



U.S. Pharmacopeia
The Standard of QualitySM

USP Compounding Stakeholder Forum
June 16, 2006
Meeting 1 for 2005-2010
Bethesda North Marriott Hotel and Conference Center
North Bethesda, Maryland
Chair: Kasey Thompson, Pharm.D.

Meeting Notes

Goals and Expected Outcomes

1. Provide a neutral forum in which stakeholders can meet and discuss pharmacy compounding standards-setting activities.
2. Present Work Plans for the USP Compounding Pharmacy and Sterile Compounding Expert Committees.
3. Exchange information on key compounding topics through panel discussions.
4. Identify hot topics related to compounding and potential Project Teams to address issues.

Attendees

See Appendix I - Attendee List.

1. Welcoming Remarks

Dr. Williams convened the meeting at 8:35 a.m. and welcomed everyone to the first USP Compounding Stakeholder Forum (SF) of the 2005-2010 Convention Cycle. He thanked the participating associations, members of the USP Compounding, Sterile Compounding, Radiopharmaceuticals and Medical Imaging Agents, and Veterinary Drugs Expert Committees, and USP staff for attending the meeting. Dr. Williams said that this Stakeholder Forum set record for the Expert Committee representation. He indicated that a planning meeting for this Forum was held in August 2005. At that meeting, Dr. Thompson agreed to be the Chair. Dr. Williams thanked Dr. Thompson, as well as members of the Planning Committee. He said that USP cast a broad net to reach out to professional societies who are the heart of USP. Dr. Williams presented the following information:

- Stakeholder Forums present an opportunity for USP to seek guidance from the community.
 - The key purpose of Stakeholder Forums is to increase communication between USP and stakeholders.
 - Stakeholder Forums may create Project Teams to address specific issues.
 - Prior Compounding SFs were held in August 2002 and August 2003. Participants in today's Compounding SF were encouraged to review the minutes from these meetings.
- The Compounding SF is guided by rules and procedures. Ms. de Mars was present to answer any questions.
- Practitioners of various pharmaceutical arts, including compounding, are the motivating forces behind USP activities.
 - USP is continually reinventing itself with input from practitioners.
 - Practitioners of pharmaceutical compounding want to be assured of high quality and consistent therapeutics.
- The USP Convention organization and the Council of Experts structure were explained.
- The field of compounding can be viewed as a landscape.
 - The practitioner and patient are at the core.
 - Surrounding the core are a number of groups and bodies designed to promote the practice of compounding and improve patient care.
- Although some progress has been made, challenges remain and USP wants to be useful in this work.
 - USP's compounding standards need to be completed.
 - The Pharmacy Compounding Accreditation Board (PCAB) has recently been formed.
 - Ingredients are not yet verified.
 - Practitioners are not yet certified.
 - A comprehensive program including education, training, and certification is needed.

Dr. Williams said that he hopes to see Compounding Stakeholder Forum representatives at USP Convention in 2010. He informed Forum participants of USP sites in Europe and India and the future China site and commented that their deliberations are of interest to people around the world.

Headquarters

12601 Twinbrook Parkway
Rockville, Maryland 20852
+1-301-881-0666

Europe/Middle East/Africa

Münchensteinerstrasse 41
CH-4052 Basel, Switzerland
+41 (0)61 316 30 10

USP-India Private Limited

ICICI Knowledge Park
Genome Valley
Labs 7-10, Phase III
Turkapally, Shameerpet
Ranga Reddy District
Hyderabad 500 078, A.P., India
+91-40-2348-0088

Dr. Williams then provided attendees with the information about USP Stakeholder Forums and Project Teams and said that the most vigorous is Prescription/Nonprescription Stakeholder Forum that was coming up on July 10. He commented that Stakeholder Forums are advisory to USP, but not binding.

Ms. Cousins presented the following:

- During the past five years healthcare has addressed the quality chasm in healthcare as identified by the Institute of Medicine (IOM).
- Healthcare should be safe, efficient, effective, timely, and patient-centered.
- During a recent reorganization at USP, the Department of Patient Safety was moved to the Standards Division. This department is now responsible for the Compounding, Sterile Compounding, Nomenclature, and Safe Medication Use Expert Committees.
- Patient safety can be defined as “freedom from injury in all aspects of healthcare, including pharmaceutical compounding.”
- Examples of fatal compounding errors were discussed. Through the development of compounding standards, USP hopes to address harmful compounding outcomes.

Dr. Thompson discussed the purpose and goals of the Compounding SF:

- ASHP has a close alignment with the patient safety mission of USP.
- Ensuring sterility is a central issue of patient safety and healthcare quality.
- All institutions engaged in compounding should be accredited. Their activities must be standards-based.
- In 2004, the ASHP leadership determined that the intent of USP *General Chapter <797> Pharmaceutical Compounding – Sterile Preparations* should be incorporated into practice.

Dr. Thompson then introduced Dr. Allen.

ACTION ITEM

- Participants in the Compounding SF are encouraged to review the minutes from the two previous Compounding SF meetings.

