

## Process Improvement for Linen and Meals Delivery

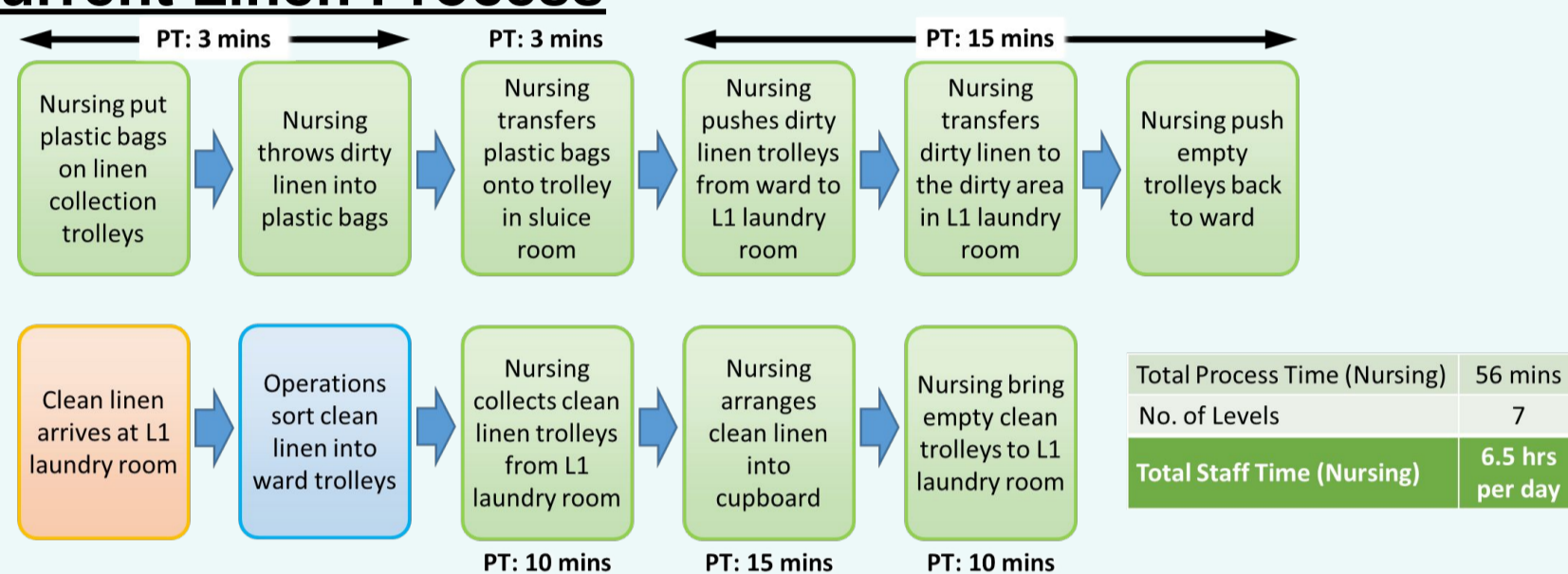
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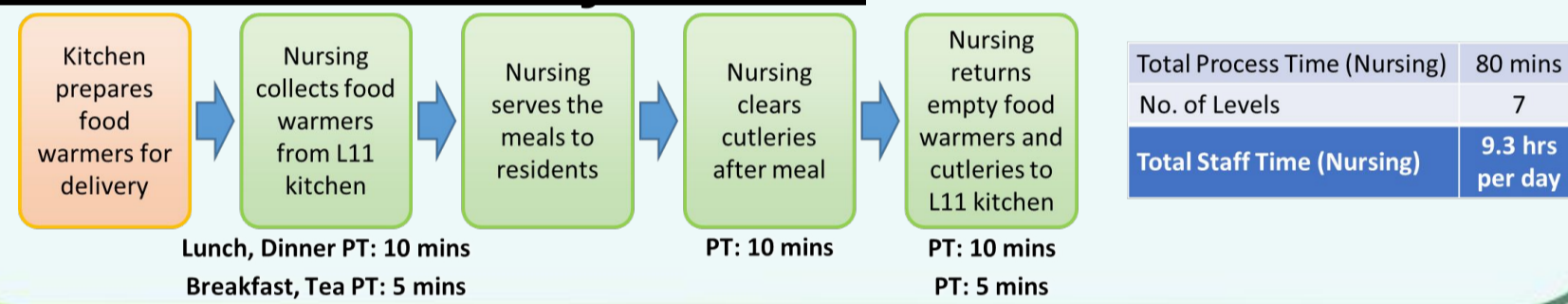
### Problem Statement

Nursing Home (NH) delivers linen and meals within the facility up to **7 trips per day** and could weigh as much as 160 kg.

