All on board for change: Implementing a sustainable, hospital-wide Rx waste management program

Presented by
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Paulette O’Hara
Biographical Overview

Cristina Indiveri, M.S.
Support Services Administrator, Yale-New Haven Hospital

- Under Cristina’s direction, YNHH is supported in the development of ongoing sustainability initiatives, assessment and data collection, goal setting and creating a culture of environmental excellence.
- Cristina’s expertise lies in the areas of implementing sustainable operations and oversight of support areas for the hospital.
- Cristina serves as the Vice President of the Environmental Advisory Group for VHA, is a member of the American College of Healthcare Executives and earned her M.S. at Georgetown University.

Paulette O’Hara
Major Account Executive, Stericycle

- 23 years of health care industry experience.
- Paulette’s expertise lies in waste educating and managing compliant practices, including program design for hospital staff members and affiliates.
- Paulette has developed and performed training programs for hospital staff in the areas of proper segregation of all waste streams including bio-hazardous, pharmaceutical recycling and hazardous waste.
Objective
Comprehensive effort to engage employees to remove waste, reduce unnecessary expenditures, eliminate unnecessary work and re-work, streamline processes, and improve efficiency throughout Yale-New Haven Hospital

Complimentary Structures

Employee Engagement Subcommittee
- Solicit and respond to employee suggestions
- Implement approved employee suggestions
- Host employee rewards celebrations

Waste Reduction, Efficiency and Sustainability Subcommittee
- Eliminate waste and improve efficiency in six targeted organization-wide areas
- Collaborate with Hospital and System counterparts

WorkSMART Program Steering Committee
Employee Suggestion Trend

573 suggestions have been submitted by Yale-New Haven Hospital employees on the WorkSMART portal between January 1, 2012 and December 9, 2013.
WorkSMART Focus Areas

- Traffic Demand Management
- Operating Room Reprocessing
- Printing and Paper
- Energy
- Waste
- Courier Services
- Printing and Paper
Learning Objectives

• Outline pharmaceutical waste disposal regulatory requirements and associated risks of violating standards
• Examine how to effectively educate and on-board cross-functional teams on pharmaceutical waste management
• Learn how to successfully implement a pharmaceutical waste management program
• Detail methods to minimize risk and stay ahead of the compliance curve
Why Is This Important?

- Trace amounts of pharmaceuticals were measured in the drinking water of at least 46 million Americans (Associated Press, 2008)
- Hospitals are a major source of pharmaceutical use
- Inspectors have begun targeting hospitals’ pharmaceutical waste programs
- Risk of potential fines and negative publicity are real
- New EPA proposal will be very specific to pharmaceutical waste regulations for healthcare
What do the Numbers Tell Us?

• In 2012 *Pharmacy, Purchasing & Products* surveyed 416 hospitals and found that:
  - 92% of pharmacy directors placed high priority on pharmaceutical waste management
  - 71% of pharmacists had a program in place for RCRA hazardous pharmaceutical waste
  - 54% felt their program was fully compliant, 35% partially compliant and 11% non-compliant
Why is implementing a pharmaceutical waste disposal program such a challenge?
Challenge #1: Stakeholder Buy-In

- Key Stakeholders:
  - Nurse Managers and Nurses
  - Operation Room Department Managers
  - Emergency Room Staff
Key Stakeholders

**NURSING / PATIENT CARE**
- Review On-Floor Waste Identification
- Proper Collection and Segregation of Pharmaceutical Waste

**ADMINISTRATION**
- Budget Approval
- Addresses Multi-Departmental Challenges
- Emphasizes the Importance of Successful Program to Entire Facility / System

**EDUCATION**
- Facilitate Initial Training at “Go Live”
- Maintains Training Materials
- Maintains Training Records
- Manages Ongoing Education
- Integration of Training Modules into New Employee Orientation
- Integrate Training Materials in the Computer Based Learning System

**PHARMACY**
- Submits Initial Formulary Data for Characterization
- Establishes and Maintains Internal Waste Identification System
- Manages Pharmaceutical Waste Returned to Pharmacy
- Submits Formulary Additions
- Review Controlled Substance Policy and Procedure
- Review Chemotherapy Waste Policy and Procedure
- Determine Management Process of Samples Within the Hospital

**INFECTION CONTROL**
- Approve the Placement of Pharmaceutical Waste Collection Containers
- Approve Disposal Procedure of Pharmaceutical Waste from Isolation Rooms
- Review Procedure for Managing Pharmaceutical Waste Remaining in a Syringe

