A PROFILE OF VOLUNTARY PARTICIPATION BY MEDICAL TECHNOLOGISTS IN CONTINUING EDUCATION IN THE CITY OF DALLAS

A THESIS

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CHAPTER I

INTRODUCTION

Professional society certification of members traditionally has been viewed as one means of assuring quality health care. State licensure requirements are a further attempt to assure practitioner competency. Generally, the public and government recognize that certification and licensure are not one-time endeavors, but rather are dynamic processes which must be continually fortified and updated.

Problem Statement

Several professional societies have mandated continuing education participation as prerequisite for membership renewal. The American Society for Medical Technology (ASMT), a national organization for medical technologists, has not yet mandated continuing education participation as a requirement for membership. The American Society for Medical Technology does support continuing education for medical technologists, and it provides traveling workshops which confer continuing education units as recognition of attendance and participation at these workshops. However, few studies are published which profile the professionals who voluntarily take advantage of continuing education programs.

Purpose of the Study

The purposes of this study were: (1) to describe medical technologists who currently participate voluntarily in medical technology continuing education in the City of Dallas, and (2) to obtain

information which could be utilized to plan future continuing education programs for medical technologists, either voluntary or mandatory programs.

Research Questions

For the purposes of this study, the following research questions were considered:

1. Do medical technologists who are employed in administrative positions participate in continuing education programs more frequently than do bench technologists?

2. Do medical technologists who are employed in hospitals with less than 200 beds participate in continuing education programs more frequently than do technologists who are employed in hospitals with 200 or more beds?

3. Do medical technologists with five or more years of medical technology experience participate in continuing education more frequently than do medical technologists who have less than five years medical technology experience?

4. Do male medical technologists participate in continuing education programs more frequently than do female medical technologists?

5. Do medical technologists have medical technology related areas of interest which are not currently included as topics in the professional continuing education program?

Operational Definitions

For the purpose of this study the following terms were defined:

1. Medical technologist, (ASCP)--professional who has

completed the following requirements for certification by the American Society of Clinical Pathologists (ASCP):

A. Baccalaureate degree from an accredited institution which includes the following requirements:

1. Minimum of 16 semester units (24 quarter units) is required in chemistry including one semester of organic chemistry or biological chemistry.
2. Minimum of 16 semester units (24 quarter units) is required in biological sciences to include one semester of microbiology and immunology.
3. One course in mathematics is required; minimum requirements are met by courses recognized as pre-requisite for admission to physics.
4. Successful completion of a medical technology program accredited by the Committee on Allied Health Education and Accreditation (CAHEA).
5. Successful completion of the national registry examination for medical technologists prepared by the American Society of Clinical Pathologists Board of Registry.

B. Medical laboratory technician (ASCP) certification and a baccalaureate degree from an accredited institution including:

1. Minimum of 16 semester hours (24 quarter hours) of chemistry with one semester of organic biochemistry.

2. Minimum of 16 semester hours (24 quarter hours) of biological science including one semester in microbiology and immunology.
3. One semester (one quarter) of mathematics.
4. Three years full-time acceptable clinical laboratory experience in blood banking, chemistry, coagulation, hematology, microbiology, mycology, parasitology, serology, and urinalysis within the last seven years. At least one of these years of experience must be acquired post baccalaureate degree and at least two years must be under the supervision of a certified pathologist (certified by the American Board of Pathology or eligible) or an appropriately certified medical scientist and a certified medical technologist.

C. Clinical laboratory assistant (ASCP) certification and a baccalaureate degree from an accredited institution including:

1. Minimum of 16 semester hours (24 quarter hours) of chemistry with one semester of organic or biochemistry.
2. Minimum of 16 semester hours (24 quarter hours) of biological science including one semester in microbiology and immunology.
3. One semester (one quarter) of mathematics.

4. Four years full-time acceptable clinical laboratory experience in blood banking, chemistry, coagulation, hematology, microbiology, mycology, parasitology, serology, and urinalysis within the last seven years. At least one of these years experience must be acquired post baccalaureate degree and at least two years must be under the supervision of a certified pathologist (certified by the American Board of Pathology or eligible) or an appropriately certified medical scientist and a certified medical technologist.

D. Baccalaureate degree from an accredited institution including:

1. Minimum of 16 semester hours (24 quarter hours) of chemistry with one semester of organic or biochemistry.

2. Minimum of 16 semester hours (24 quarter hours) of biological science including one semester in microbiology and immunology.

3. One semester (one quarter) of mathematics.

4. Five years full-time acceptable clinical laboratory experience in blood banking, chemistry, coagulation, mycology, parasitology, serology, and urinalysis within the last seven years. At least two of these years of experience must be acquired post

> baccalaureate degree and at least two years must be under the supervision of a certified pathologist (certified by the American Board of Pathology or eligible) or an appropriately certified medical scientist and a certified medical technologist. (American Society of Clinical Pathologists Board of Registry, 1981)

2. Continuing education--"education which is pursued for reasons other than those of career entry" (Lindberg, 1973, p. 1).

3. Continuing education unit--"a meaningful unit for measuring participation in continuing education of a stated quality, content, and relevance; one continuing education unit is awarded for 10.0 hours participation in an approved continuing education program "(Lindberg,, 1973, p. 1).

4. Bench technologist--medical technologist who performs routine laboratory procedures and assumes no supervisory or administrative duties; the bench technologist may have some teaching duties related to the clinical laboratory experience of medical technology students or medical laboratory technician students, but the bench technologist is not directly responsible for the content of the learning experience (Presbyterian Hospital of Dallas, 1977).

5. Professional Acknowledgement for Continuing Education (PACE)--an official means of recording earned continuing education units for members of ASMT by this society (Lindberg, 1973).

Assumptions

For the purpose of this study, the following assumptions were made:

1. Each medical technologists sampled answered the questionnaire to the best of his ability.

2. Medical technologists generally believe that some level of continuing education is desirable for members of their profession.

