



Sterile Compounding

Hospital Administration Discussion Guide

Does our hospital or health system compound medications?

Compounding medications is essential to patient care. All types of medications can be compounded (i.e., prepared from component ingredients) if needed, including capsules or tablets, products like creams and gels that are used on the skin, and medications that are injected into the skin, muscle or vein using a syringe or infusion.

Hospitals use a large quantity of compounded medications, most of which are injectables that must be made according to strict standards to ensure sterility. These include total parenteral nutrition, irrigations used during surgical procedures, ready-to-administer dosage forms, chemotherapy and antibiotic treatments. Nonsterile compounding includes customized dosage forms for special populations such as neonates, infants, and geriatric patients.

How do we assure our sterile compounded products are safe?

Because the risks of infection from using injectable medications are higher, they must be prepared following very strict quality standards established by the United States Pharmacopeia (USP). These standards for compounding sterile products may require a large capital investment for equipment, testing, training and maintenance.

USP Chapter <797>: USP is a federally recognized standards-setting entity in matters of drug quality. Standards and requirements in Chapter 797 of their pharmacopeia, entitled "Compounding Sterile Products," include specific guidance for compounding injectables and other sterile products in a safe manner.

Accreditation: Hospitals and health systems are accredited by quality improvement organizations such as **The Joint Commission**, and they often have other types of accreditation and certification to ensure patient safety and quality.

What is the difference between compounding and manufacturing?

Compounding: Compounding is preparing a medication that is not commercially available in the strength, concentration, or form needed for a specific patient pursuant to a prescription, according to the National Association of Boards of Pharmacy Model Act, 2012. Medications are often compounded for patients with specific needs, including young children, seniors, or patients with special medical conditions. A medication may be compounded for a patient who is allergic to an ingredient in the commercially available product or for patients who need an individualized mixture of medication.

Specific definitions of compounding can be found in individual state pharmacy practice acts or regulations.

Manufacturing: Drug manufacturing is the preparation, packaging, and labeling of medications in large quantities that are not intended for a specific patient, according to the FDA (21 CFR 207.3(a)(8)).

What are the regulatory differences between compounding and manufacturing?

Compounding: State boards of pharmacy oversee the practice of compounding to ensure quality and safety.

Sterile compounding is further defined by USP to include any manipulation of a sterile or nonsterile product intended to produce a sterile final product.

The Food and Drug Administration (FDA) recognizes compounding as a part of pharmacy practice, which does not fall within the agency's authority. [FDA's Compliance Policy Guide \(460.200\)](#) states, "Generally, FDA will continue to defer to state authorities regarding less significant violations of the Act related to pharmacy compounding of human drugs. FDA anticipates that, in such cases, cooperative efforts between the states and the Agency will result in coordinated investigations, referrals, and follow-up actions by the states."

Manufacturing: The FDA oversees manufacturers, which must comply with federal rules that assure quality and safety, including Current Good Manufacturing Practices (CGMP).

What is "anticipatory compounding?"

In hospital practice, anticipatory compounding is the process of making limited quantities of compounded medications that are not patient specific, but in preparation for a certain number of expected patients, and will be used in the near future. Anticipatory compounding is based on historical demand and reduces wait time for patients and providers.

What are the restrictions for compounding medications?

Compounded medications must be prepared for a specific patient or in reasonable quantities in anticipation of a prescription, based on historical need.

Ingredients for compounded medications must meet specifications established by the FDA, but in general are made from FDA-approved ingredients that come from an FDA-registered facility. Pharmacies cannot compound medications that are copies of commercially available products (same strength size or concentration) or drugs that have been withdrawn from the market for safety reasons.

What happened at NECC that caused these problems?

Investigators are finding serious lapses in procedures to ensure sterility, including contaminated tools and rooms, shipping of product before the results of sterility testing were known, and disregard of other known safeguards.

Additionally, it appears that NECC was representing itself as a “compounding pharmacy” but was preparing medications in large quantities, without registering with the FDA as a manufacturer or following CGMP.

Why do hospitals outsource compounding?

Pharmacists who work in hospitals and health systems routinely compound medications in response to a prescription from a physician or other prescriber, and they sometimes may choose to work with an outside compounding pharmacy to prepare some of those sterile products. The outsourcing of compounding services is prompted by:

- The need to prepare and provide safe medications using techniques and equipment in accordance with industry requirements and standards.
- The need for better workflow management.
- The need for products that present an unfavorable risk or financial commitment if compounded on site.

If hospitals or clinics don't have the resources to meet the necessary safety standards, they will work with a supplier who is able to meet the requirements. ASHP strongly recommends that hospitals engage in due diligence when selecting an outsourcing supplier and offers pharmacists guidelines on how to do this.

Is compounding related to drug shortages?

There are a number of good reasons to contract out certain sterile compounded products, such as need for a particular dose form, i.e. prefilled syringes for emergency or anesthesia use, high volume use of standardized pain infusions, and complex intravenous nutrition solutions for neonates that are not commercially available.

Drug shortages may play a role in the decision to obtain products from an outsourcing supplier but there is no data on the extent to which shortages influences that decision. Congress recently gave the FDA additional authority to deal with drug shortages (Food and Drug Safety and Innovation Act of 2012) that will help alleviate the impact of shortages on patient care.

Drug shortages are one factor, among many, why a hospital pharmacy may need to compound a medication. When a drug is in short supply, pharmacists attempt to locate commercially available product and then pursue other avenues which may include outsourcing services.

What steps does our health system need to take?

- Review the health system's entire drug supply chain.
 - o See ASHP's Eight Critical Steps Related to Sterile Compounding Services: Member Action Check List
- Review ASHP's Guidelines on Outsourcing Sterile Compounding Services.
 - o These guidelines offer a detailed overview of factors that health care organizations should consider when exploring the outsourcing of pharmacy sterile compounding.
 - o The guidelines highlights key components to include in requests for proposals, including:
 - Minimum experience requirements,
 - History of results of regulatory or accreditation surveys, and
 - Evidence of qualified staff who are licensed or eligible for license by federal, state, and local agencies.
- Review the ASHP Foundation's Outsourcing Sterile Products Preparation Contractor Assessment Tool, which is a free web-based tool that serves as a checklist for staff involved in purchasing decisions and inventory control to evaluate outsourcing proposals.
- ASHP also has several professional policies relating to compounding and outsourcing sterile compounding: ASHP Policy on Safe and Effective Extemporaneous Compounding; ASHP Policy on Accreditation of Compounding Facilities; and Compounding by Health Professionals.
- All of the above resources, and more, are available on ASHP's new Sterile Compounding Resource Center.

What needs to happen next in regulation?

- There needs to be enhanced coordination between state boards of pharmacy and the FDA.
- State boards of pharmacy need additional resources to provide strict oversight of compounding.
- The FDA needs additional resources to more effectively oversee pharmacy compounding that has crossed the line into manufacturing.
- The public should have better access to reports of enforcement actions that have been taken by state and federal regulators for compounding pharmacies and manufacturers.