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**DEVELOPING AND IMPLEMENTING A CURRICULUM
FOR PHARMACISTS
IN PRIMARY HEALTH CARE**

by

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Honorable President Sabarini, officers and members of the Jordanian Pharmacists Association, other visiting colleagues, students and friends:

I bring you greetings from my fellow pharmacists in America and am deeply honored to be a part of your conference today. We have greatly benefited from your most hospitable climate and the hospitalities of several local pharmacists, your esteemed President and other Jordanians since our arrival for this event.

The preceding speaker, Dr. Rosalyn C. King, reported to you findings of a detailed study she and colleagues in U.S.A.I.D. made during a visit to Jordan during 1982.¹ I have had the opportunity to review that report and am simply elated at the progress you have made over the recent past -- both in terms of the expansion in the number of pharmacists and pharmacies and in terms of the establishment of two pharmacy colleges in Jordan in such a short period of time.

I have been invited to participate in your conference by discussing the development and implementation of a curriculum for pharmacists in primary health care (PHC), including family planning. As a prelude to my doing this, permit me to share with you an unconventional -- yet timely and useful -- definition of pharmacy as developed by the Study Commission on Pharmacy of the American Association of Colleges of Pharmacy:²

"One can conceive any health service -- medicine, nursing, dentistry or pharmacy, as a knowledge system. It is a system which generates knowledge about man in sickness and in health, takes knowledge from other sciences and arts, criticizes and organizes that knowledge, translates knowledge into technology, uses some knowledge to create products, devices and instruments, transmits the knowledge through the education of practitioners and dissemination to others, to the end that an individual known as a patient may benefit from the particular knowledge system and its consequent skills...."

Based on the aforementioned study of pharmacists, pharmacies and the pharmaceutical industry in Jordan, just reported by Dr. King, the potential for broader participation in PHC in Jordan is tremendous.

Let's briefly review the principal functions engaged in by Jordanian pharmacists, based on this study:

1. Selling non-prescription drugs.
2. Dispensing prescription drugs.
3. Applying first aid, especially in rural areas.
4. Making drug substitutions, when necessary.
5. Providing written and basic oral instructions to clients regarding drug use.
6. Recommending cosmetics.
7. Referral of clients to physicians.
8. Recommending weaning foods for and amounts of foods to be given babies, and cooking instructions.
9. Making dietary recommendations.
10. Selling and advising patients on the use of family planning products.

Looking at the world community, we find the following among the major health problems which impact most heavily on the health of women and children in developing countries and, therefore, which should be given priority consideration:

1. Lack of adequate immunization coverage for the major debilitating diseases.
2. Lack of adequate family planning information and support.
3. Widespread diarrheal disease, for which Oral Rehydration Therapy represents an economical and effective remedy.
4. Nutritional support, especially as relates to the weaning of infants and child growth monitoring.

In the attack on each of these problem areas, pharmacists represent a key, greatly underutilized resource. You routinely advise clients on infant

nutrition and, in conjunction with your sales of contraceptives, on family planning. However, the level of involvement of the pharmacist in these components of PHC in Jordan has been artificially limited historically. Yet, who is better qualified or in a more advantageous position to promote and support the rapid expansion of nutritional support, immunization programs, Oral Rehydration Therapy and Family Health, including maternal and child health?

By virtue of your training, you possess superior knowledge of pharmacology, adverse drug reactions, drug interactions and pharmaceutical distribution when compared to either of the other health professions. Your knowledge of immunology, anatomy and physiology, of other biological sciences and chemistry, especially when coupled with your unique and profound knowledge of pharmaceutical products, immunologicals, medical supplies, vitamins and other nutritional components, and medical devices places you in an enviable position for broader professional interventions in PHC. By virtue of your convenient locations within the community, you provide ease of access to a health-care professional by the general public. By virtue of your customary myriad pharmacist activities, you come into direct contact with a large number of people daily. You are highly respected members of the community because you provide life-saving drugs and related health-care information regularly to this clientele.

Yet, both your own expectations of yourself as a pharmacist and the expectations of your clientele have limited your role as a pharmacist to the more traditional responsibilities of dispensing prescription and non-prescription drugs and to selling other health and cosmetic products. The information given by you at the time of dispensing of pharmaceuticals and non-drug items has apparently been limited.

