

2003 Workforce Survey of Hospital Clinical Laboratories in New Jersey

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ABBREVIATIONS: CT = cytotechnologist; HLT = histotechnologist; HT = histotechnician; MLT = medical laboratory technician; MT = medical technologist.

INDEX TERMS: job opportunities; workforce.

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The clinical laboratory personnel shortage has reached significant proportions in many areas of the country and there is growing concern about its impact on the accessibility and quality of clinical laboratory services. For the years

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2002–2012, the U.S. Bureau of Labor Statistics projected a need for 138,000 new clinical laboratory technologists and technicians, or approximately 13,800 per year, due to growth and attrition from the field.¹ On the other hand, in 2002, there were only 3,548 clinical laboratory technician/medical laboratory technician (CLT/MLT) and clinical laboratory scientist/medical technologist (CLS/MT) graduates in the U.S.² If the current imbalance between vacancies and graduates continues, the national shortage of clinical laboratory personnel may grow by more than 10,000 laboratorians per year. In surveys conducted by the American Society for Clinical Pathology (ASCP), vacancy rates in 2000 for medical technologists (MTs) and medical laboratory technicians (MLTs) were 11.1% and 14.3% nationally and 14.9% and 24.5% in the northeast; in 2002 those rates showed a decrease to 7% and 8.6% nationally and 8.3% and 3.5% in the northeast. Although the vacancy rates in the latter study decreased to single digits, the vacancies are nevertheless noteworthy in terms of the actual number of vacant positions, taking into consideration a national workforce estimated at 297,000 clinical laboratory technologists and technicians.¹

A Coalition for New Jersey Clinical Laboratory Personnel was formed in April 2002 to study the extent of and address a perceived shortage of clinical laboratory personnel in New Jersey. This coalition consists of twenty-eight members representing hospital clinical laboratory administrators, supervisors, and educators; hospital human resources directors; and representatives from the New Jersey Society for Clinical Laboratory Science, New Jersey Clinical Laboratory Management Association, New Jersey Hospital Association, the New Jersey State Department of Health and Senior Services, and New Jersey Medicaid. One of the goals of the coalition is to document and disseminate data on the supply of and demand for clinical laboratory professionals in the state. An unpublished study conducted by the New Jersey Society for Clinical Laboratory Science showed a 48.5% decrease in MLT and MT graduates since 1998, with only 26 MTs and 21 MLTs graduating in 2003 in the entire state. In addition, during that same time, the state experienced the closure of one MT and three MLT programs. There are no histotechnologist (HTL) programs, and only one histotechnician (HT) program in the state, but that program recently went

into inactive status. There is also only one cytotechnologist (CT) program. In 2003, these programs produced only seven HT and five CT graduates.

Although there was some anecdotal information from New Jersey laboratory managers about difficulties in hiring qualified laboratory practitioners, there was insufficient data on vacancies and shortages for these practitioners in the state's workforce. Therefore, the Coalition conducted a survey of hospital clinical laboratory managers to determine the extent of the clinical laboratory personnel shortage in NJ, and to begin a data collection process to project workforce needs into the future.

METHODS

In January 2003, a one-page survey was mailed to the clinical laboratory managers of the 95 hospitals in NJ. Surveys were coded for tracking purposes. A second survey was sent in March 2003 to the non-responders, followed by phone contact.

The survey requested data on county, hospital size, total number of billable tests, total current budgeted FTEs, the number and age of clinical laboratory employees in six categories, the number of current vacancies, and the average time it took to fill vacancies. The six personnel categories included MT staff, MT supervisor, MLT, HTL, HT, and CT. In addition, managers were asked to indicate if they had difficulties hiring or recruiting for a particular position, department, or shift, and if they had incentives in place to hire laboratory personnel. All survey responses were received between February and April 2003, and were reviewed, tabulated, and summarized.

