

## **Critical Issues in Quality Compounding:**

**The 25 questions you should ask your compounding pharmacy before you write your next prescription.**

### Compounding fills a critical need

The practice of compounding custom tailored medications, by both pharmacists and practitioners, has existed for centuries. However, the birth of the pharmaceutical industry in the early 20<sup>th</sup> century led to a shift in the emphasis from custom compounded preparations to bulk manufactured drug products. A lot has changed over time, and for a variety of reasons, today's pharmaceutical manufacturers simply aren't able to produce every drug in every strength or every dosage form needed. Compounding pharmacies are an important compliment in that they continue to meet the needs of patients and prescribers who turn to them for help in providing the custom medications that may be otherwise unavailable to them for treatment.

<b>Compounding is Appropriate When</b>	<b>Compounding is Not Appropriate When</b>
<ul style="list-style-type: none"><li>• The best therapy for a patient is not commercially available;</li><li>• The active drug ingredient is not available in the desired strength or dosage form;</li><li>• A commercial product is on extended back-order and using the compounded preparation may mean there is no interruption in proven therapy for the patient;</li><li>• The manufacturer, for non-safety reasons, has discontinued a commercial product;</li><li>• A patient is sensitive/allergic to a non-active component of a manufactured product (e.g., lactose, dyes and preservatives).</li></ul>	<ul style="list-style-type: none"><li>• A suitable manufactured product is commercially available;</li><li>• A compounded version of a commercially available product is being used just to save money;</li><li>• It violates patents;</li><li>• Exposure to the preparation would create unsafe conditions for the compounding staff, physician's staff, or patients.</li><li>• Producing the compound is beyond the skill set or equipment capability of the compounder and/or its laboratory. A good compounding pharmacist will decline to prepare a medication beyond the scope of his or her expertise.</li></ul>

## The Pharmacology of Compounding

Pharmacology is defined as the science of drugs, including their composition, uses, and effects. Compounding is the preparation of a pharmaceutical medication in response to a doctor, veterinarian, or other licensed prescriber's order. Compounding can be classified into several types:

- The preparation of dosage forms such as solutions, suspensions, and suppositories.
- The conversion of one dosage form to another, such as capsule to oral suspension.
- The preparation of select dosage forms from bulk chemicals, intravenous admixtures, parenteral nutrition solutions, pediatric dosage forms, radioactive isotopes, and cassettes, syringes, etc.

In the early days of pharmacy, the core of a pharmacist's education was based on the notion that **every** prescription was compounded. With the prevalence of manufactured drug products, many of today's pharmacy school curriculums have placed less and less emphasis on the art of compounding. That's why it's important, now more than ever, to find a compounding pharmacy with a dedicated facility and, most importantly, a staff trained in the intricacies of this art that understands the importance of ensuring patient safety everyday. Compounding pharmacists are called upon daily not only to apply their expertise and sound knowledge base to the art and science of compounding but also to familiarize themselves with new technologies in order to ensure quality preparations continue to be provided to those patients that use them.

For example, equipment has advanced with the times, and while the traditional mortar and pestle still has its place, today's well-equipped compounding pharmacy also has electronic balances, ointment mills, and laminar airflow hoods in order to prepare accurate and effective medications.

A compounding pharmacist should have a dedicated compounding area appropriate to the type of compounding being performed.

Formula worksheets or logs should be maintained for every preparation or batch with documentation of all key information. Additionally, it is the responsibility of the pharmacist to select chemicals of the appropriate quality and grade and to maintain a Certificate of Analysis for each chemical ingredient.

