ATTITUDES OF MEDICAL LABORATORY TECHNOLOGY GRADUATES TOWARDS THE INTERNSHIP TRAINING PERIOD AT KING FAISAL UNIVERSITY

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Objectives: The objective of this present survey was to look into the attitudes of medical laboratory technology (MLT) graduates towards the internship training period of the MLT Department, College of Applied Medical Sciences, King Faisal University.

Material and Methods: A self-administered questionnaire was designed and distributed for this purpose. The study period was from December 1st, 2002 – 31st December 2004. Two-hundred questionnaires were distributed to recent graduates, and 115 were returned completed.

Results: All respondents agreed with the importance and necessity of the internship period, and felt it should not be reduced or eliminated. The most favorite laboratory where they liked to work was microbiology (70%). They all agreed that evaluation report with hospital staff and laboratory set up were vital in achieving the goals of the internship period. The majority stressed the significance of safety precautions and the application of theoretical knowledge before performing technical assignments.

Conclusion: The respondents had very positive attitudes towards the internship-training period stressing its importance. The most favorite laboratory rotations were in rank order: Microbiology, Serology followed by Histotechnology, Hematology, Blood Banking and finally Clinical Chemistry. The majority of graduates had a very positive attitude also towards medical laboratory technology as a profession.

Key Words: MLT, internship training

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INTRODUCTION
The internship training period is an important period needed to consolidate the practical experience and theoretical knowledge of new graduates. Whether it is in medicine, medical laboratory technology (MLT) or nursing, it is an essential part of training and qualification.1-3 Students who would like to pursue a profession in laboratory medicine need to understand their critical role as medical laboratory professionals in the health care system. They must realize that they will be required to perform their duties in the clinical laboratories and interact with other health care professionals. They must be competent, knowledgeable and reliable.4-6 The Department of MLT, College of Applied Medical Sciences at King Faisal University (KFU) mandates the completion of the internship period after a four-year curriculum of study before the award of a Bachelor of Science degree in MLT.7

The goal for this training period is to acquire the practical in-service experience, required for the assumption of professional responsibility. This training is essential to enable the graduate MLT attain the desired level of expertise and experience necessary for practice in the different hospital laboratories as well as in medical research establishments. In the earlier years of the program, the candidates used to do a four-month rotation each through three laboratory sections according to the following choices; Hematology and Blood Banking or Microbiology and Immunology/Serology with either Clinical Chemistry or Histotechnology. After many discussions on curriculum reform, an evaluation of a system of rotations through all laboratory sections whereby interns would do a two-month rotation in all laboratory disciplines: Clinical Chemistry, Hematology, Blood Banking, Microbiology, Serology/Immunology, and Histotechnology was suggested. Each student was expected to participate fully in the different professional activities and duties performed in each laboratory, and assessed in accordance with a specific evaluation format. The criteria for assessment included the quality of blood collection, knowledge, technical ability, interpretation of tests, safety, reliability, punctuality, and ethics etc.

Clinical laboratory science educators must plan curricula and training programs to meet present needs and anticipate possible changes in order to give graduates the necessary competencies. Educators of allied health professionals are being asked to design programs that produce graduates with skills in different areas.8 The primary goal of the KFU MLT program is the acquisition of technical skills that employers demand. The main objective of this study was to survey MLT graduates in order to gather descriptive data of their attitudes towards the internship training period, and their feelings towards their chosen profession.

MATERIAL AND METHODS
The study was carried out during a two-year period from December 1st 2002 to December 31st 2004 in order to cover many graduates as possible since the average number of students in each graduating group is 30. The purpose of this survey was to gain a better understanding of MLT graduates’ attitudes towards the internship training period. The specific objectives were to determine the following: does the MLT graduate believe that an internship training period is necessary? is the internship an important requirement for certification? what barriers may interfere with achieving the goals of this period?

