

# Student Perceptions of the Clinical Laboratory Science Profession

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**OBJECTIVE:** The purpose of this paper is to describe the attitudes and perceptions among college biology and CLS/CLT students. These students were on selected college campuses at Texas universities in Houston, Dallas and the Austin/San Antonio areas for the Spring 2007 semester. Specifically, students were questioned on factors that influence their choice of field of study, career expectations, legislative measures which might be used to attract individuals to the career, and factors that will be required to keep them in the field of practice.

**DESIGN:** This study was part of a larger qualitative study which included exploratory discovery and inductive logic regarding the attitudes of four focus groups in Texas.

**SETTING:** Focus groups took place on college campuses or in hotel conference rooms.

**PARTICIPANTS:** 1) junior/senior-level college biology students and 2) junior/senior-level students currently enrolled in CLS/CLT programs.

**INTERVENTIONS:** Focus group discussions using a standard set of questions; group sessions lasted about 45 minutes.

**MAIN OUTCOME MEASURE:** This study was a qualitative study which included exploratory discovery and inductive logic regarding the attitudes of two groups in Texas.

**RESULTS:** College biology and CLS/CLT students find the clinical laboratory science profession to be interesting and exciting as a career prospect, however, many do not see themselves remaining in the profession and perceive it does not have good prospects for career advancement. The majority of students must work to support themselves through their college education and would welcome additional grants, scholarships and loan forgiveness programs as incentives to study the clinical laboratory sciences. Students believe that additional recruitment on high school and college campuses is needed to increase the visibility of the field as career choice.

**CONCLUSION:** The majority of students who are entering the clinical laboratory science profession do not see the profession as their final career choice, but rather a stepping stone to another career field in healthcare or a related field. The perception that the profession lacks a career ladder is a critical detriment to the retention of CLS/CLT professionals. The clinical laboratory science profession continues to suffer from a lack of knowledge about the field by the general public, college advisors, and even healthcare workers. State and national programs involving grants/scholarships or loan forgiveness programs offered by healthcare institutions would be beneficial in attracting students to study the clinical laboratory sciences.

**ABBREVIATIONS:** BLS = Bureau of Labor Statistics; CLS/CLT = clinical laboratory science/clinical laboratory technician; US = United States

**INDEX TERMS:** administration; behavioral research; health occupations; hospital; students.

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An adequate supply of clinical laboratory scientists (CLS) and technicians (CLT) is essential to achieving the nation's goals of ensuring accessible, high quality healthcare at a reasonable price and being able to respond effectively to a bioterrorist event or a national healthcare emergency.<sup>1-11</sup>

The Bureau of Labor Statistics in its 2006-07 Occupations Outlook Handbook cites an estimated 68,700 new CLS/CLT positions will be added between 2004-2014 (average growth of 6,870 new positions annually).<sup>12</sup> In 2005 a total of about 4,390 CLS/CLTs graduated from schools in the US.<sup>13</sup>

By focusing on those who are considering entering or soon will enter the field of practice, it was hoped that insights might be gained into what this generation of young adults are looking for in a career which would attract and retain them in this healthcare field.

According to a the May 2006 BLS report, there are an estimated 25,720 CLS/CLTs working in Texas; 62% of the CLSs and 57% of the CLTs are working in the Dallas, Houston, and Austin/San Antonio areas.<sup>12</sup> Thus, these metropolitan areas were targeted for focus group sessions.

The results of the BLS estimates and those from a Doig and Beck study

both conclude that the nation is losing workers at a much quicker pace than it is replacing them.<sup>5,12</sup> The anticipated national deficit can be estimated using the information on workforce numbers from the BLS and the Doig / Beck study (Figure 1). These numbers point to a 34% deficit in the number of clinical laboratory workers needed by 2015.