Take but a few moments to look around you and reflect on what is happening in your communities. Consider the impact of diarrheal disease, family size, the limited availability of certain essential drugs and limited health-related information on the health and socioeconomic status of the vast majority of the population in communities you serve. Perhaps, you will agree that much needs to be done to improve the health and well-being of the public. Perhaps, you will also agree that both public and private sectors have major roles to play in improving your country's public health and well-being.

The most vital steps to be taken to ensure success in the broadening of the pharmacist's role in PHC in Jordan as elsewhere involve the development and implementation of curricula in PHC, including Family Planning and Maternal and Child Health, for both:

1. Undergraduate pharmacy students, who represent your pharmacists of tomorrow; and
2. Practicing pharmacists, through post-graduate continuing professional education.

In your curriculum development efforts, the goal is improved patient care through enhancement and broadening of the pharmacist's role in health care at the primary level. In order to assist you in this direction, I propose the use of a generic curriculum design model developed by the Harvard University School of Public Health for the health professions. This model is comprised of three major phases:

1. Describing Professional Performance
2. Describing Student Competencies
3. Planning Student Learning

Attachment A presents a summary of this model and should assist you in following my development of recommendations in accord with this model.

In describing optimal professional performance, the following questions will be helpful:

1. What are future professional roles of the pharmacist in Jordan?
2. What are the professional responsibilities of the pharmacist consistent with optimal or ideal professional competence?
3. What are the skill, knowledge and attitude components of the professional responsibilities listed?

A useful listing of future professional roles for Jordanian pharmacists can be arrived at by answering the following questions:

1. In academe -- What happens to your graduates? What do they do? Where do they go?
2. At the professional association level -- What are your pharmacists doing? Where are they?

According to the previously cited study, of a total of 1,156 authorized pharmacists in Jordan, almost one-half or 567 were working abroad during 1981; 75 were working in the public sector (in the Ministry of Health, the University Hospital, and in the Armed Forces; while 514 were engaged in the private sector here in Jordan.

All private sector pharmacies (retail outlets), drugstores (wholesale outlets), and domestic manufacturing plants, as well as government and private hospitals with 20 or more beds, must be headed by (or employ) a pharmacist. Consequently, according to the Jordanian system, the pharmacist may practice at any one of several levels:

1. At the retail level or in pharmacies;
2. At the wholesale level or in drugstores;
3. At the manufacturer level or in the pharmaceutical industry;
4. In hospitals in both the public and private sector; and
5. In the public sector, which includes the licensing and regulation of pharmacists and pharmaceutical institutions at all levels of practice in Jordan, and basic public health services.

Therefore, the major "roles" of the Jordanian pharmacist are clearly identified in the "Law of Practicing the Profession of Pharmacy in Jordan", Law 43; that is, pharmacists in Jordan essentially perform in roles in:

1. Retail pharmacy distribution
2. Wholesale distribution
3. Industrial pharmacy or manufacturing
4. Hospital pharmacy services
5. Public sector pharmacy services, which includes pharmacy services in hospitals, clinics, etc., as well as in the MOH Department of Pharmacy, supplies and warehouses, and in licensing.

What does such role identification do for us in our attempt to plan and implement appropriate curricula for Jordanian pharmacists-to-be or today's practitioners? Unfortunately, such role identification does no more than indicate the locus of practice -- until one takes the next vital step. That next step is to list professional responsibilities for pharmacists practicing in each of these "roles".

As times does not permit us to consider exhaustive listings of these responsibilities for each of these levels of pharmacy practice in Jordan today, let us proceed by considering a non-exhaustive listing of professional responsibilities for pharmacists practicing in the two principal levels of professional practice -- retail pharmacy distribution and hospital pharmacy services. This can best be done by simply responding to the questions:

1. Specifically, what do Jordanian pharmacists in retail and hospital pharmacies do?
2. What should Jordanian pharmacists in retail and hospital pharmacies be doing that they are not doing today?

