Department of Pharmacy POLICY AND PROCEDURE

POLICY NUMBER: 907
VERSION: 13

SUBJECT: Sterile Compounding

PURPOSE:
To ensure compounded sterile preparations (CSPs) are prepared following USP standards and board of pharmacy regulations in order to prevent harm to High Desert Regional Health Center (HDRHC) patients that could result from microbial contamination, excessive bacterial endotoxins, variability from the intended strength of correct ingredients, and chemical and physical contaminants.

POLICY:
HDRHC Pharmacy will ensure the safe and accurate preparation of compounded sterile preparation (CSPs) by ensuring compliance with USP standards and board of pharmacy regulations.

DEFINITIONS:
"Compounding" means any of the following activities occurring in a licensed pharmacy, by or under the supervision of a licensed pharmacist, pursuant to a prescription:

A. Altering the dosage form or delivery system of a drug
B. Altering the strength of a drug
C. Combining components or active ingredients
D. Preparing a drug product from chemicals or bulk drug substances

PROCEDURE:

I. License to Compound Sterile
   A. HDRHC Pharmacy shall renew sterile compounding license with board of pharmacy annually
      1. In order to renew the license the pharmacy shall
         a. Provide to the board, within 12 hours, any recall notice issued by the pharmacy for sterile products it has compounded
         b. Report to the board any adverse effects reported or potentially attributable to a pharmacy's sterile drug product within 12 hours and immediately to MedWatch program of the federal FDA
      2. Pharmacist-in-charge shall complete the compounding self-assessment biannually developed by the California Board of Pharmacy. The self-assessment shall be completed before July 1 of odd-numbered each year, within 30 days of the start of a new pharmacist-in-charge, and within 30 days of the issuance of a new pharmacy license. Completed self-assessment forms shall be kept on file in the pharmacy for 3 years after it is performed

II. Training, Evaluation, and Requalification
   A. Pharmacy staff involved in compounding shall have the skills and training required to properly and accurately perform their duties in compounding.

1. All pharmacy personnel engaging in compounding sterile injectable drug products shall have training and demonstrated competence in the safe handling and compounding of sterile injectable products, including cytotoxic agents.
2. Each workforce member involved in compounding shall have documented competence in the following areas prior to preparing CSPs:
   a. Aseptic technique.
   b. Pharmaceutical calculations and terminology.
   c. Sterile preparation compounding documentation.
   d. Quality assurance procedures.
   e. Aseptic preparation procedures.
   f. Proper hand hygiene, gowning and gloving technique.
   g. General conduct in the controlled area (aseptic area practices).
   h. Cleaning, sanitizing, and maintaining of the equipment and the controlled area

B. The pharmacist-in-charge shall be responsible for documenting initial training and competence in sterile compounding.

C. The pharmacist-in-charge shall be responsible for maintaining records of training and competence evaluation for all staff involved in sterile compounding.

D. Gloved fingertip/thumb testing, visual audit of hand hygiene and garbing, sterile technique evaluations shall be included in the initial and ongoing competency evaluations
   1. Staff members who fail competency evaluations must undergo additional training and re-evaluation.

E. All documentation of compounding training and competency shall be retained for at least three years beyond the period of employment.

III. Facilities and Equipment

A. Facility Design
   1. Containment Primary Engineering Controls (C-PEC)
      a. Sterile Compounding shall be performed within the ChemoShield or SteriShield
         i. ChemoShield- restricted access barrier system which operates under negative pressure, is externally ventilated through hepa filtered exhaust, and provides vertical laminar airflow and ISO class 5 working environment in order to minimize product, personnel, and environmental exposure and used for hazardous drug compounding.
         ii. Sterishield- Is a restricted barrier system which operates under a positive pressure that provides vertical laminar airflow and an ISO class 5 working environment that offers product protection only and therefore shall not be used for compounding hazardous drugs.
   2. Containment Secondary Engineering Controls (C-SEC)
      a. The Chemoshield is placed in a C-SEC which is a containment segregated compounding area (C-SCA) with at least 12 air exchanges per hour, that is externally vented, and that has a negative pressure between 0.01 and 0.03 inches of water column

