

ASCP Board of Registry's 2000 Annual Survey of Medical Laboratory Science Programs

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Every year since 1984, the American Society of Clinical Pathologists' Board of Registry (ASCP BOR) has conducted annual surveys of medical laboratory science programs accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS) and the Commission on Accreditation of Allied Health Education Programs (CAAHEP). The survey monitors the following:

- (1) The quality and quantity of the applicants to the accredited educational programs.
- (2) The number of program graduates and the number of graduates who find employment or enter a graduate or professional program immediately upon graduation.
- (3) Changes in the structure and operation of the educational programs.

Methods

Surveys were sent to program directors of NAACLS- and CAAHEP- accredited programs (both approved and pending approval) for cytotechnologists (CTs), histologic technicians (HTs), medical laboratory technicians (MLTs), medical technologists (MTs), and specialists in blood banking (SBBs). A scannable survey was used to request information regarding the program's status (active, inactive, or discontinued), the program's institutional base (eg, hospital, university, etc), the

number of students enrolled and graduated, and how many of last year's class sought and found employment. Information was also collected on changes in the program status (eg, changes in the number of clinical affiliates, number of clinical rotation positions). The survey was modified this year to gather information on total enrollment (formerly gathered as class size).

When computing the "average program enrollment" or "average number of graduates", programs with no students or graduates, respectively, were not included in the statistics. The employment rate was based solely on those graduates seeking employment. To aid in identifying regional differences, the programs were classified into 1 of 10 geographic regions on the basis of the first digit of their zip code.

Results

Data on the number of surveys mailed, usable surveys returned, response rate by category, and the number of inactive and active programs are listed in [T1](#). The overall response rate was 89%, which is slightly better than the previous four years (87%, 86%, 84%, and 86%, in 1999, 1998, 1997, and 1996, respectively).

[F1](#) depicts the educational settings for each type of accredited program. Medical centers were the most common site for CT. The most common site for HT and MLT were

SURVEY DISTRIBUTION AND RESPONSE RATE

T1

Category	Surveys Mailed	Usable Returns	Response Rate	Inactive Programs	Active Programs
Cytotechnologist	51	47	92%	3	44
Histologic Technician	34	25	73%	6	19
Medical Laboratory Technician	266	243	91%	19	224
Medical Technologist	286	253	88%	31	222
Specialist in Blood Banking	15	15	100%	5	10
Total	652	583	89%	64	519

community colleges. The MT programs were found nearly equally at hospitals and universities, whereas the most prevalent site for SBB programs were blood centers.

The program directors' report of changes in program status is summarized in T2. Summaries of the number of programs eliminated or on hold, total enrollment, average enrollment, average number of graduates, and percentage of graduates seeking employment who found employment are broken out by geographic region of the country in T3A-3E.

Discussion

Essentially there was little change from the 1999 survey of program directors related to a decrease in the number of clinical affiliations.¹ None of the HT program directors reported a

decrease in the number of clinical affiliations. Correspondingly, program directors from all categories, except SBB, reported a slight increase in the number of clinical affiliations. Noteworthy was that CT program directors reported a greater than 10% increase in the number of clinical affiliations in 2000. The only program directors reporting a noticeable decrease in the number of clinical rotation positions were those from SBB programs. In fact, CT, HT, and MT program directors reported a greater increase in the number of clinical rotation positions in 2000 compared to 1999.