A considered response to these questions should elicit a useful listing which includes, but is not limited to, the following responsibilities:

1. Supervise all drug distribution activities for drug use control and patient safety.
2. Compound and dispense drug preparations to meet specific patient requirements.
3. Select for patients therapeutically effective prescription drug products at reasonable cost.
4. Monitor patients response to drugs, utilizing patient medication profiles and other sources.
5. Record patient medication history of drugs taken and any adverse drug reactions from them.
6. Detect and diagnose adverse drug reactions and drug interactions.
7. Counsel patients on the proper use of drugs to promote compliance and safety.
8. Counsel patients on the proper use of other health-related products, such as family planning devices and methods, to promote safety and effectiveness through compliance.
9. Advise patients on the selection of non-prescription drugs and supplies for self-medication.
10. Prescribe for self-limiting diseases and/or for diseases and conditions for which the Minister of Health may approve prescribing by pharmacists.
11. Detect and overcome incompatibilities in drug mixtures.
12. Assist in establishing medication dosage regimens for patients.
13. Promote rational drug therapy by physicians.
14. Review drug utilization.
15. Administer first aid to patients, when required.
16. Provide health-care information to the public.
17. Refer clients to physicians and other health professionals, as needed.
18. Refer clients to public and private sector health-care agencies and institutions, when needed.

In order to properly carry out professional responsibilities, the pharmacist must utilize knowledge, skills and appropriate attitudes. Then,

needless to say, each professional responsibility is comprised of knowledge, skill and attitudinal components. Consequently, the next step in the curriculum development model is to analyze the knowledge, skill and attitude requirements of each professional responsibility.

To illustrate, suppose we consider a modified version of the professional responsibility related to Family Planning activities and limit our scope to that responsibility, as restated:

8a. Counsel patients on the proper use of contraceptive pharmaceuticals and Family Planning devices and methods.

In order to proceed with the analysis, one first asks the question, "What must the pharmacist know in order to properly dispense and advise the patient on the proper use of Family Planning products and methods?"

This responsibility requires that pharmacists (and pharmacists-to-be) who what Family Planning is all about. More specifically, he/she must know:

1. What Family Planning and birth spacing mean.
2. The importance of Family Planning to his/her community and nation:
 - a. From a health viewpoint.
 - b. From an economic viewpoint.
 - c. From a social viewpoint.
3. What contraception is.
4. What alternative methods of contraception are available:
 - a. Utilizing pharmaceuticals;
 - b. Utilizing medical devices;
 - c. Involving medical/surgical techniques;
 - d. Requiring or utilizing scheduled abstinence from sexual activity.
5. The advantages and limitations of each alternative method of contraception.
6. The rates of effectiveness of each alternative method.
7. Pharmaceutical products used in contraception:
 - a. Types of drugs used
 - b. Types of dosage forms used
 - c. Dosage ranges and usual doses

- d. Dosage regimens and schedules
 - e. Methods of administration or application
 - f. Contraindications
 - g. Drug interactions
 - h. Special precautions
 - i. Storage conditions
 - j. Sources of information
 - k. Distribution channels
 - l. Sources of supply
 - m. Cost information.
8. Non-pharmaceutical products used in family Planning:
- a. Types of products
 - b. Mechanisms of action for the various types of products used
 - c. Methods of application
 - d. Potential problems associated with their use, their prevalence, and how they may be prevented or remedied
 - e. Professional interventions required for their safe and effective use (such as fittings of IUDs), when required
 - 1. By physicians
 - 2. By nurse-midwives
 - 3. By paramedicals
 - f. Special precautions
 - g. Storage conditions and special requirements
 - h. Sources of supply
 - i. Sources of information
 - j. Distribution channels
 - k. Cost information.
9. Anatomy and physiology of human reproduction
- a. Male
 - b. Female
10. Basis of and issues in human sexuality
11. Maternal and child health
- a. Conception and gestation
 - b. Pregnancy -- both normal and abnormal
 - c. Child birth
 - d. Children growth monitoring
 - e. Nutritional requirements
 - 1. For pregnant and lactating women
 - 2. For infants and children
12. Criteria for referral of patients to other health-care professionals and agencies.

Skills required of the pharmacist in carrying out his/her responsibility in Family Planning encompass, but are not limited to, the following:

- 1. Explains to the patient what family planning and contraception are.

2. Explains to the patient:
 - a. the benefits and risks of the alternative methods of contraception.
 - b. the relative effectiveness of the alternative methods of contraception.
 - c. the importance of complying with dosage and application instructions.
 - d. the results of non-compliance with dosage and application instructions.
 - e. when and why specific types of contraceptive products should not be used.

