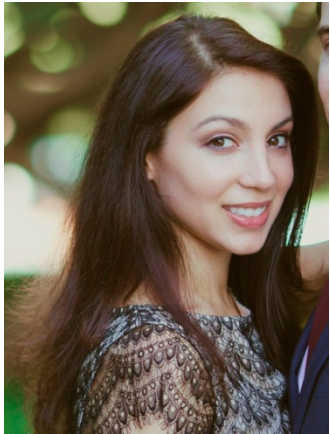




All on board for change: Implementing a sustainable, hospital-wide Rx waste management program

Presented by
Cristina Indiveri, M.S.
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.



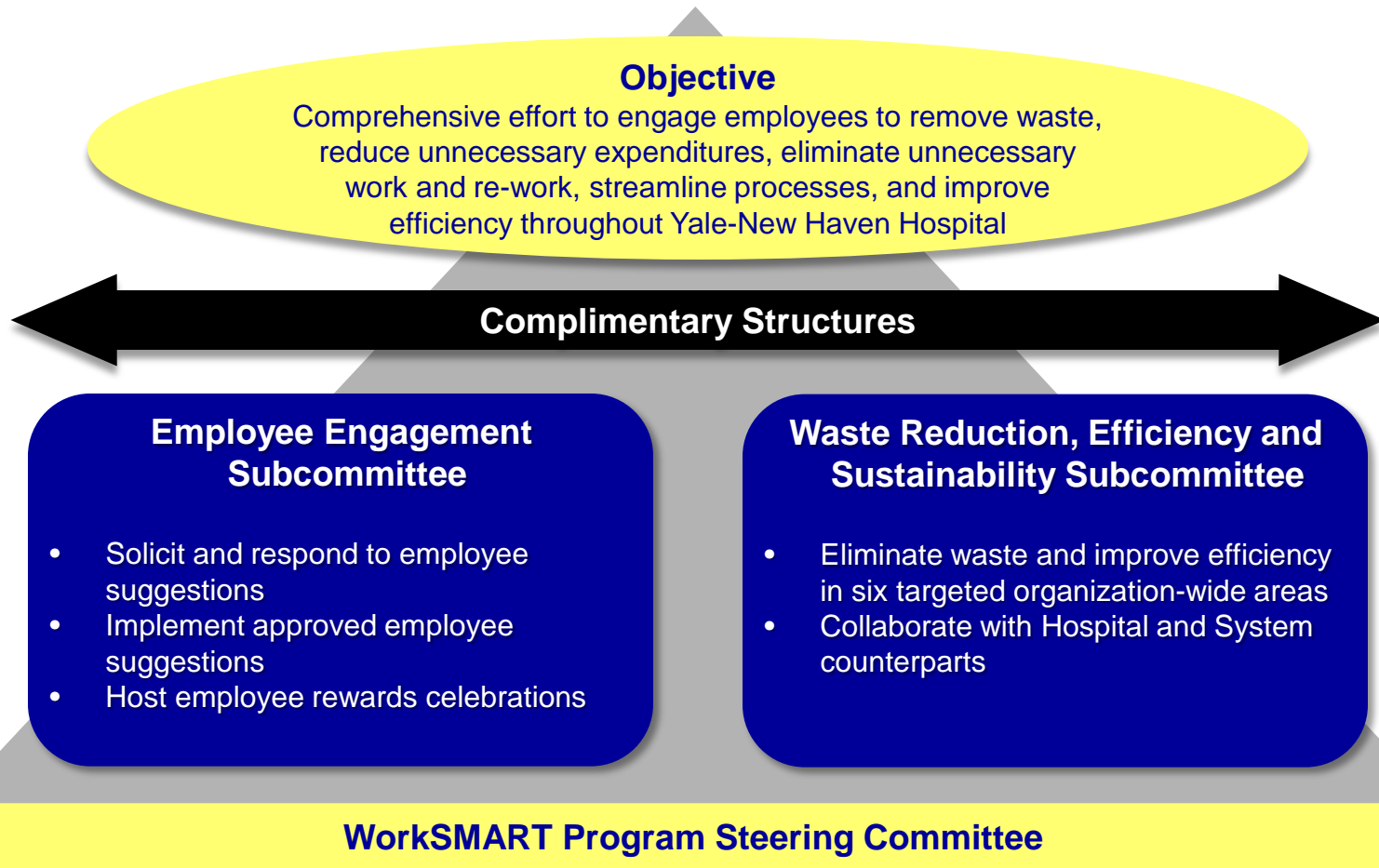
Paulette O'Hara

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.