Limitations

The limitations for this study were as follows:

1. The medical technologists sampled in the study were limited to those technologists employed in the City of Dallas.

2. The medical technologists sampled were employed as medical technologists working the day shift in a hospital laboratory.

3. The medical technologists sampled were currently certified by the American Society of Clinical Pathologists (ASCP).

CHAPTER II

REVIEW OF LITERATURE

The role of continuing education as a method for laboratory professionals to assess, renew, and expand competence is supported by regulatory agencies, professional organizations, and consumer advocacy groups. Some practitioners view continuing education as an opportunity to enhance and increase professional and intellectual growth. Although many groups of allied health professionals have legislated recertification and continuing education requirements, there is disagreement at all levels on the issue of mandatory versus voluntary continuing education.

Early Development

In 1968, a national conference was held to study the feasibility of developing a standard unit of measurement for non-credit continuing education programs (The Continuing Education Unit, 1968). The conference was sponsored by the United States Civil Service Commission, the United States Office of Education, the American Association of College Registrars and Admissions Officers, and the National University Extension Association. This conference created a national task force which developed a uniform continuing education unit. This unit is defined as 10 contact hours of participation in an organized continuing education experience under responsible sponsorship, capable direction, and qualified instruction (The Continuing Education Unit, 1968). The following lists describe what a continuing education

education unit is and is not intended to do, A continuing education unit is:

1. A meaningful unit for measuring participation in continuing education of a stated level, quality, content, and relevence.
2. An acceptable means of documenting worthwhile activities of those who believe that learning is truly a lifetime experience.
3. A part of a voluntary recording system for documenting the efforts of professionals to maintain and improve competencies.

A continuing education unit is not:

1. Awarded for non-learning activities such as business meetings of a society or for travel to attend class.
2. The same as a semester hour, quarter hour, or an academic Carnegie unit.
3. Intended to be convertible into academic units or credit.
4. A form of recognition that any institution or organization is required to accept (Lindberg, 1973, p. 1).

A position paper by the American Society for Medical Technology (ASMT) in 1971 on career mobility in the medical laboratory outlined basic components of a competence assurance program (Mass, 1978). The concept of the program was implemented in 1976 by the creation of the Competence Assurance Council. Competence assurance is a determination of whether or not professionals possess the required skills, knowledge, and attitudes to practice, and that these are used to fill roles and positions of medical technologists. ASMT is committed to the inclusion of the competence assurance program in the credentialing

process which will define standards of performance.

The Education Council of ASMT was established in 1977 in an effort to bring a coordinated approach to the assessment of needs and the development, implementation, and evaluation of education programs. The first obligation of ASMT to the profession in educational activities is to provide the opportunity to assure continued competence after initial certification of medical technologists. The second obligation is to provide a route to career mobility not confined to traditional academic structure.

Professional Acknowledgement for Continuing Education (PACE) was designed in 1973 by medical technologists who recognized the need for professional development and implemented the mechanism to actualize these needs. PACE is a functioning administrative program which was designed to stimulate and record involvement in continuing education experiences. Two types of continuing education participation are accepted and recorded by PACE, Continuing Education Unit (CEU) and Individual Education Unit (IEU). A CEU is a uniform unit of measurement intended for non-credit continuing education programs which meet criteria set by the PACE Review Committee and are reported by the sponsor of PACE-approved programs (Lindberg, 1973). An IEU is defined as one hour participation in an appropriate experience which may not qualify for CEU credit (Lindberg, 1973). The PACE committee awards IEU's for activities such as formal education programs less than four hours duration, attendance of professional society meetings, and participation in educational experiences which lack one or more of the

requisite program criteria for CEU activities. IEU education does not require PACE committee approval.

Motivating Forces for Participation

Reports indicate that it may become necessary for medical technologists to document continuing education participation for certification renewal (Communication, 1977). The external forces of professional societies and government play a role in the existence of continuing education. Professional societies recognize laboratorians who meet stated qualifications and standards by means of certification or registration. They additionally offer a broad scope of educational experiences in an effort to assure continued competency, keep abreast of technological innovations, and enhance professionalism. Self-assessment series and mini-courses are useful for identification of individual strengths and weaknesses. Workshops in several disciplines are presented regionally, and educational programs are included with annual meetings of professional societies (Alexander, 1980).

The National Certification Agency (NCA) for clinical laboratory personnel was established in 1971 in response to needs stated by numerous health care practitioners. Its purpose is to develop an evaluation mechanism by which to discriminate competency of laboratory professionals and thereby decrease the need for government regulation. NCA has proposed initial certification and periodic recertification. It has also proposed that documentation of continuing education be accepted as alternative to recertification examinations.

Those who advocate mandatory continuing education recertification

requirements are convinced that this is the only way to assure competent clinical practice. They believe requirements for participation in continuing education programs result in learning and improved level of practice. Others are less convinced of the value of mandatory requirements; they feel competency cannot be legislated. Mandatory requirements do not take into account individual differences in learning.

Internal motivation can be described as a hierarchy of needs recognition by medical technologists. Continuing education as a means of reinforcement and review of knowledge is a basic level of recognition of the need for continuing education. Self-assessment programs and mini-courses which review fundamental concepts are developed to fulfill this need.

A second level of need recognition is the desire to stay current with new research and technological changes. This level of recognition of continuing education need may open the way to greater depths of understanding of knowledge and new expectations. Many laboratorians are cognizant of the rapid growth and change taking place in medicine, and they view continuing education as a necessity to keep up with this change.

The need for documentation of continuing education as a means of certifying competency to practice in one's profession describes another level of continuing education need. This need may be perceived positively as a means of demonstrating continued competency and professional growth; the need may be viewed negatively as a burden placed on medical technologists to justify their existence.

A fourth level is recognized by individuals who seek development of new dimensions for members of the profession. The technologist at this level explores the health care field to see what present and future areas of interest and expertise can be utilized. These technologists are intellectually curious and are interested in expansion for themselves and for other technologists.