A total of 115 MLT graduates working in the different affiliated hospitals in the Eastern Province participated in the survey. A stratified random sample with proportional allocation was selected. A self-administered 32-item questionnaire was designed and distributed for completion. Two-hundred questionnaires were distributed and 115 were returned with complete data, so sample reduction was due to missing data. A five-point Likert scale, ranging from 1 (strongly agree) to 5 (strongly disagree), was created for some of the questions. There were fill-in the blanks, yes/no questions and multiple-choice responses. Data was collected under the supervision of the chief investigator. After explaining to the graduates the research objectives, the questionnaire’s different components and questions, they were asked to complete them. Statistical analysis was performed using the Statistical Package for the Social Sciences (SPSS) PC, software program.

RESULTS
All 115 graduates (100%) strongly agreed that the internship training period was important, necessary and should not be eliminated. The majority of the respondents 95 (82.6%) defined the internship training period as "a bridge between undergraduate training and working as a technologist". Ninety-four (81.7%) agreed to the
understood the importance of and always practiced universal safety precautions. One hundred seven (93%) responded that they needed to start working immediately after finishing the internship training period. Ninety-five (82.6%) agreed that the hospital set-up and the cooperation of laboratory staff were vital for the success of training. One hundred and seven (93%) agreed that training in all laboratory sections was better than rotating in only three laboratory disciplines. Ninety-eight (85%) agreed that there should be an elective rotation according to choice and interest of the intern. Ninety-nine (86%) agreed that MLT was a wise and important career choice. The most favorite laboratory rotation for training was Microbiology followed in rank order by immunology/serology, histotechnology, hematology, blood banking and clinical chemistry. It

asked the participants to give their definition of the internship training period in their own words, and the three main opinions in rank order were: (1) Application of theoretical knowledge in a practical way, (2) a period of continuous training and knowledge, and (3) a transition phase between undergraduate years and “real life work”.

**DISCUSSION**

The internship provides students/interns an opportunity to relearn basic skills and to gain experience in management and problem solving. It is over a decade since the MLT program was established at KFU, and it has produced over 250 graduates. The main objective of the MLT program at KFU, is to train competent clinical laboratory personnel to meet present and future needs of the health care services. The demand for allied health professionals; laboratory technologists, physiotherapists, and respiratory therapists is increasing in the Kingdom of Saudi Arabia. In order to meet these demands and challenges, institutions must do their best to structure curricula and design new training programs to meet the health needs of hospitals and clinical services in the kingdom. It is useful to study the attitudes of students and graduates to their programs and educational needs to help in the implementation of changes for the best possible improvements. The explosion of scientific and technological advances in the clinical laboratories have effected profound changes in the laboratory services ultimately making significant impact on the expected roles of medical laboratory technologists. It is mandatory that as educators we examine these changes and identify the possible impact on the educational needs of the next generation of technologists.

In this survey, all 115 graduates acknowledged the importance of the internship period. They also exhibited satisfaction with MLT as a profession; the majority thought MLT is a wise choice and an important profession. It has been reported that medical laboratory technology is a career with a high job satisfaction, that has been traditionally female-dominated. The respondents understood the basic objective of this period as clearly seen in their responses on the definition of the internship period. They also agreed that the one-year internship was adequate and satisfactory. The most favorite laboratory discipline for training was Microbiology followed by Serology then Histotechnology, Hematology, Blood Banking and Clinical Chemistry. It

importance of the evaluation report at the end of the training period. One hundred and ten (95.6%) said they always applied their theoretical knowledge on the job. All 115 graduates (100%)

| Table 1: Summary of attitudes towards the internship |
|----------------------------------------|----------------|
| Responses                              | No. (%)       |
| Internship training is important and   | 115 (100)     |
| necessary                              |               |
| An evaluation report is important      | 94 (81.7)     |
| Apply theoretical knowledge on the job | 110 (95.6)    |
| always                                 |               |
| Understanding the importance of and    | 115 (100)     |
| practicing universal safety precautions |               |
| A job should be started immediately    | 107 (93.0)    |
| after finishing the internship training period |         |
| Hospital set up and cooperation of     | 95 (82.6)     |
| laboratory staff are the most          |               |
| important for the success of training  |               |
| Training in all laboratory sections is  | 107 (93.0)    |
| better than rotating in only 3         |               |
| laboratory disciplines                 |               |
| KFU curriculum and internship program  | 99 (86.0)     |
| are satisfactory                       |               |
| MLT was a wise and important career    | 106 (92.2)    |
| choice                                |               |