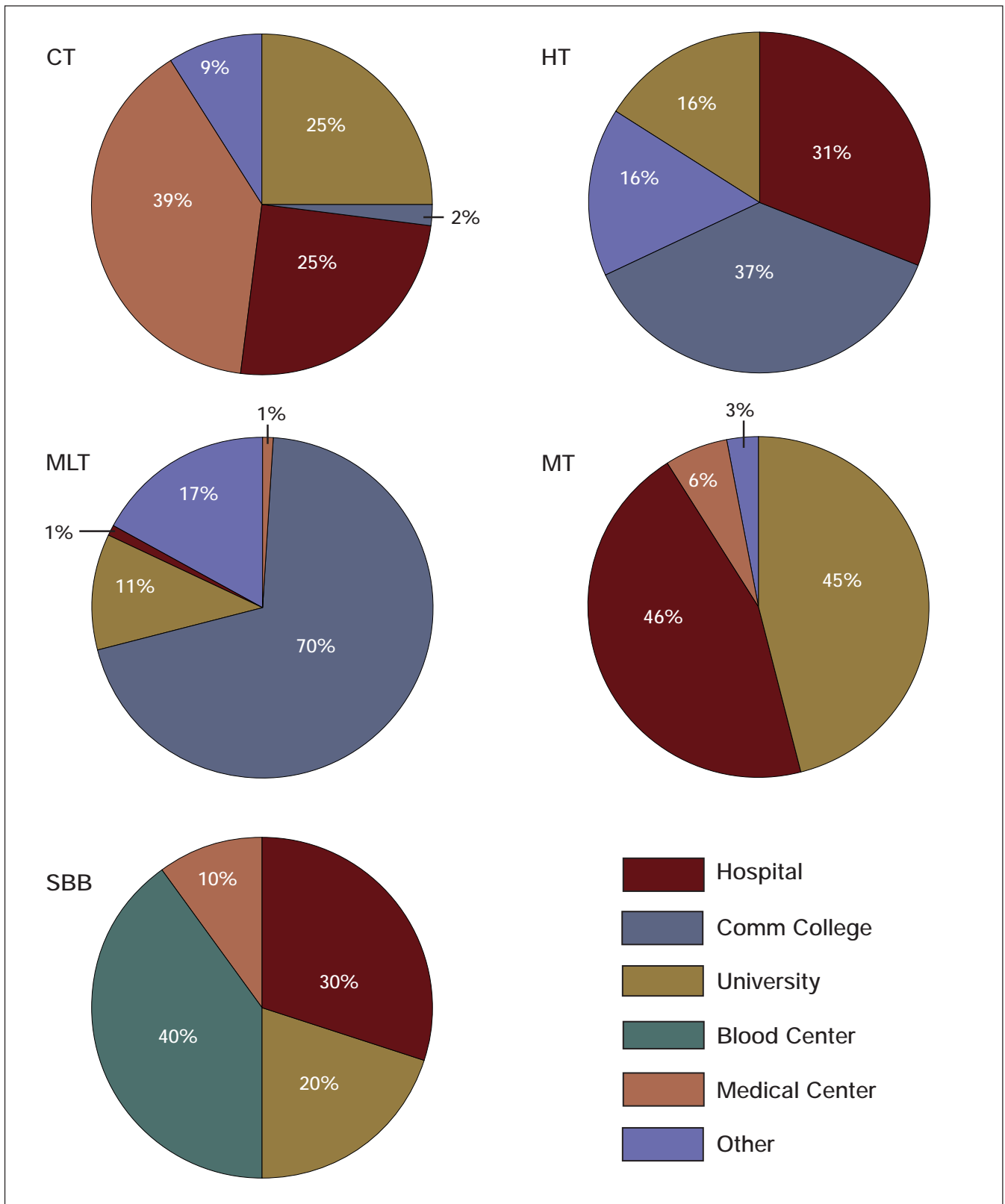
In 2000, there was a significant increase in the number of program directors reporting a decrease in total enrollment (eg class size) compared to 1999. In fact, in 2000, there was an increase of greater than 5% for CT, MT and MLT, and greater

