

## **The Six-Month Internship Training Program for Medical Laboratory Science Education: An Initial Evaluation**

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**Abstract** - In 2006, the Commission on Higher Education (CHED) released CHED Memorandum Order (CMO) no. 14 which changed the duration of internship training program to six months as opposed to the previous memorandum order, CMO no. 27 s. 1998 which required a one-year internship schedule for Medical Laboratory Science (MLS) students. Thirty-eight graduates of CMO No. 14 s. 2006 from Lyceum of the Philippines University-Batangas and 13 chief medical technologists (CMT) or senior medical laboratory staff from identified affiliate-hospitals were surveyed about their perception on the attainment of the objectives, as well as the strengths and weaknesses of the said program. Results show that objectives were achieved even if the duration of the training period was shortened. The graduate-respondents favored the

6-month internship training program while the CMT preferred the one year timetable. This study can be used as a pilot study for other higher education institutions implementing the same CMO and can be used as a basis for a curricular reform by assessing the different parameters that were identified in order to enhance further the six-month internship training program in producing globally competitive medical laboratory scientists.

*Keywords* - internship training program, medical laboratory science, curriculum improvement, memorandum order, interns, affiliating hospital

## INTRODUCTION

The development of an effective curriculum guide is a multi-step, ongoing, and cyclical process. The process progresses from evaluating the existing program, to designing an improved program, to implementing a new program and back to evaluating the revised program. During the last decades, effectiveness of curriculum change has been evaluated although questions that emerged on the competencies of medical professionals affected by the curriculum change is a complex one and cannot be answered by a single outcome study (Peeraer 2009).

According to researches, curricular reform is mainly affected by the internationalization in higher education. Likic (2005) stated in his works that the process has established itself as a pivotal concept and dominant driving force that can mainly influence the reform processes and shapes academic communities worldwide. Moreover, the process is creating an awareness of the importance and value of an intercultural and international dimension in higher education.

As mentioned earlier, evaluation of the revised program is one of the most important course of action done when curriculum change is to be implemented. One of the main reasons is that it is a chance for practitioners to test for themselves that their plan is working as well as the identification of the strengths and weaknesses of the said intervention. Evaluation is based on evidence or data which are systematically obtained from those who are participating in the

program by different methods such as surveys, interviews, analysis of documents, and performing a background check. The results gathered from these will be the basis of evaluation (Shackman 1999).

The Medical Laboratory Science (MLS) program is one of the health science programs in the Philippines offered in various higher education institutions. It is a program that aims to develop competent medical laboratory scientists and to meet the demands for competent manpower in the healthcare service with the use of highly innovative technologies (CMO no. 14, 2006). Its curriculum is based on the memorandum order mandated by the CHED which is composed of a school-based learning focused on the different principles employed in the discipline and importantly on the critical and analytical thinking abilities of the learner. Furthermore, the curriculum has an internship training program geared on developing the entry-level competencies of graduates (Green 2011).

In the year 1998, the CHED initially released a memorandum order which is CMO No. 8 also known as the "Updated Policies and Standards for Medical Technology Education" which states the different requirements needed by an institution should it want to offer a Bachelor in Medical Laboratory Science program. Later in that year as well, another memorandum order was released which is CMO No. 27 known as "Curriculum for the Common 2-year Associate in Health Science Education," which is a program that will prepare students as they enter to the practice of health services. These memorandum orders serve as the first bases of different schools offering medical laboratory science education.

In 2006, the CHED mandated the implementation of Memorandum Order No. 14 for Medical Technology education. The CMO is a revised account of the previous memorandum order and became the basis for most of the schools offering the said program.

This study determined the degree of attainment of the six-month internship training program objectives. It also identified the perceived strengths and weaknesses of the new program which will serve as the basis for further studies and formulation of plan of action for curriculum modification that is most suitable to learners for the development of the necessary core competencies needed in the practice of the profession.

