilled positions within the medical laboratory profession between August 4, 2000, and October 10, 2000, for medical technologist staff, supervisor, and manager; cytotechnologist staff and supervisor; histotechnologist staff and supervisor; histologic technician; medical laboratory technician; and phlebotomist.
- ▶ The national trends indicate that the positions of cytotechnologist staff, histotechnologist staff and supervisor, and phlebotomist are experiencing vacancies of 20.6%, 22.2%, 20.0%, and 18.1%, respectively. Moreover, regional data indicate shortages in excess of 20% to 40% for all 10 positions depending on location, size, and type of facility.

Personnel shortages in the clinical laboratory continue to climb. The year 2000 marked the highest vacancy rates reported per position over the 12-year comparison period, for 5 of 10 positions, according to the results of a survey conducted by the American Society of Clinical Pathologists' Board of Registry (BOR). For all 10 medical laboratory positions, the percentage increase for median average pay rates was greater than in any time period from 1992, when the survey instrument first requested average rates.

The BOR, in conjunction with Morpace International, Detroit, MI, conducts a biennial wage and vacancy survey of laboratory managers. The survey documents current wage levels

for 10 medical laboratory positions, measures the vacancy rates for these positions, and compares and contrasts data from 1988, 1990, 1992, 1994, 1996, and 1998 studies. All 7 studies were designed and executed alike.

A questionnaire was mailed to 2,500 randomly selected medical laboratory managers listed with the BOR. Five hundred ninety-four medical laboratories returned questionnaires for a response rate of 23.76%. All responses were received between August 4, 2000, and October 10, 2000. Sample returns were fully representative by type, size of facility, and geographic region of the country. The sample size provided a sample error tolerance of $\pm 4\%$ at a 95% confidence level.

Both medical technologist staff and medical technologist manager positions exist at 87% of responding laboratories. Eighty percent of laboratories have phlebotomists, followed by 75% employing medical laboratory technicians. Seventy-two percent have medical technologist supervisors. Forty percent of the laboratories list histologic technicians as part of their staff, with 24% listing histotechnologists and 28% employing histologic supervisors. Thirty-one percent of laboratories have staff cytotechnologists, and only 17% employ cytotechnologist supervisors. Though data for these latter positions were more limited, the number of responses from laboratories with these positions was sufficient to support the conclusions of this report.

Wages

For the 2000 survey, beginning, average, and top wage levels were measured for each of 10 positions commonly found in US medical laboratories:

- 3 levels for medical technologists
- 2 levels for cytotechnologists

Median Beginning Pay Rate Increases (Decreases) From 1988 to 2000**T1**

Position	Change (%)					
	1988-1990	1990-1992	1992-1994	1994-1996	1996-1998	1998-2000
Medical technologists						
Staff	11.3	11.2	2.4	4.3	3.2	7.7
Supervisor	13.5	6.8	6.1	1.7	6.0	6.9
Manager	9.8	5.1	6.2	4.1	7.9	9.9
Cytotechnologists						
Staff	19.1	17.4	3.3	7.0	4.8	8.4
Supervisor	22.1	14.4	3.7	6.9	3.4	2.2
Histologic technicians/histotechnologists						
Technicians	NA	13.3	2.0	7.0	1.9	10.1
Histotechnologists	NA	11.0	7.2	NC	0.8	15.8
Supervisor	13.8	10.9	2.9	7.2	(0.7)	7.4
Medical laboratory technicians	11.1	9.4	4.3	2.1	5.1	9.6
Phlebotomists	5.7	19.9	(7.5)	3.7	5.7	9.5

NA, not available; NC, no change.

- 3 levels for histologic technicians/histotechnologists
- 1 level for medical laboratory technicians
- 1 level for phlebotomists

The measurement used for wages is the median wage. The median wage is the wage at the 50th percentile when all wages for a particular category are ordered from lowest to highest. In other words, half of the laboratories pay below the median and half pay above the median.

The median wage is the base pay. The base pay represents monetary compensation that the employee receives for a daytime work hour and excludes other forms of compensation such as shift pay, bonuses, and benefits. In addition, many laboratories pay above the stated beginning or low-end rate for entry-level positions to attract qualified candidates to vacant positions. The median beginning wage paid to staff medical technologists in 2000 was \$14.00 per hour (up \$1.00 from 1998 and up \$1.40 from 1996). This translates into an annual salary of \$29,120 (\$14.00 × 2,080 hours, assuming a standard 40-hour workweek, 52 weeks a year). The median average rate paid to staff medical technologists was \$17.90 per hour (\$37,232 annually), and the median top rate was \$20.50 per hour (\$42,640 annually).

Between 1996 and 1998, the increase in beginning rates for medical technologist staff was only 3.2% or about 1.6% per year. From 1998 to 2000, the increase was 7.7% or almost 4% per year. From 1996 to 1998, the increase in average rates for medical technologist staff was 3.9% or roughly 2% per year. From 1998 to 2000, this position experienced an increase of 11.9%, an increase of 6% per year. Before 2000, the average increase was only 2% to 3% per year.

In 1988 and 1990, the survey instrument requested the top rate of pay for each position as well as the beginning rate. In 1992, an additional question requested the average rate, a rate considered to be more reflective of the overall pay rates. The median beginning pay rate increases (or decreases) for wages for each position from 1988 to 2000, in 2-year increments, are shown in [T1]. The 2-year percentage increases in average wages for each position from 1992 to 2000 are shown in [T2].