understood the importance of and always practiced universal safety precautions. One hundred seven (93%) responded that they needed to start working immediately after finishing the internship training period. Ninety-five (82.6%) agreed that the hospital set-up and the cooperation of laboratory staff were vital for the success of training. One hundred and seven (93%) agreed that training in all laboratory sections was better than rotating in only three laboratory disciplines. Ninety-eight (85%) agreed that there should be an elective rotation according to choice and interest of the intern. Ninety-nine (86%) agreed that MLT was a wise and important career choice. The most favorite laboratory rotation for training was Microbiology followed in rank order by immunology/serology, histotechnology, hematology, blood banking and clinical chemistry. It
emerged after many discussions with MLT students and graduates that they preferred microbiology because it allowed them to use their theoretical knowledge to work with their hands and sometimes with automation to clinical chemistry for which an array of automated instruments are used. Their responses to questions revealed that they understood that automated technology gave them the opportunity to use their skills in new and challenging ways in order to eliminate mundane tasks. Successful automation and new technologies are very important in the career of MLTs.14 Many MLT graduates considered hematology and blood banking difficult.

The change in the internship program to include all laboratory disciplines was a significant improvement. It not only exposed graduates to all areas of expertise but also ensured that there was an adequate number of staff to cover the different laboratories and eliminate the overcrowding that resulted from too many interns choosing the same rotations. This system was in the better interest of the interns and graduates especially for employment since the assignment of newly employed graduates to different laboratories was based on need and shortage rather than on the preference of the employee. Another important benefit of the internship period is the exposure of trainees to the different clinical laboratories and facilities. This enables interns to assess the institution and staff, and provides the institution the opportunity to evaluate the interns for possible future employment. Institutions can also benefit from accepting interns for training. Many hospital laboratories prefer to hire interns trained in their own facilities, and already evaluated and assessed as potential employees.12 The inclusion of an elective rotation to the program has been debated for some time in the Department of MLT and is still under discussion. The majority of graduates preferred an elective rotation to explore their areas of interest. Electives during medical internship, for example, are important and have proved to be useful in the choice of future careers.13 On the issue of future career choices, the majority of graduates were in favor of beginning their career of MLTs.14 Many MLT graduates considered hematology and blood banking difficult.

Much is expected of graduates during the internship period. It is a time when they are also encouraged to have continuous medical education (CME) after internship and higher certification. CME is necessary for health care professionals because they not only have to maintain their skills but also continue to improve on them.16-18 Although no national certification for MLT has been established, graduates are encouraged to obtain certification elsewhere.16

The interns identified five major areas of competence important for MLT practice. These included depth of knowledge, technical ability to work alone and fast, working in a team and punctuality. It was important to know their views about the most desirable attributes of an MLT. This can help educators design curricula, assessment methods and guidance for students who are considering a career in MLT. The interns’ comments indicated the importance of adopting an attitude of personal responsibility, for they emphasized the importance of being able to work independently as well as in the health care team.

We would like to conclude with the following recommendations:
1. Establishment of career development programs for new graduates. The majority wanted to start working immediately after internship.
2. Identification of better methods of evaluation, because evaluation is essential to the assurance of the quality and appropriateness of a learning program.
3. Identification of better methods of collaboration between institutions training MLTs.
4. Establishment of a national society or board for MLT in the Kingdom, to give recognition to these professionals.

It is vital that MLT graduates are motivated and given the adequate support to ensure the development and maturing of qualified Saudi laboratory leadership teams.

CONCLUSION
MLT graduates stressed that internship-training period after completion of the undergraduate training was important and should not be eliminated. They also stressed that all laboratory disciplines should be part of this important training. They also showed satisfaction with their chosen profession. Certain suggestions have been made for implementation to give the MLT graduates support, motivation and validate their chosen profession.

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