Continuing education is many things to many people. For some it is a route to professional advancement or salary adjustments. For others continuing education is a requirement placed on them by their employers or regulatory agencies. For still others, the motivating force for participation in formal continuing education, is the desire to perform one's job as effectively as possible. Soloway (1981) refers to true professionals as having innate intellectual curiosity. They study and refine their skills throughout their careers, they teach others, and they innovate and discharge their professional obligations to the limits of their capabilities.

Effective participation in continuing education requires actual commitment of time, energy, and resources on the part of the employee and the employer. Continuing education cannot be passively absorbed; learning is an active process that requires work before, during, and after attendance at a formal program. Active participation can result in long term benefits to continuing education participants and ultimately to patients. Berry (1981) states . . . "Although hard data are lacking . . . when each person in the laboratory has an opportunity to obtain relevent continuing education, high-quality and appropriate

laboratory services will result" (p. 10). However, it is almost impossible to measure such benefits in quantifiable terms.

An example of the dedication of laboratory personnel to continuing education is the growing number of volunteer workshop directors and faculty who present regional and national programs. These professionals contribute time and expertise from a sense of commitment and service to their profession. Many of the same people also serve on committees of various professional societies, working to plan educational projects and programs.

Involvement in Continuing Education

In a study (Marty, 1977) designed to characterize involvement by medical technologists in continuing education, attitudes toward the concept of continuing education in professional development were found to be generally positive. However, continuing education involvement did not appear to be an integral part of the professional commitment made by many medical technologists. Interest in participation in continuing education offerings was expressed, but many respondents indicated a demand for release time from work, more continuing education close to home, and shared contribution costs with the employer. Lecture was the most commonly reported type of formal continuing education, but a perceived need for home-study courses was strongly indicated.

Marty also indicated that journal reading was the most commonly reported form of continuing education activity. Participation in professional meetings at any level was low. It was conjectured that

several of the following factors contribute to this finding: 1) prohibitive costs, 2) inconvenient location, 3) irrelevant content, 4) inability to shift work time, 5) inability to miss work, and 6) lack of interest.

Strong support for voluntary continuing education was seen in most responses. Practical considerations of time and money necessary for mandatory continuing education systems was expressed. The need for establishment of national standards for continuing education participation was indicated, and most respondents expressed the opinion that voluntary continuing education was good for all health care professionals.

Workshops: A Continuing Education Tool

Workshops are probably the most interesting and rewarding type of continuing education available to laboratorians (Moore, 1979). Workshops offer both direct information and valuable opportunity for participants to talk shop among themselves. Preplanning for workshop attendance can decrease expenses and maximize information obtained at the workshop.

Workshop listings should be checked for local and regional meetings. Local meetings can save transportation and hotel costs, and often speakers can be scheduled to present subjects of particular interest. The content of the workshop should be checked to identify those which meet specific needs--update for outdated procedures, specific subject material to sharpen skills or correct deficiencies. Workshops that offer continuing education credits are an asset to

work records, and such workshops have met certain professional society requirements. A short proposal to explain the workshop and benefits to the laboratory should be submitted along with a list of expenses and time off requirements. Writing down this proposal helps clarify goals for the technologist who will attend the workshop, and will assist the administrator who must review applications for continuing education funding.

Workshop handouts and scientific papers should be collected and organized in a notebook to be shared with co-workers. Between scientific sessions, discussion and idea-sharing with collegues can be valuable sources of continuing education. After returning from a workshop, mini-workshops and inservice programs should be set up promptly to share knowledge with co-workers and implement new methods and procedures. The knowledge obtained from workshops must be shared to be useful.

Retraining Inactive Technologists

One important and often overlooked application of continuing education programs is that of retraining the medical technologist who has been professionally inactive (Price, 1977). The assumption that once qualified a technologist remains forever competent is a major flaw in the recertification system. Professional obsolescence--spawned by a rapidly changing body of knowledge--requires anyone out of the active work force for more than a few years to take part in formal retraining.

The University of Iowa has devised a retraining program that

caters to a student's specific needs while staying within the regular medical technology training program (Floss, 1980). Each trainee embarks on a unique course of study designed to hone knowledge and skills only in identified deficient areas. It is felt that this individualization of course study has been key to the program's success.

Four steps are identified to help inactive technologists find their way back into the laboratory in the University of Iowa program. The initial step in retraining the inactive medical technologist is assessment of what must be taught. Proficiency tests similar to the one given graduating medical technology students are administered to each candidate to determine how much factual knowledge has been retained, how well the trainee can apply laboratory knowledge, and an assessment of whether the trainee possesses the discipline essential to laboratory work. This assessment also includes a review of the individual's prior education and training, length of professional activity, previous job experience, and participation in related activities while employed.

Potential candidates are asked why they want to be retrained and what type position they hope to attain. Applicants are advised about job opportunities that will be available when retraining is complete. Some trainees are homemakers who want to pick up their careers again. Others are medical laboratory technicians and clinical laboratory assistants who want to progress up the career ladder. A third group who seek retraining developed their skills in the military or abroad and need retraining for a civilian laboratory position in this

country. In most cases, the trainees desire full-time jobs upon completion of the retraining course, with an opportunity for advancement to supervisory positions.

The most important step in the retraining program is the development of individual training programs to fit individual needs. With information garnered from the proficiency testing and career counseling, the trainee and instructors prepare a mutually agreed-upon plan for study. The intensity and length of the program is directly related to the trainee's length of absence from the work force.

The most likely place to start a retraining program of this sort would be a university- or hospital-based medical technology program. Due to the diversity of instructional materials available at a large hospital or university, the ability to tailor courses to each trainee is enhanced. Available resources may be used rather than developing new material for each trainee. Lectures, texts, laboratory supplies, and self-instructional materials from the regular medical technology program may be used.