Table 1. Usable surveys by New Jersey County. Numbers represent surveys received by region and by county

North - 31	Central - 9	South - 9
Bergen - 5	Hunterdon - 0	Atlantic - 3
Essex - 9	Mercer - 3	Burlington - 1
Hudson - 6	Middlesex - 1	Camden - 3
Morris - 0	Monmouth - 5	Cape May - 0
Passaic - 6	Somerset - 0	Cumberland - 0
Sussex - 1		Gloucester - 1
Union - 2		Ocean - 1
Warren - 2		Salem - 0

RESULTS

A total of 55 surveys were received for a response rate of 57.9%. Forty-nine (51.6%) of the surveys contained data that were usable in the analysis, and represented data from hospitals in fifteen of the twenty-one NJ counties (Table 1). A majority of the surveys (31) were received from the Northern NJ counties.

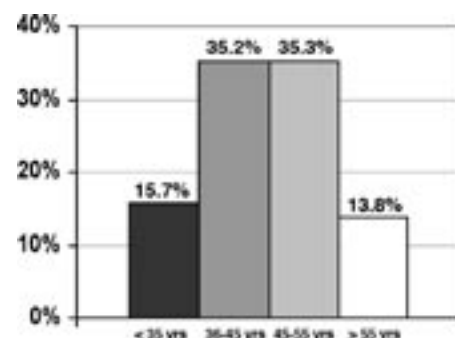
Forty-seven percent of the usable responses were from hospitals with greater than 300 beds, while 53% had less than 300 beds. A total of 33,094,905 annual billable laboratory tests were reported by 39 hospitals, ranging from 97,800 to 3,822,755 per hospital. A total of 2,697 total budgeted FTEs were reported by 49 hospitals.

Figure 1 depicts the breakdown of all categories of NJ clinical laboratory personnel by age. A breakdown of personnel by category and age is depicted in Figure 2 and Table 2.

The largest category reported was MT staff with 1,455 employees in 49 hospitals. In the MT staff category, 50.8% of the employees were over 45 years, and 14% were over 55 years, while 61.5% of the MT supervisors were over 45 years, with 21.6% over 55 years. The MLT population was somewhat younger with only 38.3% over 45 years. In the MLT, HTL, HT, and CT categories, 10% of the employees were over 55 years.

Table 3 lists the number of vacancies by category and region. The highest number occurred in the MT category with 49 full time and 52 part time vacancies among the

Figure 1. Percent distribution of all categories of NJ laboratory personnel by age (n = 2,004). Note that 49.1% are older than 45 years, and 13.8% are older than 55 years



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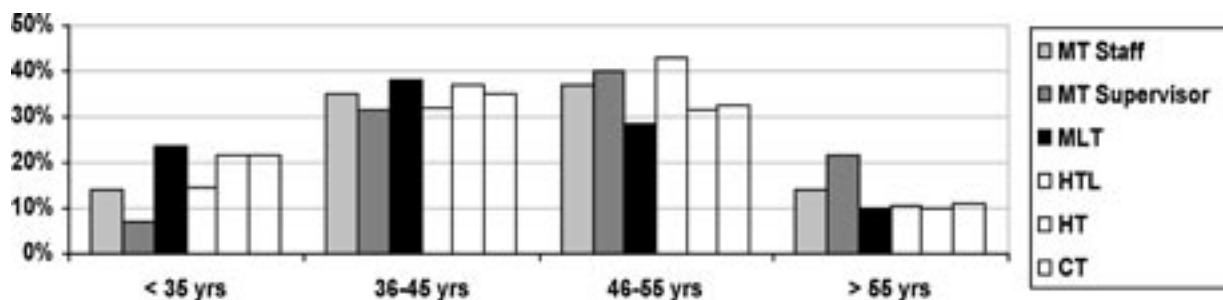
49 hospitals. In the MT supervisor category, there were 11 full time and 4 part time vacancies, and in the MLT category, there were 6 full time and 20 part time vacan-

cies. There were seven vacancies for full time HT and one vacancy for a full time CT.