This lack of qualified workers in clinical laboratories will directly impact the efficiency and quality of patient care and impede appropriate actions in response to public health threats (e.g., bioterrorist events, emerging infectious diseases, etc.).<sup>2-4</sup>

The need to discover and understand the attitudes and perceptions towards a career in the clinical laboratory sciences, from those who will soon be entering the field, is a key element in understanding what is necessary to maintain the vitality of the CLS/CLT profession.

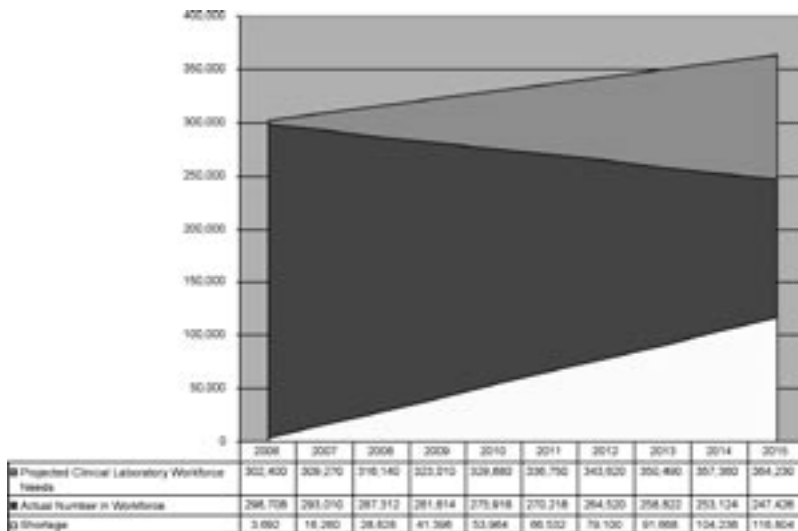
MATERIALS AND METHODS

This study was a qualitative study which included exploratory discovery and inductive logic regarding the attitudes of two groups in Texas: 1) junior/senior-level college biology students and 2) junior/senior-level students currently enrolled in CLS/CLT programs. Exploratory discovery is used to understand the reason behind the numbers seen in quantitative studies by exploring the “what, why, and how” of people’s views. Inductive logic uses a repetitive group of observations to reach a general conclusion, which is most likely true, although not certain.<sup>14,15</sup>

This paper focuses on the results from two groups: the college biology students and CLS/CLT students. It was imperative that the members of the focus groups were representative of the target population from which the information was desired.<sup>14,15</sup> It is also a comparative study looking at these two groups and their attitudes and perceptions on career selection factors, incentive measures which might attract individuals to an allied healthcare career, and the field of practice. It was postulated that there would be some areas of significant differences to the questions posed in the study between the two groups. A discussion guide was developed containing the questions which focused on the perceptions and attitudes college biology and CLS/CLT students had towards a career in the clinical laboratory sciences; topics included the appeal of the professions, skills needed at entry level, impressions about the career, and what factors might be useful in attracting individuals to the profession.

There were a total of 56 research participants in six focus groups (three groups of college biology students and three groups of CLS/CLT students) conducted in three metropolitan locations

Figure 1. Gap in workforce projections<sup>5,12</sup>



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within the state of Texas; Houston, Dallas, and Austin/San Antonio areas. Tables 1 and 2 contain demographic information about the groups upon which this paper is based.

This study was approved by the Committee for the Protection of Human Subjects at the University of Texas School of Public Health and a consent form was completed by each participant; additional Internal Review Board (IRB) approvals were obtained where necessary.

A type of boundary analysis was used to identify all the themes of the focus

group discussions.<sup>15</sup> Codes were assigned to broad themes upon review of the transcripts from the focus group; the transcripts were analyzed three times to ensure accurate documentation of the coding and thorough analysis of the information obtained.<sup>14,15</sup> Each transcript was evaluated, line by line, to identify themes/patterns. As the themes developed, a code was assigned and used to evaluate the next transcript. As other themes/perspectives emerged, new codes were developed; new codes were added only if a group of statements did not fit into another, already identified category. Classificational analysis was used to

logically divide the responses into classified themes.<sup>15</sup>

All information that might compromise confidentiality was removed from the report prior to submission to any outside reader.