WorkSMART Framework

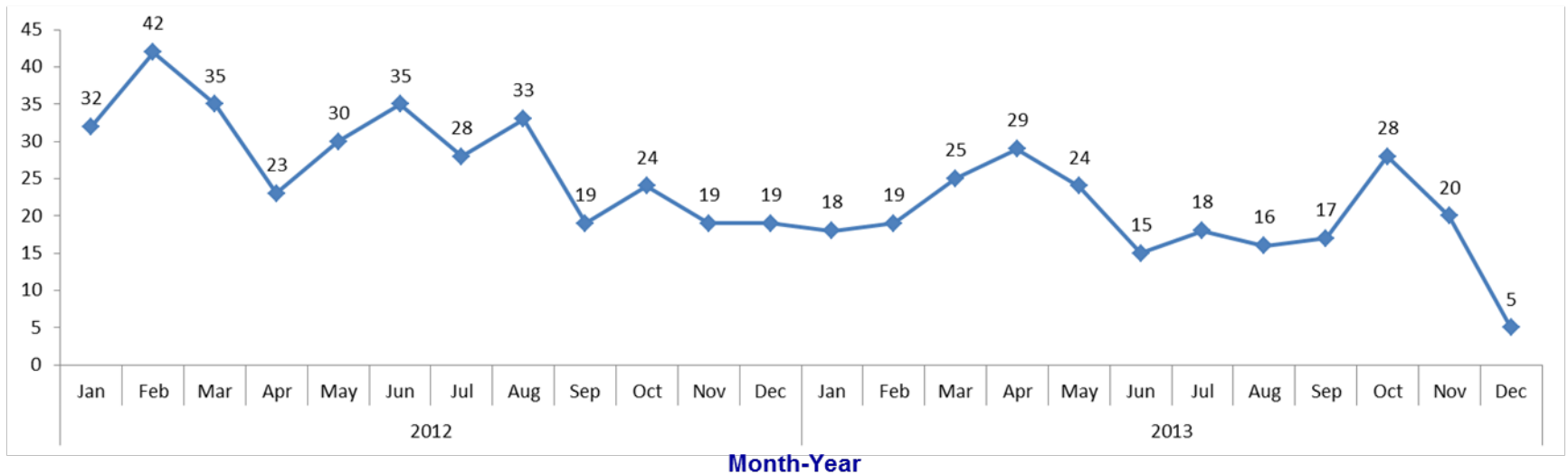




Employee Suggestion Trend

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

Count of Suggestions Received





WorkSMART Focus Areas



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

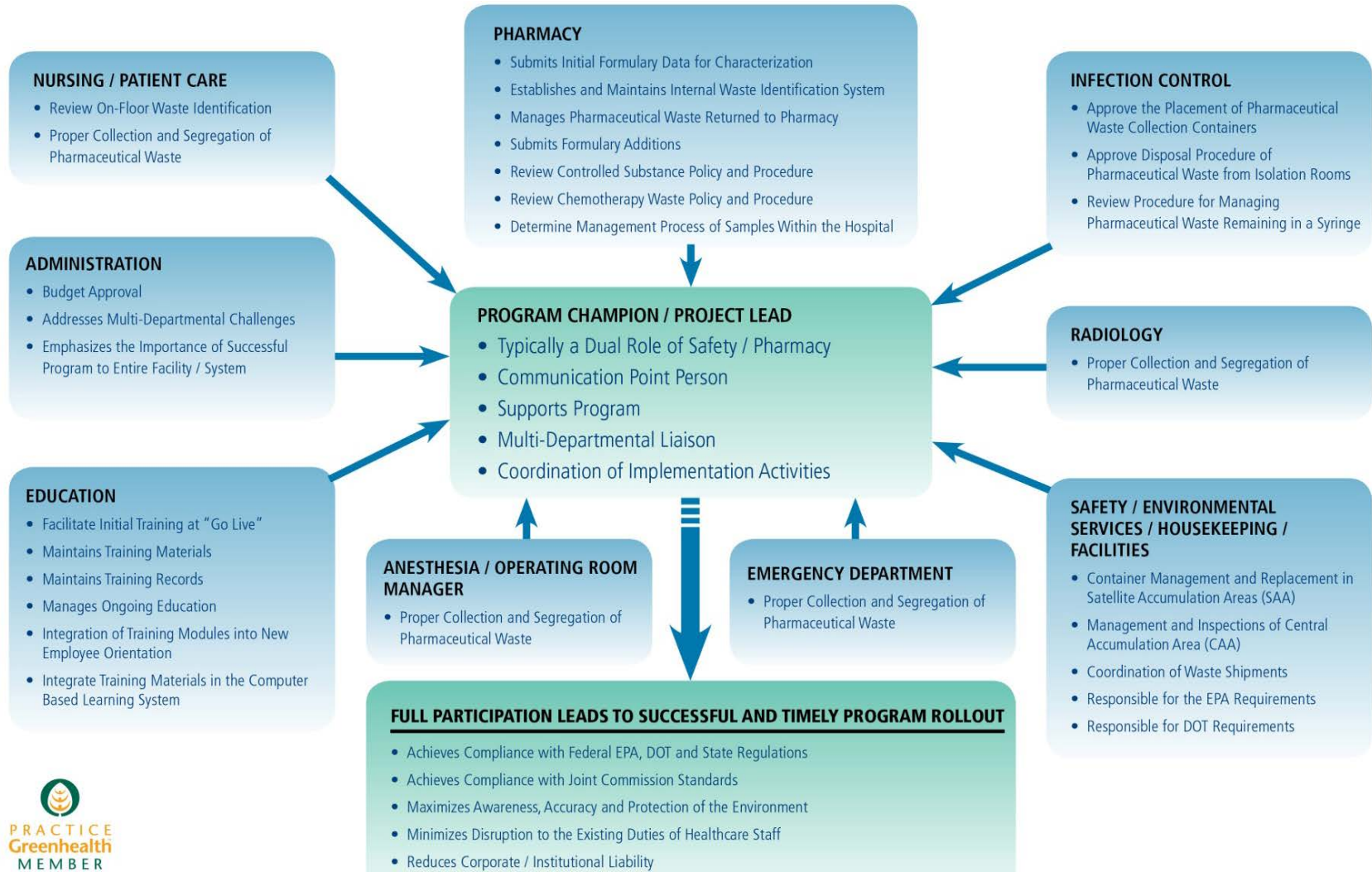


**Why is implementing a
pharmaceutical waste disposal
program such a challenge?**

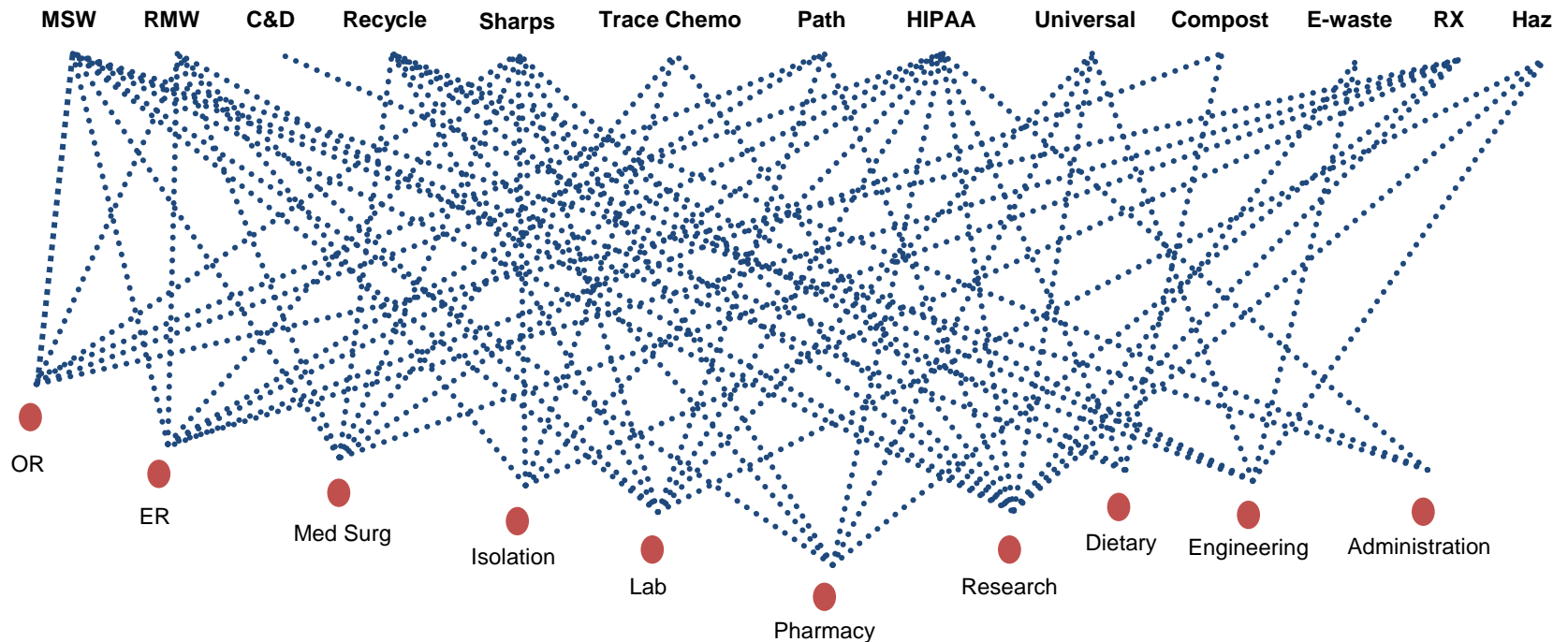
Challenge #1: Stakeholder Buy-In

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

Key Stakeholders



Waste Streams are Interconnected



**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



Price Difference in Disposal Methods

Waste Stream	Solid Waste Cost per <u>Ton</u>	Recycled Cost per <u>Ton</u>	RMW Cost per <u>Ton</u>	Hazardous Waste Cost per <u>Pound</u>
Average	\$126	\$90	\$1015	\$3.10 (\$6200/ton)





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





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 can not go into the containers on the unit:
 - Examples: Ammonia aromatic, Glycopyrrolate, Inhalers, Pyridoxine HCL (9 medications total)



What Drug Goes Where?

Message	Waste types	Action
Without instructions in EPIC	Non-hazardous waste	Dispose waste in blue container
With instructions in EPIC	Hazardous waste	Dispose waste and/or wrappers in black container according to instructions in EPIC
With instructions in EPIC	Incompatible waste	Seal in ziploc bag & return to Pharmacy via "out bin" (not tube system)

Segregating Rx Waste