   b. The Sterishield is placed in a C-SEC which is a C-SCA with at least 15 ACPH and contains a positive pressure
3. Sinks are available in close proximity to each C-PEC
4. Certification
   a. The SteriShield and ChemoShield shall be certified at least biannually and records shall be maintained for three years. In addition, certification of the isolators are performed whenever the device or room is relocated, altered, or major service to the facility is done.
   b. Certification shall include:
      i. Airflow testing
      ii. HEPA filter integrity testing
      iii. Total particle count testing
      iv. Smoke studies
5. Certification records
   a. Shall be reviewed by a supervising pharmacist and, if he/she is unavailable, any pharmacist who is familiar with the compounding operations of the facility
   b. Records shall be maintained for three years from the date the record was created

B. The sterile compounding area shall have a comfortable and well-lighted working environment, which includes a room temperature of 20-24 degrees Celsius (68-75 degrees Fahrenheit) or cooler to maintain comfortable conditions for compounding personnel when attired in the required compounding garb.
Maintenance and Cleaning of Facility and Equipment.
   1. Cleaning and disinfecting of the C-SCA and C-PEC shall follow policies and procedures and recorded and documented daily
   2. ChemoShield and SteriShield shall not be used if sleeves/gloves are damaged until sleeves/gloves replaced and glove/sleeve changing shall be completed as indicated below and documented
      a. Isolator sleeves shall be inspected daily for damage and replaced when damaged and/or at least once every **six months**.
      b. Isolator gloves shall be inspected daily for damage and replaced when damaged and/or at least **once a week**
   3. chemoShield and steriShield pressures shall be documented daily and any deviation noted from expected values shall be reported to supervising pharmacist and shall not be used until proper functioning is restored
   4. Pressure of segregated compounding area shall be documented daily and any deviation from expected values shall be reported to supervising pharmacist and shall not be used until proper functioning is restored.
   5. Room temperatures of segregated compounding area shall be documented daily and supervisor pharmacist shall be notified of any deviation noted from expected values
   6. Maintaining Sterility
      a. All supplies introduced into the chemoShield/steriShield shall be wiped down with 70% sterile alcohol before introduction into the pass-thru chamber.
         i. Vials and IV bags shall be removed from packaging and wiped down.

ii. Syringes, needles, and tubing shall remain in their individual packaging and only opened in the main chamber

7. Infusion pharmacist will be responsible to ensure all records are complete by the end of the shift and documentation shall be maintained for three years from the date created

IV. Personal Hygiene and Personal Protective Equipment (PPE)

A. Individuals with rashes, sunburns, sores, conjunctivitis, active respiratory infection, or other active communicable disease must be excluded from working in compounding areas until their conditions are resolved.

B. Natural nails must be kept clean and trimmed. Nail polish, artificial nails, and extenders must be removed prior to working in the compounding areas.

C. Description of PPE
   1. "Shoe covers" must be low-lint and disposable
   2. "Head covers" must be low-lint and disposable and cover the ears and forehead
   3. "Facial cover" must be low-lint and disposable
   4. "Sterile gloves" must sterile and powder-free
   5. "Chemo-safe gloves" must meet American Society for Testing and Materials (ASTM) standard D6978 (or successor) and must be powder-free.
   6. "Gowns" must be non-cotton, low-lint, and disposable
   7. "Chemo gowns" must be disposable and shown to resist permeability by HD's, must be closed in the back, long sleeved, and have closed cuffs.

D. Prior to entering one of the segregated compounding areas (IV or Chemo room) and compounding sterile preparations:
   1. Staff members must remove any items not necessary for compounding, including:
      a. Personal outer garments
      b. Cosmetics
      c. Jewelry that will be exposed and interfere with the effectiveness of personal protective equipment (PPE)
      d. Cell phones and headphones
   2. Staff members must don PPE and enter the segregated compounding area in the following sequence:
      a. Don head cover (covering ears and forehead) and hair facial cover (if applicable)
      b. Removing debris from underneath fingernails, if present, using a nail cleaner under warm running water
      c. Don pair of shoes covers
      d. Enter IV/Chemo room
      e. When entering the Chemo Room, don 2nd pair of shoe covers prior to crossing line of demarcation
      f. Wash hands with unscented soap and water for at least 30 seconds
      g. Dry hands and forearms to the elbows completely with low-lint disposable wipes
      h. Don gown, ***a chemo safe gown must be used if entering the chemo room***
      i. Apply alcohol-based hand rub with sustained microbial activity