Table 2. Breakdown of clinical laboratory personnel by category and age

Category	Total	MT staff	MT Supervisor	MLT	HTL	HT	CT
Current total # (n = 49 hospitals)	2331	1455	251	428	34	116	47
Current total # reported by age (n = 42 hospitals)	2004	1247	213	381	28	98	37
Under 35 yrs	315 15.7%	177 14.2%	15 7.0%	90 23.6%	4 14.3%	21 21.4%	8 21.6%
36 – 45 yrs	706 35.2%	436 35.0%	67 31.5%	145 38.1%	9 32.1%	36 36.8%	13 35.2%
46 – 55 yrs	708 35.3%	460 36.8%	85 39.9%	108 28.3%	12 42.9%	31 31.6%	12 32.4%
Over 55 yrs	275 13.8%	174 14.0%	46 21.6%	38 10.0%	3 10.7%	10 10.2%	4 10.8%
45 or younger	1021 50.9%	613 49.2%	82 38.5%	235 61.7%	13 46.4%	57 58.2%	21 56.8%
46 or older	983 49.1%	634 50.8%	131 61.5%	146 38.3%	15 53.6%	41 41.8%	16 43.2%

Figure 2. Percent distribution of categories of laboratory personnel by age



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Table 4 summarizes the responses for the average time to fill vacancies in the various categories. The time ranged from an average of 10.6 and 11 weeks for MLTs and MTs, respectively, to 104 weeks for HTs.

A majority of laboratory managers reported difficulties in hiring generalist MTs (71.4%), as well as night shift (46.9%), evening shift (28.6%), HT (24.5%), and blood bank (20.4%) positions. Other positions in which difficulties in hiring were reported included part time, weekend, CT, and general supervisory positions. Figure 3 presents a summary of the data. The miscellaneous category includes one to two responses each for microbiology technologist, phlebotomist, evening supervisor, blood bank supervisor, and histology supervisor.

Laboratory managers reported using the following incentives for hiring laboratory personnel: 42.9% of laboratory managers reported no incentives, 30.6% had shift differentials,

26.5% had tuition reimbursement, 24.5% had a sign-on bonus, and 20.4% made market adjustments in salaries. The incentives are summarized in Figure 4. In addition, some laboratory managers had comments related to their hiring difficulties. These are summarized in Table 5.

DISCUSSION

The data reflect responses from over half of the hospital clinical laboratories in NJ. The largest number of surveys being received from the northern region of the state reflects the larger number of hospitals in that region. The responding hospitals were almost evenly divided between those that are greater than 300 beds and those that are less than 300 beds.

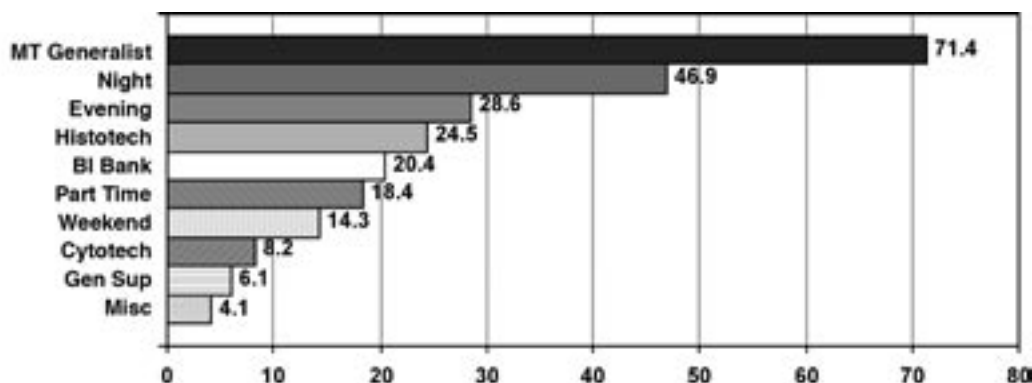
A total of 33,094,905 annual billable tests were reported by 39 hospitals. Projecting that figure across 95 hospitals at an average cost of \$14 per test, hospital laboratories represent a billion dollar industry in the state.