Nationally, trends have fluctuated by position between periods. Beginning wage increases from 1988 to 1990 were largest for cytotechnologist supervisors and staff (22.1% and 19.1%, respectively). From 1990 to 1992, beginning wage increases were largest for phlebotomists (19.9%) and cytotechnologists staff (17.4%). For all positions, with the exception of phlebotomists, increases in wages from 1990 to 1992 were less than the previous 2 years

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Median Average Pay Rate Increases (Decreases) From 1992-2000**T2**

Position	Change (%)			
	1992-1994	1994-1996	1996-1998	1998-2000
Medical technologists				
Staff	5.4	4.3	3.9	11.9
Supervisor	5.7	3.5	6.5	8.6
Manager	8.8	4.8	10.5	11.1
Cytotechnologists				
Staff	5.1	2.5	5.6	12.1
Supervisor	(1.2)	6.5	5.5	12.1
Histologic technicians/histotechnologists				
Technicians	4.7	7.5	NC	13.3
Histotechnologists	9.8	0.5	4.0	15.4
Supervisor	2.1	(0.4)	5.0	11.7
Medical laboratory technicians				
	6.3	1.7	7.5	8.5
Phlebotomists				
	3.9	6.3	5.9	10.0

(1988 to 1990); however, increases from 1990 to 1992 were still less than 10% in only 3 positions. From 1992 to 1994, increases in median beginning wages for all positions were less than 10% and, with the exception of medical technologist supervisors and managers and histotechnologists, increases were about 5% or less, or 2.5% annually. From 1994 to 1996, increases in beginning wages for all positions (except cytotechnologist staff and supervisors, and histologic technicians and supervisors) were less than 5%. In 1998, 4 of the 10 positions had increases of over 5.0% from their reported 1996 levels. They include medical technologist supervisor and managers and medical laboratory technicians and phlebotomists.

Beginning wage increases from 1998 to 2000 were the largest experienced since comparisons from 1990 to 1992. Pay for 9 of the 10 employee positions increased at least 6.9% from 1998 to 2000, with histotechnologist pay increasing by 15.8%. Beginning pay for cytotechnologist supervisors, however, increased only 2.2% from 1998.

Median average wage trends have also fluctuated by position between periods. With 4 exceptions, from 1992 to 1994, increases of over 5% occurred in average median pay rates for all positions. The exceptions include cytotechnologist supervisors, with a decrease of 1.2%; histologic technicians, with an increase of 4.7%; histologic technician or histotechnologist supervisor, with an increase of 2.1%; and phlebotomists, with an increase of 3.9%. From 1994 to 1996, increases in average pay rates for positions were much lower. Only 3 positions exceeded a 5% increase.

These positions included cytotechnologist supervisors with a 6.5% increase, histologic technicians with a 7.5% increase, and phlebotomists with a 6.3% increase. From 1996 to 1998, increases were much healthier than in the previous 2-year period. For 7 of the 10 positions surveyed average salaries increased by 5% or more. The 3 positions with increases of less than 5% included medical technologists staff, 3.9%; histologic technicians, no change; and histotechnologists, 4.0%.

Median average pay rate increases from 1998 to 2000 were larger than comparisons for any other time period. Only medical technologist supervisors (8.6%) and medical laboratory technician staff (8.5%) had wage increases of less than 10%. Histologic technicians (13.3%) and histotechnologists (15.4%) experienced the largest increases.

The beginning, top, and average hourly rates for the 10 medical laboratory positions nationally in 2000 are shown in [T3 to T12]. Data are shown by laboratory type, hospital size (by number of beds), hospital ownership, city size, and geographic region.

Medical Technologists

The Far West continued to pay the highest median beginning, average, and top wages [T3]. The lowest median beginning and top pay rates were in the West South Central region, while the West North Central region paid the lowest average rate. Beginning, average, and top wages were highest in the larger cities. The suburbs also paid the highest beginning salaries.

T3

Medical Technologist Hourly Pay Rates/Vacancies 2000 (Staff)

Employer group	Pay Rate						FTE Vacancies (%)
	Beginning		Top		Average		
	n*	Median	n*	Median	n*	Median	
Total	521	\$14.00	521	\$20.50	521	\$17.90	11.1
Private clinics/reference laboratories	59	\$13.80	59	\$20.00	59	\$17.00	10.5
Hospitals	401	\$14.00	401	\$20.60	401	\$18.00	19.4
Private physician(s) practice groups	31	\$12.70	31	\$18.00	31	\$16.00	17.6
Hospital size (no. of beds)							
Fewer than 100	86	\$13.50	86	\$18.50	86	\$16.40	12.5
100-299	165	\$14.00	165	\$20.50	165	\$18.00	17.6
300-499	94	\$14.20	94	\$21.40	94	\$18.20	7.5
500 or more	53	\$14.10	53	\$21.20	53	\$18.60	7.6
Hospital ownership							
Federal	29	\$14.50	29	\$21.50	29	\$18.80	20.9
Nonfederal	407	\$14.00	407	\$20.60	407	\$18.00	10.6
City size							
Rural area	112	\$13.50	112	\$18.90	112	\$16.50	21.0
Small-medium-sized city	213	\$13.90	213	\$20.50	213	\$17.80	10.1
Large city	105	\$15.00	105	\$21.90	105	\$19.00	11.5
Suburbs	52	\$15.20	52	\$21.50	52	\$18.10	8.9
Region†							
Northeast	57	\$14.60	57	\$20.70	57	\$18.00	14.9
East North Central	100	\$14.00	100	\$20.60	100	\$18.00	14.0
South Central Atlantic	132	\$13.50	132	\$20.00	132	\$17.20	10.5
West South Central	64	\$12.90	64	\$19.40	64	\$17.00	7.9
West North Central	70	\$13.30	70	\$19.90	70	\$16.90	8.9
Far West	97	\$17.00	97	\$23.70	97	\$21.10	7.7

FTE, full-time equivalent.

*Number of responses.

†State composition of regions includes the following: Northeast—Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; East North Central—Illinois, Indiana, Michigan, Ohio, and Wisconsin; South Central Atlantic—Alabama, Delaware, District of Columbia, Florida, Kentucky, Georgia, Maryland, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia; West South Central—Arkansas, Louisiana, Oklahoma, and Texas; West North Central—Iowa, Kansas, Minnesota, Nebraska, Missouri, North Dakota, and South Dakota; and Far West—Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

Larger hospitals and federally owned hospitals typically paid more than smaller hospitals or hospitals not federally owned.