CHANGES IN PROGRAM STATUS

T2

Change	CT (N=44)	HT (N=19)	MLT (N=224)	MT (N=222)	SBB (N=10)
Decrease in number of affiliates	6.8%	0.0% ↓	11.2% ↓	7.7%	0.0%
Increase in number of affiliates	29.5% ↑↑	31.6%	17.4%	18.9%	0.0%
Decrease in Clin Rotation Positions	4.5%	0.0%	18.3%	7.7%	10.0% ↓
Increase in Clin Rotation Positions	15.9% ↑	21.1% ↑	6.7%	10.8% ↑	0.0%
Decrease in Total Enrollment (Class Size)	6.8% ↑	10.5%	25.0% ↑	24.3% ↑	30.0% ↑↑
Increase in Total Enrollment (Class Size)	25.0% ↑↑	15.8% ↓↓	15.6%	18.9% ↑	0.0% ↓↓
Discontinuation of Program	2.3%	0.0% ↓	13.4% ↑	5.9%	10.0% ↓
Curriculum Changes	9.1% ↑	15.8%	18.8%	23.9%	30.0% ↑↑
Other Changes	0.0% ↓	10.5%	8.0%	6.3%	0.0% ↓↓
Decreased quantity of applicants	54.5% ↓	47.4%	68.3% ↓	72.1%	70.0% ↑↑
Increased quantity of applicants	27.3% ↑	31.6% ↑↑	17.4%	12.6%	20.0%
Decreased quality of applicants	36.4% ↓	26.3% ↑↑	54.0%	42.8% ↑	50.0% ↑↑
Increased quality of applicants	31.8% ↑↑	31.6%	14.3%	14.0%	0.0% ↓
Decreased number of job openings	0.0% ↓↓	0.0% ↓	6.7% ↓	5.0% ↓	10.0% ↑↑
Increased number of job openings	79.5% ↑↑	84.2% ↑↑	72.8% ↑↑	79.7% ↑↑	50.0% ↑↑
Student recruitment needed	59.1% ↑	57.9% ↑↑	76.3% ↑	69.8% ↑↑	60.0% ↑↑

CT indicates cytotechnologist; HT, histologic technician; MLT, medical laboratory technician; MT, medical technologist; SBB, specialist in blood banking. ↑ or ↓ indicates a 5 to 9% change from 1999. ↑↑ or ↓↓ indicates a 10% or greater change from 1999.



[F1] Percentages for educational settings; separated for each type of accredited program.

than 10% for SBB program directors reporting a decrease in total enrollment compared to 1999. Nationally, total enrollment continued to drop for MT programs. In 2000, overall enrollment for MT programs was reported as 2008, compared to 2148 and 2470, respectively, in 1999 and 1998 (refer to T3D). Although there were a greater percentage of MLT program directors reporting a decrease in total enrollment in 2000, there was a significant increase in the overall total enrollment of 3084 in 2000, compared to 1783 and 2322, respectively, in 1999 and 1998 (refer to T3C). One confirmed explanation for the significant increase in MLT total enrollment is the start up of more military-sponsored MLT programs. The increase is particularly striking in region 7, where one military program director reported a new enroll-

ment of 442 students and another military program director reported 182 new enrollees in 2000.

Although the discontinuance of programs had begun to slow down in 2000, the percentage of MLT program directors reporting a discontinuation of their program has risen greater than 5% since 1999. Further, a handful of MLT program directors reported that their programs have closed or are scheduled to close in 2001. Other MLT program directors have commented that their program will be merging with other programs. Some program directors reported that continuance of their program has been dependent upon delivery of web-based courses and sharing of resources with other institutions.

There appears to be several trends that have arisen in 2000 related to curricular changes. The one curricular change that tran-

T3A

CYTOTECHNOLOGIST

Region*	Programs Responding			Programs Eliminated or on Hold			Total Enrollment			Average Enrollment			Average No. of Graduates			% Graduate Employment		
	98	99	00	98	99	00	98	99	00	98	99	00	98	99	00	98	99	00
	0	6	5	6	1	0	0	26	26	26	5	5	4	5	5	5	64	96
1	7	5	6	1	0	0	49	38	39	7	8	7	6	7	8	88	91	100
2	7	6	5	1	1	0	22	35	27	4	7	5	4	4	4	100	84	100
3	3	4	5	0	0	0	19	24	28	6	6	6	8	6	8	95	95	97
4	5	6	5	0	0	0	28	26	27	6	5	5	5	5	4	96	100	100
5	5	6	7	1	1	2	16	26	28	4	5	6	4	4	5	90	100	100
6	3	3	4	0	0	1	13	11	17	4	4	6	3	4	4	100	91	100
7	6	6	5	1	0	0	30	29	23	6	6	6	6	5	5	100	89	100
8	2	2	2	0	0	0	10	12	13	5	6	7	7	5	6	92	80	100
9	3	3	2	0	0	0	12	12	12	4	4	6	4	5	6	100	100	91
Total	47	46	47	5	2	3	225	239	240	5	6	6	5	5	5	91	94	98