2. Compounding Pharmacy Expert Committee Work Plan

Dr. Allen presented the work of the CRX EC:

- He reviewed the history of the focus on compounding in USP.
 - USP resolutions related to compounding were developed in the 1990s.
 - Today, two Expert Committees focus on compounding and the USP laboratories are developing stability studies related to compounding.
- The CRX EC has seven subcommittees working on the following topics:
 - Beyond-use dates for bulk chemicals
 - Stability studies review
 - Review and maintenance of pharmacy compounding General Chapters
 - *Pharmacists' Pharmacopeia*
 - Review of General Chapters for their impact on compounding
 - Educational activities
 - News and updates of regulatory bodies, including the development of a survey to determine the most commonly prescribed medications to assist in the prioritization of USP monographs
- Other CRX EC activities include the following:
 - Support of the National Institute of Health (NIH) Pediatric Formulation Initiative Committee
 - Development of Pharmacy Board Inspectors Training Programs
 - The development of proposed General Chapter <1163> Quality Assurance in Pharmaceutical Compounding

Reviews and explores the need for work in the international market.

3. Sterile Compounding Expert Committee Work Plan

Dr. Newton discussed the Sterile Compounding Expert Committee (SCC EC) Work Plan.

- The Work Plan includes the following:
 - Review of all public comments on <797> (The deadline for submission of comments is August 15, 2006)



- Development of proposed General Chapter <1069> *Good Sterile Compounding Practices*
- Development of sterile compounding monographs
- Public communication regarding changes to <797> and related SCC EC activities
- In 1992, the ASHP published the first sterile compounding guidelines. The impact of the ASHP guidelines and <797> on increasing patient safety was discussed.
- The distinctions between sterility storage time and beyond use date were discussed.
- USP granted free public access to the In-Process Revisions to <797> on the USP website.
- Revisions to <797> include the following:
 - Requirements for personnel, air and airflow, facilities design, cleaning, and sterility storage time and beyond use date.
 - Immediate use CSPs
 - Handling of hazardous and radioactive drugs
 - Cleanrooms
 - Sampling of glove fingertips
 - Hand hygiene with an alcohol- based surgical scrub product with residual antimicrobial activity.
 - References to authoritative documents from other sources such as the FDA and CDC
- Future revisions to <797> may include the following:
 - Requirement for strength of preparations
 - Sterility and endotoxin testing
- The SCC EC advocates that <797> not be weakened.

Ms. Cousins presented information on the <797> Communications Plan.

- The goals of the plan were to create transparency of the process, provide education to stakeholders, and maximize the use of the USP website as a communications tool.
- The campaign included organization and agency briefings, publication of a guidebook, webinars, and the ability of the public to submit comments online.

DISCUSSION

Dr. Joanne Whitney

University of California, San Francisco (UCSF)

Question

Has USP considered changing the numbering of General Chapter <1163> Quality Assurance in Pharmaceutical Compounding to a lower number to make it enforceable?

Answer from Dr. Allen

- This General Chapter is presently informational to generate feedback.
- It could be re-numbered in the future. For example, General Chapter <797> at one point was numbered <1206>.

Dr. Williams

Question for Dr. Allen

What challenges could arise if USP decided to add the compounding monographs to the *Pharmacists' Pharmacopeia*?

Answer

- It would take a lot of work to obtain valid stability information for every single monograph.
- The compounding monographs need to be reformatted to match USP monograph formats in order to be published in *Pharmacists' Pharmacopeia*.

Question for Dr. Allen

Please share the focus of your upcoming presentation in Brazil.

Answer

- The presentation will focus on compounding in the US.
- Many practitioners in other countries incorporate the USP standards in their standards.
- Practices in other countries often exceed our standards.
- Some other countries would like the USP *Pharmacists' Pharmacopeia* to become their standard.



Dr. Joseph C. Hung

USP Radiopharmaceutical and Imaging Agents Expert Committee

Comment

The implementation of <797> on radiopharmaceuticals may have the following impacts:

- The high cost could be passed on to patients.
- Small towns and rural areas could have difficulty meeting the requirements.
- The benefit to patients and patient safety should be considered.

Response

- Dr. Newton: General Chapter <797> contains best practices and empirically best practices obtained from literature.
- Dr. Augustine:
 - The cost of implementing <797> is a concern. The SCC EC did not want to limit access to a needed modality like nuclear medicine.
 - When the SCC EC considered patient safety issues, the original intent was to insure that a quality product reached each patient.
 - The SCC EC considered that small volumes of radiopharmaceuticals are used in a short period of time.
 - USP encourages the use of best practices. A small nuclear medicine department would need the intent of <797> to prove that they can produce a product that is going to be safe for the patient.

Dr. Sandra Y. Lin

American Academy of Otolaryngic Allergy

Johns Hopkins University School of Medicine

Question

What are the implications of <797> as it applies to physicians compounding drugs to treat allergies and immunotherapy?

- This is an issue on state levels where <797> is applied by JCAHO.
- There is no documentation of infections from allergy immunotherapy in the medical literature.
- Limited access of patients to needed drugs could be an unintended consequence.

Answer (from Dr. Newton)

- Injections given by allergists were introduced into the *USP-NF* in 1942 in General Chapter 1 Injections.
- Information from *General Chapter <51> Antimicrobial Effectiveness Testing* was added to <797>, to address issues pertaining to preparation and antimicrobial preservatives.
- At this point, there is no exemption for allergists.

Dr. Kathleen Gura PPAG

Question

Is USP educating third-party providers and those who refer individuals to compounding pharmacies?

- We have to fight to get patients serviced by providers who adhere to the guidelines.
- It costs more for patients to use these facilities.

Answer

This question will be referred to USP staff.

Dr. Gary N. Gross

Joint Council of Allergy Asthma and Immunology (JCAAI)

Comments

- The revisions to <797> reflect an incredible amount of work with patient safety in mind.
- The impact of the changes to <797> may be more far reaching than originally intended.
 - Some of the language could be incorporated by a number of states into their own laws and this could have unintended consequences.
 - There is always a risk/benefit ratio to examine.
- Much of allergy therapy is prepared in physician's offices. This has the potential for changing the practice of medicine.
- Laws that are too restrictive for physicians to provide this therapy may limit patient access to immunotherapy.