## RESULTS

### Attitudes and perception about a CLS career

Participants cited many reasons for the appeal of a career in clinical laboratory science, but the most often cited reasons across all focus groups were:

- laboratory setting offers a variety of work environments.
- knowledge gained; the ability to solve problems, understand how the body works.
- hands-on type of work, e.g., laboratory work.
- healthcare career with very little patient contact.

When asked to identify individuals who influenced their choice of career, the most often cited from both groups were self-directed Internet searches and teachers (high school advisors, CLS/CLT program representatives). College advisors were infrequently mentioned.

The most frequent comment students gave to the questions about impressions about a career in the clinical laboratory science centered on the lack of knowledge by others (other healthcare workers or the public) about CLS/CLT job duties. Some of the CLS/CLT students commented on the lack of respect CLS/CLTs received from nurses and physicians. Additional comments included:

- an exciting career, again citing diversity of work settings.
- salary not commensurate with knowledge needed to do the job.
- a position underutilized by the

**Table 1.** Characteristics of focus groups: junior/senior-level college biology students

	Houston (n=7)	Dallas (n=5)	Austin (n=8)	Summary percentage focus groups	Texas (2006 US Census data)
<b>Gender</b>					
Female	5	4	7	80%	50.2%
Male	2	1	1	20%	49.8%
<b>Age (years)</b>					
18-25	4	4	7	75%	nt
26-30	2	1	1	20%	nt
31-35	1	0	0	5%	nt
>35	0	0	0	0%	nt
<b>Ethnicity</b>					
African					
American	2	0	1	15%	12.8%
Hispanic	0	2	5	35%	35.1%
Caucasian	5	3	2	50%	49.5%
Asian	0	0	0	0%	3.3%
Other	0	0	0	0%	2.0%

nt = not tabulated by Census Bureau

Note: percentages may not equal 100% due to rounding.

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- laboratory management.
- the perception of many frustrated 'older' techs.

The overwhelming majority (>85%) of the participants believed it would be important to build a strong bond between themselves and their job; "You must love what you do." When asked if the CLS/CLT is an essential member of the healthcare team, the vast majority responded 'yes'. Both groups believed they would have no difficulty finding a job as a CLS/CLT once they had completed their education. In fact, many believed they would have jobs before they graduated. When asked if the field

provided sufficient opportunities for growth the majority of the CLT/CLT participants (>75%) responded 'no'. However, college biology students were more optimistic about advancement opportunities and expressed that they believed sufficient opportunities were in place.

### Incentives to enter the CLS profession

Participants strongly supported the use of grant funding, scholarships, and loan forgiveness programs as means to attract more individuals to the CLS profession. Another suggestion was to "Show all of the 'cool' stuff you can do - use pictures" when recruiting. If

students had to pick one incentive to attract candidates almost all (>85%) selected a grant program.

Questions regarding impressions about the stress of the job were asked. Generally, both groups were aware of the job stressors, but acknowledged this was a known element when they were making the decision to go or not to go into the field.

Participants were then asked to identify elements they looked for when selecting a professional career path. The greatest divergence of opinion between college biology juniors/seniors and CLS/CLT students was found with this question. The most frequently cited important job element for the biology students was the work environment, however for the CLS/CLT students the most frequently mentioned was salary (55%) followed by job satisfaction (33%). In addition the following were cited:

- Opportunities for advancement
- Flexible work hours
- Being part of the healthcare team

Finally, participants were asked to identify employer benefits that mattered most to them. They most frequently identified the following:

- Health insurance
- Paid vacation
- Retirement plan
- Tuition reimbursement

When participants were asked to identify one thing they believed would be most helpful in attracting students to a career in CLS, the most frequently cited by both groups was visibility at high school career fairs. Other suggestions included: money for education and a high school program to educate students about the wide variety of healthcare careers.

