

MEDICAL WASTE MANAGEMENT

SFU Iman Baharmand, Kimberley Venn, Alec Yu

THE PROBLEM BREAKDOWN



HOSPITALS

The vast majority of Intensive Care Patients leave after using **<1/3** of their room's supply, generating needless waste of about **20-40 lbs**

Sorting is often incorrectly done, either out of caution or laziness

Average: an overstocking on equipment that exaggerates what will be required

Miscategorised waste is erroneously incinerated, dramatically adding to greenhouse gas emissions, airborne carcinogens, poisons that travel and accumulate in the food chain, and chemicals causing acid rain.



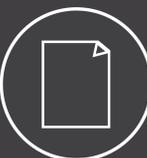
PRIVATE COMPANIES



Producers take advantage of healthcare's fear of infection to turn previously reusable items into single-use items.



Packaging is also extremely wasteful. Surgical products are often delivered in plastic containers that come double-wrapped, which encase equipment that is further covered in a blue plastic that is thrown out prior to use.



REGULATIONS & POLICIES

Apathy in Provincial and Health Authority Policy

1.

2.

3.

47

The Royal Commission on the Future of Healthcare in Canada made no mention of sustainability in any of its 47 recommendations.



Provincially, only Quebec has specific legislation on medical waste management.



In Vancouver's Health Authorities, sustainability policy is directed primarily towards conservation of electricity and natural resources, with little to no attention given to medical waste management.

GAPS AND LEVERS OF CHANGE



NGOs

GAP: Lack of collaboration between NGOs and companies or hospitals

LEVERS OF CHANGE:

1. Create partnerships with local hospitals
2. Make platform for hospital collaboration
3. Invite select companies to join platform
4. Leverage purchasing power to create change

EXAMPLE IN THE FIELD:

GreenPages Directory - A green purchasing catalogue where companies can post their sustainable products for purchasers to easily browse.



HOSPITALS

GAP: Poor hospital culture around sustainability

LEVERS OF CHANGE:

1. Conduct robust research on sustainability topics
2. Find physician sustainability champions
3. Support champions' sustainable projects
4. Disseminate project results and methods

EXAMPLE IN THE FIELD:

Hospital Handwashing Campaigns - Successful push to increase staff handwashing compliance through inter-hospital competition.



PRIVATE COMPANIES

GAP: Lack of sustainable innovation in hospitals

LEVERS OF CHANGE:

1. Form close partnerships with hospitals
2. Invite clinicians to contribute sustainable ideas
3. Invest and support viable business ideas
4. Make profit through revenue-sharing

EXAMPLE IN THE FIELD:

Deloitte - Formed the Innovation, Disruption, and Exponential Technologies Council to provide business expertise to clinicians with ideas on how to improve healthcare.



GOVERNMENT

GAP: Public misinformation and lack of data prevents policy change

LEVERS OF CHANGE:

1. Cross-reference policy with research consensus
2. Create clinician feedback groups
3. Educate public through outreach and data transparency
4. Make measurable policy changes and release results

EXAMPLE IN THE FIELD:

National Health Services (UK) - Created clinical commissioning groups for ground-level feedback and releases large amounts of general health data for public viewing.

THE SOLUTION BREAKDOWN



NON - GOVERNMENTAL ORGANIZATIONS

Innovation, Activism, & Donation

Groups that focus on innovation, including Practice GreenHealth, run projects to remove hazardous chemicals from hospital equipment and operate hospital sustainability competitions.



Health Care Without Harm uses its strong ties to the United Nations in lobbying governments to promote sustainable handling of medical waste.

BUT...

"We sent a few shiploads, but after the grants ran out, we had a lot of trouble keeping the program running."

- Dr. Yoan Kagoma, Co-Founder of Operation Green



However, groups focused on innovation often neglect issues with management of solid waste and donations fail to address the root causes and raise international development concerns.



HOSPITALS

Stocking & Sorting

Multiple American hospitals have reduced biohazardous waste to under 6% of their total waste produced.



An operating room in Massachusetts saves \$110,000 per year through proper waste segregation and supply recycling.



A pilot study done in the UK found that an average of \$456 worth of useable equipment is discarded from each bed in their ICU.



UNFORTUNATELY,

"To the hospital, if anything even has the slightest chance of increasing infection rate, it's really difficult to make it happen."

- Charge Nurse, Royal Columbian Hospital



PRIVATE COMPANIES

Reprocessing & Partnerships



GreenHealth Exchange, a marketplace for green products, was established in 2016 through an alliance of equipment manufacturers and 54 Californian hospitals.



In Sweden, medical waste disposal companies partner with hospitals to properly sort waste and effectively reduce the amount incinerated.



Stryker, a medical device manufacturer, has a medical equipment reprocessing system in Canadian hospitals.

UNFORTUNATELY,

"It's difficult because the manufacturers don't provide warranty on reprocessed products, and doctors don't think they're as good as the regular ones."

- Sonja Janousek, Sustainability Coordinator



INTERNATIONAL GOVERNMENTS

Research & In-Practice



The European Union has designated medical waste management policies that they review and update every few years.



UK's healthcare system makes use of Clinical Commissioning Groups to develop novel waste reduction strategies that are then studied and published.



Swedish research focuses on creating tools and models that calculate the costs of medical waste which, in turn, help inform purchasing decisions.

HOWEVER,

Policies are often not uniformly enforced and there is slow uptake of new tools, research, and knowledge by hospital systems.