	NON-HAZARDOUS WASTE BIN	HAZARDOUS WASTE BINS				ADDITIONAL WASTE BINS			
DISPOSAL LOCATION	 Blue Non-Hazardous Waste Disposal Bin	 Black RCRA Waste Disposal Bin	 Yellow Trace Chemo Disposal Bin	 Special Locations	 Red Biohazardous Waste Bag	 Sharps Bin	 Regular Trash Bin	 The Drain	
INSTRUCTIONS	NO CODE: Place all unused unlisted medication left in vials, IV, etc, in blue buckets. IF empty, throw in TRASH.	PBKC: Place unused P-listed medication AND any packaging/ wrappers/ containers in black bucket. (Note in Epic.)	BKC: Place unused D- or U-listed medication into black bucket. (Note in Epic.)	Place trace/empty chemotherapy agents in Yellow bucket.	SP, SPC, SPO, SPLP: Place unused characteristic waste in resealable bag and place in the Pharmacy Out Bin. (Note in Epic)	Place biohazardous waste into red bags. See hospital policy for more information.	Place all empty syringes, with or without a needle into sharps containers.	Throw non-sharps items that are empty, non-hazardous, and non-infectious into the regular trash.	Flush controlled substances and maintenance IVs down the drain.
EXAMPLES	<ul style="list-style-type: none"> Antibiotics Tylenol Aspirin IV with medication left. Keep tubing attached. Creams and ointments capped. Med-soaked sponges or paper towels Pills and tablets Vials and medication 	<ul style="list-style-type: none"> Warfarin Nicotine Arsenic Trioxide Epinephrine Nitroglycerine Physostigmine 	<ul style="list-style-type: none"> Leftover opened, partially used chemotherapy Amyl Nitrate Decavac Multivitamins Digoxin All Insulin