



Reducing Medical Waste: Balancing the Limitations of Cost and Sanitation

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Introduction

- Medical Waste: “healthcare waste that may be contaminated by blood, body fluids or other potentially infectious materials” but also include durable medical equipment²
- Found that U.S. “hospitals generate over 29 pounds of waste per bed per day”³
- Majority of waste is single use (plastics, surgical devices, gowns)
- After China announced in 2018 that they would not but 2/3 of the world’s waste, many U.S. facilities began incinerating plastics
 - This can release particulate matter and carcinogens into the atmosphere, and plastic also ends up in marine environments
- In order to make the healthcare industry more sustainable, hospitals need to learn and implement the most successful ways to reduce their medical waste

Given the limitations created by cost and sanitation in the healthcare industry, what are the best ways to reduce medical waste in the United States?

Materials and Methods

- I began by gathering background information from secondary sources (WHO, EPA)
 - Built a working definition of medical waste and evaluated an opinion-based piece from National Geographic
- These sources led me to several valuable primary sources including
 - Collection of case studies from sustainable hospitals
 - MedShare, a medical device reuse program website
- By consuming these opinions and cost statistics from various hospitals, I gathered what the most sustainable, cost-worthy, and sanitary methods are for reducing medical waste



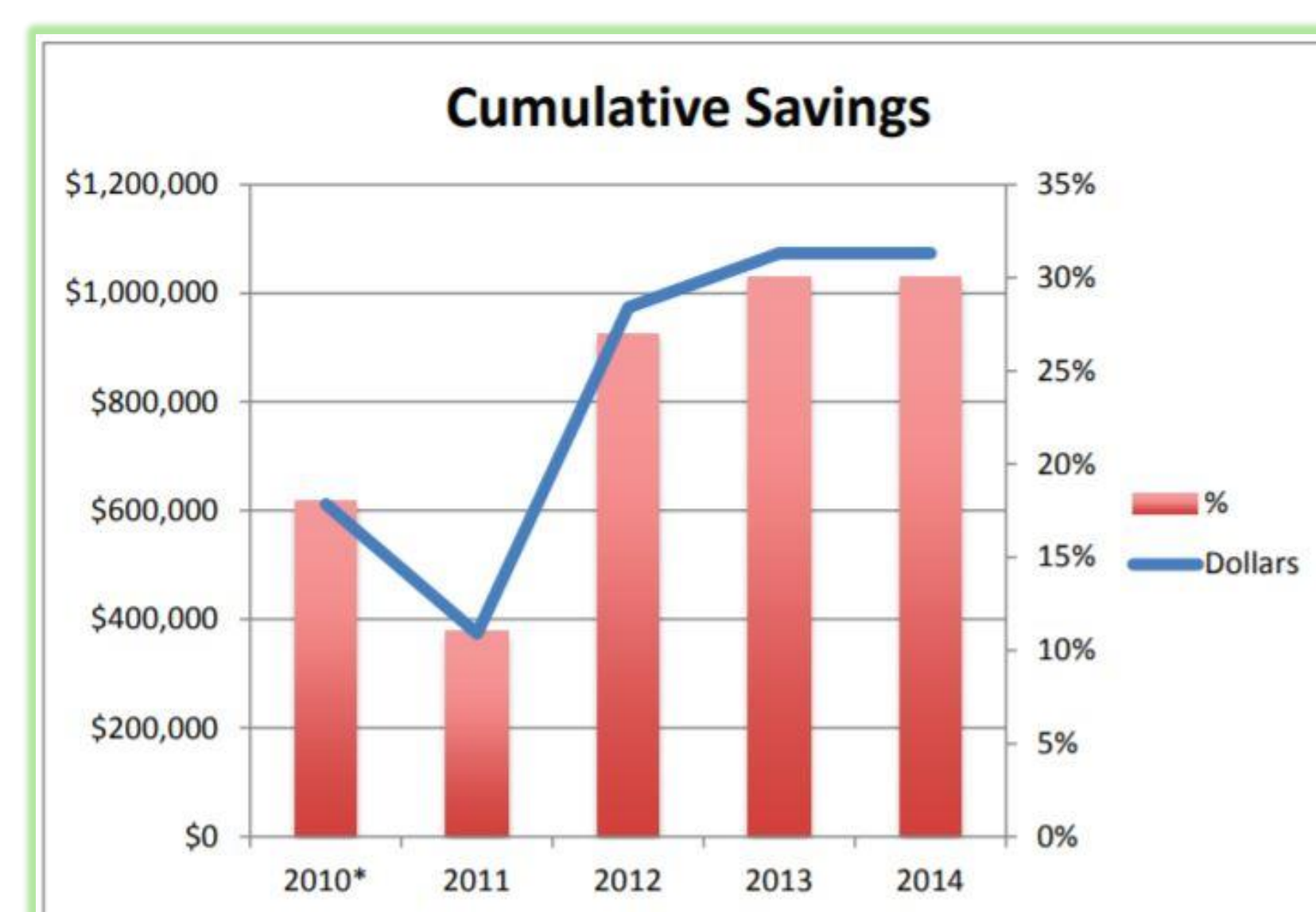
Directions for Virginia Mason Hospital’s recycling program for single use devices¹