T3B

HISTOLOGIC TECHNICIAN

Region*	Programs Responding			Programs Eliminated or on Hold			Total Enrollment			Average Enrollment			Average No. of Graduates			% Graduate Employment		
	98	99	00	98	99	00	98	99	00	98	99	00	98	99	00	98	99	00
	0	2	3	3	0	1	1	25	7	9	13	4	5	15	3	2	100	100
1	5	5	5	0	0	0	29	34	39	6	7	8	4	4	5	100	79	84
2	1	2	2	0	0	0	4	13	12	4	7	6	3	9	6	67	100	100
3	4	1	2	2	0	2	12	15	NA	6	15	NA	3	3	NA	100	100	NA
4	7	7	6	1	0	1	42	53	50	11	8	10	6	7	10	98	100	100
5	4	3	3	0	0	0	23	26	51	6	9	17	3	5	6	91	100	100
6	2	1	1	1	0	0	0	2	2	NA	2	2	1	2	2	100	100	100
7	4	4	2	0	0	1	11	12	5	3	3	5	2	3	3	100	88	100
8	1	1	1	0	1	1	2	1	NA	2	1	NA	2	2	1	100	100	100
9	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total	30	27	25	4	1	6	148	158	166	6	7	9	5	5	5	97	96	96

MEDICAL LABORATORY TECHNICIAN

Region ¹	Programs Responding			Programs Eliminated or on Hold			Total Enrollment			Average Enrollment			Average No. of Graduates			% Graduate Employment		
	98	99	00	98	99	00	98	99	00	98	99	00	98	99	00	98	99	00
0	21	23	23	0	1	2	100	117	117	6	5	7	6	6	4	86	92	100
1	24	23	21	3	2	3	219	152	138	10	7	8	8	6	6	83	89	88
2	33	30	34	4	1	2	263	277	409	9	10	13	8	7	7	96	97	99
3	37	38	37	1	0	3	383	359	490	12	10	14	9	8	8	95	88	89
4	31	35	32	3	6	5	208	208	262	8	7	10	10	6	6	95	93	96
5	23	23	24	1	1	1	194	190	306	9	9	14	8	7	7	95	95	95
6	12	19	19	0	0	1	86	131	178	8	8	10	9	7	7	95	97	94
7	33	32	38	3	0	1	686	235	948	25	8	28	9	8	18	99	100	97
8	8	9	7	2	2	0	35	49	79	7	7	13	8	6	5	96	97	100
9	7	8	8	1	1	1	148	65	157	21	9	22	9	11	16	93	98	99
Total	229	240	243	18	14	19	2322	1783	3084	12	8	14	8	7	9	94	94	96

scends all the program categories is more online instruction. This was particularly true for MT and MLT programs. A major curricular addition for many of the MT programs has been the incorporation of more molecular diagnostics and genetics courses. Although a few MT program directors reported the inclusion of more management, communications and/or laboratory informatics instruction, far more program directors have added, or plan to add in 2001, instruction in molecular techniques. Some CT program directors have also reported the introduction of techniques in molecular diagnostics and cell biology.

Recruitment of qualified applicants continued to be a problem for all programs in 2000. This was especially problematic for HT, MT, and SBB programs. Seventy-two percent of the MT, 70% of the SBB, and 68% of the MLT, and 55% of the CT program directors reported a decrease in the number of applicants. Equally alarming is that there continued to be a growing decrease in the quality of applicants from 1999 to 2000 for HT, MT, and SBB. As reported in 1999, many program officials stated again that the applicant pool was shrinking, primarily because of low entry-level salaries for their graduates. Program directors also continued to express concern over the lack of a public image for careers in the medical laboratory, which further exacerbates the problem. It was suggested by a number of program directors that professional medical laboratory societies intensify their efforts to educate the public about careers in medical laboratory science. This is an important message given the fact that there was a greater than 10% increase in the number of program directors reporting an increased number of job openings for their graduates in 2000. Despite this trend, 10% of MT graduates and 6% of MLT entered another undergraduate, graduate or professional track upon graduation.

This information is consistent with the 2000 wage and vacancy survey of clinical laboratory managers, conducted by the ASCP BOR and Morpace.² The 2000 wage and vacancy survey revealed that vacancy rates were collectively higher for the 10 laboratory staff positions studied than in the previous 12-year history of following the vacancy rates.