ACTION ITEM

- Participants in the Compounding SF should send their comments on <797> to USP through the USP website.

4. Verification of Compounding Ingredients

Dr. Sheinin presented the following information.

- Practitioners do not always know the quality of the ingredients that they purchase.
- Substandard ingredients, including those that are counterfeit, subpotent, mislabeled, and contaminated, are in the supply chain.
- USP verification programs exist for dietary supplements and supplement ingredients. Products that have been verified through these programs display the “USP Verified” seal on their containers.
- New verification and qualification programs are being developed for drug substances and excipients.
- The definitions of “verification” (for suppliers) and “qualification” (for users) were explained.

5. Panel I—Legal, Conformity Assessment, Accreditation

In preparation for the Compounding SF, panelists were asked to respond to the following questions:

- What is the current state of compounding?
- What would be the ideal state?
- What gaps exist between the current and ideal states? What is needed to close the gaps?
- What role could USP play in achieving the desired state?

a. Legal and Compendial Issues—A Framework

Ms. Miller presented the following information.

- Current State:
 - Compounding General Chapters apply to all compounded preparations.
 - USP monographs for compounded preparations apply whenever the practitioner’s prescription uses the compendial name.
 - USP standards apply to preparations for human and veterinary use unless otherwise indicated.
 - USP is not an enforcement agency.
 - Accreditation is not universally required.
 - Professional organizations have implemented USP requirements through practice standards and guidelines.
 - If USP requirements are only enforced on pharmacy practitioners, these activities could be shifted to more convenient and less expensive locations.
- Ideal State:
 - USP compounding General Chapters are viewed as minimum requirements, no matter where compounding takes place.
 - USP standards are workable and useful in all settings.
 - USP has an extensive range of monographs for compounded products.

b. FDA Perspectives on Compounding

Mr. McConagha presented the following information:

- The Federal Food, Drug, and Cosmetic Act gives the FDA legal and regulatory authority over compounded drugs.
- The FDA is not interested in criminalizing traditional pharmacies. The agency recognizes the important public health service provided by pharmacists who compound medications based on individual patient need.
- The primary concerns of the FDA include the following:
 - Large-scale drug manufacturing disguised as compounding pharmacy – the FDA issued a Compliance Policy Guide (CPG) in 2002 that listed several factors that the FDA could use to assess whether a compounding firm had crossed the line.
 - The safety of all drugs – contamination, ultra or super potent compounded drugs.



- The FDA applauds what USP is doing to ensure the safety and quality of drugs through sterility, but is concerned that the standards do not go far enough and do not address the effectiveness of drugs.
- The FDA shares a common vision with other compounding stakeholders: Drugs should be safe for their intended use.

c. State Boards of Pharmacy Perspective

Ms. Anagnostiadis presented the following information on behalf of the National Association of Boards of Pharmacy (NABP).

- Current State:
 - Fourteen states reference or recognize USP compounding standards.
- Ideal State:
 - Uniformity
 - All states recognize <795> and <797>
- What's Needed:
 - The NABP is reviewing their model rules (a reference guide that state boards utilize when developing their practice rules and regulations) to determine whether revisions are needed.
 - Continuation of the USP and NABP collaboration
- Regarding <797>:
 - The NABP is sending information to state board members of NABP to encourage them to send comments to USP.
 - The NABP is in the process of developing educational programs for state investigators and inspectors.
 - State boards are interested in dialog in dialog with USP to understand <797>. NABP had the opportunity to participate in <797> briefing webinar.
 - NABP is exploring the possibility of training inspectors to work with USP and others to include educational component.

d. Pharmacy Compounding Site Accreditation

Mr. Baker presented the following information

- Current State:
 - 1% of all prescriptions (30-40 million) are compounded each year.
 - Articles, complaints, and petitions have focused on the need for compounding pharmacy, safety, and the lack of oversight.
 - Many good, patient focused pharmacists want to know that they meet standards of quality. A few others do not.
- Overview of the PCAB:
 - The PCAB was founded 1.5 years ago by eight organizations, including USP.
 - Its mission includes voluntary accreditation; improvement of quality and safety through principles, policies and standards; identification of accredited pharmacies; and the ability to inform and educate the public on the importance of pharmacy compounding.
 - Its goal is to build a brand consciousness. The importance of sending business to accredited pharmacists needs to be conveyed to the public.
 - Pharmacists want to know if they meet the standard. The competitive advantage of quality will weed out lower quality pharmacies that will not voluntarily come forward.
 - PCAB standards include USP <795> and <797>
- Steps toward PCAB Accreditation:
 - Submission of self-analysis and documentation
 - Review of documentation
 - In-pharmacy review by survey team
- More than 60 compounding pharmacies have moved through the steps toward accreditation.
- Ideal State:
 - All compounded prescriptions are authentic, sterile, pure meet high standards of quality, and are compounded in a pharmacy that implements a continuous quality improvement (CQI) system.
 - Accreditation of every compounding pharmacy
 - Universal acceptance of PCAB principles and ethics
 - Elimination of compounding medication errors



- What's Needed:
 - Time
 - Money
 - Pharmacists' pride
 - Demand for accredited pharmacies from customers, patients, the public, and prescribers
- Role of USP:
 - Continue developing compounding standards
 - Spread the word that principles and quality are not optional. Quality matters and USP does a great job.