Medical Technologist Supervisors

The Far West paid the highest median beginning, average, and top wages, and the West South Central Region paid the lowest

[T4]. The median beginning, average, and top pay rates continued to be highest in the large cities. In 2000, private clinics/reference laboratories paid the most per hour to start, while private physician group practices paid the least. The gap in average wages has widened with private physician groups (\$18.40) paying 16% less than do hospitals (\$21.80) in 2000, up from 10% less in 1998.

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Medical Technologist Hourly Pay Rates/Vacancies 2000 (Supervisor)**T4**

Employer group	Pay Rate						FTE Vacancies (%)
	Beginning		Top		Average		(Average)
	n*	Median	n*	Median	n*	Median	
Total	435	\$17.00	435	\$24.00	435	\$21.50	12.5
Private clinics/reference laboratories	50	\$17.30	50	\$23.40	50	\$20.40	10.0
Hospitals	334	\$17.00	334	\$24.50	334	\$21.80	10.2
Private physician(s) practice groups	24	\$15.50	24	\$22.00	24	\$18.40	7.1
Hospital size (no. of beds)							
Fewer than 100	52	\$15.80	52	\$20.90	52	\$19.20	10.0
100-299	140	\$16.70	140	\$24.00	140	\$21.00	11.4
300-499	87	\$17.50	87	\$25.50	87	\$23.00	10.0
500 or more	51	\$18.60	51	\$27.00	51	\$24.00	10.1
Hospital ownership							
Federal	29	\$20.00	29	\$26.00	29	\$23.00	11.1
Nonfederal	337	\$16.80	337	\$24.40	337	\$21.80	12.0
City size							
Rural area	76	\$16.00	76	\$22.20	76	\$19.70	16.0
Small-medium-sized city	187	\$16.50	187	\$24.00	187	\$21.40	11.8
Large city	87	\$18.90	87	\$27.30	87	\$24.30	16.2
Suburbs	49	\$18.00	49	\$25.60	49	\$22.30	4.4
Region†							
Northeast	52	\$18.00	52	\$26.00	52	\$22.00	22.7
East North Central	82	\$16.90	82	\$23.90	82	\$21.30	15.9
South Central Atlantic	118	\$16.00	118	\$24.00	118	\$20.50	8.5
West South Central	58	\$15.50	58	\$22.10	58	\$19.00	12.8
West North Central	47	\$16.60	47	\$23.50	47	\$21.10	7.5
Far West	77	\$20.10	77	\$27.50	77	\$25.50	9.3

FTE, full-time equivalent.

*Number of responses.

†State composition of regions includes the following: Northeast—Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; East North Central—Illinois, Indiana, Michigan, Ohio, and Wisconsin; South Central Atlantic—Alabama, Delaware, District of Columbia, Florida, Kentucky, Georgia, Maryland, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia; West South Central—Arkansas, Louisiana, Oklahoma, and Texas; West North Central—Iowa, Kansas, Minnesota, Nebraska, Missouri, North Dakota, and South Dakota; and Far West—Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

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Medical Technologist Managers

As in previous years, wages for medical technologist managers were highest for the Far West [T5]. Beginning rates were lowest in the West North Central region, and top rates were lowest in the West South Central region. Managers in larger cities

and suburbs continued to receive more pay than those in smaller cities. In 2000, median beginning, average, and top wages usually increased as hospital size (by number of beds) increased. All wage categories were higher for federal employees vs nonfederal employees in these positions.

T5

Medical Technologist Hourly Pay Rates/Vacancies 2000 (Manager)

Employer group	Pay Rate						FTE Vacancies (%)
	Beginning		Top		Average		
	n*	Median	n*	Median	n*	Median	
Total	526	\$21.00	525	\$30.30	527	\$27.00	13.3
Private clinics/reference laboratories	61	\$20.50	61	\$30.00	61	\$26.10	14.3
Hospitals	390	\$21.30	389	\$31.00	391	\$28.00	9.5
Private physician(s) practice groups	41	\$18.50	41	\$25.00	41	\$22.00	10.0
Hospital size (no. of beds)							
Fewer than 100	89	\$19.50	89	\$27.00	89	\$24.30	20.0
100-299	158	\$21.80	158	\$31.00	159	\$27.90	16.7
300-499	91	\$23.10	91	\$35.50	91	\$31.90	13.3
500 or more	49	\$24.30	48	\$34.10	49	\$30.90	4.0
Hospital ownership							
Federal	31	\$24.00	31	\$31.30	31	\$28.30	20.0
Nonfederal	398	\$21.00	397	\$30.70	399	\$27.70	13.3
City size							
Rural area	125	\$19.50	125	\$27.00	125	\$24.40	20.0
Small-medium-sized city	205	\$21.00	204	\$30.00	206	\$27.90	6.7
Large city	106	\$24.00	106	\$34.30	106	\$30.00	13.6
Suburbs	54	\$23.50	54	\$35.00	54	\$30.00	6.7
Region†							
Northeast	55	\$21.50	55	\$31.50	55	\$30.00	18.8
East North Central	98	\$20.40	98	\$30.80	99	\$26.50	13.3
South Central Atlantic	129	\$20.00	128	\$29.30	129	\$26.70	7.1
West South Central	67	\$20.90	67	\$28.10	67	\$25.00	6.7
West North Central	74	\$19.60	74	\$29.20	74	\$25.00	14.3
Far West	102	\$24.10	102	\$35.00	102	\$31.10	12.5

FTE, full-time equivalent.

*Number of responses.