Discussion

- The information is all available, but it is just a matter of convincing hospital staff that the change is necessary for the environment, even if that means giving way to some convenience factors
- Reducing medical waste saves money and the environment, how can we convince people to act?
- I expected that COVID-19 would be a setback in reducing medical waste, but there does not seem to be a surge in waste
 - Wuhan built a new medical waste disposal center as a result of the outbreak
 - L.A. Times reported that waste companies were preparing for a surge of medical waste (masks, gloves, disposable medical equipment, etc)
 - However, the CDC has indicated that medical waste from facilities treating COVID-19 does not need any additional disinfection, and typical personal protective equipment for infectious diseases should be worn
 - CDC has recommended extended use and limited reuse of NIOSH-certified N95 facepiece respirators to conserve limited supplies



Learning how to evaluate sources by studying UMD records from Hornbake Library’s Special Collections



Broward Health’s savings from 2010-2014 after starting annual reviews of their custom produce kits for items used less than 95% of the time¹

Results

Hospitals need to be educated about the benefits of reduce, reuse, recycle in their hospitals

Reduce:

- Replacing “blue wrap” with reusable stainless-steel sterilization containers reduces waste by 50 lbs. and saves \$391 per container
- Using the EnviroPouch instead of SUP pouches
- St. Mary’s Regional Medical Center reduced regulated medical waste (RMW) by 30% with a waste segregation education program and smaller RMW disposal bins
- Seattle Children’s Hospital saved \$39,642 in a year by evaluating surgical kits with the 80/20 rule (keep only if used 80% of the time), Broward Health has a similar 95% rule

Reuse:

- Donating unwanted or outdated supplies to companies such as MedShare
 - Cosmetically damaged, overproduced, or no longer needed products are donated to communities in need
 - Includes gauze pads, bandages, sutures, IV catheters
 - 13.5 million pounds of unused medical waste equals \$220 million dollars worth of life saving medical supplies given to 100+ countries around the world
- Reusing durable medical equipment (DME) such as wheelchairs, ventilators, crutches, and walkers

Recycle:

- Single use devices can be recycled, and then reused which is FDA approved
 - Virginia Mason Hospital’s recycling program reduced purchasing costs by \$3 million since 2012
 - FDA suggests the following designs for innovation in reusable/reprocessed medical devices: smooth surfaces, ability to disassemble devices, disposable components for hardest to clean areas

Course Information

CPSP359S: Discovery Research

Dr. Eubanks

Discovery research has allowed me to complete my practicum in the form of my own research project about medical waste and sustainability. In class, I studied the process of research in collaboration with my classmates and implemented my learning into my own project.

Unfortunately, in person class was cut short by COVID-19, so I was not able to receive the amount of peer feedback on my project as I had hoped. However, I still received valuable feedback from Dr. Eubanks. In addition, COVID-19 added an unexpected element to my research that has made my work even more intriguing and relevant.



I would like to give a big thank you to Dr. Eubanks, Dr. Holtz, Dr. Merck, and my classmates for inspiring me to do this research as well as making it possible!

1. Admin HH. 2015. “Advancing sustainability in healthcare: A collection of special case studies”. *Healthier Hospitals*.
2. United States Environmental Protection Agency. 7 November 2017. “Medical waste”. *United States Environmental Protection Agency*.
3. Practice Greenhealth. 2020. “Waste”. *Practice Greenhealth*.

