

**2002**  
**TENNESSEE LABORATORY MANPOWER SURVEY**  
**REPORT OF RESULTS AND DISCUSSION**

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**GENERAL INFORMATION**

The population for this study is all managers of Tennessee hospital laboratories licensed by the Laboratory Licensing Service of the Public Health Department (n=132). A questionnaire was mailed in August, 2002 to 132 managers with the request that it be completed by the person having final personnel authority in the laboratory. Fifty-seven usable responses were received in time to be analyzed, a usable response rate of 43%. On a geographic basis responses were proportional to surveys mailed. Vacancy rates for laboratory personnel were determined by calculating the rate for each facility and obtaining the average of these data. Percentages reported may not always sum to 100% because of rounding.

**DEMOGRAPHIC INFORMATION**

Demographic information for 2002 is similar to that for 2001 when the most recent previous study was performed. Data for 2002 follow, and supporting data tables may be found in the APPENDIX.

**Bed Size**

Seventy-four percent (74%) of respondent hospitals are less than 200 beds. Twenty-one percent (21%) are between 200 and 500 beds and 5% are larger than 500 beds.

**Geographic Location**

Respondent hospitals are fairly equally divided among the 3 grand divisions of the state. Forty-seven percent (47%) are located in urban areas and 53% are in rural areas.

**INFORMATION ABOUT POSITIONS AND VACANCIES**

Except where noted in the following tables, n=number of institutions responding.

Tables 1 - 9 contain data on MT and MLT positions able to be filled, the number of vacancies existing in August, 2002 and vacancy rates, workload changes since 2001 and the amount of overtime and prn time typically paid in an 80 hour pay period.

**TABLE 1**  
n=57  
**MT Positions and Vacancies**

|                  | <b>Number of Positions</b> | <b>Mean Number per Institution Reporting</b> |
|------------------|----------------------------|--|
| <b>Total</b>     | 679.6                      | 11.9   |
| <b>Vacancies</b> | 40.2                       | 0.7  |

**TABLE 2**  
N = 57  
2001 and 2002  
**Medical Technologist Vacancy Rate**

|                     | <b>2001</b> | <b>2002</b> |
|---------------------|-------------|-------------|
| <b>Vacancy Rate</b> | 5.7%        | 7.7%        |

**TABLE 3**  
n=57  
**MLT Positions and Vacancies**

|                  | <b>Number of Positions</b> | <b>Mean Number per Institution Reporting</b> |
|------------------|----------------------------|--|
| <b>Total</b>     | 347                        | 6.1  |
| <b>Vacancies</b> | 26.4                       | 0.5  |

**TABLE 4**  
2000 and 2001  
n = 57  
**MLT Vacancy Rate**

|                     | <b>2001</b> | <b>2002</b> |
|---------------------|-------------|-------------|
| <b>Vacancy Rate</b> | 7.1%        | 6.0%        |

**TABLE 5**  
**Workload Changes Since 2001**  
n=57

| <b>Change</b>    | <b>% Institutions Reporting</b> | <b>n</b> |
|------------------|---------------------------------|----------|
| <b>Increased</b> | 70%                             | 40       |

|                        |            |           |
|------------------------|------------|-----------|
| <b>Stayed the Same</b> | <b>23%</b> | <b>13</b> |
| <b>Decreased</b>       | <b>7%</b>  | <b>4</b>  |

Of 70% of respondents reporting an increase in workload, the mean amount of increase was 12%.

**TABLE 6**  
**Overtime and PRN Hours Paid in 80 hour Pay Period**

|            | <b>n</b>  | <b>Total Hours Paid</b> | <b>Mean/Hosp</b> | <b>Equivalent FTEs</b> |
|------------|-----------|-------------------------|------------------|------------------------|
| <b>MT</b>  | <b>56</b> | <b>2931 hrs</b>         | <b>52.4 hrs</b>  | <b>37*</b>             |
| <b>MLT</b> | <b>57</b> | <b>1653 hrs</b>         | <b>29 hrs</b>    | <b>21*</b>             |

\*The FTE equivalent to the amount of overtime being paid extrapolated to the total population is 86 FTEs for Medical Technologists and 48 FTEs for Medical Technicians.