Ocuvite Selenium Sulfide Other identified meds 	<ul style="list-style-type: none"> Empty vials Empty syringes Gowns Gloves Wipes Goggles Empty IV with tubing 	<ul style="list-style-type: none"> Aerosols Inhalers Corrosives Glacial Acetic Acid Glycopyrrolate Sodium Hydroxide Oxidizers Potassium Permanganate Unused Silver Nitrate 	<ul style="list-style-type: none"> Blood and blood product in plastic containers Body fluids (e.g., hemovacs, pleurevacs, wound drains) Blood-saturated materials Bloody suction canisters Blood transfusion tubing and bag Chest tubes 	<ul style="list-style-type: none"> Empty sharps, as long as they have not come in contact with a P-listed agent Fentanyl patches (sticky ends folded together) Broken or unbroken glass contaminated with blood or body fluid 	<ul style="list-style-type: none"> Empty IV bags Med wrappers Paper towels Uncontaminated Gloves Empty drug vials (non P-listed) 	<ul style="list-style-type: none"> Controlled substances Maintenance IV solutions containing any/all of the following: <ul style="list-style-type: none"> Potassium Chloride Potassium Phosphate Sodium Phosphate Calcium Sodium Bicarbonate Dextrose Saline
SHARPS	No Sharps	Sharps (Syringe/Ampule) Containing Medications Only		Empty Sharps Only	Not Applicable	No Sharps	Empty Sharps Only	No Sharps	Not Applicable
CONTROLLED SUBSTANCES	No	No		No	No	No	No	No	Yes



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 excess 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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