By Eric S. Kastango, MBA, RPh, FASHP

USP <797>: The First Step to Compliance

THE TIME IS UPON US TO ENTER THE NEXT PHASE OF OUR JOURNEY IN aseptic compliance. After two years of work from the members of 2005-2010 USP Council of Experts' Sterile Compounding Committee and thousands of comments from hundreds of stakeholders, the next iteration of USP Chapter <797> is scheduled to be released. The purpose of this article is not to discuss the details of those changes, but rather to provide the reader with a perspective of the challenges of writing a "one-size-fits-all" regulation. When you think about the number and variety of places where compounded sterile preparations (CSPs) are prepared, it becomes daunting. What do all these situations have in common?

- A 25 bed critical-access hospital in rural Minnesota
- A physician's office where intramuscular antibiotics are given to children with pneumonia
- An allergist who manages the care of 200 patients
- A floor nurse who compounds medications to be given to patients in critical care
- A home care company with 72 pharmacies in 44 states, delivering home infusion therapy to more than 10,000 patients daily
- A national outsourcing company that is both licensed as a pharmacy and registered with the FDA as a manufacturer

In all of these settings, USP Chapter <797> requirements need to be incorporated into compounding practices to ensure patient safety. The introduction to <797> states that the standards are intended to apply to all persons who prepare compounded sterile preparations (CSPs) and all places where CSPs are prepared.

USP Chapter <797> first appeared in the pharmacy lexicon on January 1, 2004. Now, three years later, non-pharmacy stakeholders have weighed in on this chapter, including several prominent organizations like the CDC, the American Society of Microbiology (ASM), Association for Professionals in Infection Control and Epidemiology, Inc. (APIC), and of course, the FDA. You might be aware of a bill that is being kicked around the United States Senate known as the "Safe Drug Compounding Act of 2007". Basically, it would give the FDA authority over regulating compounded medications. I strongly urge you to read more about it, because pharmacy's last chance to keep more onerous regulations at bay depends on our acceptance and implementation of USP Chapter <797>.

Evidence-Based Science

Some of the principles, concepts, and requirements within the revised USP Chapter <797> have been challenged by the following question: "Where is the science to support this?" One area of great debate has been the evidence, or lack thereof, that cleanrooms (ISO Class 7 environments) are even necessary. At this point in time, the standard of practice throughout the world is that cleanrooms are necessary, and there is evidence from other professions (i.e., semi-conductor and pharmaceutical manufacturing) that cleanrooms are needed in order to maintain a state of control. Cleanrooms cannot nor should not be looked at as independent variables, since any robust quality system depends on several factors (i.e., employee garbing habits and work practices) all working together to achieve the desired outcome. Furthermore,

Photos courtesy of Lasco Services

At this point in time, the standard of practice throughout the world is that **cleanrooms are necessary**.

the FDA wants and expects cleanrooms – end of story – until we have compelling evidence to the contrary.

While no one disputes the significant cost of building a cleanroom, many hospitals are finding the money to give pharmacy directors what they should have had long ago: adequate climate-controlled facilities where employees can work comfortably in order to prepare quality CSPs. But once the cleanroom is built, what's next? The key to making a cleanroom work is proper staff practices. Reams of evidence support the necessity of proper hand hygiene in preventing infections. In fact, the CDC's Guideline for Hand Hygiene in Health-Care Settings (2002) is the definitive work on the subject and provides some 50-plus pages of guidance on proper hand washing. How well do your employees wash their hands before compounding? Have they been trained? How is the training reinforced? Are you enforcing compliance? Hospital infection control personnel are great resources in assisting pharmacists and technicians in education and training.

In addition, evidence-based science shows that gravimetric air sampling (using settling plates) is inferior and leads to false results, when compared to volumetric air sampling with an electronic air sampler. Because volumetric air samplers require a

Continued on page 14

USP <797>

Case Study

Continued from page 10

significant one-time capital expense ($3,000-$10,000), there has been an uproar over the expense of these collection devices, despite their scientifically proven superiority. It would appear that when something is not convenient, is expensive, or takes too much time to perform or supervise, we don't or won't do what's right, despite the science behind the activity.