j. Allow hands to dry thoroughly and don sterile gloves, ***sterile chemo safe gloves shall be used in the chemo room***.
k. Gloves must be applied before handling anything in the IV/Chemo room.
l. Apply sterile 70% IPA alcohol to gloves prior to compounding and whenever a nonsterile surface is touched (i.e. vials, counter tops, chairs, etc.)
m. When working in the restricted access barrier system (RABs) (i.e. Chemoshield or Sterishield) sterile gloves must be placed over the gauntlet gloves. ***Sterile chemo safe gloves shall be used in Chemoshield.***

E. Frequency of PPE change and exiting the IV room
1. Sterile and chemosafe gloves must be changed every 30 minutes when handling hazardous drugs or less if damaged or visibly soiled
2. Chemo safe gowns must be changed every 3 hours or less if damaged or visibly soiled
3. Gowns may be retained and reused until the end of the work day but must be changed if damaged or visibly soiled
4. Immediately change PPE if damaged
5. All PPE must be removed before exiting the compounding area:
   a. Top pair of shoe covers must be removed and the foot with 2nd inner shoe cover will be placed on the floor across the line of demarcation.
   b. Once employee is in the designated area within the line of demarcation the 2nd shoe cover along with other PPE shall be removed and discarded.
6. Shoe covers, hair and facial covers, and gloves shall never be reused
7. All PPE shall be discarded in the appropriate bins (see Pharmaceutical Waste Management Policy)
8. After removing chemo-safe gloves, handwashing must be performed
9. Hand washing must be performed before resuming sterile compounding.

V. Recordkeeping for CSPS

A. Drug products and components used to compound drug products shall be obtained from reliable suppliers. Records of the proper acquisition, storage, and destruction of chemicals, bulk drug substances, drug products, and components used in compounding and these records shall be readily retrievable for at least three years from the date the record was created.
B. The pharmacy shall only prepare a sterile compounded drug product with a valid prescription for an individual patient.
C. Records of processing the prescription must be kept on file for at least three years.
D. A drug product shall not be compounded until the pharmacy has first prepared a written master formula record that shall be reviewed by a pharmacist before being used and includes the following elements
1. Active ingredients to be used
2. Inactive ingredients to be used
3. Process and/or procedure used to prepare the drug
4. Quality reviews required at each step in preparation of the drug
5. Post-compounding process or procedures required, if any

6. Expiration dating requirements

E. Where a pharmacy does not routinely compound a particular drug product, the master formula record for that product may be recorded on the prescription document itself. Notify supervising pharmacist if no record is found.

F. To prepare a compounded drug the following shall be documented
   1. The date the drug product was compounded
   2. The identity of the pharmacy personnel who compounded the drug product
   3. The identity of the pharmacist reviewing the final drug product
   4. The quantity of each component used in compounding the drug product
   5. The manufacturer and lot number of each component. If the manufacturer name is demonstrably unavailable, the name of the supplier may be substituted
   6. The equipment used in compounding the drug product
   7. Prescription number
   8. The expiration date of the final compounded drug product
   9. The quantity or amount of drug product compounded

G. When compounding sterile injectable products for future use must make and keep records indicating the name, lot number, amount, and date on which the products were provided to a prescriber

H. Records shall be maintained for at least three years from the date the record was created

VI. Beyond Use Dating:

A. Beyond use date is determined by a date/time when a product cannot be used and must be discarded

B. Compounding Sterile Preparation (CSP)
   1. A maximum BUD of 12 hours or less
      a. A Shorter BUD shall be used for products if suggested by the manufacturer due to stability or if indicated in the master formula record