†State composition of regions includes the following: Northeast—Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; East North Central—Illinois, Indiana, Michigan, Ohio, and Wisconsin; South Central Atlantic—Alabama, Delaware, District of Columbia, Florida, Kentucky, Georgia, Maryland, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia; West South Central—Arkansas, Louisiana, Oklahoma, and Texas; West North Central—Iowa, Kansas, Minnesota, Nebraska, Missouri, North Dakota, and South Dakota; and Far West—Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

Cytotechnologists

Wages were the highest in the Far West region and the lowest in the West North Central region [T6]. Private clinics/reference laboratories paid at least \$1.00 more an hour in beginning, average, and top wages, compared with hospitals. Beginning, average, and top wages in both the large cities and

the suburbs were the highest, while wages in the rural areas continued to be the lowest. Medium-sized hospitals (300-499 beds) paid higher beginning rates than did larger or smaller hospitals. Average and top rates were similar for 100-bed and 500+ bed hospitals. Median beginning salaries at federal hospitals were nearly equal to those of nonfederal hospitals, while

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Cytotechnologist Hourly Pay Rates/Vacancies 2000 (Staff)**T6**

Employer group	Pay Rate						FTE Vacancies (%)
	Beginning		Top		Average		(Average)
	n*	Median	n*	Median	n*	Median	
Total	188	\$16.70	188	\$24.00	189	\$21.30	20.6
Private clinics/reference laboratories	22	\$18.00	22	\$25.00	22	\$22.40	20.0
Hospitals	153	\$16.70	153	\$24.00	154	\$21.10	23.7
Private physician(s) practice groups [†]	—	—	—	—	—	—	—
Hospital size (no. of beds)							
Fewer than 100	8	\$16.70	8	\$23.60	8	\$21.00	0.0
100-299	55	\$16.50	55	\$23.00	56	\$20.00	26.7
300-499	51	\$17.50	51	\$25.00	51	\$22.10	17.4
500 or more	37	\$16.50	37	\$23.90	37	\$21.00	18.2
Hospital ownership							
Federal	15	\$17.00	15	\$21.60	15	\$19.80	45.7
Nonfederal	154	\$16.60	154	\$24.10	155	\$21.60	25.0
City size							
Rural area	15	\$15.80	15	\$22.00	15	\$18.50	20.0
Small-medium-sized city	93	\$16.30	93	\$24.00	94	\$21.00	15.6
Large city	52	\$17.80	52	\$26.30	52	\$22.50	28.3
Suburbs	16	\$17.40	16	\$25.50	16	\$23.00	20.0
Region[§]							
Northeast	35	\$16.90	35	\$24.50	35	\$21.90	45.0
East North Central	41	\$16.70	41	\$23.40	41	\$21.00	16.7
South Central Atlantic	51	\$16.00	51	\$23.50	51	\$20.50	9.0
West South Central	17	\$17.90	17	\$25.00	17	\$21.40	15.6
West North Central	20	\$15.80	20	\$22.90	21	\$19.30	8.1
Far West	23	\$19.60	23	\$29.80	23	\$27.00	33.3

FTE, full-time equivalent.

*Number of responses

[†]Sample size fewer than 5 respondents; therefore, no data are reported.

[§]State composition of regions includes the following: Northeast—Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; East North Central—Illinois, Indiana, Michigan, Ohio, and Wisconsin; South Central Atlantic—Alabama, Delaware, District of Columbia, Florida, Kentucky, Georgia, Maryland, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia; West South Central—Arkansas, Louisiana, Oklahoma, and Texas; West North Central—Iowa, Kansas, Minnesota, Nebraska, Missouri, North Dakota, and South Dakota; and Far West—Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

average and top salaries appeared to be about 8% lower than those of nonfederal hospitals.

Cytotechnologist Supervisors

Wages were the highest in the Far West region and the lowest in the West North Central region [T7]. Average and

top rates were higher in private clinics/reference laboratories. In 2000, pay rates continued to be the highest in large cities and lowest in rural areas. Beginning pay rates were highest in hospitals with 500+ beds; however, hospitals with 300 to 499 beds paid the highest average and top salaries. Sample sizes for federally owned and nonfederally owned hospitals did not

Cytotechnologist Hourly Pay Rates/Vacancies 2000 (Supervisor)**T7**

Employer group	Pay Rate						FTE Vacancies (%)
	Beginning		Top		Average		(Average)
	n*	Median	n*	Median	n*	Median	
Total	107	\$18.40	107	\$27.00	107	\$25.90	10.0
Private clinics/reference laboratories	18	\$21.20	18	\$29.00	18	\$28.00	11.1
Hospitals	81	\$18.30	81	\$26.90	81	\$24.50	7.7
Private physician(s) practice groups [†]	—	—	—	—	—	—	—
Hospital size (no. of beds)							
Fewer than 100	5	\$17.90	5	\$26.40	5	\$22.50	— [†]
100-299	23	\$17.90	23	\$25.00	23	\$22.30	12.5
300-499	23	\$18.70	23	\$28.80	23	\$27.80	11.1
500 or more	30	\$18.90	30	\$27.10	30	\$24.80	20.0
Hospital ownership							
Federal	8	\$20.90	8	\$26.80	8	\$23.70	— [†]
Nonfederal	85	\$18.10	85	\$27.10	85	\$25.50	11.1
City size							
Rural area	8	\$15.90	8	\$23.80	8	\$21.80	0.0
Small-medium-sized city	52	\$18.00	52	\$26.50	52	\$25.00	10.0
Large city	33	\$19.90	33	\$29.50	33	\$28.70	10.0
Suburbs	8	\$18.40	8	\$26.90	8	\$25.60	0.0
Region[§]							
Northeast	18	\$19.50	18	\$29.00	18	\$28.00	11.1
East North Central	20	\$18.30	20	\$27.40	20	\$25.40	20.0
South Central Atlantic	30	\$17.60	30	\$26.30	30	\$22.60	0.0
West South Central	11	\$21.10	11	\$28.10	11	\$27.60	18.2
West North Central	14	\$17.00	14	\$25.30	14	\$21.00	0.0
Far West	13	\$22.80	13	\$32.10	13	\$29.80	12.5

FTE, full-time equivalent.

