



Fundamentals of Sustainable Health Systems

Cases & Faces of Sustainable Healthcare

Hotspot: Clinical ward waste

Case Study: Waste audit within a pediatric hospital
(Toronto, Canada)

Setting: The Hospital for Sick Children (SickKids)

- Located in Downtown Toronto, Ontario, Canada
- Serves over two million pediatric patients
- Over 300 beds
- Canada's most research-intensive hospital
- Affiliated with the University of Toronto

The Registered Nurses' (RN) Council is a shared governance nursing advocacy group within Toronto's SickKids Hospital. In addition to its Co-chairs, the Council is comprised of 34 RNs who represent each individual clinical ward. Clinical wards are the areas in hospitals where patients are admitted for ongoing medical treatment and care.

In recent years, the RN Council has been inspired by the hospitals' dedication to environmental sustainability. According to Kyle Robinson, SickKids Director of Facilities, "In staying true to our vision of *'Healthier Children. A Better World,'* SickKids understands the vital role that we must play in reducing our impact on the environment and is committed to being a green-friendly organization" (1). This commitment is reflected in the [KidsGoGreen](#) program, which lays out a series of organizational goals and strategies in pursuit of sustainability; for example, SickKids aims to decrease waste hospital-wide by 30% by 2025 and 75% by 2030 (2). In acknowledgement of the support required to undertake these efforts, the hospital has funded a Sustainability Project Manager position.

Working in collaboration with Sustainability Project Manager Elisabeth Perlikowski, the RN Council has participated in initiatives aimed at reducing clinical waste throughout SickKids' wards. These include education and coaching efforts to inform clinical staff on the importance of sustainable practice and decreasing waste. The RN Council has also hosted presentations featuring speakers with expertise in environmental sustainability to ignite interest in the topic, as well as build capacity.

Additionally, they have worked in partnership with Elisabeth to develop and execute solutions to hospital-wide sustainability challenges. Some changes that have been trialed include replacing Styrofoam cups with recyclable cups, and evaluation of biohazardous waste receptacles.

One of the larger sustainability-related tasks the RN Council led was a waste audit—a process used to analyze the amount and type of waste generated by an organization. The development, execution, and initial findings of the audit are described below.

Background

In 2019, at the annual Fiscal Advisory Committee, opportunities were discussed for potential cost savings at SickKids. From this meeting emerged an ongoing discussion around disposal of unused medical supplies after patients were discharged and strategies around how this could be reduced. Subsequent meetings with unit managers validated that this was a priority issue which needed attention. Ongoing conversations took place with unit managers to identify contributing factors and brainstorm potential solutions. As nurses spend the most time at the bedside providing patient care, they were recognized as being integral to mitigating waste generated at the bedside.

After meeting with the Fiscal Advisory Committee, the RN Council decided to conduct a cost analysis, as well as a waste audit, to better understand the financial and environmental implications of the issue. Leading up to the waste audit, principles of Lean Six Sigma and a human-centered approach were used to guide team collaboration and process improvement. According to Eryn Vandepoele (former RNC Co-Chair) these approaches resonated well with nurses because the end user is involved in the problem-solving process from the beginning. These initial brainstorming sessions included

affinity and empathy mapping exercises which allowed for the discovery of the major themes that led this work. The key themes that emerged as contributing to excess waste at the patients' bedside included (3):

1. **Space** – “too many places [without a clear purpose] for supplies to be in rooms”
2. **Preparation** – “bring in extra just in case”
3. **Culture** – “setting up the room for the next shift”
4. **Priorities** – “we are not set up for success [because ward waste is not an organizational priority]”
5. **Process** – “too busy to run back and forth to supply room”

Further steps that were taken prior to the waste audit included completing a literature review, environmental scan and meeting with key stakeholders. These included infection control practitioners, quality and risk management, and environmental staff.

Implementation

The waste audit was conducted from November 2019 to March 2020 on an inpatient medical unit that varied between both short-term and long-term patient stays. Eryn Vandepoele and Christine McGovern led the audit, in conjunction with the unit's Clinical Support Nurse (Charge nurse) team. Together, they co-created the following workflow: The CSN would notify the RN Council via text message each time a patient was going to be discharged. Once the patient was discharged, a representative from the RN Council would go to the vacant room, and analyze the unused supplies left behind. An inventory of the remaining items was completed, and a weight of the supplies was documented. Length of stay and isolation status also recorded with each discharge.

Findings

Data for the pilot waste audit was collected from a total of 38 patient stays throughout the duration of the audit. The findings had value in demonstrating the type and amount of ward waste being generated on units. **Figure 1** illustrates the number of excess items requiring disposal after patient discharge by type.