C. Single Dose Container
   1. A container of sterile medication for parental administration that is designated for use with a single patient as a single injection/infusion and typically does not contain a preservative
   2. BUD is 6 hours or less if specified by the manufacturer from the date/time opened if opened, sealed, and maintained in an ISO class 5 or clear air environment

D. Multi Dose Containers
   1. A Container of sterile medication for parental administration that is designed to contain more than one dose of the medication
   2. BUD is 28 days or less if specified by the manufacturer from the date/time opened if opened and sealed in an ISO class 5 or cleaner air environment

E. Pharmacy Bulk Package
   1. A conventionally manufactured sterile product for parenteral use that contains many single doses intended for use in a pharmacy admixture program.
   2. BUD is specified by the manufacturer and must be used only in an ISO Class 5 or better environment

F. Ampuls
   1. Use immediately after opening and passing through a sterile particulate filter

G. The BUD must be recorded on vials/preparation once opened/prepared and initialed by personnel. If no BUD is found a product a product must be considered inappropriate for use and discarded

VII. Labeling

A. A pharmacist shall not dispense a CSP except with a label that meets the following requirements
   1. The generic name(s) of the principal active ingredients (s), including the concentrations of ingredients contained in the sterile injectable products
   2. Directions for the use of the drug (include route and rate, when applicable)
   3. Patient name
   4. Prescriber name
   5. The date of issue
   6. The name and address of the pharmacy
   7. Prescription number
   8. The strength of the drug or drugs dispensed
   9. The quantity of the drug or drugs dispensed
   10. The BUD date
   11. Total volume
   12. Telephone number of the pharmacy
   13. Instructions for storage and handling.
   14. A statement that the drug has been compounded by the pharmacy shall be included on the container or on the receipt provided to the patient
   15. All cytotoxic agents shall bear a special label which states “Chemotherapy - Dispose of Properly” Or “Hazardous-Dispose of properly”.

VIII. Compounding Policies and Procedures

A. These policies and procedures shall be reviewed annually and updated whenever changes are implemented by the pharmacist-in-charge.

B. Any change in compounding duties or policies and procedures shall be communicated to all pharmacy staff via a memo and a signed log shall be maintained to document this communication.

IX. Compounding Quality Assurance

A. The pharmacist performing or supervising compounding is responsible for the integrity, potency, quality, and labeled strength of a compounded drug product until it is dispensed
   1. “Integrity” means retention of potency until the expiration date noted on the label.
   2. “Potency” means active ingredient strength within +/- 10% of the labeled amount.
   3. Quality” means the absence of harmful levels of contaminants, including filth, putrid, or decomposed substances, and absence of active ingredients other than those noted on the label.
   4. “Strength” means amount of active ingredient per unit of a compounded drug product

B. Pharmacy personnel shall only use dated medication to compound sterile products. Pharmacy personnel shall ensure that the beyond use date used for the final compounded product does not come after any products used in compounding the final product have expired.

1. Beyond use dates used for compounded drugs must be documented in the Master Formula Record. Beyond Use Dates for each compounded product shall be reviewed and researched before being implemented in the Master Formula Record.

C. Gloved finger trip testing, media fill testing, and competency in aseptic technique shall be completed yearly
D. Nonviable and viable air testing, surface sampling, and hood certification testing shall be completed at least biannually
E. Each compounded product requires a final check from a pharmacist to check for any particulate matter or signs of incapability
F. Potency and quality testing shall be done on a yearly basis on a compounded sterile preparation
G. All compounded drug products shall only utilize drug products received by a reliable supplier and maintained in its proper storage conditions.
H. All compounded CSP's require a preproduction visual confirmation of the amount of each ingredient (prior to addition to final container).

X. Recalls of Compounded Sterile Preparations

A. The Pharmacy shall contact the recipient patient, the prescribing physician, and the board as soon as possible within 12 hours of the recall notice if the exposure to the recalled drug may cause serious adverse health consequences or death.

Approved By: Romina Panoussi (PHARMACY SERVICES CHIEF II)	
Date: 06/07/2018	Original Date: 08/01/2013
Reviewed: 06/07/2018	Next Review Date: 06/07/2019
Supersedes:	