*Number of responses.

[†]Sample size fewer than 5 respondents; therefore, no data are reported.

[§]State composition of regions includes the following: Northeast—Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; East North Central—Illinois, Indiana, Michigan, Ohio, and Wisconsin; South Central Atlantic—Alabama, Delaware, District of Columbia, Florida, Kentucky, Georgia, Maryland, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia; West South Central—Arkansas, Louisiana, Oklahoma, and Texas; West North Central—Iowa, Kansas, Minnesota, Nebraska, Missouri, North Dakota, and South Dakota; and Far West—Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

allow for statistically significant comparisons of hospital pay rates.

Histologic Technicians

The highest wages were paid to histologic technicians in the Far West and Northeast, while the lowest wages for this position

were found in the West South Central region [T8]. In 2000, private clinics/reference laboratories paid their technicians rates similar to those of hospitals, a significant change from previous years. As seen in previous years, wages increased as the population density increased. Hospitals with 100 beds or fewer paid about 7% lower beginning salaries than did hospitals with more

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Histologic Technician Hourly Pay Rates/Vacancies 2000 (Staff)**T8**

Employer group	Pay Rate						FTE Vacancies (%)
	Beginning		Top		Average		(Average)
	n*	Median	n*	Median	n*	Median	
Total	246	\$12.00	246	\$17.30	245	\$15.30	16.1
Private clinics/reference laboratories	17	\$12.00	17	\$17.40	17	\$15.00	14.3
Hospitals	215	\$12.10	215	\$17.30	214	\$15.40	11.8
Private physician(s) practice groups [†]	—	—	—	—	—	—	—
Hospital size (no. of beds)							
Fewer than 100	14	\$11.30	14	\$17.80	13	\$15.50	0.0
100-299	93	\$12.10	93	\$17.30	93	\$15.10	16.7
300-499	61	\$12.10	61	\$17.20	61	\$15.50	9.0
500 or more	44	\$12.10	44	\$17.50	44	\$15.60	13.0
Hospital ownership							
Federal	20	\$12.80	20	\$17.70	20	\$15.40	12.5
Nonfederal	211	\$12.00	211	\$17.20	210	\$15.40	16.1
City size							
Rural area	31	\$11.00	31	\$16.10	30	\$12.50	25.0
Small-medium-sized city	114	\$11.90	114	\$17.10	114	\$15.20	12.9
Large city	63	\$12.80	63	\$18.50	63	\$16.30	17.0
Suburbs	22	\$13.30	22	\$18.70	22	\$16.70	15.4
Region[§]							
Northeast	40	\$13.40	40	\$18.30	39	\$16.30	36.7
East North Central	52	\$12.50	52	\$17.30	52	\$15.50	16.7
South Central Atlantic	60	\$11.70	60	\$17.10	60	\$15.00	8.6
West South Central	27	\$11.10	27	\$15.80	27	\$13.20	13.5
West North Central	32	\$11.10	32	\$16.40	32	\$14.30	11.8
Far West	35	\$13.30	35	\$19.20	35	\$16.40	9.4

FTE, full-time equivalent.

*Number of responses.

[†]Sample size fewer than 5 respondents; therefore, no data are reported.

[§]State composition of regions includes the following: Northeast—Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; East North Central—Illinois, Indiana, Michigan, Ohio, and Wisconsin; South Central Atlantic—Alabama, Delaware, District of Columbia, Florida, Kentucky, Georgia, Maryland, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia; West South Central—Arkansas, Louisiana, Oklahoma, and Texas; West North Central—Iowa, Kansas, Minnesota, Nebraska, Missouri, North Dakota, and South Dakota; and Far West—Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

than 100 beds. Unlike other medical laboratory positions, little difference was found for average and top wages by hospital size (by number of beds). Likewise, as seen in previous years, little difference was seen in salaries between federally and nonfederally owned hospitals.

Histotechnologists

For all wage categories, the Northeast paid the highest and the West South Central and West North Central paid the lowest [T9]. Because of the small sample size, comparisons could not be made for private clinics, physician groups, and federally

Histotechnologist Hourly Pay Rates/Vacancies 2000 (Staff)**T9**

Employer group	Pay Rate						FTE Vacancies (%)
	Beginning		Top		Average		(Average)
	n*	Median	n*	Median	n*	Median	
Total	145	\$13.90	145	\$19.90	144	\$18.00	22.2
Private clinics/reference laboratories	10	\$16.00	10	\$22.30	10	\$19.20	20.0
Hospitals	128	\$13.80	128	\$19.70	128	\$18.00	37.7
Private physician(s) practice groups [†]	—	—	—	—	—	—	—
Hospital size (no. of beds)							
Fewer than 100	8	\$13.60	8	\$18.90	8	\$17.10	18.8
100-299	45	\$13.80	45	\$19.60	45	\$18.10	20.0
300-499	43	\$13.20	43	\$19.50	43	\$17.00	20.8
500 or more	31	\$14.10	31	\$20.30	31	\$19.00	20.0
Hospital ownership							
Federal	13	\$17.00	13	\$20.00	13	\$18.80	34.6
Nonfederal	123	\$13.50	123	\$19.80	122	\$17.90	25.0
City size							
Rural area	12	\$12.60	12	\$18.50	12	\$17.00	15.4
Small-medium-sized city	65	\$13.10	65	\$19.60	64	\$17.80	20.7
Large city	41	\$14.50	41	\$21.20	41	\$19.00	25.8
Suburbs	21	\$14.10	21	\$20.90	21	\$18.70	5.0
Region[§]							
Northeast	22	\$15.30	22	\$22.40	21	\$20.30	14.0
East North Central	20	\$14.00	20	\$20.10	20	\$17.50	27.6
South Central Atlantic	51	\$13.10	51	\$19.70	51	\$17.20	16.7
West South Central	18	\$12.30	18	\$18.20	18	\$15.00	73.7
West North Central	10	\$12.30	10	\$18.20	10	\$16.50	21.4
Far West	23	\$14.50	23	\$20.50	23	\$19.50	15.8

FTE, full-time equivalent.