## **MATERIALS AND METHOD**

### **Research Design**

The descriptive research design was used. The proponents formulated a self-structured, open-ended survey questionnaire relating to the evaluation of the six-month internship training program. The questionnaire was divided into two parts: first was on the degree of attainment of the objectives of the program and the second part was on the respondent's perceived strengths, weaknesses of the program and recommendations for the improvement of implementation. The questionnaire was validated by the Office of the Dean of the College of Medical Technology of Our Lady of Fatima University together with ten randomly selected individuals from the target population. A focus group discussion and analysis of available documents were also conducted to validate the responses. These were pen recorded and summarized.

### **Participants**

There were two groups of respondents: first, the graduates of the CMO No. 14 of the LPU-Batangas, Batch 2010 and 2011 and the chief medical technologists or the senior medical laboratory staff of the hospitals where LPU interns were affiliated.

### **Statistical Analysis**

Statistical tools that were used are weighted mean, frequency, distribution, and percentage.

## **RESULTS AND DISCUSSION**

CHED Memorandum Order No. 14 also known as the "Policies, Standards and Guidelines for Bachelor of Science in Medical Laboratory Science were implemented in 2006. The improvements and changes done in this curriculum were the results of curriculum benchmarking studies that were conducted internationally.

A thorough review of the old curriculum and the new CMO showed several modifications. One of which was the change in the nomenclature of the program from Bachelor of Science in Medical Technology to Bachelor in Medical Laboratory Science Program. Another significant modification in the CMO was the courses required for the program. In the old curriculum, Qualitative Chemistry and Quantitative Chemistry were offered as separate subjects with 5 units each. With the present CMO these two courses were joined together as a 5-unit course now termed Analytical Chemistry. Furthermore, the following core courses were added: Basic Statistics, Introduction to Medical Technology with Science, Technology and Society, and Principles and Strategies in Health Education. Pharmacology and Cytogenetics were offered as new professional courses. Laboratory Management was previously incorporated in Medical Technology Laws and Ethics (3 units) but now offered as separate courses (2 units and 3 units respectively). There were also changes in the nomenclature of some courses namely: Clinical Microscopy which is now known as Analysis of Urine and Other Body Fluids and Blood Banking to Immunohematology.

Another major change was the duration of the internship training of the senior students. Based on the previous curriculum, the internship training program entails 12 months in the fourth level. In the new CMO, the 12 months was shortened to six months that require going on-duty at 40 hours per week in 27 weeks with total minimum training hours in the clinical laboratory of 1080 hours. The 1080 hours were divided as follows in the different sections of the laboratory: Clinical Chemistry (230 hrs.), Hematology (120 hrs.), Blood Bank (150 hrs.), Immunology and Serology (100 hrs.), Bacteriology (150 hrs.), Clinical Microscopy and Parasitology (230 hrs.) and Histopathology and Cytology (100 hrs.).

Results of the survey showed 38 graduate-respondents of batch 2010 and 2011 and 13 CMT from the affiliate hospitals namely: Mary Mediatrix Medical Center (MMMC), Daniel Mercado Medical Center (DMMC), Veterans Memorial Medical Center (VMMC), National Children's Hospital (NCH), and Philippine Heart Center (PHC) participated in the study.

Likert scale was used in assessing the degree of attainment of the

objectives of the training program. The scale used the following ranges and verbal interpretation to assess the overall degree of attainment: 4.50-5.00 = Great Extent (GRT); 3.50-4.49 = Moderate Extent (MOD); 2.50-3.49 = Less Extent (LSS); 1.50-2.49 = Lesser Extent (LSR); 1.00-1.49 = Did Not Agree (NOT).

The responses on the open-ended questions on the perceived strengths and weaknesses of the internship training program implementation as well as recommendations were validated with a focus group discussion and analysis of documents available.

Table 1 presents how the respondents perceived the degree of attainment of the objectives of the six-month internship training program.