**TABLE 7**  
**Vacancy Rate by Level of Personnel and Hospital Size**

| <b>Bed Size</b> | <b>n</b>  | <b>MT</b>    | <b>n</b>  | <b>MLT</b>  |
|-----------------|-----------|--------------|-----------|-------------|
| <b>1-99</b>     | <b>27</b> | <b>9.9%</b>  | <b>26</b> | <b>8.3%</b> |
| <b>100-199</b>  | <b>15</b> | <b>2.7%</b>  | <b>14</b> | <b>2.2%</b> |
| <b>200-299</b>  | <b>9</b>  | <b>11.5%</b> | <b>8</b>  | <b>7.8%</b> |
| <b>300-500</b>  | <b>3</b>  | <b>5.4%</b>  | <b>2</b>  | <b>0.0%</b> |
| <b>&gt;500</b>  | <b>3</b>  | <b>3.4%</b>  | <b>3</b>  | <b>2.8%</b> |

**TABLE 8**  
**Vacancy Rate by Level of Personnel and Geographic Location**

| <b>Location</b>  | <b>n</b>  | <b>MT</b>   | <b>n</b>  | <b>MLT</b>  |
|------------------|-----------|-------------|-----------|-------------|
| <b>East TN</b>   | <b>17</b> | <b>8.1%</b> | <b>15</b> | <b>6.9%</b> |
| <b>Middle TN</b> | <b>22</b> | <b>6.9%</b> | <b>20</b> | <b>7.3%</b> |
| <b>West TN</b>   | <b>18</b> | <b>8.2%</b> | <b>18</b> | <b>3.8%</b> |

**TABLE 9**  
**Vacancy Rate by Level of Personnel and Urban vs Rural Area**

| <b>Area</b>  | <b>n</b>  | <b>MT</b>   | <b>n</b>  | <b>MLT</b>  |
|--------------|-----------|-------------|-----------|-------------|
| <b>Urban</b> | <b>27</b> | <b>6.7%</b> | <b>24</b> | <b>5.1%</b> |
| <b>Rural</b> | <b>30</b> | <b>8.6%</b> | <b>29</b> | <b>6.7%</b> |

### **INFORMATION ABOUT SALARIES**

Tables 10 -15 contain information about salaries by shift, bed size and location of hospital.

**TABLE 10**  
**2001 and 2002**  
**Mean Entry Level Hourly Wage for MTs by Shift**

|         | 2001                       |    | 2002                       |    | % Change per year |
|---------|----------------------------|----|----------------------------|----|-------------------|
| Shift   | Hourly Wage (Range)        | n  | Hourly Wage (Range)        | n  |                   |
| Day     | \$14.25<br>(11.98 - 18.00) | 61 | \$15.02<br>(12.60 - 18.00) | 52 | 5.4%              |
| Evening | \$15.86<br>(12.70 - 20.25) | 56 | \$16.82<br>(13.60 - 20.50) | 48 | 6.1%              |
| Night   | \$16.27<br>(12.94 - 20.25) | 57 | \$17.43<br>(13.85 - 23.50) | 48 | 7.1%              |

**TABLE 11**  
**2001 and 2002 Mean Entry Level Hourly Wage for MLTs by Shift**

|         | 2001                       |    | 2002                       |    | % Change per year |
|---------|----------------------------|----|----------------------------|----|-------------------|
| Shift   | Hourly Wage (Range)        | n  | Hourly Wage (Range)        | n  |                   |
| Day     | \$11.58<br>(9.00 - 15.00)  | 59 | \$12.35<br>(9.58 - 15.37)  | 50 | 6.6%              |
| Evening | \$12.77<br>(10.18 - 15.68) | 54 | \$13.64<br>(11.05 - 17.37) | 47 | 6.8%              |
| Night   | \$13.14<br>(10.37 - 17.00) | 54 | \$14.19<br>(11.05 - 17.87) | 46 | 8.0%              |

**TABLE 12**  
**Day Shift MT Wages by Hospital Size and Vacancy Rate**

| Size    | n  | Day Shift Mean Wage | Vacancy Rate | n  |
|---------|----|---------------------|--------------|----|
| 0-99    | 22 | \$15.04             | 9.9%         | 27 |
| 100-199 | 15 | \$14.35             | 2.7%         | 15 |
| 200-299 | 9  | \$15.56             | 11.5%        | 9  |
| 300-500 | 3  | \$15.51             | 5.4%         | 3  |
| >500    | 3  | \$17.02             | 3.4%         | 3  |