**RADIOLOGY**
- Proper Collection and Segregation of Pharmaceutical Waste

**ANESTHESIA / OPERATING ROOM MANAGER**
- Proper Collection and Segregation of Pharmaceutical Waste

**EMERGENCY DEPARTMENT**
- Proper Collection and Segregation of Pharmaceutical Waste

**PROGRAM CHAMPION / PROJECT LEAD**
- Typically a Dual Role of Safety / Pharmacy
- Communication Point Person
- Supports Program
- Multi-Departmental Liaison
- Coordination of Implementation Activities

**FULL PARTICIPATION LEADS TO SUCCESSFUL AND TIMELY PROGRAM ROLLOUT**
- Achieves Compliance with Federal EPA, DOT and State Regulations
- Achieves Compliance with Joint Commission Standards
- Maximizes Awareness, Accuracy and Protection of the Environment
- Minimizes Disruption to the Existing Duties of Healthcare Staff
- Reduces Corporate / Institutional Liability

**SAFETY / ENVIRONMENTAL SERVICES / HOUSEKEEPING / FACILITIES**
- Container Management and Replacement in Satellite Accumulation Areas (SAA)
- Management and Inspections of Central Accumulation Area (CAA)
- Coordination of Waste Shipments
- Responsible for the EPA Requirements
- Responsible for DOT Requirements
No single department is responsible for managing all hospital waste streams
Waste affects everyone
Challenge #2: Proper Staff Training

- All waste generators must be trained
- Lack of experience causes hospitals to classify all waste as hazardous—a very costly decision
- Staff needs to be trained on differences between hazardous and bio-hazardous waste
- Training must be conducted annually with reinforcement multiple times per year
- OSHA, DOT and EPA require additional training
Identify RCRA Hazardous Pharmaceuticals in Formulary

- **Listed**
  - “P” or “U” list supplied by EPA
  - 1980 was the last year updates were made to list
  - Captures only 25% of hazardous drugs

- **Characteristically hazardous**
  - Four categories defined by Department of Energy and Environmental Protection
    - Ignitability, corrosivity, reactivity and toxicity
Challenge #3: Proper Segregation

• Least expensive option is to segregate hazardous from non-RCRA hazardous
  ▪ Proper segregation helps manage costs
  ▪ Understand environmental impact
  ▪ Place containers conveniently so implementation is easily adopted
What is Pharmaceutical Waste?

- Pharmaceutical waste is a medication that is:
  - No longer used for its intended purpose
  - To be discarded
- Pharmaceutical waste is LEFTOVER or UNUSED medication contained in:
  - Vials
  - IV’s with attached tubing
  - Oral medications
  - Ointments and creams
  - Physician samples
What Drugs Go Where?

• Hazardous drugs go into the BLACK RCRA container (EPIC will give instruction)
  • Examples:
    ▪ Nicotine
    ▪ Nitroglycerin
    ▪ Warfarin

• Non-hazardous drugs go into the BLUE container (no instruction in EPIC)
  • Examples:
    ▪ Abilify
    ▪ Clozapine
    ▪ Ibuprofen
Waste Segregation

- **Reduce Medical Waste**: 6% - 13%
- **Reduce Solid Waste**: 56% - 81%
- **Increase Recycling**: 6% - 37%
## Price Difference in Disposal Methods

<table>
<thead>
<tr>
<th>Waste Stream</th>
<th>Solid Waste Cost per Ton</th>
<th>Recycled Cost per Ton</th>
<th>RMW Cost per Ton</th>
<th>Hazardous Waste Cost per Pound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>$126</td>
<td>$90</td>
<td>$1015</td>
<td>$3.10 ($6200/ton)</td>
</tr>
</tbody>
</table>
Challenge #4: Proper Disposal

- Locate a central accumulation area for pharmaceutical waste
- Dual waste is the most expensive option, costing up to 50% more when bio-hazardous and hazardous are combined
- Incineration of waste at a facility for hazardous waste is the next most expensive option
- Environmental regulations have limited the number of incinerators in the U.S.
How has Yale-New Haven Hospital effectively overcome these challenges facility-wide?
Yale-New Haven Hospital

- Two New Haven campuses:
  - York Street Campus
  - Saint Raphael Campus

- Yale-New Haven Children’s Hospital
- Yale-New Haven Psychiatric Hospital
- Smilow Cancer Hospital at Yale-New Haven

- Founded in 1826
- Fourth oldest voluntary hospital and one of the largest hospitals in the U.S.
- Primary teaching hospital of Yale University School of Medicine
- Magnet Nursing designation
- 12,000 employees
- 2,500 volunteers
- 1,541 inpatient bed capacity
Pharmaceutical Program

- Results in significant cost savings
- Complies with waste disposal regulations
- Health and safety of patients, employees, community
- Sustainable environment and preservation of resources
Rx Program Highlights

• Implemented reusable containers to reduce waste
• EPIC displayed waste disposal method to encourage proper waste segregation
• Changes in container location
  ▪ All containers are located in centralized areas
• New process for returning incompatible hazardous medications to pharmacy
Waste Disposal Guidance