Table 3. Number of vacancies by category and region (n = 49 hospitals)

	MT Staff				MT Sup				MLT				HTL				HT				CT			
	Tot	N	C	S	Tot	N	C	S	Tot	N	C	S	Tot	N	C	S	Tot	N	C	S	Tot	N	C	S
FT	49	26	18	5	11	8	3	0	6	2	3	1	0	0	0	0	7	5	2	0	1	1	0	0
PT	52	36	12	4	4	4	0	0	20	5	4	11	1	0	0	1	1	1	0	0	1	1	0	0

FT = full time; PT = part time; Sup = supervisor; Tot = total number vacancies; N = vacancies in northern NJ; C = vacancies in central NJ; S = vacancies in southern NJ

Figure 3. Percentage of laboratory managers reporting hiring difficulties by category (n = 49)



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Nearly half of the practitioners employed in the responding NJ hospital clinical laboratories are over the age of 45, which is only slightly lower than the median age of 47 years reported in 2002 for clinical laboratory practitioners nationwide. In NJ, 13.8% of the clinical laboratory professionals in the 49 responding hospitals were over the age of 55; projecting that number over the 95 hospitals in the State, it is likely that over 500 laboratorians in the current workforce will be over 65 within the next 10 years.

There were a total number of 2,697 budgeted FTEs in 49 hospitals, with 2,331 current clinical laboratory employees. Using these figures, an estimate of the overall vacancy rate for hospital laboratory personnel is 13.6%.

During the 3-month survey period, there were a total of 49 full time and 52 part time vacancies for staff MTs, and 11 full time and 4 part time vacancies for supervisory MTs in the 49 responding hospitals. Projecting those figures to the 95 hospitals in the state, the number of actual vacancies could

be as high as 116 full time and 109 part time MT positions. Given that only 26 MTs graduated in 2003, and that not all of that cohort will choose to work in hospital laboratories, there was a significant shortfall of MTs with approximately eight vacant MT positions per MT graduate. Over 70% of the laboratory managers reported difficulty in filling vacant MT generalist positions, while difficulty in filling night, evening, and blood bank positions were reported by 46.9%, 28.6%, and 20.4% of the managers, respectively. As indicated in a comment in Table 5, an unknown, but probably significant, number of MTs work more than one job to supplement their salaries. If this did not occur, (assuming the second job is in another hospital laboratory) the shortage would be even greater.

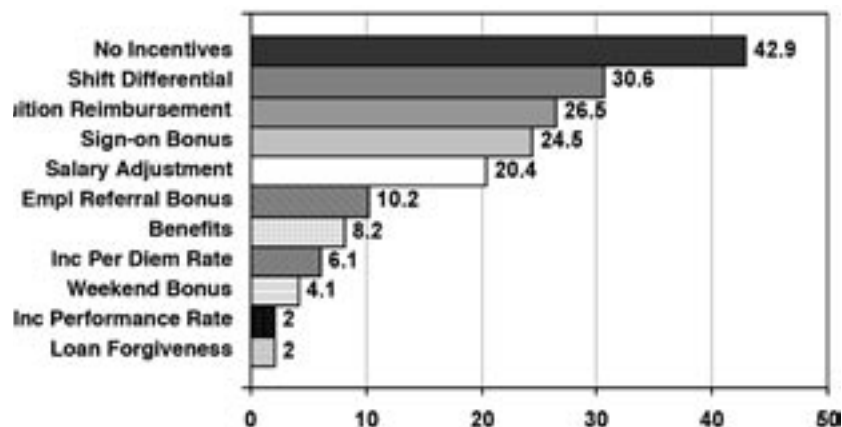
During this same period, there were 4 full time and 20 part time MLT vacancies. Again, projecting these figures to the 95 hospitals in the state, the amount of actual vacancies could be as high as 8 full time and 39 part time positions. Given that only 21 MLTs graduated in 2003, and that not

Table 4. Average time to fill vacancies

	MT Staff	MT Sup*	MLT	HTL	HT	CT
Average number of weeks	11.0	14.8	10.6	22.6	25.6	25.4
Range in weeks	1 to 52	2 to >52	2 to 52	8 to >52	8 to 104	12 to 78
Number of hospitals	n = 39	n = 32	n = 27	n = 8	n = 21	n = 10

* Sup = supervisor

Figure 4. Percentage of hospitals offering hiring incentives for laboratory personnel (n = 49)



all of that cohort will work in hospital laboratories, there was a shortage of MLTs to fill the open part time positions. Some laboratory managers indicated that they would hire a MLT to fill a vacant MT position if a qualified MT was not available, prompting them to reevaluate their staffing mix of MLTs vs. MTs. If this staffing shift should occur, there will likely be more vacant MLT positions, thus exacerbating the MLT shortage.