ACTION ITEM

- Participants are encouraged to review the PCAB principles of compounding at www.pcab.info.

e. Compounding and Healthcare Facility Accreditation

Dr. Croteau presented the following information.

- JCAHO is a private, non-profit organization with the mission of improving the quality and safety of healthcare. It is an improvement organization, not a regulator.
- Current State:
 - JCAHO accreditation is based on evaluation against JCAHO standards. These standards are not inconsistent with <797>, but many aspects of <797> are not addressed.
 - JCAHO standards state that all JCAHO accredited organizations must comply with the law. To the extent that <797> is addressed by the law, JCAHO would require compliance with that regulation.
 - JCAHO has more than 450 surveyors.
 - JCAHO surveyors are not familiar with <797> and do not survey compliance with it. They only cite an organization for noncompliance with Joint Commission standards or if the organization has been cited by a legal authority and has not responded appropriately.
 - Organizations are required to comply with best practices. JCAHO surveyors will cite organizations if they have not even considered the requirements in <797> when designing their process and facility.
 - JCAHO is working with other organizations to harmonize their requirements and coordinate their evaluation activities.
- Ideal State:
 - Striving for optimum achievable standards, not minimum requirements.
- Gaps:
 - Uniform expectations and a collaborative evaluation process that others can rely on are needed.
- Role of USP:
 - Continue the strong, positive relationship with JCAHO through conversation and collaboration
 - Become part of the JCAHO standards development process

DISCUSSION

Mr. Tom Clark

American Society of Consulting Pharmacists (ASCP)

Question

Regarding the use of the USP compendial name by the prescriber on a prescription:

- Is a pharmacy under obligation to follow the USP monograph or can they use own recipes?
- What are the liabilities of a pharmacy does not use the USP monograph? Are the liabilities different if the pharmacy is accredited?

Answer

- Ms. Miller:
 - If a monograph for that product exists in the *USP-NF* and the pharmacy does not follow it, FDA enforcement is a ramification.
 - This enforcement is unlikely unless there is a negative effect from the compounded medication. Liability would then be a concern.



- Mr. Bill McConagha:
 - His remarks are his own and do not necessarily reflect the views of the FDA.
 - This issue is set forth in the May 2002 CPG.
 - The FDA is interested in the safety and integrity of drug products. They are looking for some sort of measure of certitude of the sterility of drugs.
 - Compendial standards are just one factor.
 - The relationship between compendial standards and compounded drugs is being considered for inclusion in a new CPG.

Ms. Shara Rudner

American College of Apothecaries (ACA)

Question

- Mr. McConala mentioned several times "traditional pharmacies" and "corner drugstores". Recently, more pharmacies are specializing in niches such as sterile compounding and veterinary compounding. This is done to standardize their procedures and improve quality. Does the FDA recognize these specialty pharmacies?

Answer (Mr. McConagha)

- As delineated in the May 2002 CPG, factors that the FDA uses to distinguish between traditional pharmacies and large-scale manufacturers include the volume and size of the pharmacy or compounding operation and the sophistication of the equipment.
- A traditional pharmacy is defined as the extemporaneous compounding of an individualized medication based on a specific medical need born out of the relationship between the pharmacist, doctor, and patient, pursuant to a prescription.
- The FDA recognizes that there are specialty-compounding firms that are good at what they do. There are also firms that use the term "specialty compounding" to mask the fact that they produce compounding medications on a large scale, and should thus be regulated as drug manufacturers and wholesalers.
- The next CPG on pharmacy compounding will include more details to distinguish between traditional pharmacies and large-scale manufacturers.

Question

- What happens if a compounding pharmacy purchases modern, expensive equipment to test ingredients?

Answer

- The line is drawn when industrial scale equipment is used.
- The FDA does not want to inhibit Good Manufacturing Practices (GMPs). The purchase of modern equipment would be considered as one factor and alone is not likely to arouse concern from the FDA.

Ms. Sally Schwartz

Society of Nuclear Medicine (SNM)

Comments (from a written statement)

- Definitions, including compounding and dispensing, should be redefined relative to the concerns of the nuclear pharmacy industry.
- Monographs should refrain from prescriptive requirements to achieve competencies for compounding personnel, activities and facilities.
- Compounding guidelines should be adaptable therefore avoid using the word must in the revision of 797, and replace it with the word should.
- The Office of Management and Budget (OMB) should evaluate USP proposed changes to 797 regarding the cost implications for the changes on enforcement or compliance of practice standards.

Dr. Whitney

Question

- Does the FDA consider compounding into an unavailable dosage form and the making of a corresponding placebo for a clinical trial compounding or manufacturing?

Answer (Mr. McConagha)

- Clinical trials are covered under Investigational New Drug (IND) legislation.



Mr. Michael Heath

Question

- Will the FDA enforce <797> and, if so, through what processes?

Answer (Mr. McConagha)

- Whether a drug meets compendial standards is only one factor that the FDA considers.
- Sterility is of interest to FDA because of the patient safety issues inherent in dealing with products that lack sterility.

Dr. Hung

Comment

- The definition of compounding does not include reconstituting or following the package insert.
- Radiopharmaceutical pharmacists follow the package insert. If the FDA uses this definition, radiopharmaceuticals would not be covered under <797>.

f. Pharmacists' Pharmacopeia—Demonstration/New Directions

Mr. Jeffrey Silverstone, Director of USP Sales and Marketing, briefly discussed the *Pharmacists' Pharmacopeia*. It is available in both electronic and print formats and includes <797>.