3. Describes to the patient:
 - a. the alternative methods of Family Planning available.
 - b. the types of pharmaceutical products available for Family Planning.
 - c. the types of non-pharmaceutical products available for Family Planning.
 - d. the methods of proper administration of application of oral contraceptives, condoms, IUDs, diaphragms, foam products.
 - e. storage requirements for Family Planning products in order to maintain their chemical, physical and therapeutic integrity.

4. Refers patients to appropriate health professionals or health-care agencies, when necessary, for sizing and application of special FP products, such as IUDs.

5. Selects and procures FP products which are safe and effective for patient use.

6. Maintains an adequate inventory of the various FP products in demand by his/her clientele.

7. Dispenses FP products to patients pursuant to a prescription or patient's request, in accordance with the legal classifications of the products.

8. Explains to pregnant and lactating women nutritional requirements and suggests foods to promote a healthy pregnancy and delivery and optimal growth of the newborn infant.

9. Explains to parents nutritional requirements for the healthy growth of their children.

11. Detects and diagnoses adverse drug reactions and drug interactions involving pharmaceutical contraceptives.

Now that the knowledge and skill components of the pharmacist's professional responsibility in Family Planning, and including Maternal and Child Health, have been analyzed, what, then, are the attitudinal requirements to enable the pharmacist to be effective in carrying it out?

It will be helpful to remember that in all professional activities involving human interactions and especially in those involving such potentially sensitive issues as Family Planning, the pharmacist must:

1. Be respectful and tolerant (Remember to never belittle negative attitudes).
2. Show genuine interest in helping the patient with his/her problem; never be condescending.
3. Establish rapport -- an appropriate climate -- for communication and treat all questions and comments as being important.

These Attitudinal Components apply especially to Skill Components 1-4 and 7-10. In the successful application of Skills 5-7 and 11, the pharmacist should:

1. Be meticulous and accurate.
2. Be thorough and complete.
3. Be efficient.

It may be argued that these Attitudinal Components apply equally well to several of the previous Skill Components.

Before we can proceed to the next phase -- describing student competencies -- a validation process should take place. This merely involves analyzing actual professional performance and, on the basis of this analysis, revising the initial descriptions of performance. For the sake of this presentation, let's assume that this has been done. To be sure, in actual practice, such an assumption cannot and should not be made.

Phase II is comprised of two major and discrete tasks:

Task 1 -- Describe professional conditions and performance.

Task 2 -- Plan simulation of professional conditions and performance.

Just how does one go about determining terminal student competencies? First, one tries by using the conditions and performance of the professional competency as the final level of simulation for students in a

course. Where this is not feasible, it is suggested that you then back down from the professional level in small, discrete steps, considering the feasibility of each alternative before backing down yet another step.

Secondly, it is important to select as high a level of simulation as possible which will permit evaluation of terminal student competencies. In so doing, one must consider:

1. the time required for the student to perform the simulation; and
2. the need for having a representative and equivalent set of test stimuli for comparing the performance of all students fairly.

Since the highest level of simulation is selected for the purpose of evaluating terminal student competencies in a fair and as objective a manner as possible, it is possible for the teacher to use a still higher level of simulation during the instructional phase of the course. An example of this would be allowing students to practice with real patients in counseling and referring them to appropriate health professionals, when necessary, for sizing and application of certain FP products, such as IUDs, but evaluating them on the basis of their performance when challenged with a representative set of case studies.

As the terminal student competencies relate directly to professional competencies, these will constitute a much smaller number than will the entry OR intermediate student competencies, which must now be developed:

- for each course or module, in the case of the entry competencies; and
- for each terminal student competency, in the case of intermediate student competencies.

The judicious design, use and evaluation of pre-tests, post-tests and prerequisite tests will prove to be invaluable in completing this phase of curriculum development.

The final phase -- Phase III -- involves identification of intermediate student competencies, designing instructional activities to facilitate the achievement of such intermediate competencies and, in so doing, the terminal competencies as well; and choosing instructional and testing methodologies.

In describing student competencies, there are several critical components to be included:

- the conditions under which student performance is expected.
- designation of whom will be expected to demonstrate the competency specified.
- the simulation to be performed (competency to be demonstrated).
- the level of accuracy, completeness or effectiveness at which the student competency must be demonstrated.

