Pharmaceutical Waste Program for Inpatient Pharmacy

PROVIDENCE
Health & Services
Portland Service Area
Pharmacy Leadership Team
What is Pharmaceutical Waste?

- Pharmaceutical waste is waste generated through IV preparation, compounding, spills or breakage, partially used vials syringes, and IV’s, and outdated products.
- Pharmaceutical agents (solid, liquid, or gas) that can pose a substantial hazard to human health or the environment when not properly managed are deemed hazardous.
- These agents have been characterized and identified by:
  - Regulatory Agencies (EPA, OSHA, DOT)
  - Professional consensus groups (NIOSH, NTP)
Hazardous Waste in Pharmacy

- Pharmacy will now sort pharmaceutical waste designated as regulated and/or hazardous from that which is non-regulated and not described as hazardous.
- New bins will be utilized within pharmacy in order to differentiate this waste for transport and appropriate disposal once it leaves the pharmacy.
Why Separate Pharmaceutical Waste?

- **Employee Safety**
  - To minimize risks associated with managing hazardous medications

- **Environmental Safety**
  - To keep pharmaceutical waste out of our groundwater and landfills and reduce potential harmful effects to our environment

- **Regulatory Compliance**
  - EPA regulations regarding hazardous waste management are increasingly being applied to hospitals and pharmacies.
Which Drugs are Hazardous?

- Those defined by the Environmental Protection Agency
  - Resource Conservation and Recovery Act (RCRA) creates lists of regulated waste:
    1. Specifically listed waste
       - P-list = “acutely toxic” chemicals
       - U-list = “toxic” chemicals
    2. Waste exhibiting particular hazardous characteristics:
       - D-list = ignitable, corrosive, containing heavy metal (i.e. mercury, silver) or reactive
P-Listed Waste - “acutely toxic”

- Arsenic Trioxide
- Nicotine
- Physostigmine
- Warfarin

- “Discarded products” or mixtures containing at least 3% of these P-listed materials are regulated as hazardous waste.
- Also, any **empty containers** (vials, etc) formerly holding P-listed waste must also be managed as hazardous waste.
  - Exception: wrappers from oral agents (nicotine, warfarin) can go in trash
- Waste must be incinerated at licensed facility.
U-Listed Waste - “toxic”

- ChloraHydrate
- Chlorambucil
- Cyclophosphamide
- Melphalan
- Phenol
  - Cepastat Lozenges
  - Chloraseptic Spray
- Reserpine
- Selenium Sulfide
- Mitomycin or Daunomycin

- “Discarded products” or mixtures containing at least 10% of these U-listed materials are regulated as hazardous waste.
- Empty containers are not regulated (containers do not need to be rinsed, just “empty by conventional means”).
- Waste must be incinerated at licensed facility.
D-Listed Waste

- Contain mercury preservative:
  - Blephamide
  - Neo/Poly/HC
  - Neo/Poly/Gra
  - Flurbiprofen
- Contain other heavy metals:
  - Chromium
  - Thermazene
  - Silver Sulfadiazene
- Contain m-cresol:
  - Insulin
  - Forteo
  - Levemir
- Acetone (ignitable)

- Waste containing these “toxic characteristics” have potential to leach from a landfill into the groundwater.
D-Listed “Ignitable”

These materials have a flash point less than 140°F or are mixed with more than 24% alcohol

- ALL AEROSOLS
- Alcohol
- Alprostadil
- Aluminum Chloride Soln
- Ammonia
- Androgel-Testosterone Gel
- Benzoin
- Betamethasone
- Calcipotriene
- Ciclopirox Soln
- Clindamycin Soln
- Clobetasol Propionate
- Collodion
- Dexamethasone
- Dimethyl Sulfoxide
- Fluocinonide Soln
- Hurricaine Gel
- Mastisol
- Podofilox Gel
- Podocon
- Prednisone
- Ritonavir Soln
- Tacrolimus
D-Listed “Corrosive” or “Oxidizer”

- Potassium Hydroxide (alkaline)
- Trichloracetic Acid (acid)
- Expired/unused silver nitrate (oxidizer)

- Corrosive wastes are liquids with pH less than 2 or greater than 12.5.
- Oxidizers can react with other hazardous materials when mixed together.
- Because these materials are not compatible with ignitable liquids, they cannot be collected in the same bin as other hazardous waste.
Other Hazardous Drugs