Significantly more program directors reported that student recruitment is needed, compared to those in 1999, owing to the fact that enrollments are down and the number of job opening for their graduates has increased significantly. Although a few program directors have noticed an increase in entry-level salaries for their graduates, many program directors indicated that entry-level salaries need to continue to rise in order to attract and retain qualified applicants.

The combination of low enrollments nation-wide, increased vacancy rates for CTs, HTs, MTs, MLTs, and SBBs, and budget constraints in the academic and laboratory environments has led to continued program closures for both hospital- and university-based programs. Intensive recruitment efforts and heightened awareness about the growing workforce shortage must continue to be addressed to maintain current and future laboratory staffing needs. Program directors have identified low entry-level salaries as the primary reason for low enrollments. In order to attract more individuals to a career in the medical laboratory sciences, salaries must become more competitive with those in the other health care disciplines.

1. Ward-Cook K, Simpson P, Brito C. ASCP Board of Registry's 1999 Annual survey of medical laboratory science programs. *Lab Med*. 1999; 31(10):550-554.
2. Ward-Cook K, Tannar, S. 2000 Wage and vacancy survey of medical laboratories: *Lab Med*, 2000; 32(3):124-138.

T3D

MEDICAL TECHNOLOGIST

Region*	Programs Responding			Programs Eliminated or on Hold			Total Enrollment			Average Enrollment			Average No. of Graduates			% Graduate Employment		
	98	99	00	98	99	00	98	99	00	98	99	00	98	99	00	98	99	00
0	27	28	30	1	3	6	309	314	275	12	13	12	11	11	13	93	93	95
1	34	29	29	4	3	6	269	173	155	9	7	9	9	8	8	85	95	96
2	29	25	23	2	0	1	265	241	266	10	10	12	10	9	10	94	96	97
3	30	30	28	2	6	1	287	239	227	10	9	9	8	7	8	94	95	97
4	34	34	36	5	4	5	296	235	226	10	8	8	9	8	8	97	96	100
5	27	23	23	3	2	2	208	174	201	8	8	10	8	8	8	99	99	83
6	26	28	26	0	4	3	244	205	184	9	8	9	9	8	8	99	100	100
7	38	35	32	4	1	3	359	362	287	11	11	10	10	8	9	65	99	100
8	13	8	11	2	0	1	133	93	91	12	12	9	9	9	13	99	97	96
9	16	16	15	8	3	3	100	112	96	9	9	9	7	7	9	91	100	98
Total	274	256	253	31	26	31	2470	2148	2008	10	12	10	9	8	9	94	97	96

SPECIALIST IN BLOOD BANKING

T3E

Region*	Programs Responding			Programs Eliminated or on Hold			Total Enrollment			Average Enrollment			Average No. of Graduates			% Graduate Employment		
	98	99	00	98	99	00	98	99	00	98	99	00	98	99	00	98	99	00
0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	3	2	2	1	0	0	9	5	5	5	3	3	3	4	3	100	100	100
3	4	2	3	1	1	2	4	1	2	2	1	2	1	1	1	100	100	100
4	2	2	2	0	0	0	4	1	6	4	1	3	3	4	0	100	100	NA
5	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
6	1	1	1	0	0	0	3	5	5	3	5	5	3	3	5	100	100	100
7	5	5	5	1	0	1	4	5	5	1	2	1	2	2	2	100	88	100
8	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9	1	NA	2	0	NA	2	2	NA	NA	2	NA	NA	2	NA	NA	100	NA	NA
Total	16	12	15	3	1	5	26	17	23	3	2	3	2	2	2	100	95	100

*Regions: 0, PR, ME, VT, MA, NH, CT, RI, and NJ; 1, PA, NY, and DE; 2, NC, SC, VA, WV, MD, and DC; 3, TN, MS, AL, GA, and FL; 4, MI, IN, OH, and KY; 5, MT, ND, SD, MN, WI, and IA; 6, IL, MO, KS, and NE; 7, TX, OK, AR, and LA; 8, ID, WY, CO, NM, AZ, UT, and NV; 9, AK, HI, CA, OR, WA.

NA (not applicable) indicates that there were no responses from that region.