One product that was identified as a contributor to waste was the one-time use plastic K-basins. K-basins are shallow basins shaped like a kidney that have multiple purposes for patient care, such as for oral hygiene, as an emesis basin, or to place supplies for medication administration and other procedures. As a result of the audit, SickKids has been looking into introducing pulp basins onto units; these can be macerated after use, avoiding landfill. Other items that were left in excess at the bedside and had to be discarded included: normal saline flushes used to flush intravenous lines, chlorohexidine (alcohol) swabs, diapers, and oxygen saturation stickers used for monitoring patients' oxygen levels. These medical/non-medical supplies are often high in demand and are items that are required to monitor and care for patients.

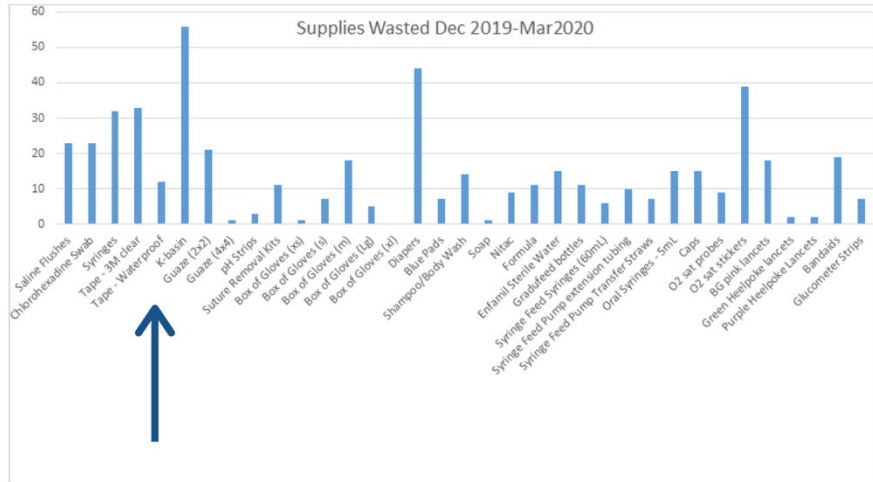


Figure 1: Supplies Wasted (Dec 2019 – March 2020) (3)

Although the waste audit was completed on a small sample size, the results from this single unit offer a glimpse into the excess amount of waste being generated on all wards in hospitals.

Next Steps

The COVID-19 pandemic interrupted the progression of the project; at the time of writing, the findings of the waste audit have not been revisited. However, brainstorming on potential solutions to mitigate this issue has continued by the RN Council.

Some potential solutions that have been explored include the following:

- Have one designated location for supplies in room to target the problem of disorganization
- Incorporate educational sessions for nurses on the environmental impact of ward waste
- Leveraging Just In Time Stocking (JIT) – a practice whereby items are stocked only as necessary to avoid the disposal of expired products
- Explore individual ward cultures that may require unique solutions to mitigate ward waste (i.e., setting up the patient room for the next shift in a proactive manner that does not require excess supplies being brought in)
- Continue to have interprofessional communication/collaboration on this issue and its potential solutions

The work that has been put into this project by the RN Council at SickKids is just the start; to capture the true essence of waste generated at the bedside, additional waste audits need to be completed on a larger sample size, both within SickKids (in other units) and in other health care facilities.

Clinical ward waste is a multi-level system issue and is of concern for all wards in healthcare settings. However, there is no one-size-fits-all solution; due to the distinct nature and culture of each individual

hospital ward, unique and innovative solutions are necessary for sustainability. Building capacity among other hospital organizations to complete this work is critical, including via funding and other forms of support. This will allow clinical wards to determine their needs and implement effective solutions. The pilot waste audit at SickKids demonstrates the value of an organizational commitment to sustainability. In order for any follow-up action waste audits to be truly effective, there needs to be direction and leadership at an organizational level to prioritize waste mitigation. The RN Council hopes to continue to work in partnership with Elisabeth to create innovative solutions to ward waste production, contributing to SickKids' goals to decrease waste hospital-wide.

Sources

1. SickKids. Environmental Sustainability [Internet]. 2021. Available from: <https://www.sickkids.ca/en/about/strategy-performance/environmental-sustainability/>
2. SickKids. A Socially Responsible SickKids [Internet]. 2016. Available from: <https://www.sickkids.ca/siteassets/about/strategy--performance/environmental-sustainability/sickkids-environmental-sustainability-goals.pdf>
3. Vandepoele E. Decreasing supply waste at the patient's bedside. [PowerPoint presentation]. SickKids. [2020].

This project was undertaken with the financial support of the Government of Canada.

Ce projet a été réalisé avec l'appui financier du gouvernement du Canada.

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