6. Panel II—People, Environment, Process Issues

a. Compounding Practice—A Framework

Dr. Thompson introduced the second panel discussion.

b. Community Practice Perspective

Dr. Whitney presented the following information.

- The University of California San Francisco (UCSF) retail pharmacy is owned by the UCSF Department of Pharmacy. It was founded in 1937 to make drug products that were not commercially available.
- Current State:
 - Thousands of retail compounding pharmacies
 - Over 4,000 members in the Professional Compounding Centers of America (PCCA)
 - The International Academy of Compounding Pharmacists (IACP) lobbying group helps protect compounding pharmacies
 - State pharmacy board inspectors have little experience in sterile compounding
 - Not enough technical, scientific, business, and marketing training in compounding pharmacy is being offered by pharmacy schools
 - Major products compounded by community compounding pharmacies include B Hormone Replacement Therapy (BHRT), sterile injections, sterile ophthalmics, pain relief, hospice medications, pediatric medications, and veterinary medications.
 - Compounding pharmacists supplement their income by performing consultations for cash.
 - Lack of data on efficacy, content, and bioavailability of many of the dosage forms
 - History of tragic compounding errors causing death
- Ideal State:
 - Better educated compounders and customers
 - Competent inspectors and improved, clearer regulation by state boards of pharmacy
 - Input into technical, scientific, business, and marketing aspects of compounding by pharmacy schools
 - Greater emphasis on efficacy and safety and less on profit
 - Better data on effectiveness, content, stability, sterility, and bioavailability of major products and greater compliance by compounding pharmacists in obtaining such data
 - Improved payment by government and private insurance
- What's Needed:
 - Use of evidence based therapy by compounders
 - Attitude change in academia, government, and insurance companies regarding the importance and value of compounding
 - High powered courses for students, continuing education for practitioners, and specialized residencies, offered by pharmacy schools and other qualified organizations
 - Small business entities capable of doing research for a reasonable fee



- Publicity that counters the public's fear of compounding
- Role of USP:
 - Provide seminars and publicity on generalized compounding
 - Strengthen <795> and other associated General Chapters
 - Expose questionable products, dosage forms, and practices
 - Be uncompromising regarding efficacy, bioavailability, and stability
 - Consider a pharmacy residency in compounding issues
 - Collaborate with academia to provide better education
 - Involve practicing retail compounding pharmacists in USP

c. Education and Training

Mr. L.D. King presented the following information pertaining to community pharmacy:

- Current State:
 - Recent revisions in the Accreditation Council on Pharmaceutical Education (ACPE) standards for accreditation of colleges of pharmacy include a section on compounding. There is room to expand the ACPE standards.
 - PCAB is moving forward and will expand its influence on education and training. A cottage industry may emerge to help pharmacies improve their standards of practice to reach PCAB standards.
 - Nonprofit organizations and commercial entities provide continuing education on compounding, including aseptic technique, understanding elements of <797>, and veterinary pain management.
 - There is a trend toward the provision of more compounding education.
- Educational Needs:
 - Quality Assurance (QA) is a recent concept in pharmacy compounding. Tools such as statistical analysis are being used.
 - Emphasis on the containment of potent and hazardous pharmaceuticals such as hormone replacement therapy is needed. Information available through the National Institute for Occupational Safety and Health (NIOSH) and ACPE includes engineering controls that must be implemented for containment.
 - The development and implementation of standard operating procedures is new for compounding pharmacy and needs to be expanded.
 - Education on the unique legal and regulatory environment, including <795> and <797>, is needed. Students should be cognizant that these General Chapters are constantly changing.
 - There is a need for data that could be met through research endowments and partnerships with pharmacy and academicians.

The Accreditation Council for Pharmacy Education (ACPE) should be invited to future Compounding Stakeholder Forums.

d. Environment and Facilities

Mr. Collins presented the following information on infection control and patient safety.

- Current State:
 - ASHE questions the rationale and justification of the environmental conditions required for sterile compounding in the current version of <797>.
 - There is no data to support this section of <797>.
- Ideal State:
 - The environmental conditions required for safe sterile compounding should be based on data.
- What is Needed:
 - Studies showing that the safety and quality of sterile compounds are related to a specific ISO level and that the number of particles per volume of air affects this quality.
- Role of USP:
 - Develop and support study designs, including compounding and patient outcome studies
 - Develop more performance-based measures to achieve desired outcomes for sterility and patient outcomes

e. Infection Control and Patient Safety

Ms. Bartley presented the following information.

- The goal is to reach zero adverse events and zero infections.
- Current State:
 - Increased attention on adverse events, medication errors, and healthcare associated infections (HAIs)
 - Interventions reduce variations that could result in contamination and subsequent HAIs.
 - Valuable guidance addresses minimizing potential contributors to infection caused by compounded products.
 - The potential for a double standard exists between <797> and other key evidence-based guidelines (e.g. CDC) that are specifically related to compounding processes.
 - ASHE, the Society for Healthcare Epidemiology of America (SHEA), and APIC have interest in this topic and are seeking common denominators in their standards.
- Ideal State:
 - Increased use of science-based studies establishing where the greatest risk for product contamination occurs with potential for infection
 - Environmental monitoring techniques that are appropriate to measurable outcomes should be science based, include performance measures, and be less labor and resource/cost intensive.
 - Best practice in asepsis, hand hygiene, glove use, disinfection, and environmental sampling and monitoring
- What's Needed:
 - Reconsider the role of environmental sampling and testing in light of CDC Environmental Infection Control Guidelines.
 - Acceptance of performance-based measures
 - Increased dialogue with the infection control community in other forums to align with specific CDC guidelines
 - Share information that we have in specialty areas and be prepared to adapt when new information becomes available
 - Environmental monitoring techniques should be more flexible to reach the same measurable outcome.
 - New study designs, performance measures, new approaches, flexibility
 - Agreement on patient safety practices when facilities are being planned and designed through use of an Infection Control Risk Assessment (ICRA)

DISCUSSION

Dr. Williams

- Data is difficult to find.
- Adverse events are underreported.
- We're coming to better understanding of risk assessment. Standards need to emerge. USP is challenged to find appropriate data to support the standards that it sets.