Table 1. Perceptions of the respondents on the degree of attainment of the objectives of the mls six-month internship training program

Objectives of the 6-month Internship Training Program (CMO # 14 s. 2006)	Weighted mean Graduate Respondents	Rank	Verbal Interpretation	Weighted Mean Chief Med Tech	Rank	Verbal Interpretation
1) Enhance the knowledge, skills, and attitudes needed for a member of the health care delivery team who with precision and accuracy performs the clinical laboratory physician in the proper diagnosis, treatment, and prevention of disease.	4.37	2	MOD	4.33	1	MOD

2.) Develop among students a well-rounded personality with a healthy outlook and oriented towards intelligent, ethical, and active participation in professional as well as community welfare activities.	4.35	3	MOD	4.23	3	MOD
3.) Develop critical thinking skills that will enable them to participate in research endeavors/ activities and respond to challenges of the profession.	4.32	4	MOD	4.15	4	MOD
4.) Develop humane and competent medical technologists who are globally competitive, and committed to serve the health needs in both local and international communities	4.39	1	MOD	4.25	2	MOD
<b>AVERAGE</b>	4.35		MOD	4.25		MOD

Data in Table 1 show that both the graduate-respondents (weighted mean of 4.35) and the CMT (weighted mean of 4.25) agree to moderate extent that the different objectives of the six-month internship training program were achieved. They differ only on the ranking of how these objectives were met. The graduate-respondents believed that the training program greatly helped them to become humane and competent medical technologists who are globally capable and committed to serve the health needs in both local and international communities. This particular objective was ranked first with a mean value of 4.39. Second in rank (mean of 4.37) was on enhancing their knowledge, skills and attitudes that are needed to become effective and efficient members of the healthcare team. This pertains to the competencies they should develop during the training period so they

can perform laboratory tests with accuracy and precision and help in the proper diagnosis, treatment and prevention of diseases. On the other hand, this particular objective ranked first among the CMT. The training officers felt that they have exerted their best effort in helping the students develop the core competencies expected of an entry-level medical laboratory scientist in the practice of the profession. These claims were validated by the documents showing the results of the performance evaluation in both written and practical examinations that were conducted during the internship training period. Likewise, the graduates claimed that they were able to put into practice what they have learned in their professional courses while at school.

Surprisingly, results showed that both groups of respondents agree that the following objectives ranked third and fourth in their mean values: the development of well-rounded personality with a healthy outlook and orientation towards intelligent, ethical, and active participation in professional as well as community welfare activities and the development of critical thinking skills that will enable them to participate in research activities and respond to challenges of the profession. These were validated through the research outputs that the graduates were able to produce most especially in areas where the research work entails data gathering in the clinical laboratory. In addition, the interns were able to participate in different community extension services that require the use of different laboratory tests in the medical and dental activities of hospital as well as the school.

These results can call the attention of the curriculum developer and educators thus may serve as guide in planning for curriculum improvement to address the weak areas.

Table 2 presents the respondents' perceived strengths of the six-month internship training program.

Table 2. Perceived strengths of the six-month internship training program

Areas	Responses of Graduate-respondents (no. of responses/total no. of respondents)	Responses of the CMT
1. Duration and quality of internship training	<ul style="list-style-type: none"> <li>▪ Interns learn to manage their time efficiently because of the specific number of training hours required in rotating in the different sections of the clinical laboratory. (30/38)</li> <li>▪ The interns felt that the duration of the training in the clinical laboratory gave them enough time to go back to the school and spend the remaining six months to review for the board examinations (22/38)</li> </ul>	<ul style="list-style-type: none"> <li>▪ On the theoretical aspect of the training, the CMT felt that the required training hours is enough to develop the competencies needed for the students to help them pass the board examinations (12/13)</li> </ul>
2. Training staff	<ul style="list-style-type: none"> <li>▪ The training staffs are more focused on mentoring the interns rather than giving them extra works or errands that are not related to internship training. (29/38)</li> <li>▪ Because of the limited time, the staff follows the schedule of the lectures that should be conducted within the 6 months rotation. (25/38)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Since the training entails only 6 months, the MT staff involved in training the interns can spend the other 6 months in attending continuing professional education programs so they can be updated also in the practice of the profession. (10/13)</li> <li>▪ The medical staff involved in training can maximize the time allotted for the lecture since they have to follow the policies embodied in the training program. (12/13)</li> </ul>
3. Financial expenses	<ul style="list-style-type: none"> <li>▪ It entails lesser expenses on the part of the interns especially on the affiliation fees and payment for the boarding house. (38/38)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Lesser expenses on the part of the students since they will be paying their affiliation fees for 6 months only instead of 12 months. (12/13)</li> </ul>