The individual undergoing retraining among undergraduate medical technology students may be stimulated to progress at a level comparable to the others. The trainees in the Iowa program achieve the same level of professional competency as do the regular medical technology students. The existing medical technology program provides instructors who are more likely to be sensitive to the special needs of students resuming formal education after years of absence. A teaching staff must recognize the time constraints that often plague the returning student.

In the Iowa program, tuition is flexible. Some trainees who sit in on lectures but do not attend laboratory sessions are not charged. Students who use laboratory facilities pay a minimal fee. Flexibility and diversity have been major assets in this retraining program. If a trainee desires rapid completion of the program, an intense, eight-hour-a-day program with both classroom and laboratory sessions is devised. If the trainee plans to work in a specialized laboratory, a program can be developed to focus exclusively on that area. It has been found that most trainees desire a training program that is very generalized, with classroom work preceding the clinical laboratory rotations.

Upon completion of the classroom and laboratory coursework, the final step in retraining consists of a review and evaluation of the trainee's newly acquired knowledge and skills. Evaluation of laboratory skills actually takes place throughout the clinical rotations. The primary means of evaluation is the posttest. This examination may resemble the assessment test given at the beginning of the program, or it may be comparable to a certification examination.

A survey (Hallum, 1981) to find out more about technologists returning to the work force found that some generalizations could be made about technologists and the retraining programs. Where statistics are available, they indicated that 63 percent had been out of the field more than 10 years; 27 percent had been away for 5 to 10 years; 10 percent had been away less than 5 years. Two-thirds of the retrainees were women who had left the field because of family

commitments and wanted to return to work after raising children. Others were looking to change or advance their careers,

Program directors see a lack of confidence as the most common problem facing retrainees. Aware of the many changes in the field, they feel incompetent and insecure of their skills. Less often mentioned, but a real problem in some cases, is the reluctance of potential employers to hire retrainees. The retraining program helps the returning technologist regain his self-confidence, but it does not always overcome the employer's skepticism about the individual's abilities.

Some students do not realize the intensity of the retraining programs and the effort they must put into it. Some schools approach this problem administratively by outlining course guidelines in brochures and by counseling students before they enter the program. One-fourth of the schools use proficiency testing to determine placement of the students, but the majority of the directors rely on observation and the student's self-assessment.

There was wide diversity found with respect to entrance requirements, type of training offered, subjects offered, total hours of instruction, and evaluations while training. The ultimate evaluation or criterion of success is reemployment, and data are sketchy in this area. Instructors in the programs find their task both challenging and rewarding--challenging as they overcome the retrainees' fear of the unknown, and rewarding as they see the reacquisition of skills and self-confidence. Older students seeking retraining are seen to

be more motivated than are younger students, and they seem to have a better sense of what they want to do (Hallen, 1981).

There seems to be general agreement in the literature that participation in continuing education by medical technologists is both necessary and desirable. There is discussion on the questions of mandatory versus voluntary continuing education requirements and recertification. One issue central to this discussion is the philosophy of legislating professional competency.

In 1968, a national conference was held to develop a standard unit of measurement for non-credit continuing education programs. This conference developed the continuing education unit (CEU) which is recognized by many education agencies as documentation of continuing education participation. Professional acknowledgement for continuing education (PACE) was developed and implemented in 1973 by the American Society for Medical Technology to stimulate and record involvement in continuing education experiences by medical technologists. Two types of continuing education are accepted by PACE, the CEU and the individual education unit (IEU).

There are several motivating forces which seem to indicate that it may become necessary for medical technologists to document continuing education participation for certification renewal. Professional societies offer a broad scope of educational experiences in an effort to assure continued competency, keep abreast of technological inovations, and enhance professionalism of members. These societies recognize laboratorians who meet stated qualifications and standards

by means of certification or registration. The National Certification Agency (NCA) for clinical laboratory personnel was established to develop an evaluation mechanism by which to discriminate competency of laboratory professionals. NCA has also proposed that documentation of continuing education be accepted as alternative to recertification examinations.

Internal motivational forces for continuing education participation can be described as a hierarchy of needs recognition by medical technologists: 1) Continuing education as a means of reinforcement and review of knowledge; 2) The desire to stay current with new research and technological changes; 3) Documentation of continuing education as a means of certifying competency to practice one's profession; 4) Development of new dimensions for members of the profession.

Effective participation in continuing education requires actual commitment of time, energy, and resources. Continuing education cannot be passively absorbed; learning is an active process that requires work before, during and after attendance at a formal program. Active participation can result in long term benefits to participants and ultimately to patients.

Attitudes toward the concept of continuing education for professional development are generally positive. Medical technologists express interest in continuing education participation, but demand release time from work, more continuing education close to home, and shared contribution costs with the employer. Strong support for

voluntary continuing education is most often recorded, and the need for establishment of national standards for continuing education participation are often expressed.

Workshops are interesting and rewarding continuing education available to laboratorians which offer both direct information and valuable opportunity for participants to talk shop among themselves. Preplanning for attending workshops can decrease expenses and maximize information obtained.

One important and often overlooked application of continuing education programs is that of retraining the medical technologist who has been professionally inactive. Professional obsolescence--spawned by a rapidly changing body of knowledge--requires that anyone out of the active work force for more than a few years take part in formal retraining. With the growing shortage of medical technologists it becomes advantageous to support continuing education in the form of retraining programs. These technologists cannot be legislated professionally competent because at some point in time a certifying examination was taken and passed. There is a need for the development of competency-based methods of evaluation for all levels of professionals, but the issue of mandatory versus voluntary continuing education may never be resolved.

CHAPTER III

METHODOLOGY

A descriptive study was made of medical technologists employed in hospital laboratories in the City of Dallas. The medical technologists sampled had specialized in clinical laboratory areas such as microbiology, hematology, clinical chemistry, blood bank, urinalysis, and serology/immunology, or they worked in all or several areas of the laboratory and were considered laboratory generalists. The technologists had varying levels of work experience from recent graduates to those technologists with more work experience. The amount of post baccalaureate education, both academic education toward a degree and continuing professional education, varied among the technologists sampled.