Dr. David Hussong

FDA CDER

Comments

Obtaining data on sterility assurance is a serious problem. Interesting point of environmental control was presented in that current limits are often not in the quantitative range of test methods. Correlating environmental control data to sterility failures is also difficult. There is an absence of evidence and no tests are suitable.

- Stringent limits have been proposed for microbiological environmental monitoring of critical zones. When monitoring these, microbiological data analysis cannot be done. When assessments are attempted, conclusions must be viewed with caution.

Response (Dr. Whitney)

- Experiments have shown that contamination is less than 1% with glove use.
- If contamination is greater than 1% (e.g. 3%), what would that mean? Up to 6,000 samples may be needed for a result to be statistically significant. Would that be meaningful or reasonable?



Dr. Alice Weissfeld
American Society for Microbiology

Comments

- Microbiology and public health literature contain numerous instances where harm to patients is related to nonsterile compounding.
- ASM applauds USP for the steps that it has taken thus far.

Response (Ms. Bartley)

- An understanding of appropriate levels of airflow and clean air are needed. Studies are needed that show how air around the workbench contributes to sterility.
- During outbreak investigations, it is difficult to determine which variable contributed to the outcome of infection. There is debate on the contribution of the surrounding environment.

Mr. Mike J. Johnston
National Pharmacy Technicians Association

Comment

- There is deep concern about the training and competence levels of compounding technicians.
- Most schools of compounding do not require skills, formal training, or practical experience.

Responses

- Mr. King: This is an important point.
 - Accreditation organizations should get involved.
 - Appropriate supervision of practitioners needs to be defined.
- Dr. Whitney:
 - Pharmacists need education in compounding.
 - Arenas for training of pharmacy technicians are scarce.
- Dr. Thompson: Organizations engaged in any activity have the responsibility and accountability to insure that staff are trained, competent, and adequately supervised.
- Dr. James Dice:
 - Some hospitals have no policies or procedures on sterile compounding. Hospital executives are using <797> to develop sterile compounding goals for their institutions.
 - The use of makeup is an issue for some pharmacists.
 - Some environmental services departments do not understand the needs pertaining to sterile compounding.
- Ms. Bartley:
 - Because sterility may not be taught in schools, hospitals need to set clear expectations and not skip procedures.
 - Collaboration is needed between all groups in the work setting.

7. Hot Topic Discussion

Dr. Williams solicited Hot Topics (in all capital letters below) from the participants.

Dr. Kenneth Miller (ACCP)

- The issue of safety goes beyond morbidity and mortality. It also includes efficacy and effectiveness.
- Just because an article can be put into a nonsterile dosage form, should it be done? When does the practitioner decide to compound the medication if something else is available?
- Why are there so many monographs for compounded drugs? Is value added or is there a cost benefit?
- Hot Topic: THERAPEUTIC RATIONALE FOR COMPOUNDED PREPARATIONS

Dr. Kathleen Gura (PPAG)

- A heightened awareness of the special needs of pediatric patients and patients with feeding tubes is needed.
- Hot Topics: SPECIAL POPULATIONS and DISEASE STATES

Dr. Williams

- Standards should look to the future, e.g., personalized medicine and biologics.
- Hot Topic: FUTURE NEEDS



Mr. Mike Johnston

- Hot Topic: TRAINING AND SKILL ASSESSMENT

Dr. Weissfeld

- Most patients have IV catheters and monitoring subsequent bloodstream infections would be a way of tracking problems. However, there should be faster tests to determine whether compounds are sterile.
- Response from Dr. David Hussong: A General Chapter on rapid tests is being proposed.
- Hot Topic: RAPID MICROBIOLOGY TESTING

Dr. Gary Gross (JCAAI)

- Balancing patient access and safety is an issue.
- How USP communicates with other regulatory bodies is also an issue.
- Response from Dr. Williams: Conformity assessment bodies meet periodically to discuss their activities.
- Hot Topics: PATIENT ACCESS and CONFORMITY ASSESSMENT

Dr. Whitney

- What information should be relayed to patients regarding compounding septicemia?
- Response from Ms. Cousins: This topic ties into the revitalization of USP Drug Information.
- Hot Topic: PATIENT COMMUNICATION

Dr. Marcie Bough (APhA)

- Outreach is needed to increase pharmacists' and practitioners' awareness of USP monographs.
- Hot Topic: OUTREACH TO PRACTITIONERS

Dr. Gross

- There are several definitions of compounding from USP, the FDA, and other sources.
- Hot Topic: DEFINING COMPOUNDING

Dr. Williams

- People besides compounding pharmacists and technicians are compounding medications.
- Hot Topic: WHO IS COMPOUNDING MEDICATIONS?

Dr. Gura

- Hot Topic: GLOSSARY

Ms. Bartley

Although compounding is regulated by state boards of pharmacy, there is great diversity among the states.