*Number of responses.

[†]Sample size fewer than 5 respondents; therefore, no data are reported.

[§]State composition of regions includes the following: Northeast—Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; East North Central—Illinois, Indiana, Michigan, Ohio, and Wisconsin; South Central Atlantic—Alabama, Delaware, District of Columbia, Florida, Kentucky, Georgia, Maryland, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia; West South Central—Arkansas, Louisiana, Oklahoma, and Texas; West North Central—Iowa, Kansas, Minnesota, Nebraska, Missouri, North Dakota, and South Dakota; and Far West—Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

owned and nonfederally owned hospitals. In 2000, for all wage categories, large cities experienced at least a 14% increase in wages from 1998, replacing suburbs as paying the highest wages based on city size. Rural areas continued to pay their histotechnologists the lowest wages. Hospitals with 500+ beds paid the highest wages.

Histologic Technicians/Histotechnologist Supervisors

The Far West and the Northeast regions paid their histology supervisors the highest wages across all rates, while the West South Central and the West North Central regions paid the least [T10]. In 2000, larger cities paid the highest salaries for begin-

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Histologic Technician/Histotechnologist Hourly Pay Rates/Vacancies 2000 (Supervisor)**T10**

Employer group	Pay Rate						FTE Vacancies (%)
	Beginning		Top		Average		(Average)
	n*	Median	n*	Median	n*	Median	
Total	176	\$16.00	176	\$24.10	176	\$21.00	20.0
Private clinics/reference laboratories	14	\$19.00	14	\$25.70	14	\$22.90	20.0
Hospitals	153	\$16.00	153	\$23.40	153	\$20.60	7.1
Private physician(s) practice groups [†]	—	—	—	—	—	—	—
Hospital size (no. of beds)							
Fewer than 100	9	\$15.60	9	\$21.10	8	\$18.00	0.0
100-299	47	\$15.60	47	\$22.70	47	\$19.80	22.2
300-499	55	\$15.90	55	\$23.70	55	\$21.20	22.2
500 or more	40	\$16.70	40	\$25.70	41	\$23.00	20.0
Hospital ownership							
Federal	15	\$20.30	15	\$26.00	15	\$22.90	30.0
Nonfederal	149	\$16.00	149	\$23.80	149	\$20.90	20.0
City size							
Rural area	15	\$14.00	15	\$19.20	14	\$17.60	25.0
Small-medium-sized city	84	\$15.60	84	\$23.30	84	\$20.00	10.0
Large city	51	\$18.70	51	\$26.40	51	\$23.00	30.0
Suburbs	16	\$17.50	16	\$25.60	17	\$22.00	10.0
Region[§]							
Northeast	23	\$17.30	23	\$26.60	23	\$24.30	15.4
East North Central	29	\$17.60	29	\$25.50	29	\$22.00	30.0
South Central Atlantic	52	\$16.10	52	\$24.40	52	\$20.90	11.1
West South Central	24	\$15.40	24	\$23.00	24	\$18.60	18.2
West North Central	24	\$14.00	24	\$21.20	24	\$18.60	10.0
Far West	23	\$18.60	23	\$26.40	23	\$23.00	11.1

FTE, full-time equivalent.

*Number of responses.

[†]Sample size fewer than 5 respondents; therefore, no data are reported.

[§]State composition of regions includes the following: Northeast—Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; East North Central—Illinois, Indiana, Michigan, Ohio, and Wisconsin; South Central Atlantic—Alabama, Delaware, District of Columbia, Florida, Kentucky, Georgia, Maryland, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia; West South Central—Arkansas, Louisiana, Oklahoma, and Texas; West North Central—Iowa, Kansas, Minnesota, Nebraska, Missouri, North Dakota, and South Dakota; and Far West—Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

ning, average, and top pay rates, while rural areas paid the least. Because of the small sample size for this position, statistically significant comparisons could not be made for private clinics/reference laboratories and private physician groups. Likewise, comparisons could not be made for federally or nonfederally owned hospitals for this position.

Medical Laboratory Technicians

As has been the case every year since 1992, the highest beginning and average wages in 2000 were paid in the Northeast region [T11]. Top pay rates were the highest in the Far West, a finding consistent with the 1998 results. The highest beginning and average wages were paid in suburban areas, with large cities

Medical Laboratory Technician Hourly Pay Rates/Vacancies 2000 (Staff)**T 1 1**

Employer group	Pay Rate						FTE Vacancies (%)
	Beginning		Top		Average		
	n*	Median	n*	Median	n*	Median	
Total	456	\$11.40	456	\$16.30	455	\$14.00	14.3
Private clinics/reference laboratories	45	\$11.60	45	\$16.10	45	\$14.10	13.5
Hospitals	342	\$11.30	342	\$16.40	341	\$14.00	18.5
Private physician(s) practice groups	40	\$10.40	40	\$15.00	40	\$13.00	22.7
Hospital size (no. of beds)							
Fewer than 100	74	\$11.00	74	\$15.30	74	\$13.50	29.4
100-299	140	\$11.50	140	\$16.70	139	\$14.30	15.4
300-499	77	\$11.30	77	\$16.50	77	\$14.00	8.8
500 or more	47	\$11.40	47	\$16.80	47	\$14.90	10.9
Hospital ownership							
Federal	29	\$11.30	29	\$15.90	29	\$14.70	20.9
Nonfederal	349	\$11.40	349	\$16.30	348	\$14.00	13.9
City size							
Rural area	112	\$11.50	112	\$15.50	112	\$13.60	25.6
Small-medium-sized city	184	\$11.00	184	\$16.20	184	\$13.90	11.1
Large city	82	\$11.80	82	\$17.60	82	\$14.90	17.7
Suburbs	44	\$12.00	44	\$17.00	44	\$15.00	9.8
Region†							
Northeast	53	\$12.30	53	\$17.00	53	\$16.00	24.5
East North Central	95	\$11.90	95	\$16.90	95	\$14.80	13.3
South Central Atlantic	121	\$11.00	121	\$15.90	120	\$13.80	10.8
West South Central	59	\$10.70	59	\$15.10	59	\$12.80	14.3
West North Central	67	\$11.00	67	\$16.10	67	\$13.90	15.8
Far West	61	\$12.00	61	\$17.40	61	\$14.60	12.3

FTE, full-time equivalent.