The Challenges of a One-Size-Fits-All Regulation

It is reported that there are about 800 to 900 high-volume compounding pharmacies with reported sales in excess of $2 billion annually. These operations should be regulated differently than the average compounding pharmacy. But it begs the question: Is it possible to write a compounding regulation that is applicable to all facilities? There are several factors that make a "one-size-fits-all" regulation tenuous, including the following scenarios:

- Many pharmacists, by choice or necessity, compound patient-specific sterile preparations using bulk non-sterile active pharmaceutical ingredients in order to meet the patient's therapeutic needs when no commercial drugs are available. When does the pharmacy cross the line and become a manufacturer?
- Patients will not be able to access care because the cost of compliance will discourage rural practitioners who only compound a few CSPs per week. At what point does a practitioner have to comply with the regulations?
- Some state boards of pharmacy permit pharmacists to compound non-patient-specific sterile preparations for office use (bulk vials), making some pharmacies seem more like manufacturers, but this flies in the face of federal regulations. Do these pharmacies have to comply with different standards?
- The ongoing tug of war between the FDA, compounding facilities, and state boards of pharmacy over the point at which a compounding pharmacy becomes a manufacturer has spurred the FDA to post on May 31, 2007 a document titled "The Special Risks of Pharmacy Compounding" (available at www.fda.gov/consumer/updates/compounding053107.html).

The practices, processes, and procedures found in the next, soon-to-be-released version of USP Chapter <797> need to be embraced by all pharmacies. And as the revisions to <797> are incorporated into practice, and everyone starts believing that the moving target known as USP Chapter <797> isn't moving any more, the excuses for not complying will go away. It is a robust document with the express purpose of building quality into compounded sterile preparations and ensuring patient safety. Evidence-based science exists for many of the practices that need to be managed, monitored, and measured and many of these are based on best practice; the answer is: Put patient safety first and embrace <797>. This chapter will continue to spark additional research that will, in turn, generate the scientific evidence needed to address the gray areas of sterile compounding and answer the questions surrounding best practices.

The bottom line is that USP Chapter <797> is not going away, and compliance is required. Not all state boards of pharmacy are yet on board with this regulation, but it is my hope that the state boards will rise to the challenge and start enforcing it in order to ensure patient safety and keep the FDA out of the practice of pharmacy. ■

Eric S. Kastango is the president, CEO, and owner of Clinical IQ LLC, a provider of customized process and educational strategies for the pharmaceutical, medical device, and health care industries. A member of USP's Sterile Compounding Committee, he has practiced in the field of both hospital and home care pharmacy since 1980.

Continued from page 12

Self-Validation of Air Quality

Once a cleaning schedule is developed and initiated, an environmental monitoring program must be established to ensure the following processes are being followed according to procedure:

- Gowning and gloving procedures
- Cleaning and disinfecting procedures
- HVAC performance
- Material handling procedures

NMH uses the Graseby In-line Suction System by Andersen to collect air samples as part of our environmental monitoring program. A grid was drafted of the cleanroom to ensure that samples were included from all high-traffic areas and areas of expected contamination. An inhibitive mold agar Petri dish (for molds/fungus) and a blood agar Petri dish (for bacteria) are labeled with the room, location, and date, placed into a biohazard bag and hand delivered to the microbiology department for incubation. The plates are incubated for four days and any growth is cultured and identified.

In addition to self-validation, NMH utilizes CSI Testing Inc. of Plymouth, Minnesota, for semi-annual air testing, laminar flow hood certification, and pressure gradient measurements. Reports are compared and monitored for any trends of increased particulates. If increased particulate levels are observed, the sterile compounding staff evaluates the procedures used in that specific area to identify potential sources of contamination.

Conclusion

By following the cleaning procedures outlined above, NMH is able to maintain a compounding environment that complies with the standards set forth in USP Chapter <797>. Establishing a cleanroom cleaning program can be made easier by breaking things into smaller tasks. Begin by looking at your daily processes. Determine if inventory can be minimized, and reduce traffic into the room. Your department of epidemiology can be very useful in helping you determine the correct cleaners and disinfectants to use in your cleanroom, and your surgical services housekeeping department can help you determine schedules, products, and techniques for cleaning your room. Contact your environmental services department to test your HEPA filters and airflow. After implementing your cleaning program, compare before and after air samples to see if your cleaning methods have improved your air quality. Most of all, involve your employees. Have them read USP Chapter <797> and understand the importance of the changes you are trying to establish. They may bring a fresh perspective to the table and come up with some great ideas. ■

Jeannie Bennett, RPh, MS, is a patient care pharmacist at Nebraska Methodist Hospital in Omaha, Nebraska, where she has worked for the past eight years.

Fred Massoomi, PharmD, FASHP, has served as the pharmacy operations coordinator at the Nebraska Methodist Hospital for the past 11 years.

WHERE TO FIND Controlled Environment Cleaning Products:

Vendor	Reader Service Number	Vendor	Reader Service Number
Acute Care Pharmaceuticals	8	Kimberly-Clark Professional	17
Alconox, Inc.	9	Micronova Manufacturing Inc.	21
Attentus Medical Sales, Inc.	10	Professional Disposables Inc.	42
Berkshire Corporation	12	STERIS Corporation	43
High-Tech Conversions	13	Technowipe Lint-Free Wipes	45
ITW Texwipe	14	Williams Medical Company	46