The American Hospital Association listing of hospitals in the City of Dallas was used to construct a list of hospitals according to the following groupings: 0-99 beds, 100-199 beds, 200-500 beds, and greater than 500 beds. A convenient sample of the medical technologists employed in the laboratories of these hospitals was made on a proportional basis of each of the bed size divisions listed. A total of 200 questionnaires were distributed among the laboratories included in the study. Seventy-four questionnaires were distributed to laboratories with 0-99 beds, 50 questionnaires were distributed to laboratories with 100-199 beds, 36 questionnaires were distributed to laboratories with 200-500 beds and 40 questionnaires were distributed

to laboratories in hospitals with greater than 500 beds, The questionnaires were randomly distributed to the technologists in each laboratory selected for the study.

A questionnaire devised by this researcher (see Appendix A) was distributed to medical technologists who were employed on the day shift at each of the hospitals included in the study. Questionnaires were mailed to the laboratory director of each hospital in the study and the questionnaires were distributed to the technologists. Every other name on the laboratory list of technologists was chosen for the study until the sample size proposed for that laboratory was reached. The number of technologists to be sampled at each hospital in each bed size grouping was determined by dividing the number of technologists to be sampled in that group by the number of hospitals in that group.

A formative evaluation of the questionnaire used in this study was made prior to its distribution. The faculty members of the School of Allied Health Medical Technology Department of Southwestern Medical School in Dallas made this evaluation. The medical technologists who make up this faculty were not included as part of the sample for the study, nor were the results from this evaluation included in the tabulation of the data received from technologists sampled.

The one suggestion for improvement of the questionnaire which was received from this evaluation concerned question number 12 on the questionnaire. The faculty felt that the terminology used in this question--"workshops which include "hands--on" instruction"--might

not be readily understood by all technologists sampled. A brief explanation of this terminology was added to question number 12 in an effort to clarify the question. All other questions which were evaluated were thought to be acceptable as they were written.

An explanatory cover letter (see Appendix B) was attached to each questionnaire. It was stated in this cover letter that the questionnaire should be completed, placed in the stamped and addressed envelope provided, and returned within one week after receiving the questionnaire. Two weeks after the initial mailing of the questionnaires, a second mailing was made in an effort to elicit a greater response from those laboratories which did not have 100 percent return of the questionnaires. This researcher attached a letter directed to each laboratory director requesting that technologists who had been selected and did not complete a questionnaire at the initial mailing do so at this time. One additional week was allowed for completion and return of these questionnaires.

A consent form as required by the Human Research Committee of Texas Woman's University was also attached to the questionnaire (see Appendix C). Completion and return of the questionnaire and the consent form served to indicate consent by the technologists being sampled to act as subjects for research and investigation in this study. A phone number for this researcher was included on the cover letter. After selection of the hospitals to be sampled the hospital administrators of each hospital were contacted to request permission to distribute the questionnaire to the ASCP certified medical

technologists in that hospital laboratory. This permission was granted by each administrator contacted.

Analysis of the data obtained from the sampling of ASCP certified technologists in the study was made by taking raw numbers and constructing frequency distributions and calculating percentages for each question on the questionnaire. The frequency distributions and percentages were used to construct tables to illustrate answers to the research questions listed in chapter I.

CHAPTER IV

RESULTS AND DISCUSSION

A return rate of 38.5 percent (77 respondents) was achieved by two mailings of the questionnaire, and the response rates are listed by hospital bed size in Table 1.

Table 1

RESPONSE RATE BY HOSPITAL BED SIZE

Hospital Bed Size	Questionnaires Mailed	Questionnaires Returned	Percentage
0-99	74	2	3%
100-199	50	5	10%
200-500	36	30	93%
$\geq$ 500	40	40	100%

The response rate from medical technologists in hospitals sampled with less than 200 beds was 5.7 percent (seven respondents), and this rate was not considered significant. It was determined in post-questionnaire interviews, with chief technologists at these laboratories, that many of the workers in these laboratories were not ASCP registered medical technologists. These workers were either on-the-job trainees with varying educational backgrounds, or medical laboratory technicians. It was also determined in these interviews that the average number of workers employed in this size hospital laboratory was four. The findings that the majority of laboratory workers in hospitals sampled

with less than 200 beds were not ASCP registered medical technologists and that these workers were not represented in numbers which met criteria proposed for this research caused this researcher to delete these hospitals from the study. The responses contained in the questionnaires returned from this part of the sample were not included in the tabulation of data to calculate percentages or to draw any conclusions from answers to the questionnaire.

A response rate of 94.5 percent (70 respondents) was achieved when questionnaires from medical technologists in hospitals with greater than 200 beds were tabulated. The responses indicated on these questionnaires were used to develop frequency distributions and to draw conclusions to this study, and these responses indicated that most respondents were young, female, and married (Table 2).

Table 2

SEX, MARITAL STATUS, AND AGE

OF RESPONDENTS BY PERCENTAGE

Sex	Percentage	Marital Status	Percentage	Age	Percentage
Male	11.4%	Married	90%	20-29	47%
Female	88.6%	Not Married	10%	30-39	25%
				40-49	17%
				50-59	11%
				60	0%

The eight male respondents were all married, all were in the 20-29 age group, and all male respondents indicated some participation in continuing education activities. Ninety percent of all respondents were

married, their ages ranged from 22 to 58, and the majority were under 40 years of age.

When participants in the study were assessed as to number of years work experience in medical technology, the results were skewed with the larger percentage at the lower end of the scale (Table 3).