Although there were only two vacancies for CTs, there is only one program in the state producing five to eight graduates per year, many of whom are employed, often at higher salaries, by reference laboratories. This situation creates difficulties in filling vacancies at some hospitals, requiring as long as 78

weeks to fill a CT vacancy (Table 4). In fact, one hospital reported closing their cytology department since they were unable to fill a vacant CT position (See Table 5).

There are no HTL programs in the state, and only the one HT Program in the southern region of the state. That one HT Program, however, recently went inactive. It was producing five to ten graduates per year; however, the graduates traditionally preferred employment in their home region, resulting in unfilled positions in the northern and central regions of the state. Nearly 25% of the laboratory managers reported difficulty in filling HT positions, with up to 104 weeks required to fill a vacant position (Table 4). With no active HT or HTL programs in the state, the personnel shortages in histology will become even greater.

The U.S. Bureau of Labor Statistics projected that between 2002–2012 the clinical laboratory field would experience a combination of growth and attrition requiring 13,800 new clinical laboratory technologists and technicians per year. Although the simplification and automation of tests will result in some loss of positions, a net increase in need for new practitioners was predicted due to the population growth, an increase in the elderly population, and the introduction of new types of tests that will spur the utilization of more laboratory services.

The general staffing pattern was 3.4 MTs to 1 MLT in NJ hospital laboratories. Utilization of MLTs to fill some of the vacant MT positions may help to alleviate the shortage and spur an increase in enrollments in MLT Programs.

Supply and demand in the state's clinical laboratory workforce will continue to be monitored by surveying the educational programs and laboratory managers every two years, and developing a prediction model for future needs. It is also recommended to continue to study and address working conditions, incentives, and salaries to make the clinical laboratory profession more attractive and competitive with other fields that require comparable education, and to begin to study the impact of the shortage on the delivery and accessibility of quality laboratory services. This information is critical for strategic planning for both laboratory managers and educators.

The Coalition launched a Website in May 2003 (www.lab-science.org) to inform potential students and science teachers about the clinical laboratory professions. The Coalition will

Table 5. Comments from laboratory managers about hiring difficulties

"Most employees are working more than one job to earn a living. This makes it very difficult to staff the lab."

"Shift differential increases are desperately needed but being delayed at least 6 months due to reimbursement problems."

"Much difficulty in recruiting supervisors due to lack of qualified outside applicants and lack of interest in qualified in-house staff due to salary compression with increased responsibilities."

"We gave up trying to fill a part time MLT day job and converted it to a lab aide."

"Blood bank position vacant since 3/02; histologist position vacant since 8/02."

"Could not find a CT, so closed cytology."

"Unable to find qualified candidate for blood bank supervisor. Three blood bank techs went to industry. Histotech asking salary was above our approved range."

"We are lucky enough to have a MT school; CTs and HTs are extremely hard to find."

continue to address the shortage through efforts to promote awareness of the professions to potential students and the public, to assist in recruitment of students into the state's educational programs, to encourage hospitals, colleges, and universities to maintain their educational programs, and to share information about successful retention programs to keep our highly skilled professionals in hospital settings.

Nationwide, and statewide, clinical laboratory practitioners are not being produced in sufficient quantity to meet the current and future demand. Nationwide, it has been estimated that the shortage is growing by over 10,000 laboratorians per year. In NJ, even if the five existing MT programs operate at full capacity (an estimated 52 students per year), there will still be insufficient graduates to meet the current and the projected demand for MTs in the future. In addition, due to the location of a large number of pharmaceutical compa-

nies and commercial laboratories in NJ, the state's hospitals must compete for skilled laboratory personnel with those industries that recruit professionals out of the hospital setting with higher wages and/or better working conditions, e.g., no weekends, holidays, etc. MT programs either need to expand or new programs need to be established, and perhaps the hospital laboratory industry in the state should re-examine the utilization of MLTs vs. MTs in the workplace.

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