

Training student pharmacists to administer long-acting injectable medications

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Abstract

Objective/Process: In June of 2022, the State of Maryland Board of Pharmacy issued regulations permitting pharmacist administration of maintenance injectable medications. Subsequently, the University of Maryland School of Pharmacy created a laboratory to train student pharmacists based on these regulations on administering long-acting maintenance injections. This training included a review of regulations, reconstitution and administration of medications, and education for patients and caregivers on long-acting injectable medications. This is the first training the authors are aware of incorporating both reconstitution and administration of these medications. The objective of this paper is to describe the laboratory details and future directions of the training course.

Results/Conclusions: The first training laboratory trained 94 student pharmacists in the administration technique of long-acting injectable medications. The program has been adapted for practicing pharmacists and other healthcare providers. Thus far, more than 300 practitioners have participated in the learning lab.

Keywords: student pharmacists, long-acting injectables, pharmacist, administration, curriculum

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Introduction

In June 2022, the State of Maryland Board of Pharmacy issued regulations (COMAR 10.34.41.00) permitting pharmacist administration of maintenance injectable medications.¹ The State of Maryland is one of the last states to allow for pharmacist administration of maintenance injectable medications.² Before June 2022, pharmacists in Maryland were only

permitted to administer self-administered medications, such as insulin. Regulations require the use of board-approved procedures, such as having a refrigerator, obtaining written approval from the authorized prescriber before administering an initial dose, notification to the patient of all fees, referral to additional care if needed, provision of a copy of a visit summary to the patient and authorized prescriber, and documentation of the encounter and maintenance of records. In addition to these noted regulations, pharmacists are required to complete a board-approved training program or complete training as part of a formal education program. This training must include knowledge of the specific maintenance injectable medications administered and current guidelines relating to the specific patient populations served by the pharmacist, management of the patient populations served by a pharmacist, including monitoring for adverse effects, and appropriate administration technique of a maintenance injectable medication.



TABLE 1: State of Maryland Board of Pharmacy requirements and curriculum placement

Requirement	Course in Curriculum	Year in Curriculum
Administration of a maintenance injectable medication	Abilities Lab 5	3 rd Year
Management of the patient populations served by a pharmacist (including monitoring and adverse effects)	Applied Sciences and Therapeutics 7: Psychiatry and Toxicology Applied Sciences and Therapeutics 8: Substance Abuse and Neurology Infectious Diseases Therapeutics 1 & 2	2 nd Year
Knowledge of the specific maintenance injectable medications that a pharmacist may administer	Abilities Lab 5	3 rd Year
Current guidelines relating to the specific populations served by a pharmacist and the specific maintenance injectable medications that a pharmacist may administer	Applied Sciences and Therapeutics 7: Psychiatry and Toxicology Applied Sciences and Therapeutics 8: Substance Abuse and Neurology Infectious Diseases Therapeutics 1 & 2	2 nd Year

In October 2022, The University of Maryland School of Pharmacy offered the first training to student pharmacists as part of a board-approved formal education program through an abilities laboratory. This is the first training the authors are aware of, including reconstitution and administration of long-acting injectable medications for student pharmacists.³ The abilities laboratory course is offered during the fall and spring terms during years 1 through 3 of the 4-year curriculum.⁴ The purpose of the course was to assist student pharmacists in achieving proficiency in professional abilities by integrating knowledge, skills, behaviors, and values to function as an independent pharmacy practitioner in various healthcare environments. The sequence requires the integration of didactic and experiential content across the first 3 years of the curriculum. During the third professional year, the abilities laboratory specifically emphasized competency in compounding, selected top 200 medications, suicide and overdose risk identification/prevention, and applicable state and federal pharmacy laws. This manuscript will describe the development and incorporation of a new educational laboratory on pharmacist administration of long-acting injectable maintenance medications into an abilities laboratory.⁴

Course

Based on the training requirements set forth in the State of Maryland Board of Pharmacy regulations, student pharmacists are required to demonstrate knowledge of maintenance injectable medications, including pharmacology, therapeutics, monitoring, and guidelines. Additionally, the student pharmacist must describe the management of populations that the pharmacist serves. Student pharmacists at the University of Maryland School of Pharmacy meet these requirements by completing the following 4 courses during their second professional year: Applied Sciences and Therapeutics 7: Psychiatry and Toxicology;

Applied Sciences and Therapeutics 8: Substance Abuse and Neurology; and Infectious Diseases Therapeutics 1 and 2 (Table 1).