- The hospital formulary was analyzed to determine the proper disposal method
- EPIC instructions emphasize proper segregation of hazardous drugs
  - Example: “Dispose leftover medication in the black hazardous waste container”
- Non-hazardous items do not have EPIC instructions as they make up the majority of the formulary
Incompatible Hazardous Rx Waste

- Incompatible Hazardous Pharmaceuticals
  - Rx waste CANNOT be placed in the same container with other Rx waste because it may result in a dangerous chemical reaction
- EPIC informs if a medication is incompatible by saying “seal in a ziploc bag and return to the Pharmacy”
- Example items that cannot go into the containers on the unit:
  - Examples: Ammonia aromatic, Glycopyrrolate, Inhalers, Pyridoxine HCL (9 medications total)
<table>
<thead>
<tr>
<th>Message</th>
<th>Waste types</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without instructions in EPIC</td>
<td>Non-hazardous waste</td>
<td>Dispose waste in blue container</td>
</tr>
<tr>
<td>With instructions in EPIC</td>
<td>Hazardous waste</td>
<td>Dispose waste and/or wrappers in black container according to instructions in EPIC</td>
</tr>
<tr>
<td>With instructions in EPIC</td>
<td>Incompatible waste</td>
<td>Seal in ziploc bag &amp; return to Pharmacy via “out bin” (not tube system)</td>
</tr>
</tbody>
</table>
## Segregating Rx Waste

<table>
<thead>
<tr>
<th>NON-HAZARDOUS WASTE BIN</th>
<th>HAZARDOUS WASTE BINS</th>
<th>ADDITIONAL WASTE BINS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Non-Hazardous Waste Disposal Bin</td>
<td>Black RCRA Waste Disposal Bin</td>
<td>Yellow Trace Chemo Disposal Bin</td>
</tr>
<tr>
<td><strong>DISPOSAL LOCATION</strong></td>
<td><strong>PBKC</strong>: Place unused P-listed medication AND any packaging/containers in black bucket. (Note in Epic.)</td>
<td><strong>BKC</strong>: Place unused D- or U-listed medication into black bucket. (Note in Epic.)</td>
</tr>
<tr>
<td><strong>INSTRUCTIONS</strong></td>
<td><strong>Place trace/empty chemotherapy agents in Yellow bucket.</strong></td>
<td><strong>SP, SPC, SPO, SPLP</strong>: Place unused characteristic waste in resealable bag and place in the Pharmacy Out Bin. (Note in Epic)</td>
</tr>
<tr>
<td><strong>INSTRUCTIONS</strong></td>
<td><strong>Place biohazardous waste into red bags. See hospital policy for more information.</strong></td>
<td><strong>Place all empty syringes, with or without a needle into sharps containers.</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Antibiotics</strong></td>
<td><strong>Throw non-sharps items that are empty, non-hazardous, and non-infectious into the regular trash.</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Tylenol</strong></td>
<td><strong>Flush controlled substances and maintenance IVs down the drain.</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Aspirin</strong></td>
<td><strong>No Sharps</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>IV with medication left. Keep tubing attached.</strong></td>
<td><strong>Sharps (Syringe/Ampule) Containing Medications Only</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Creams and ointments capped.</strong></td>
<td><strong>Empty Sharps Only</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Med-soaked sponges or paper towels</strong></td>
<td><strong>Not Applicable</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Pills and tablets</strong></td>
<td><strong>No Sharps</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Vials and medication</strong></td>
<td><strong>Empty Sharps Only</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Warfarin</strong></td>
<td><strong>No Sharps</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Nicotine</strong></td>
<td><strong>Empty Sharps Only</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Arsenic Trioxide</strong></td>
<td><strong>Not Applicable</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Epinephrine</strong></td>
<td><strong>No Sharps</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Nitroglycerine</strong></td>
<td><strong>Empty Sharps Only</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Physostigmine</strong></td>
<td><strong>No Sharps</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Leftover opened, partially used chemotherapy</strong></td>
<td><strong>Empty Sharps Only</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Amyl Nitrate</strong></td>
<td><strong>No Sharps</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Decavac</strong></td>
<td><strong>Empty Sharps Only</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Multivitamins</strong></td>
<td><strong>Not Applicable</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Digoxin</strong></td>
<td><strong>No Sharps</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>All Insulin</strong></td>
<td><strong>Empty Sharps Only</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Ocuvite</strong></td>
<td><strong>No Sharps</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Selenium Sulfide</strong></td>
<td><strong>Empty Sharps Only</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Other identified meds</strong></td>
<td><strong>No Sharps</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Empty vials</strong></td>
<td><strong>Empty sharps, as long as they have not come in contact with a P-listed agent</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Empty syringes</strong></td>
<td><strong>Fentanyl patches (sticky ends folded together)</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Gowns</strong></td>
<td><strong>Broken or unbroken glass contaminated with blood or body fluid</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Gloves</strong></td>
<td><strong>Empty drug vials (non P-listed)</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Wipes</strong></td>
<td><strong>Controlled substances</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Goggles</strong></td>
<td><strong>Maintenance IV solutions containing any/all of the following:</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Empty IV with tubing</strong></td>
<td><strong>Potassium Chloride</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Aerosols</strong></td>
<td><strong>Potassium Phosphate</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Inhalers</strong></td>
<td><strong>Calcium</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Corrosives</strong></td>
<td><strong>Sodium Bicarbonate</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Glacial Acetic Acid</strong></td>
<td><strong>Dextrose</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Glycopyrrolate</strong></td>
<td><strong>Sodium Bicarbonate</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Sodium Hydroxide</strong></td>
<td><strong>Dextrose</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Oxidizers</strong></td>
<td><strong>Sodium Bicarbonate</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Potassium Permanganate</strong></td>
<td><strong>Uncontaminated Gloves</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Unused Silver Nitrate</strong></td>
<td><strong>Empty sharps</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Blood and blood product in plastic containers</strong></td>
<td><strong>Med wrappers</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Body fluids (e.g., hemovacs, pleurevacs, wound drains)</strong></td>
<td><strong>Paper towels</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Blood-saturated materials</strong></td>
<td><strong>Uncontaminated Gloves</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Bloody suction canisters</strong></td>
<td><strong>Empty sharps</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Blood transfusion tubing and bag</strong></td>
<td><strong>Med wraps</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Chest tubes</strong></td>
<td><strong>Paper towels</strong></td>
</tr>
<tr>
<td><strong>EXAMPLES</strong></td>
<td><strong>Controlled substances</strong></td>
<td><strong>Uncontaminated Gloves</strong></td>
</tr>
</tbody>
</table>