On the perceived strengths of the six-month internship training program, majority (79%) of the graduate-respondents believed that they were able to manage their time efficiently given the required specific number of training hours per section in the clinical laboratory. Moreover, they claimed that they (58%) had sufficient time to go

back to school for the seminars and review classes conducted by the clinical instructor and invited resource speakers in preparation for the licensure examinations. Likewise, the CMT (92%) claimed that because of the shortened number of weeks of rotation per section, they strictly follow the policies and guidelines of the internship training program stated in the memorandum order thus, the lectures and mentoring were conducted as what they reported in the documents the staff submitted to the technical committee members and CHED assessors who evaluated the program and the clinical laboratory during the accreditation of the program and facility that is being used by both parties in the training of the interns. Similarly, many of the CMT (77%) cited that one advantage of the new training program was that they will have the opportunity to also attend continuing professional education activities during the latter half of the year when there are no interns training in the laboratory. These conferences and seminars will update and enhance their leadership and management skills so they can deliver effectively their role as training officers.

On the other hand, both groups of respondents (100%) agreed that the six-month training program entails lesser expenses on the part of the students. These include the affiliation fees, transportation expenses, board and lodging and their daily allowances during the six months training in the hospital especially for interns who are living far from the assigned hospital.

Table 3 portrays the perceptions of the respondents on the weaknesses of the six-month internship training program.

Table 3. Perceived weaknesses of the MLS six-month internship training program

Areas	Responses of Graduate-respondents	Responses of the CMT
1. Duration and quality of internship training	<ul style="list-style-type: none"> <li>▪ The interns were not given the opportunity to be rotated in other hospitals. (35/38)</li> <li>▪ The number of contact hours is not sufficient to learn all the tests in the different sections of the clinical laboratory. (28/38)</li> <li>▪ The shortened duration of training is not enough to develop their confidence in performing different laboratory examinations. (29/38)</li> <li>▪ Limited exposure to different types of patients and laboratory tests being requested and done. (20/38)</li> </ul>	<ul style="list-style-type: none"> <li>▪ The training hours is not enough to teach everything that the interns need to know in all the different sections of the clinical laboratory. (8/13)</li> <li>▪ Limited exposure to different types of patients and their needs. (10/13)</li> <li>▪ Their orientation of their role in the hospital is also affected since the interns will be training for 6 months only. (10/13)</li> </ul>
2. Training staff	<ul style="list-style-type: none"> <li>▪ Because of the limited time, the staff is not able to teach all they want to teach the interns especially on complicated test procedures and trouble shooting of the equipments when technical problems happen in the laboratory. (20/38)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Because of the time constraint, the training staff felt that they cannot deliver the expectations of the interns and the teachers from the school where the interns came from. (8/13)</li> </ul>
3. Financial expenses	No identified weakness	No identified weakness

Data in Table 3 showed that both groups of respondents have almost the same perceived weaknesses which focused on the shortened number of months of rotation in the hospital. Because of the nature of the new program, a lot of the activities which they used to carry out during the one-year program were also modified. One of these is the chance to be assigned in other hospitals. Almost all (92%) of the graduate-respondents complained of not having been able to rotate in other hospitals due to the shortened period. Both groups of respondents felt that the rotation in different hospitals will help the students develop the necessary knowledge, skills and values in the practice of the profession. To be sent in two or three different hospitals

especially if the assignment is a mixture of private and public rotation, the interns will have the chance to immerse themselves in different clinical situations and different approaches. The opportunity to learn is greater when exposed in different hospitals because of the different methodologies and approaches that the medical technology staffs use in the day to day activities and situations they face in the hospitals where they work. In effect, the graduate-respondents perceived that the shortened duration of training is not enough to develop their confidence in performing different laboratory examinations.