A laboratory consisting of 4 separate activities was developed to satisfy the requirement of knowledge of the administration of injectable maintenance medications. The objectives of the maintenance injectable medication laboratory were to provide appropriate education to the patient regarding the injectable medication, demonstrate the preparation of the medication for injection using appropriate sterile technique and infection control procedures, and, in accordance with the product labeling, select the appropriate administration site on an anatomical model, demonstrate appropriate administration of the injection in accordance with current practice standards, document the patient information, medication, lot number, dose administered, injection site, and patient reaction, and describe methods for communicating appropriate information to the prescriber.

Before laboratory activities, student pharmacists were required to view an hour of a prerecorded lecture and video on the preparation and administration of long-acting antipsychotics, substance use disorder, and HIV injectable medications. This included the z-track technique as well. The video contained instructions from industry partners on the appropriate preparation and administration of injectable medications. Additionally, students were required to view administration videos on subcutaneous and intramuscular injection techniques created by SMI Adviser.⁵

On the day of training, students were divided into 4 groups, and every 20 minutes, they rotated through the following stations: regulations and documentation, mixing and preparation of medications, administration, and education. A

TABLE 2: Gluteal injection clinical skill checklist

Activity	Not Attempted	Attempted but Insufficient	Satisfactory ^a	Comments
Washes hands				Will use hand sanitizer
Selects and puts on gloves				
Assesses potential injection sites completely				
Checks medications				
Selects appropriate needle size and type of syringe				Will use what is provided
Cleanses top of vial appropriately				
Prepares dose appropriately				
Removes air bubbles efficiently without bending needle				
Arranges necessary materials in appropriate orientation				
Landmarks appropriately for injection ^{b,c}				
Cleanses injection site appropriately				
Communicates appropriately throughout the process				
Provides safe and effective injection ^c				
Applies pressure at the injection site with a cotton ball				
Does not compromise personal safety with administration ^c				
Does not recap the needle and disposes of equipment safely				

^aStudent demonstrates competency in the task by completing the task independently with appropriate technique.

^bExpose the buttock as required. Find the trochanter. Find the anterior iliac crest. Place the palm of your hand over the trochanter. Point the first or index finger toward the anterior iliac crest. Spread the second or middle finger toward the back, making a “V.” The thumb should always be pointed toward the front of the leg. Always use the index finger and middle finger to make the “V.” Give the injection between the knuckles on your index and middle fingers. Stretch the skintight. Hold the syringe like a pencil or dart. Insert the needle at a right angle to the skin. Inject.

^cConstitutes areas that are essential for passing the station.

layered learning model was used with faculty, resident pharmacists, and fourth-year PharmD teaching students, available at each station to educate and evaluate students.

Station 1: Regulations and Documentation

This station included a live lecture educating the student pharmacists on the current regulations on administering maintenance injectable medications. In addition to the review of the regulations, student pharmacists were educated on required documentation before and after administering the medication. Example documents were provided to students based on American Pharmacists Association (APhA) Medication Administration Services documents.⁶

Station 2: Mixing and Preparation of Medications

This station included demonstration kits for maintenance injectable medications provided by industry educators, including those reviewed in the prerecorded lecture. Student pharmacists practiced preparation techniques, including appropriate reconstitution, shaking, and drawing up medications into syringes. This station was included as each medication has unique preparation characteristics. While it is not expected that students will remember all preparation instructions, allowing them the hands-on opportunity to practice with the various

medications instills the importance of reviewing package insert materials before administering any maintenance injectable medications.

Station 3: Ventral Gluteal Injection Administration

This station included student pharmacist practice and assessment of the administration of a gluteal injection using a simulation anatomic model.⁷ The deltoid and subcutaneous injections were not required in this course as each student participating in this course has previously completed the APhA immunization training course.

Students were provided an opportunity to practice the injection technique before the assessment. To complete this station, students were evaluated on the successful gluteal injection technique via a standardized rubric (see Table 2 for the rubric used).

Subcutaneous and deltoid injection assessments will be included during the next course offering, given the need to review these techniques.

Station 4: Education

This station included faculty-developed cases to allow student pharmacists to role-play education on maintenance

injectable medications. A pharmacy resident reviewed 6 cases with unique attributes to the injectable medications, including dosing, missed doses, and administration, providing students with opportunities to practice role-play educating patients.

Future Planning of the Training Program

This is the first board-approved training program with a hands-on learning lab for University of Maryland School of Pharmacy student pharmacists. Graduating student pharmacists are able to enter the workforce with the necessary training in providing maintenance injectable medications. Additionally, as practicing interns, they are able to provide injections in practice if their pharmacist is a trained injection pharmacist as well. This training has the potential to increase access to medications for many vulnerable populations. At this time, the first class trained is preparing for graduation.

The training program continues to grow with the use of an adapted learning lab at the American Association of Psychiatric Pharmacists, American Psychiatric Association, and the Maryland Pharmacists Association annual meetings. This adapted training has provided training to over 300 healthcare practitioners.

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