Table 3

MEDICAL TECHNOLOGISTS'

WORK EXPERIENCE AND

CONTINUING EDUCATION PARTICIPATION BY PERCENTAGE

Factors	Years of Experience			
	0-3	4-6	7-10	10
Medical Technologists	28%	44%	24%	4%
Continuing Education Participation	53%	45%	100%	100%

Seventy-two percent of the participants in this study had less than six years work experience in medical technology. Only about one-half of the technologists with less than six years work experience indicated participation in continuing education. One hundred percent of respondents with greater than six years experience indicated participation in continuing education.

Three-fourths of the respondents described their job title as bench technologists, and few (10 percent) of these technologists had post degree academic credit (Table 4).

Table 4

JOB TITLE AND PARTICIPATION

IN CONTINUING EDUCATION

Job Title	Post Degree Academic Credit	"Hands-on" Workshops Professional Meetings Seminars
	Percentage	Percentage
Bench Technologist	(10%)	(33%)
Administrative Technologist	(56%)	(100%)

NOTE: Bench technologist n=52; Administrative technologist n=18.

Those technologists who described their job title as administrative technologist indicated a higher percentage of attainment of post degree academic credit. Thirty-three percent of bench technologists attended wet workshops, professional meetings, or seminars, and 100 percent of the administrative technologists indicated participation in these same continuing education activities. It may be that these administrative technologists perceive a greater responsibility to attend continuing education programs to gather new knowledge and compare notes than do bench technologists.

Regularly scheduled inservice continuing education programs were reported to be offered at laboratories where 71 percent of the respondents were employed. Only 50 percent of technologists who work at hospitals were regularly scheduled inservice programs indicated

participation in these programs. Most participants in hospital-based continuing education programs were administrative technologists and those technologists with more than six years working experience in medical technology.

A significant number of respondents, 25 technologists (35.7 percent), made unsolicited comments at the end of the questionnaire describing their personal feelings regarding continuing education in the City of Dallas and continuing education for medical technologists in general. These comments are summarized as follows:

1. There is a need for development of inservice programs within specific laboratory departments; these programs are seen to be needed on a regularly scheduled basis.

2. There is a need for continuing education that is designed to expand technical knowledge into such areas as clinical relevance.

3. There is a need for more formal management training for administrative technologists and for the development of management skills in other technologists within individual departments in the laboratory.

4. There is a need for supervisors and pathologists to take more active roles in the training and professional development of technologists who are classified as bench technologists. See Appendix D for a list of all comments.

Although the technologists surveyed in this study did not indicate a particularly high level of participation in continuing education programs, the unsolicited comments on the questionnaires seem to indicate that these technologists were interested in improving the

continuing education programs which were currently available. This was expressed in the perceived need to develop inservice programs within individual laboratory departments. These programs would facilitate technical training and review, and could be used as a forum to expand knowledge to such areas as clinical relevance. In this age of ever-increasing awareness of cost-containment and testing justification, it becomes necessary for medical technologists to question and explore the actual clinical relevance of testing and procedures practiced in the clinical laboratory. As patients become better educated consumers who demand competent laboratorians to perform clinical laboratory procedures, these consumers of medical care demand relevant clinical testing and reporting.

The eight male respondents in this study were all bench technologists. Proportionally, the male respondents did participate in continuing education offerings with greater frequency than did the female respondents who were bench technologists (100 percent participation). The male technologists may attend more continuing education in an effort to increase their marketability and mobility up a career ladder toward a position of greater responsibility--the administrative technologist position.

Fifty-six percent of technologists who described their job title as administrative technologist indicated they possessed post degree academic credit. Several of the technologists indicated on the questionnaire that this academic credit included coursework in management and management-related courses. One of the most frequent unsolicited

comments on the questionnaire was the perceived need for formal management training for administrative technologists. As the duties of these technologists have expanded to include budget preparation and analysis, capital equipment purchase proposals and other major expenditure proposals, scheduling, counseling, evaluation, and professional development of employees, the maintenance and future development of the technical aspects of the specific laboratory area--it is no longer sufficient to have a department supervisor who is merely technically competent. At present, there are few avenues available for training and development of the management aspect of laboratory supervisors. Many medical technology programs are beginning to include coursework in some aspects of laboratory management in the curriculum. Some master's degree programs include this training in the required coursework. Increasingly, seminars and workshops are being developed which address this important area of continuing education for medical technologists. As supervisors acquire management training to prepare them to assume the role of manager/supervisor, it is important for these supervisors to develop management skills in technologists within the department as part of the professional development of these technologists.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The purpose of this study was to determine a profile of medical technologists in the City of Dallas who voluntarily participate in continuing education and to determine the level of this participation. This information may be used to plan future continuing education programs--either voluntary or mandatory continuing education programs.

The following research questions were considered in this study:

1. Do medical technologists who are employed in administrative positions participate in continuing education more frequently than do bench technologists?

2. Do medical technologists who are employed in hospitals with less than 200 beds participate in continuing education programs more frequently than do technologists who are employed in hospitals with 200 or more beds?

3. Do medical technologists with five or more years experience participate in continuing education more frequently than do medical technologists who have less than five years experience?

4. Do medical technologists who are male participate in continuing education programs more frequently than do medical technologists who are female?

5. Do medical technologists have areas of interest which are not currently included as topics for continuing education programs?

A descriptive study of medical technologists who were employed in hospital laboratories in the City of Dallas was conducted. The American Hospital Association listing of hospitals in the City of Dallas was used to construct a list of hospitals according to the following groupings: 0-99 beds, 100-199 beds, 200-500 beds, and greater than 500 beds. A convenient sample of the medical technologists employed in these hospitals was made on a proportional basis of each of the bed size divisions listed. A total of 200 questionnaires were distributed within the laboratories chosen to be samples. The number of technologists sampled at each hospital in each bed size grouping was determined by dividing the number of technologists to be sampled in that grouping by the number of hospitals in that grouping.

A formative evaluation of the questionnaire used in this study was made prior to beginning the survey. The faculty members of the School of Allied Health Medical Technology Department at Southwestern Medical School in Dallas made this evaluation. The technologists who comprise this faculty were not included as part of the sample for the study, nor were the results from this evaluation used in any form in the tabulation of data for the study of the drawing of any conclusions from the data received.