**TABLE 13**  
**Day Shift MLT Wages by Hospital Size and Vacancy Rate**

| Size    | n  | Day Shift Mean Wage | Vacancy Rate | n  |
|---------|----|---------------------|--------------|----|
| 0-99    | 22 | \$12.42             | 8.3%         | 26 |
| 100-199 | 13 | \$11.92             | 2.2%         | 14 |
| 200-299 | 9  | \$12.31             | 7.8%         | 8  |
| 300-500 | 3  | \$13.34             | 0.0%         | 2  |
| >500    | 3  | \$12.88             | 2.8%         | 3  |

**TABLE 14**  
**Mean Day Shift Wages for MTs and MLTs by Geographic Location**

| <b>Geographic Area</b> | <b>n</b>  | <b>MT Wage</b> | <b>n</b>  | <b>MLT Wage</b> |
|------------------------|-----------|----------------|-----------|-----------------|
| <b>East</b>            | <b>16</b> | <b>\$15.18</b> | <b>14</b> | <b>\$12.46</b>  |
| <b>Middle</b>          | <b>20</b> | <b>\$14.54</b> | <b>21</b> | <b>\$12.01</b>  |
| <b>West</b>            | <b>16</b> | <b>\$15.65</b> | <b>15</b> | <b>\$12.73</b>  |

**TABLE 15**  
**Mean Day Shift Wages for MTs and MLTs**  
**by Urban vs Rural Area**

| <b>Area</b>  | <b>n</b>  | <b>MT Wage</b> | <b>n</b>  | <b>MLT Wage</b> |
|--------------|-----------|----------------|-----------|-----------------|
| <b>Urban</b> | <b>27</b> | <b>\$15.49</b> | <b>26</b> | <b>\$12.48</b>  |
| <b>Rural</b> | <b>25</b> | <b>\$14.63</b> | <b>24</b> | <b>\$12.21</b>  |

## **CONCLUSIONS**

### **The Manpower Shortage**

Analysis of data from the 2002 Tennessee Hospital Laboratory Manpower Survey reveals that the shortage continues for both levels of personnel with the vacancy rate for medical technologists showing a 2% increase since 2001. The shortage continues even though hospitals have instituted numerous measures to cut costs due to managed care, e.g. reduced length of stay. Despite these cutbacks, seventy percent of respondent laboratory managers again report an increase in workload over last year. The average amount of increase is 12% for 2002. In 2001 this statistic was 10.4%. Therefore, we are observing a greater shortage of personnel who must face steadily increasing workloads. The staggering amount of expensive overtime and PRN hours (use of personnel on an as needed basis with no benefits except salary) reported in this study seems to be the less than ideal solution being implemented at this time. The Tennessee shortage of clinical laboratory personnel is further confirmed by national data provided by the American Society for Clinical Pathologists in their most recent bi-annual survey in which they report even higher vacancy rates in the nation as a whole than reported in Tennessee at the present time. However, if overtime and PRN hours were calculated into the vacancy rates, the rates in Tennessee would be more reflective of the national vacancy rates.

### **Reasons for the Shortage**

The reasons for the shortage continue to be attrition from the field and lack of qualified applicants to laboratory educational programs. These two problems have existed for a number of years, and soon the shortage will be exacerbated by a third cause: retirement of long term practitioners with insufficient numbers of new practitioners to replace them. Factors contributing to attrition and lack of recruitment are reported to be salary inequity and lack of respect and recognition. Although salaries have increased in the past two years, all evidence suggests that they are still too low in that they lack equity with other professions that require similar or even less preparation. Further, successful efforts to achieve equitable salaries would inevitably go a long way toward increasing respect and recognition.

### **Consequences**

The most serious consequence of the chronic shortage of laboratory personnel is the inevitable compromise in patient care as was reported in comments from lab managers. A further consequence of

the worsening shortage is the increased employee burn out due to fewer practitioners being forced to handle increasing workloads. This affects not only employee retention, but also student recruitment as burned out practitioners advise potential applicants to choose another, better paid and less stressful profession.

