

Pharmacist Education

Philip J. Schneider

INTRODUCTION

The increased interest in and concern about the quality of compounded sterile preparations (CSPs) as noted in Chapter 1 has continued to raise questions about how well pharmacists are educated to perform this function. With the adoption of the doctor of pharmacy degree as the entry-level degree for pharmacists, there has been continual increase in the emphasis on the biological sciences and clinical practice and a decline in subject matter, including the physical sciences and compounding. None of the current educational outcomes developed by the Center for the Advancement of Pharmacy Education—intended to “guide curricular discussion of faculty and preceptors within the academy and curriculum planning, delivery, and assessment within colleges and schools of pharmacy”—include any outcomes related to CSPs.¹ Therefore, pharmacy schools, professional organizations, and employers must reevaluate the adequacy of the training to compound sterile preparations that is offered to their students, pharmacists, and technicians if they are to competently assume roles in CSPs. Due to the lack of change during the decades where concerns about the quality of pharmacist-CSPs has been the topic of conversation, it is not likely that this will happen in colleges of pharmacy. Moreover, there is little emphasis on CSPs in pharmacy residency programs that increasingly focus on preparing clinicians. It is more likely that elective coursework, continuing education programs, and on-the-job training will meet this need. Given the variety of ways pharmacists can learn what is necessary and the increased sophistication of the standards, technology, and regulatory requirements, it is possible that some form of credentialing, such as certificate programs or even board certification, may emerge.

Although USP Chapter <797> Pharmaceutical Compounding—Sterile Preparations does not specify training requirements, it does address the responsibility of compounding personnel. Specifically, it states the following:

Compounding personnel are adequately skilled, educated, instructed, and trained to correctly perform and document the following activities in their sterile compounding duties:

- a. Perform antiseptic hand cleansing and disinfection of nonsterile compounding surfaces;
- b. Select and appropriately don protective garb;
- c. Maintain and achieve sterility of CSPs in ISO Class 5 PEC devices and protect personnel and compounding environments from contamination by radioactive, cytotoxic and chemotoxic drugs;
- d. Identify, weigh, and measure ingredients; and
- e. Manipulate sterile products aseptically, sterilize high-risk level CSPs, and label and quality inspect CSPs.²

Copyright © 2016 U.S. Pharmacopeial Convention.
Reprinted with permission.

Chapter <797> emphasizes the need to maintain high standards for the skill and knowledge of personnel who prepare CSPs.² It seems to acknowledge that personnel who prepare CSPs need additional training and evaluation and include recommendations for training and evaluating aseptic manipulation skills. Nevertheless, it is usually the responsibility of pharmacists to compound sterile preparations, so it would make sense to include appropriate education and training as part of the education of pharmacists.

In this chapter, the need for training pharmacists about CSPs, both in colleges of pharmacy and after, is examined. The role of pharmacy technicians in this area and the current level of technician training are presented in Chapter 24. The need for employers to train and evaluate all employees in CSPs is then discussed, followed by a brief description of the importance of this training to pharmacy licensure.

PHARMACY SCHOOL EDUCATION

PROFESSIONAL PERCEPTIONS

At an ASHP invitational conference on quality assurance for pharmacy-prepared sterile products, several problems pertaining to pharmacist training on CSPs were discussed.³ Attendees at this conference included representatives from the Food and Drug Administration (FDA), National Association of Boards of Pharmacy, the U.S. Pharmacopeial Convention (USP), and practitioner-based organizations.

The following are some of the problems discussed:

- There is a lack of education and training for pharmacists on CSPs.
- There is little or no formal education and training in pharmacy schools on the compounding of sterile preparations.
- Many pharmacists do not understand applicable quality assurance principles.
- Mere experience with CSPs does not impart the knowledge and understanding necessary to ensure their accurate and safe preparation.
- Few pharmacy-school faculty members have the knowledge and skill to teach others about this subject area.
- Instructional materials are not readily available.

Several ideas for resolving these problems were identified at the conference:

1. The American Association of Colleges of Pharmacy (AACP) and the American Council on Pharmaceutical Education should reassess the present curricula of colleges of pharmacy. The compounding of sterile preparations should be a required component.
2. The knowledge and skill of college faculty in compounding sterile preparations should be upgraded, perhaps through videotapes at the teaching site.

STUDENT PERCEPTIONS

A study was conducted to determine if specific factors influenced graduating pharmacy students' knowledge of aseptic technique.⁴ Results indicated the following:

- Student performance on a test of this knowledge varied widely.
- Students reported limited exposure to CSPs as part of their academic programs.
- Nineteen percent of the experiential training was in this area.
- Two percent of the students said that they had no exposure to sterile preparations in classes.
- Twenty-seven percent of the students said that they had no exposure in their internships.