## Finding a Compounding Pharmacy

Prescribers should have some knowledge of the compounding capabilities of the pharmacy they use. Visiting a local pharmacy is one possibility; however, the closest pharmacy may not be the best equipped to handle the compounding required to prepare a medication. If it's not possible to visit the pharmacy you are considering, how can you determine its capabilities? You can start by asking about their staff training, experience and number of years in business. If you are looking for a topical cream or ointment, you should look for a facility with an ointment mill. For some suspensions, a fluid micronizer may be important to ensure small uniform particle size. In the case of antibiotics, it's important to have dedicated equipment to handle cross-contamination concerns. Independently certified cleanrooms and laminar airflow hoods are mandatory for sterile compounding along with aseptic training, validation, and proper gowning attire. Autoclaves and sterility testing materials such as bioindicators, soy broth for inoculation, and incubators are among the other "must-have" items.

## Compounding Dos and Don'ts for the Physician

- Do determine if the pharmacist is qualified.
- Don't accept any kind of incentive in return for prescribing a compounded product.
- Do establish parameters for monitoring both efficacy and toxicity before prescribing a compounded medication.
- Do document and report successes and failures in patients treated with compounded medications.
- Do inquire about quality control and documentation to support any quality control measures in place.

Because of the strict USP <797> guidelines for sterile compounding, it's more important than ever for prescribers to choose a compounding pharmacy they can trust with their reputations. When you are choosing a compounding pharmacy to work with you, be sure to ask questions like those listed here.

1. Are you committed to compliance with the USP <797> guidelines for sterile compounding? Have you completed a <797> gap analysis? If so, where are you in the implementation of projects to become fully compliant with <797>?
2. Based on your assessment of <797>, are you compounding sterile preparations at high, medium or low risk?
3. How would you know if you are having a problem with your clean room environment?  
(A pharmacy with a clean room should be able to tell you about their environmental monitoring program, which is designed as one means of sterility assurance. The program is a way of monitoring the clean room to ensure it is in a continuous state of control - air & surface sampling for microcontamination, temperature & humidity monitoring, and cleaning & disinfection are some of the basic points they should cover with you in their answer.)
4. If you are compounding high risk sterile preparations, do you conduct weekly independent lab tests of air and surface samples in your clean room? Or monthly testing, if you are

compounding low and medium risk preparations?

5. Is the air quality in your general compounding lab engineered for HEPA filtration to reduce particulates?
6. Do you obtain independent, semi-annual certifications of your clean rooms and laminar airflow hoods?
7. Do you perform daily monitoring and documentation of your clean room temperature and humidity?
8. Is your staff properly trained and evaluated in aseptic manipulation skills, gowning technique and clean room use?
9. Do you filter (0.2 micron) in a Class 100 (ISO 5) laminar airflow hood contained in a Class 1000 (ISO 8) clean room, or autoclave where appropriate, to achieve sterility?
10. Do you perform sterility testing on every preparation batch?
11. Do you perform sterility testing according to USP <71> - Sterility Tests and USP <85> - Bacterial Endotoxin (Pyrogen) Test?
12. Do you perform post-filtration filter-integrity testing?

13. Do you have systems in place for handling complaints and investigating sterility failures and adverse events?
14. In the event of a sterility failure, complaint or adverse event, do you have a procedure in place for determining if a recall is necessary?
15. Do you purchase pharmaceutical-grade chemicals (USP, NF equivalent) from FDA-registered suppliers?
16. Do you obtain Certificate of Analyses for all formula ingredients?
17. Do you maintain both master formulas and lot-specific worksheets for all compounds? (Do they include the supplier and lot number of each ingredient and quality-control test results?)
18. Can you trace a prescription back to the original formula log sheet and the source of ingredients?
19. Is every step of the compounding process from prescribing to compounding and labeling through dispensing reviewed and authorized by a licensed pharmacist?
20. Do you verify the potency of finished compounds through the weight, volume and yield checks?
21. Do you perform pH testing on injections, ophthalmic preparations and other compounds?
22. Do you perform HPLC verification on selected formulations?
23. Are your pharmacists, technical and customer service staff dedicated exclusively to compounding?
24. Does the pharmacy have adequate liability insurance?
25. Are you active members of the American College of Apothecaries and the International Academy of Compounding Pharmacists? What other professional organizations are you a member of?