Times run so fast, that even if the number of contact hours is the same as that in the one-year program, the CMT (62%) perceived that the training hours is not enough to teach everything that the interns need to know in all the different sections of the clinical laboratory thus they feel that they were not able to meet the expectations of the clinical instructors as well as the students.

Furthermore, the CMT (10/13) claimed that the interns lost the opportunity to learn other clinical cases that entails different clinical laboratory tests especially seasonal diseases since the training starts in November and ends in April. They claimed that if the training is for one year then there is great chance to see and learn clinical diseases that are common during the months of May to October. They perceived that this kind of experience will help the students see and experience the actual clinical cases which they read on the books.

The responses of the CMT and the graduate-respondents on the perceived weakness all point out to the limited number of months of the training program because in planning their program the senior medical technologists assigned in training the interns were more oriented on working on the one-year training program.

Moreover, both groups of respondents claimed that the financial aspect involved in training was not seen as weakness but was perceived as one of the advantages of the new curriculum.

Table 4 presents the recommendations of the respondents on how the present program can be improved.

Table 4. Recommendations of the respondents on the mls six-month internship training program

Recommendations of the Graduate-respondents	Recommendations of the senior medical technologists involved in the training program
<p>Retain the six-months internship training program but there is a need to have better planning of those involved in training like the chief medical technologists of the different hospitals and the clinical supervisor of the school so that a better program can be formulated. (38/38)</p> <p>It is also recommended that the six months can be divided into 2 or 3 programs such that the interns may be able to rotate in two or three different hospitals for better exposure and experiences. (36/38)</p> <p>Some (15/38) of the graduate-respondents recommended that the six months be focused on hospital duties only and the pull out for seminars in school be given another period after the internship training so they can also have time to rest after their hospital duties and further lessen the expenses.</p>	<p>Some of the CMT (5/13) recommended to go back to the one-year internship training program.</p> <p>Many of the respondents (9/13) are very much open to retain the six months duration and strongly recommend that a planning workshop can be done together with the clinical instructor or supervisors of the schools so that they can come up with a better and concrete program that will really address the needs of the interns in preparation for the board examinations and the practice of the profession in the future.</p> <p>To lessen the pull-out of interns from the hospital duties for seminars in school. The schedule for the seminars be programmed after the training so the interns can focus on their responsibilities and assignments in the laboratory at the same time the medical technology staff they can fully monitor the activities of the interns on rotation.</p>

Data on Table 4 revealed different points of view when it comes to recommendations on how the six-month internship training program can be improved based on the perceived strengths and weaknesses of the program. While all the graduate-respondents agree that the six months can be retained but with some modifications in terms of approaches in planning the schedule of rotation, all of them recommended to increase the number of hospitals where they can be assigned so they can have varied experiences in the different types of management and leadership of the senior medical technologists and the approaches in the clinical setting.

In contrast, the CMT vary in their recommendations. Some (38%) believe that the one-year training program is better than the six-month program. However, many (90%) are open to the idea of coming up

with a better planning by the interns coordinators and training officers of the different hospitals so a well-defined program can be formulated and may guide them in the implementation and evaluation.

On the other hand, both groups agree that the pull-out of interns from their hospital duties to school activities and seminars be lessened or be assigned a different schedule after the six months of training.

## CONCLUSION

The objectives of the six-month internship training program embodied in CMO No. 14 series of 2006 were realized to a moderate extent. There were strengths and weaknesses in the implementation of the modified program which need to be addressed. The recommendations warrant consideration to improve its implementation.

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