• RCRA went into effect in 1976
  ▫ Drugs such as chemotherapy agents were not reviewed
  ▫ Professional consensus groups have developed standards to identify additional hazardous drugs based on recommendations from organizations including:
    • OSHA (Occupational Safety and Health Administration)
    • NIOSH (National Institute for Occupational Safety and Health)
    • National Toxicology Report on Carcinogens

• PharmEcology: A company that aids in meeting EPA regulations and following recommendations from consensus groups
  • Provided Providence with additional hazardous drugs
  • List is extensive and will be provided on-site
PharmEcology hazardous drugs

- Chemotherapy drugs
- Endocrine disrupters
- Pharmaceuticals listed as potential carcinogens
- Immuno-suppressives
- Marine pollutants
- Reproductive toxins not otherwise regulated
- Drugs listed on NIOSH Hazardous Drug Alert
- Drug formulations with LD50 less than 50 mg/kg

- Doxorubicin
- Cisplatin
- Dacarbazine
- Climara
- Estrogen
- Oxytocin
- Azathioprene
- Ribavirin
- Deferoxamine
- Ketamine
- Quelicin
- Clotrimazole
- And more...
Pharmaceutical Waste Containers

- Providence will utilize 5 different containers to segregate waste
- All pharmaceutical waste must be appropriately sorted into one of these bins

Proper waste management:
- Protects the environment
- Protects waste handlers’ health and safety
- Prevents mixing of incompatible materials
- Maintains regulatory compliance
Pharmaceutical Waste and Disposal

- Toxic & Hazardous Waste; Bulk Chemo; Empty P-list vials
- Aerosols and Corrosive liquids
- Trace Chemo
- Non-regulated drugs, Empty vials
- Sharps, Empty and partially full Syringes

UNUSED syringes containing toxic drugs & USED P-list syringes
Black Bin #1 Waste: (no sharps)

- P-listed drugs
  - Including partially full or empty containers (excluding wrappers for oral dosage forms)
- D-listed drugs
- U-listed drugs
- Ignitable liquids
- **Bulk chemotherapy**
- PharmEcology hazardous drugs
Black Bin #2 Waste:  (no sharps or syringes)

- Aerosols – pressurized and ignitable
- Corrosive acid/bases
  - Trichloroacetic acid
  - Potassium hydroxide solution
- Oxidizers
  - UNUSED Silver nitrate products only (used silver nitrate goes in blue bin)
- NO SHARPS
Blue/White Bin Waste: (no sharps or syringes)

- All non-regulated drugs not identified as hazardous
  - Includes partially full and empty glass and plastic vials
    - **Exception:** Vials that contain the 4 P-listed drugs. These go in Black Bin #1
- **NO SHARPS OR SYRINGES**

- **Note:** you may recycle empty glass bottles as long as they are TRULY EMPTY

• Includes partially full and empty glass and plastic vials
• Exception: Vials that contain the 4 P-listed drugs. These go in Black Bin #1

• NO SHARPS OR SYRINGES

• Note: you may recycle empty glass bottles as long as they are TRULY EMPTY
Yellow Bin Waste:  (no sharps or syringes)

- **Trace Chemo Only**
  - Empty vials, tubing, syringes, and iv bags, as well as gowns, gloves, wipes, and other items contaminated with less than 3% of chemotherapy drug.
- Bulk chemo will now go in black bin #1
- Empty syringes and sharps go in red sharps containers.
Red Sharps Containers

- **ALL** empty syringes
- **ALL** syringes that have been used even if they contain residual drug.

**Exceptions:**
- Syringes containing UNUSED HAZARDOUS drugs (expired medication) must go in **black** sharps container.
- Syringes used for P-list drugs must go in **dual waste** container.
Sewer System

- IV’s containing sterile water, sugar/salt solutions (i.e. NS, LR, D5LR, D5NS20K, KCl)
- **All** controlled substances

*Only non-hazardous IV solutions and DEA controlled substances go down the drain*
Identifying Black Bin #1 Drugs

- There will be a black dot placed on the shelf or container in which the drug resides within our inventory.
- There will be a printed, alphabetized list attached to the wall near the bin for reference.
- Other containers will have a label to help identify what is to be placed in them.
Questions?

• See your site-specific coordinator for more information