Such competency statements are commonly referred to as behavioral objectives.

EXAMPLES

Given a specific method of contraception, the student will list the major types of products available with 80 percent accuracy.

Given the major types of Family Planning products available, the student will describe in writing the methods of application or administration for each with an accuracy of at least 75 percent.

Given the standard tools and supplies for laboratory instruction, the student will prepare Oral Rehydration Salts in multiple doses, subdivide, package and label with 100 percent accuracy.

The two major types of instruction are group instruction and individualized instruction. The major methods of group instruction are:

- the group lecture
- the programmed lecture
- the guest interview
- the case method
- trigger films

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A CURRICULUM DESIGN MODEL FOR HEALTH PERSONNEL*
THE PHARMACIST'S ROLE IN PRIMARY HEALTH CARE, INCLUDING FAMILY PLANNING

A. OVERVIEW OF THE CURRICULUM DESIGN MODEL

1. Phase I -- Describing Professional Performance

- a) Task 1: Describe Optimal Professional Performance
 - 1) Identify Future Professional Roles
 - 2) List Professional Responsibilities
 - 3) Analyze Skill, Knowledge and Attitude Components
- b) Task 2: Analyze Actual Professional Performance
 - 1) Select and Implement a Method of Performance Analysis
 - 2) Identify Performance Discrepancies
- c) Task 3: Revise Initial Description of Performance
 - 1) Analyze Causes of Performance Discrepancies
 - 2) Modify Initial Mastery Description

2. Phase II -- Describing Student Competencies

- a) Task 1: Describe Professional Conditions and Performance
- b) Task 2: Plan Simulation of Professional Conditions and Performance
 - 1) Consider Entry Competencies
 - 2) Consider Resources Available for Simulation
 - 3) Consider Needs for Evaluation

3. Phase III -- Planning Student Learning

- a) Task 1: Define Intermediate Competencies
- b) Task 2: Design Instructional Activities
- c) Task 3: Develop Course Syllabus

B. IMPLEMENTATION

1. Phase I -- Describing Professional Performance

- a) Problem 1: Future Professional Roles Are Widely Divergent or Unknown
- b) Problem 2: Determining the Professional Responsibilities
- c) Problem 3: Analyzing the Components of a Responsibility
- d) Problem 4: Choosing One Method of Performance Analysis Over Another
- e) Problem 5: Considering Future Roles Which Are Non-Existent
- f) Problem 6: Conducting a Performance Analysis and Revising the Mastery Description

2. Phase II -- Describing Student Competencies

- a) Problem 6: Determining Terminal Student Competencies
- b) Problem 7: Identifying Entry Student Competencies
- c) Problem 8: Using Pre-Tests, Post-Tests, and Prerequisite Tests Effectively
 - 1) Feedback from Score Distributions
 - 2) Using Feedback to Determine the Influence of Instruction
 - 3) Feedback through Analyzing an Error Matrix

3. Phase III -- Planning Student Learning

- a) Problem 9: Identifying Intermediate Student Competencies
- b) Problem 10: Designing Instructional Activities
- c) Problem 11: Choosing One Instructional Method or Medium Over Another

C. METHODS FOR IMPLEMENTATION

1. Phase I -- Methods for Describing Professional Performance

2. Phase II -- Methods for Describing Student Competencies

- a) Planning Tests
- b) Selecting Evaluation Techniques
- c) Grading Students
- d) References

3. Phase III -- Planning Student Learning

- a) Methods for Developing Attitudes in the Classroom
- b) Methods for Group Instruction
- c) Methods for Individualized Instruction
- d) Instructional Media

D. OTHER CONSIDERATIONS: ARRANGING COURSES IN THE CURRICULUM

- a) Sequencing Terminal Student Competencies
- b) Sequencing Intermediate Student Competencies
- c) Time Requirement Considerations
- c) Application to Continuing Professional Education Courses for Pharmacists

*Based on: Segall, et al., SYSTEMATIC COURSE DESIGN FOR THE HEALTH FIELDS, Center for Educational Development and Health, Harvard University School of Public Health, John Wiley and Sons, New York/London/Sydney/Tokyo, 1975.

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