*Number of responses.

†State composition of regions includes the following: Northeast—Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; East North Central—Illinois, Indiana, Michigan, Ohio, and Wisconsin; South Central Atlantic—Alabama, Delaware, District of Columbia, Florida, Kentucky, Georgia, Maryland, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia; West South Central—Arkansas, Louisiana, Oklahoma, and Texas; West North Central—Iowa, Kansas, Minnesota, Nebraska, Missouri, North Dakota, and South Dakota; and Far West—Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

paying approximately 4% more in top wages than the suburbs. Private clinics/reference laboratories continued to pay the highest beginning and average wages. In 2000, hospitals with 100 to 299 beds, 300 to 499 beds, and 500+ beds were all within \$0.90 of each other in hourly rate for beginning wages. Hospitals with

fewer than 100 beds paid their medical laboratory technicians the lowest wages. Top pay rates were approximately 3% higher at nonfederally owned hospitals, a change from 1998. Beginning rates were about the same for both types of facilities, while average rates were 5% higher at federally owned hospitals.

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Phlebotomist Hourly Pay Rates/Vacancies 2000**T12**

Employer group	Pay Rate						FTE Vacancies (%)
	Beginning		Top		Average		
	n*	Median	n*	Median	n*	Median	
Total	484	\$8.10	484	\$11.80	484	\$9.90	18.1
Private clinics/reference laboratories	52	\$8.50	52	\$12.00	52	\$10.00	16.0
Hospitals	368	\$8.10	368	\$11.80	368	\$9.90	24.8
Private physician(s) practice groups	37	\$7.00	37	\$10.50	37	\$9.20	25.0
Hospital size (no. of beds)							
Fewer than 100	74	\$7.30	74	\$10.10	74	\$8.50	17.9
100-299	153	\$8.00	153	\$12.00	153	\$10.00	18.4
300-499	89	\$8.50	89	\$12.00	89	\$10.00	14.7
500 or more	49	\$8.30	49	\$12.40	49	\$10.10	14.8
Hospital ownership							
Federal	27	\$8.70	27	\$11.80	27	\$10.30	15.0
Nonfederal	374	\$8.10	374	\$11.90	374	\$9.90	17.2
City size							
Rural area	99	\$7.40	99	\$10.70	99	\$8.70	26.5
Small-medium-sized city	210	\$8.00	210	\$11.60	210	\$9.80	17.3
Large city	91	\$8.90	91	\$12.80	91	\$11.00	19.3
Suburbs	50	\$8.90	50	\$12.80	50	\$10.80	12.3
Region†							
Northeast	52	\$9.40	52	\$12.90	52	\$11.40	35.8
East North Central	97	\$8.50	97	\$11.90	97	\$10.00	20.0
South Central Atlantic	125	\$7.60	125	\$11.20	125	\$9.00	16.7
West South Central	63	\$7.10	63	\$10.80	63	\$8.80	15.0
West North Central	57	\$7.60	57	\$11.00	57	\$9.30	19.3
Far West	89	\$9.40	89	\$13.00	89	\$11.40	11.5

FTE, full-time equivalent.

*Number of responses.

†State composition of regions includes the following: Northeast—Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; East North Central—Illinois, Indiana, Michigan, Ohio, and Wisconsin; South Central Atlantic—Alabama, Delaware, District of Columbia, Florida, Kentucky, Georgia, Maryland, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia; West South Central—Arkansas, Louisiana, Oklahoma, and Texas; West North Central—Iowa, Kansas, Minnesota, Nebraska, Missouri, North Dakota, and South Dakota; and Far West—Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

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Phlebotomists

For all wage rates, the highest wages were paid in the Northeast and the Far West [T12]. The lowest wages were reported in the West South Central region. As with other employee positions, city size appeared to affect wages, as the larger cities paid more than the smaller cities. Beginning, average, and top

salaries continued to be the highest for private clinics/reference laboratories. The lowest pay rates were found in physician offices. In general, larger hospitals paid more than smaller hospitals; however, average and top wages were the same for hospitals with 100 to 299 beds and 300 to 499 beds. Federally owned facilities paid higher beginning and average rates, while

Vacancy Rates (%)***T13**

	1988	1990	1992	1994	1996 [†]	1998	2000
Medical technologists							
Staff	9.3	11.6	13.8	9.6	8.2	10.2	11.1
Supervisor	5.0	10.2	9.3	10.3	8.6	9.3	12.5
Manager	5.2	7.1	15.0	15.4	7.7	15.4	13.3
Cytotechnologists							
Staff	13.6	27.3	21.2	19.2	7.1	10.5	20.6
Supervisor	5.0	10.0	20.0	11.1	12.5	10.0	10.0
Histologic technicians/histotechnologists							
Technicians	NA	9.5	12.0	8.7	13.0	12.9	16.1
Histotechnologists	NA	14.3	12.0	17.4	5.3	10.3	22.2
Supervisor	11.7	10.0	10.0	10.0	10.0	20.0	20.0
Medical laboratory technicians							
	6.5	11.1	14.6	14.8	9.4	11.1	14.3
Phlebotomists							
	8.2	12.2	15.4	14.8	12.5	12.3	18.1

NA, not available.

*Vacancy rates were computed for each position by dividing the number of currently vacant positions by the number of budgeted full-time equivalent employees.