An explanatory cover letter was attached to each questionnaire which was mailed. This researcher contacted the chief technologists by telephone when the mailing procedure failed to elicit a significant response from the hospitals with less than 200 beds. During these conversations, it was determined that the workers in the laboratories

of this size hospital in the City of Dallas were for the most part not ASCP registered medical technologists. Many of these workers were on-the-job trainees and medical laboratory technicians. It was also determined that the number of workers employed in the laboratories of this size hospital was approximately four workers per laboratory. The laboratory workers in hospitals with less than 200 beds did not meet two criteria established for this study, namely that the workers were for the most part not ASCP registered medical technologists, and these workers were not employed in sufficient numbers to maintain the proportions for the hospital sample groupings.

A return rate of 38.5 percent was achieved by two mailings of questionnaires. This percentage reflects 77 respondents to 200 questionnaires sent out. The response rate from hospitals sampled with less than 200 beds was not considered significant.

The technologists surveyed in this study did not indicate a particularly high level of participation in continuing education programs overall, but the unsolicited comments on the questionnaires seem to indicate that technologists were interested in improving continuing education programs which were currently available. More specific and individualized inservice programs were seen as being needed within the different laboratory departments. Technologists also expressed the desire to have department supervisors and pathologists assume more active roles in the continuing education and training of the technologists in the laboratories.

Responses to the questionnaires indicated that most participants

in the study were young, female, and married. Most of the respondents had less than six years work experience as medical technologists. Only about half of these technologists indicated participation in continuing education programs. Technologists with greater than six years experience working as medical technologists indicated 100 percent participation in continuing education programs. Administrative technologists indicated a higher level of participation in continuing education than did bench technologists. Only 10 percent of the bench technologists indicated having post degree academic credit, but 56 percent of administrative technologists possessed this credit. The administrative technologists indicated that management and management-related courses were common subjects being taken for post degree academic credit. The need for more management training for department supervisors was expressed, and this trend toward management training is reflected in workshops and seminars being developed for this purpose.

Conclusions

The conclusions of this study were as follows:

1. No conclusions relative to continuing education participation can be made for medical technologists employed in hospitals with less than 200 beds.

2. The demographic profile of medical technologists in hospitals with less than 200 beds could not be compiled.

3. Medical technologists employed in laboratories in hospitals with greater than or equal to 200 beds are for the most part young, female, married, and have less than six years experience working in

medical technology.

4. The technologists surveyed did not indicate a high level of continuing education participation, but there was interest expressed in improving the continuing education which was available.

5. The male respondents in the study were young, married, all were bench technologists, and all indicated participation in continuing education.

6. These male respondents did participate in continuing education offerings with greater frequency than did the female technologists who described their job as bench technologist.

7. Fifty-six percent of technologists who described their job title as administrative technologist indicated they possessed post degree academic credit.

8. The administrative technologists who responded to the survey all reported participation in continuing education. This was a higher percentage of continuing education participation than that reported by the bench technologists.

Recommendations

For future studies the following recommendations are made:

1. A study of laboratory workers in smaller hospitals without regard to certification or registration to determine selected demographic characteristics and the level of participation in continuing education programs.

2. An identification of the level of participation in continuing education of part-time employees.

3. An assessment of laboratory workers who are not currently employed and those who have been professionally inactive and are presently working to determine the level of participation in continuing education.

4. An assessment of the attitudes of laboratory workers toward mandatory versus voluntary continuing education which may include the following considerations:

   a. Professional recognition

   b. Salary adjustment

   c. Time off constraints

   d. Financing continuing education

   e. Professional competence

5. A measure of the awareness level of medical technologists of available continuing education opportunities.

APPENDIXES

APPENDIX A

Dear Medical Technologist:

This questionnaire is being distributed to determine the level of voluntary participation by medical technologists in the City of Dallas in continuing education for medical technologists. Results obtained will be used to profile medical technologists certified by ASCP who are currently participating in continuing education programs on a voluntary basis. These results will be tabulated and frequency distribution figures will be utilized for a thesis by a graduate student at the Texas Woman's University. All individual answers provided to this questionnaire will remain confidential.

These questionnaires are to be randomly distributed to the ASCP certified medical technologists on the day shift in your laboratory. Please select every other name on your laboratory listing of ASCP certified medical technologists until ____ technologists are selected from your laboratory listing.

Completion of the attached questionnaire and consent form will serve to indicate your willingness to voluntarily participate in this study. Please place the completed questionnaire in the stamped and addressed envelope provided and mail the questionnaire and consent form within one week after receiving the questionnaire. A phone number where the researcher can be reached during the day is included below. Thank you for your time.

Sincerely,
Judy Guillory, M.T. (ASCP)
696-7963

APPENDIX B

Consent Form
TEXAS WOMAN'S UNIVERSITY
HUMAN RESEARCH REVIEW COMMITTEE

Title of Project: A Profile of Voluntary Participation by Medical Technologists In Continuing Education in the City of Dallas

Consent to Act as a Subject for Research and Investigation

I have received a written description of this study (see attached cover letter of this questionnaire), including a fair explanation of the procedures and their purpose, any associated discomforts or risks, and a description of the possible benefits. An offer has been made to me to answer all questions about the study and questionnaire. I understand that my name will not be used in any release of the data and that I am free to withdraw at any time. I further understand that no medical service or compensation is provided to subjects by the University as a result of injury from participation in this research.

Signature _____ Date _____

Witness _____ Date _____

Certification by Person Explaining the Study:

This is to certify that I have fully informed and explained to the above named person a description of the listed elements of informed consent.

Signature _____ Date _____

Position _____

Witness _____ Date _____

APPENDIX C

QUESTIONNAIRE

A PROFILE OF VOLUNTARY PARTICIPATION BY MEDICAL TECHNOLOGISTS IN CONTINUING EDUCATION IN THE CITY OF DALLAS

DIRECTIONS: Please circle the answer which best answers each question.