- State law does not allow them to reference external standards.
- Response from Ms. Miller: One state has adopted parts of <797>. That state will have to change their regulations whenever < 797> is revised.
- Response from Mr. Baker: Part of the role of PCAB and JACHO is to set voluntary national standards. States could require PCAB or JACHO certification.
- Response from Dr. Gross: The medical board of one state has adopted <797>.
- Hot Topic: STATE BOARD LINKS

Dr. Williams

- Comments have been made pertaining to facilities and environment.
- When the FDA regulates, an environmental impact results. Has a cost analysis been conducted pertaining to the impact of <797>?
- Response from Dr. Newton: Although a cost analysis has not been performed, the SCC EC Members have expertise pertaining to facilities and the environment. Facilities where fatal errors occur pay high costs as a result of those errors.
- Hot Topics: FACILITIES AND ENVIRONMENT and ECONOMIC ANALYSIS AND ACCESS



Mr. Keith St. John

- The root cause of microbial contamination associated with compounding sterile preparations needs to be studied in greater depth. An extensive literature review of 10+ years with a meta-analysis performed regarding the potential cause of associated microbial contamination that resulted in an outbreak/adverse patient outcome was proposed. This extensive review could help identify significant risk factors that may lend support and provide greater clarity to the recommendations and standards set forth in <797>.
- The CDC Intramural Research Branch could be solicited for this endeavor by USP. Having the CDC involved in this review would provide a well respected independent research arm with high success of having their findings published in peer reviewed journal(s) upon completion. The findings of this review should be published in a journal or journals that cross the disciplines of pharmacy, infection prevention & control, and patient safety.
- Hot Topic: LITERATURE REVIEW/RISK ASSESSMENTS (CDC)

Ms. Kathryn Morgan

- Private payors have required accreditation for practitioners of home infusions for 20 years.
- National organizations have data on pharmacy outcomes for patients.
- Protein based specialty biologics are sent to the home and reconstituted prior to administration. <797> ends at the point of administration.
- Guidelines are needed to instruct nurses regarding home administration.
- Hot Topics: ACCREDITATION and COMPOUNDING BY NURSES FOR HOME ADMINISTRATION

8. Next Steps and Action Items

Ms. Angela Long explained the following:

- A list of Project Teams will be developed based on the Hot Topics determined above.
- The CRX Stakeholder Organizations will be asked to propose the names of individuals to serve as members of the Project Teams.
- Project Teams are advisory to USP Expert Committees.

Ms. Long thanked participants for the informative and lively discussion.

The Compounding Stakeholder Forum adjourned at 3:35 p.m.



Appendix I Attendee List

Stakeholders

Mary C. Alexander, M.A., R.N., CRNI, CAE
 Eleni Z. Anagnostiadis, RPh
 Cynthia M. Anderson, B.S., M.S.
 Kathleen R. Anderson, Pharm.D.
 Kenneth R. Baker, Pharm., J.D.
 Judene M. Bartley, M.S., MPH, CIC
 Susan K. Bishop, M.A.
 Marcie A. Bough, Pharm.D.
 Colleen E. Brennan, R.Ph.
 Mark N. Brueckl, R.Ph., M.B.A.
 Rebecca Burke, J.D.
 David R. Chason, M.B.A.
 Tom Clark
 Middleton J. Coburn, Pharm., M.S.
 James E. Dice, Pharm.D.
 Terry A. Duncombe, R.N., MSHA
 Richard M. Fejka, R.Ph., M.S., BCNP
 John E. Fishbeck
 Jennifer Goodrum
 Gary N. Gross, M.D.
 Karl F. Gumpfer, R.Ph., BCNSP, BCPS
 Kathleen M. Gura, Pharm.D.
 Charles S. Hartig
 Karen G. Hirshfield
 David Hussong, Ph.D.
 Mike J. Johnston
 Patricia C. Kienle, R.Ph., MPA, FASHP
 L.D. King
 Elizabeth A. Kuller, B.S.
 Sandra Y. Lin, M.D.
 Robert C. Livingston, Ph.D.
 Jaclyn J. Lopez, Pharm.D.
 Jami Lucas
 Lesley Maloney, Pharm.D.
 Kent D. McClure, DVM, J.D.
 William A. McConagha
 Kenneth W. Miller, Ph.D.
 John D. Musil, Pharm.D.
 Harriett H. Olson, R.N., MNED
 Larry A. Ouderkirk, B.S.
 A. Kenneth Peterson, BBA, MHA
 Shara Rudner, R.Ph.
 Karen G. Rymers, Pharm.D.
 Sally W. Schwarz, R.Ph., M.S., BCNP
 Rebecca P. Snead, R.Ph.
 Marc H. Stranz, Pharm.D.
 Kerri A. Temple
 Alice Weissfeld
 Katherine S. Werner, M.H.A., B.S.N., CRNI
 Joanne Whitney

Representing*

INS
 NABP
 NHIA
 FDA CDER
 PCAB
 APIC
 APhA
 APhA
 NCPA
 AMCP
 JCAAI
 Maryland Board of Pharmacy
 ASCP
 FDA CDER
 PPAG
 CHAP
 APhA
 JCAHO
 IACP
 JCAAI
 PPAG
 PPAG
 NCPA
 FDA CDER
 FDA CDER
 NPTA
 ASHP
 IACP
 ASHP
 AAOA
 AHI
 NCPA
 AAOA
 ASHP
 AHI
 FDA CDER
 AACP
 ACA
 CHAP
 FDA CDER
 JCAHO
 ACA
 NASPA
 SNM
 NASPA
 NHIA
 NASPA
 ASM
 NHIA
 UCSF