[†]Differs from vacancy rates previously published for the 1996 Wage and Vacancy Survey (Lab Med. 1997;28:176-180) owing to a change in the method of calculating vacancy rates. All rates in this table were calculated by the same method and are comparable from year to year.

top rates were about the same for federally owned and nonfederally owned hospitals.

Vacancies

From 1998 to 2000, vacancy rates for 7 of 10 positions increased. Vacancy rates were computed for each position by dividing the mean number of currently vacant positions by the mean number of full time equivalent employees. Comparative vacancy rates for 1988, 1990, 1992, 1994, 1996, 1998 and 2000 are shown [T13]. From 1998 to 2000, vacancy rates for every position increased, with 3 exceptions. These exceptions were for medical technologist managers (for whom vacancy rates decreased from 15.4% in 1998 to 13.3% in 2000), and cytotechnologist and histologic supervisors, (for whom vacancy rates remained stable). The highest increases in vacancy rates were found among staff cytotechnologists (from 10.5% in 1998 to 20.6% in 2000) and histotechnologists (from 10.3% in 1998 to 22.2% in 2000). Among employee positions, vacancy rates were highest for staff cytotechnologist positions (20.6%), histotechnologist positions (22.2%), and histologic supervisor positions (20.0%). Of all the positions surveyed, none had vacancy rates of less than 10%, compared with 2 in 1994, 6 in 1996, and 1 in 1998.

The year 2000 marked the highest vacancy rates reported per position over the 12-year comparison period for medical technologist supervisors, all histologic positions, and phlebotomists. Cytotechnologist staff vacancy rates had been decreasing from 1990 to

1996. However, in 1998, this position experienced its first rise in vacancy rates, and by 2000, the vacancy rate was almost 2 times that of 1998. After experiencing a sharp decline from 1994 to 1996, the vacancy rate for histotechnologists continued to increase in 2000, nearly doubling that of 1998 and quadrupling that of 1996. Upward trends in vacancy rates from 1996 to 2000 continued for staff medical technologists, medical technologist supervisors, and medical laboratory technicians. The vacancy rates for histologic technicians and phlebotomists also increased in 2000, compared with relatively stable rates from 1996 to 1998. Although the histotechnologist/histologic technician supervisor vacancy rate remained unchanged from 1998, the 1998 rate was double that of 1996 and was the first time an increase in vacancy rates was reported in 8 years. The vacancy rate for medical technologist managers, although slightly declining in 2000, remained statistically unchanged from 1992, 1994, and 1998. The cytotechnologist supervisor vacancy rate has remained somewhat stable since 1994.

Personnel Shortages by Shift

Laboratory managers were asked about the difficulty of filling their shifts. In 2000, across all employee positions, it was typically easier to fill evening or night shifts than day shifts. All 3 shifts—day, evening, and night—were still the most troublesome to fill for staff medical technologists, medical laboratory technicians, and phlebotomists. Phlebotomists continued to be the most difficult day shift to fill, as vacancies

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Managers Who Had Problems Filling Vacancies by Shift (%)**T14**

Position	1998			2000		
	Day	Evening	Night	Day	Evening	Night
Medical technologists						
Staff	13	30	30	19	44	47
Supervisor	4	5	5	6	6	4
Manager	1	1	1	3	*	*
Cytotechnologists						
Staff	21	5	4	25	2	1
Supervisor	2	1	2	4	*	*
Histologic technicians						
	19	1	2	27	3	3
Histotechnologists						
	18	2	4	24	2	4
Histologic supervisors						
	4	1	1	8	*	*
Medical laboratory technicians						
	9	16	17	13	29	24
Phlebotomists						
	23	20	16	37	40	29

*Less than 0.5%

increased significantly from 1998 at 23% to 37% in 2000. Evening and night shifts continued to be the most troublesome for staff medical technologists. Problems filling evening vacancies for this position increased from 30% in 1998 to 44% in 2000, with nearly one half of managers (47%) reporting problems filling night shifts, a significant increase from 30% in 1998 [T14].

Other troublesome shifts include:

- Day shifts for histologic technicians (27% in 2000, up from 19% in 1998)
- Day shifts for staff cytotechnologists (25% in 2000, up from 21% in 1998)
- Day shifts for histotechnologists (24% in 2000, up from 18% in 1998)
- Evening shifts for phlebotomists (40% in 2000, up from 20% in 1998)
- Evening shifts for medical laboratory technicians (29% in 2000, up from 16% in 1998)
- Night shifts for phlebotomists (29% in 2000, up from 16% in 1998)
- Night shifts for medical laboratory technicians (24% in 2000, up from 17% in 1998)

Two thirds (66%) of all laboratories with positions available were having trouble filling vacancies on at least 1 shift for medical technologist staff, and 54% were having trouble filling

phlebotomist positions; both were significant increases of approximately 20% from 1998 (data not shown).

When asked to indicate the amount of turnover of medical laboratory testing personnel within the past 12 months compared with 1 year ago, 49% of laboratory respondents indicated “no change,” compared with 44% who noticed an increase. Just 7% of respondents said that the amount of turnover had decreased. When replacing or adding new personnel, 38% of laboratories used increased salaries or benefits, followed by 17% using sign-on bonuses and 16% offering reimbursement for tuition or continuing education expenses.

Summary and Conclusions

Overall, the wages for all medical laboratory positions are on the upswing. The percentage median wage increases are collectively greater than in any other time in the 12-year comparison period. Vacancy rates are concurrently continuing to accelerate for 8 of the 10 positions. Difficulty in filling shifts, coupled with more staff turnover, presents a challenge for laboratory directors and managers.

The market for staff cytotechnologists, histologic technicians, histotechnologists, and phlebotomists presents concerns. The significant difficulty in filling at least 1 shift by medical technologists suggests the potential for increasing market problems. Although not all positions present major immediate market concerns for the coming year, continuous monitoring is recommended.