**SHARPS**

- No Sharps
- Sharps (Syringe/Ampule) Containing Medications Only
- Empty Sharps Only
- Not Applicable

**CONTROLLED SUBSTANCES**

- No Sharps
- Empty Sharps Only
- No Sharps
- Not Applicable
Hospital-Wide Communication

- Huddle on each and every unit
- Daily classroom learning
  - Partnered with waste vendor to ensure new educational session every hour for a week
- E-mail notification
- Newsletter article
- System-wide health stream course
Sustainability Champions

Wanted: Sustainability Champions

Yale-New Haven Hospital’s Work Smart committee is calling for volunteers to act as “sustainability champions.” These employees will motivate fellow co-workers to take environmentally friendly actions, set an example for peers and help develop ways to contribute to the hospital’s sustainability efforts.

Sustainability Champions will meet monthly on a day and time to be determined. Employees who would like to volunteer should contact Cristina DeVito (Cristina.DeVito@ynhh.org), YNHH sustainability coordinator, with their name, department and contact information.

Sustainability Champions are employees who:

• Develop and implement methods to contribute to YNHH’s sustainability efforts
• Motivate fellow co-workers to take environmentally friendly actions
• Set an example for peers
• Implement a Green Office Program modified from Harvard University
• Early adopters of sustainable policies
Partnering with Vendors

• Created strategic partnership with waste vendor to create win-win scenarios
• One team working together; no finger pointing, no fault-finding
• Utilized all communication channels for education as a team
  ▪ E-mail, hospital newsletter, posters/signs, staff meetings, huddles, screen savers
  ▪ Emphasize employee safety, regulatory impacts, sustainability and cost
  ▪ Perform random and routine audits to increase accountability
• Provide routine feedback and opportunities for improvement
Sustaining the Rx Program

- Waste audits were performed daily, weekly and monthly
- Units were provided immediate feedback
  - Successes were outlined
  - Opportunities for improvement were depicted as well as photos of current state
- Three citations from audit resulted in action plan
  - Manager was asked to put together an action plan that would be presented to Steering Committee
Results

• Safety and Quality
  ▪ Clear waste segregation program based on “best practice” model
  ▪ Sustainable waste program to create a healthier community and an environment

• Cost Savings
  ▪ In access of $100,000 based on proper segregation

• Regulatory and Legal Concerns
  ▪ Pharmaceutical waste containers will be removed from individual patient rooms to ensure that they are under the control of the operator
Lessons Learned

• Create a burning platform to encourage change
• Emphasize that all employees are responsible for managing waste
• Utilize your champions
• Partner with a reliable vendor
• Provide continuous feedback
  ▪ Successes
  ▪ Opportunities for improvement
Contact Information

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