* (see Appendix II for Acronym List)



USP Compounding Stakeholder Forum Planning Committee

Kasey Thompson, Pharm.D., Chair	ASHP
John Collins	ASHE
Richard Croteau, M.D.	JCAHO

USP Expert Committee Members

Loyd V. Allen, Jr., Ph.D., Chair
Lisa D. Ashworth, R.Ph.
Samuel C. Augustine, Pharm.D.
Mary B. Baker, Pharm.D.
Robin H. Bogner, Ph.D.
James F. Cooper, Pharm.D.
Gigi S. Davidson, R.Ph.
Brian J. Fichter, Pharm.D., R.Ph.
Donald J. Filibeck, Pharm.D.
Larry W. Griffin, B.S.
Deborah R. Holly, Pharm.D.
Kenneth L. Hughes, B.S.
Joseph C. Hung, Ph.D., Vice Chair
Eric S. Kastango, M.B.A.
Mary Ann F. Kirkpatrick, Ph.D.
Mark G. Klang, R.Ph., M.S.
Lawson G. Kloesel, R.Ph.
David W. Newton, Ph.D., Chair
Keith H. St. John, M.S.
Laura A. Thoma, Pharm.D.
Judith E. Thompson, R.Ph., Vice Chair
Lawrence A. Trissel, R.Ph.
James Wagner

USP Expert Committee

Compounding Pharmacy
Compounding Pharmacy
Sterile Compounding
Sterile Compounding
Compounding Pharmacy
Sterile Compounding
Compounding Pharmacy
Veterinary Drugs
Sterile Compounding
Sterile Compounding
Compounding Pharmacy
Sterile Compounding
Radiopharmaceuticals and Medical Imaging Agents
Sterile Compounding
Compounding Pharmacy
Compounding Pharmacy
Compounding Pharmacy
Sterile Compounding
Sterile Compounding
Sterile Compounding
Compounding Pharmacy
Compounding Pharmacy, Sterile Compounding
Sterile Compounding

Observers

Karen Hirshfield, R.Ph., FDA	FDA
Samia Nasr, M.S., R.Ph., FDA	FDA

USP Staff/Consultants

Tristan M. Alexander, Coordinator, Meeting and Conference Services
Margaret A. Becker, Vice President, Publications
Shawn C. Becker, M.S.N., R.N., Director, Patient Safety Initiatives, Department of Patient Safety
Arline M. Bilbo, Director, Member and Professional Relations
Kelly T. Coates, Manager, Meeting and Conference Services
Diane D. Cousins, R.Ph., Vice President, Department of Patient Safety
Elizabeth P. Cowley, Manager, MedMarx Communications
Susan S. de Mars, J.D., Chief Legal Officer
Amanda Fleming, Coordinator, Meeting and Conference Services
Joyce Hawkins, Administrative Assistant, Meeting and Conference Services
Michael Heath, Consultant, Department of Patient Safety
James W. Kelly, Ph.D., Scientist, General Chapters
Helen Kharab, Manager, Stakeholder and Organizational Affairs
Christina H. Lee, Pharm.D., Senior Scientific Associate, Department of Patient Safety
Angela G. Long, Vice President, Department of Volunteer and Organizational Affairs
Capri R. McClendon, Coordinator, Member and Professional Relations
Ruth K. Miller, J.D., Counsel
Claudia C. Okeke, Ph.D., Scientific Fellow, Department of Patient Safety
Ami Patel, Intern, Department of Patient Safety
Jennifer Payette, M.B.A, Director, Stakeholder and Organizational Affairs
John Santell, Director, Educational Program Initiatives, Department of Patient Safety



Rick G. Schnatz, Manager, Subscriber Services
Jeffrey Silverstone, Director, Sales & Marketing
Eric Sheinin, Ph.D., USP Fellow
Marilyn Storch, Patient Safety Project Coordinator, Department of Patient Safety
Marie J. Temple, Project Specialist, Executive Secretariat
Richard Wailes, M.B.A., Vice President, Sales and Marketing
Roger L. Williams, M.D, Executive Vice President, CEO and Acting Chief Standards Officer



Appendix II Organizational Acronyms

Acronym	Organization
AACP	American Association of Colleges of Pharmacy
AAOA	American Academy of Otolaryngic Allergy
ACA	American College of Apothecaries
AHI	Animal Health Institute
AMCP	Academy of Managed Care Pharmacy
APhA	American Pharmacists Association
APIC	Association for Professional Infection Control
ASHP	American Society of Health-System Pharmacists
ASM	American Society for Microbiology
ASCP	American Society of Consulting Pharmacists
CHAP	Community Health Accreditation Program, Inc.
FDA CDER	US Food and Drug Administration Center for Drug Evaluation and Research
IACP	International Academy of Compounding Pharmacists
INS	Infusion Nurses Society
JCAAI	Joint Council of allergy Asthma and Immunology
IOM	Institute of Medicine
JCAHO	Joint Commission on the Accreditation of Healthcare Organizations
NABP	National Association of Boards of Pharmacy
NASPA	National Alliance of State Pharmacy Associations
NCPA	National Community Pharmacists Association
NHIA	National Home Infusion Association
NPTA	National Pharmacy Technicians Association
PCAB	Pharmacy Compounding Accreditation Board
PPAG	Pediatric Pharmacy Advocacy Group
SNM	Society of Nuclear Medicine
UCSF	University of California, San Francisco