## **Solutions**

As we identify solutions to the shortage of practitioners, we must have the vision to devise real, long-term solutions rather than implement short-term actions that may eventually turn into future consequences even more dire than the current situation.

One solution proposed with some frequency is that more schools need to be established or reopened. It is true that many schools have closed, but they have closed due to lack of qualified applicants. If more schools existed in the current climate, they would simply be competing for the same too small pool of applicants with this solution becoming a consequence as even more school would be forced to close due to lack of applicants. Therefore, the better solution is not more schools, but rather it is increased enrollment. The time to open more schools is when classes in the existing schools are filled.

Educators and managers must work together toward this common goal of effective recruitment to produce more practitioners. Selling a profession is very much like selling anything else. The first step is to identify the competition. It seems that hospitals view each other as the competition and periodically raise salaries a few pennies above the hospital across the street to compete for the continuing inadequate number of practitioners. This solution only lasts as long as it takes the neighboring hospital to raise it's salary by a few more pennies. It does very little or nothing to address the real need which is to increase the total number of practitioners. The real competition is other professions that lure potential laboratory applicants away by offering higher salaries for the same or less preparation. We believe that educators and managers could and should sit down together and develop strategies for offering benefits desirable enough to overcome this competition from other professions and to increase potential medical technology applicants.

We are very pleased to report that salaries have once again increased by much higher rates than in previous years. We believe this is due to you, the lab managers as you have successfully negotiated with your administrators. However, salaries still have not reached equitable levels. Somehow we must reverse the prevailing myth that other professionals should be paid more because they provide direct patient care. We must dispel this myth by learning to successfully argue the point rather than to just concede when it's given as the reason. As an example: which is more important to patient care, the administration of the insulin shot or the laboratory's glucose test result that defines how much insulin to give? The informed observer would likely say that it takes a wider array of skills to provide an accurate test result than it does to correctly measure and give a shot.

There are those who propose that more automation will solve the shortage by using instrument technology to replace people. We have observed over our 36 + 27-year laboratory careers that machines never replace people in the final analysis. Machines only give us the ability to perform more tests faster. Let us not fall into the trap of giving up FTEs in favor of equipment without efforts to visualize the future expectations of laboratory users for more tests with faster turnaround times. I believe that educators also must have the vision to adjust curricula to address changing skills necessary for entry level practitioners to work with expanding technology.

## **APPENDIX**

**TABLE 16**  
**Proportion of Mailings and Responses**

| <b>Geographic Location</b> | <b>n=132<br/>Mailed</b> | <b>n=57<br/>Response</b> |
|----------------------------|-------------------------|--------------------------|
| <b>East Tennessee</b>      | <b>36%</b>              | <b>32%</b>               |
| <b>Middle Tennessee</b>    | <b>33%</b>              | <b>32%</b>               |
| <b>West Tennessee</b>      | <b>31%</b>              | <b>37%</b>               |

## DEMOGRAPHIC RESULTS

**TABLE 17**  
**Size of Hospitals**  
**n=57**

| <b>Bed Size</b> | <b>Percent of Total</b> |
|-----------------|-------------------------|
| <b>0-99</b>     | <b>47%</b>              |
| <b>100-199</b>  | <b>26%</b>              |
| <b>200-299</b>  | <b>16%</b>              |
| <b>300-500</b>  | <b>5%</b>               |
| <b>&gt;500</b>  | <b>5%</b>               |

**TABLE 18**  
**Location of Hospitals**  
**n=57**

| <b>Area</b>  | <b>Percent of Total</b> |
|--------------|-------------------------|
| <b>Urban</b> | <b>47%</b>              |
| <b>Rural</b> | <b>53%</b>              |

## BIBLIOGRAPHY

1. Appold, K. What is the future of the laboratory profession? *Clinical leadership and management review*. 2002;16(4): 264-267.
2. Auxter, S. Why there's a shortage of clinical lab scientists. *Clinical Laboratory News*. 2002; 28(7):1, 6, 10.
3. Ward-Cook K, and Tannar S. 2000 wage and vacancy survey of medical laboratories. *Laboratory Medicine*. 2001;32(3):124-138.
4. Wyatt D, and Ross L. Report of Results 2001 Tennessee Laboratory Manpower Survey. Memphis: University of Tennessee Health Science Center, Program in Medical Technology, November, 2001.