1. What is your sex?

   Female

   Male

2. What is your age?

   20-29

   30-39

   40-49

   50-59

   60 and over

3. What is your marital status?

   Married

   Not married

4. Are you currently certified by the American Society of Clinical Pathologists (ASCP)?

   Yes

   No

5. Indicate your highest level of academic study.

   baccalaureate degree

   post-baccalaureate studies

   master's degree

   post-master's studies

6. Are you currently enrolled in a program at a 4-year college?

   Yes

   No

7. If yes to question six, indicate institution _____

   Degree working toward _____

8. Indicate years experience in medical technology.

   less than 1 year

   1 year but less than 2 years

   2 years but less than 3 years

   4 years but less than 5 years

   5 years but less than 6 years

   6 years but less than 7 years

   7 years but less than 8 years

   8 years but less than 9 years

   9 years but less than 10 years

   greater than 10 years experience

9. Have these been consecutive years experience?

   Yes

   No

10. Indicate the bed size of your hospital.

    0-99 beds

    100-199 beds

    200-500 beds

    greater than 500 beds

11. Indicate your present job title.

    administrative technologist (supervisor, educator, laboratory director)

    bench technologist

12. On the average, in the past 3 years, how often do you attend workshops which include "hands-on" instruction? (hands-on means actual performance of test or procedure being demonstrated by technologist.)

    1/year 3/year 5/year 7/year 9/year 11/year

    2/year 4/year 6/year 8/year 10/year 12/year or more

13. On the average how often do you attend other continuing education programs including seminars and monthly professional meetings?

    1/year 3/year 5/year 7/year 9/year 11/year

    2/year 4/year 6/year 8/year 10/year 12/year or more

14. Indicate your area of laboratory responsibility.

    microbiology clinical chemistry blood bank

    hematology urinalysis serology/immunology

    laboratory generalist other _____

15. Is regularly scheduled inservice continuing education offered by your employer?

    Yes

    No

16. Do you attend these inservice programs for laboratory personnel if they are offered?

    Yes

    No

17. If you do not participate in continuing education, please briefly indicate why you do not participate.

Thank you.

APPENDIX D

A LISTING OF THE UNSOLICITED RESPONSES TO THE QUESTIONNAIRE

1. "Need regularly scheduled inservice."
2. "Programs are needed in individual laboratory departments."
3. "Need inservice to review fundamentals."
4. "Need programs to review new developments."
5. "Management training needed for supervisors."
6. "Need to discuss clinical relevance in processing specimens."
7. "More development of technologists in the lab."
8. "More teaching by supervisors."
9. "Need more inservice at convenient times."
10. "More teaching by pathologists."
11. "Inservice isn't offered at times I can get away."
12. "More development and responsibilities for bench technologists."
13. "More inservice for bench techs."
14. "Not enough inservice available in my specialty."
15. "Need more inservice in my area."
16. "More management training needed for supervisors."
17. "More recognition for attendance of continuing education programs."
18. "Want paid time off to attend continuing education."
19. "My hospital policy is to take my vacation days for continuing education."
20. "Need more hospital-based inservice education--why don't pathologists and supervisors do more inservice?"
21. "Supervisors should share what they learn at continuing education programs--how about giving the bench techs a mini-workshop?"

22. "We need more progressive and specific inservice."

23. "We need regular inservice programs--not just twice a year."

24. "Why can't bench techs give inservice?"

25. "Bench techs should be encouraged to attend continuing education."

26. "Bench techs never seem to go to workshops--only the supervisors go."

27. "Our pathologist goes to meetings and workshops and tells us what changes to make."

28. "We never have input as to what topics to have at inservice."

29. "More inservice needed."

30. "Bench techs are capable of attending workshops."

31. "Bench techs are capable of giving inservice instruction."

32. "Pathologist doesn't give techs credit for knowing anything--he goes to all workshops and tells us what to do."

33. "Pathologist should give more inservice."

34. "Supervisor should review basic techniques with new employees."

35. "Bench techs need paid time off to attend continuing education."

36. "More inservice at my hospital."

37. "More workshops needed."

38. "Both supervisors and pathologists need management training."

39. "Need inservice offered at convenient times."

40. "Need better inservice--ours is the pits."

41. "Need inservice/update in my area."

42. "Why don't pathologists and supervisors take part in inservice and training?"

43. "Time off needed to attend inservice and continuing education."

44. "Regular inservice needed."

45. "Specific inservice needed in individual departments."

46. "Why isn't there more inservice in my area?"

47. "Supervisor needs management training."

48. "Not enough workshops available in many areas."

49. "More training needed."

50. "Need regular continuing education to maintain competency level."

51. "In-house inservice should be set up and utilized."

52. "Management courses needed as part of medical technology training."

53. "Supervisors and pathologists have no management training."

54. "More training needed as job enrichment."

55. "Supervisors should spend more time in training and less time with paperwork."

56. "Clinical relevance and evaluation of specimens need to be addressed by techs who process the specimens."

57. "Physicians need to keep up with literature regarding proper specimens and interpretation of results--pathologists could help here."

58. "Pathologists should educate staff regarding clinical relevance and evaluation of specimens."

59. "Techs should share knowledge gained at workshops and seminars."

60. "More attendance at continuing education seminars."

61. "More programs on clinical relevance."

62. "Workshops in this area need upgrading."

63. "More inservice needed."

64. "Supervisors are a good source of inservice material."

65. "More studies needed to look at whether continuing education participation increases or maintains competency."

66. "More continuing education needed."

67. "More participation needed in continuing education."

68. "Recognition needed for higher degrees earned."

69. "More management training needed."

70. "Inservice needed on coping with stress."

71. "Pathologist should participate in inservice."

72. "More continuing education needed."

73. "More self-assessment and home-study programs needed."

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