**Table 2.** Characteristics of focus groups: junior/senior-level CLS/CLT students

	Houston (n=10)	Dallas (n=10)	Austin/ San Antonio (n=15)	Summary percentage focus groups	Texas (2006 US Census data)
<b>Gender</b>					
Female	8	6	13	77%	50.2%
Male	2	4	3	33%	49.8%
<b>Age (years)</b>					
18-25	7	7	10	67%	nt
26-30	3	1	5	26%	nt
31-35	0	1	1	6%	nt
>35	0	1	0	3%	nt
<b>Ethnicity</b>					
African American	4	2	3	28%	18.0%
Hispanic	3	4	2	28%	35.1%
Caucasian	3	3	9	43%	49.5%
Asian	0	0	2	6%	3.3%
Other	0	1	0	3%	2.0%

nt = not tabulated by Census Bureau

Note: percentages may not equal 100% due to rounding.

## DISCUSSION

It was originally hypothesized that there would be more diversity of opinions between the college biology students and the CLS/CLT students, however, the results from the focus groups indicate that they hold many of the same attitudes and opinions. This may be due to fact that both groups are biology-oriented and enjoy working in the laboratory setting, thus leading to shared opinions on the points discussed during the focus groups sessions.

Several notable features emerge from these focus group discussions. They are:

1. Students see the CLS profession as an exciting career with diverse opportunities in which to practice the profession, however, the majority does not believe the salary is commensurate with the knowledge they must gain to enter into the profession.
2. Students who have rotated through a clinical laboratory observe that the CLS/CLT is being under-utilized, that some older laboratory workers are frustrated with their jobs, and that there is a lack of respect for the clinical laboratory worker.
3. A significant majority of students must work to pay for some or all of their education and would benefit from grants/scholarship programs or loan forgiveness programs.
4. The work environment and salary are important drivers for individuals who are considering or who are entering the field of practice.
5. While the job market is strong for CLS/CLT prepared individuals, many are looking for opportunities to advance which they do not readily see in the CLS/CLT profession.

Several key points of information can be gleaned from these focus group discussion results:

First, the CLS/CLT career is an attractive profession to healthcare oriented students, however, the profession continues to suffer from low visibility on college campuses, and perhaps even more important, in the healthcare arena.

Second, it is imperative for employers to develop suitable career paths for individuals who enter the CLS profession, as those entering now will soon be looking for the 'next step' in their career and this will only add to the personnel crisis the profession is experiencing. Employers would be well advised to develop a career ladder for the CLS/CLT and to look at what might be done to increase salaries for these essential members of the healthcare team. This point was

also identified in the 2005 HSRA report on the CLS/CLT profession which found "the lack of a career ladder for laboratory professionals due to the relatively flat hierarchies that exist in hospital laboratories" is an issue in worker retention and recruitment.<sup>16</sup>

Third, the use of grants, scholarships and loan forgiveness programs hold promise as viable means to attract individuals to the CLS profession. This parallels the HSRA study which found that cost is a barrier for some students. "Several respondents cited the cost of education to students as a barrier to recruitment into clinical laboratory science programs."<sup>16</sup>

These focus group studies highlighted information not previously reported regarding students and the clinical laboratory science profession.

- CLS/CLT students are concerned about what they are observing in clinical laboratories during their clinical rotations: specifically, frustrated workers and a lack of respect given the clinical laboratory workers by other healthcare workers, primarily physicians and nurses.
- Unlike previous reports<sup>17</sup> which indicated that the younger generation is not as interested in salary as previous generations, results from this study would indicate that salary is still an important driver in career direction for the CLS/CLT.
- Perhaps the most disturbing finding is that many of the individuals who are entering into the profession are not looking to remain in the profession as their long term career.
- It is hoped that the findings from this study will contribute to the understanding the interests and values of CLS/CLT graduates when addressing the problem of recruitment and retention in the CLS/CLT professions.


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