#### Current Linen Process



#### Current Meals Delivery Process



### Potential Solutions

Observations and Value Stream Mapping revealed staff spent approximately **5,767 hrs annually** on low-value added duties.

8 Wastes	
<b>Defects</b>	<ul style="list-style-type: none"> <li>Dirty linen are spilled on the floor due to torn plastic bags.</li> <li>Infection control concern with exposed dirty linen during delivery process.</li> </ul>
<b>Overproduction</b>	<ul style="list-style-type: none"> <li>Ordering of extra one-time use plastic bags for holding dirty linens.</li> </ul>
<b>Waiting</b>	<ul style="list-style-type: none"> <li>Long waiting time for lifts during peak hours.</li> </ul>
<b>Non-Utilised Talent</b>	<ul style="list-style-type: none"> <li>Staff performing low-value added delivery tasks instead of nursing care.</li> <li>Linen chute is not utilised due to misconception of difficulty in maintenance and safety concerns.</li> </ul>
<b>Transportation</b>	<ul style="list-style-type: none"> <li>Delivery of linen and meals between laundry and kitchen.</li> </ul>
<b>Inventory</b>	<ul style="list-style-type: none"> <li>Large number of plastic bags takes up space for storage in the storeroom.</li> </ul>
<b>Motion</b>	<ul style="list-style-type: none"> <li>Nurses need to walk to Sluice Room for topping up of plastic bag while changing linen.</li> </ul>
<b>Extra Processing</b>	<ul style="list-style-type: none"> <li>Placing plastic bag over linen collection trolley</li> </ul>

#### Solutions:

- Washable laundry bags to replace plastic bags.
- Dirty linens was sent to laundry using linen chute
- Automated Guided Vehicle (AGV) to deliver clean linen and meals to the wards.

### Project Aim

- To reduce 30% or more of the time spent on this task so staff have more time for value added tasks such as caring for residents.
- Improve sustainability throughout our processes.
- Improve job satisfaction and morale by reducing strenuous tasks, and creating a safer working environment.

### Lessons Learnt

Due to previous feedback, the linen chute had not been used even though it was provided. After numerous trials, the linen chute proved to be very useful with minimal maintenance. With both linen chute and AGV, low-value added delivery tasks carried out by staff were replaced with automation. The approach is also sustainable through staff training as the chute and AGV have simple user interfaces.

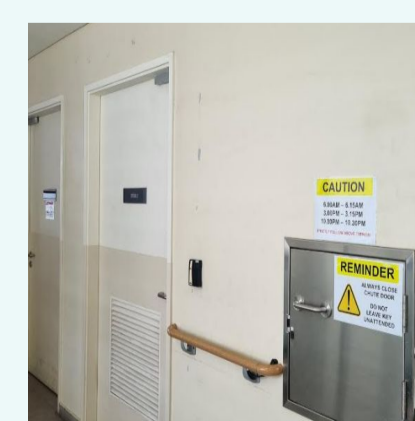
The benefits were evident with improvement in job satisfaction and significant total savings of man hours. It is vital to keep an open mind and venture into unexplored grounds for process improvement.

### Outcomes & Impacts

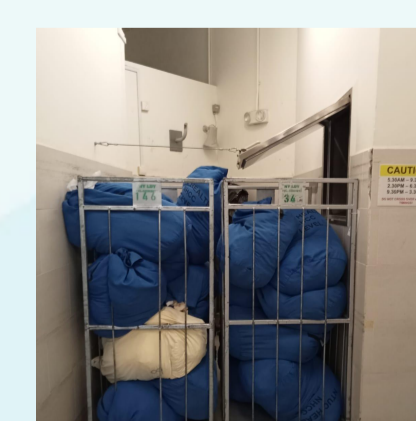
Linen chute, washable laundry bags and AGV have significantly reduced the time spent to transport linen and meals. The new process had replaced the time spent by staff in transportation tasks by a cumulative total of **11.2 hrs daily and 4088 hrs annually**, achieving a **72% reduction**. Washable laundry bags have also replaced **20,400 plastic bags used annually**, a significant contribution to environmental sustainability efforts.



Washable Laundry Bag



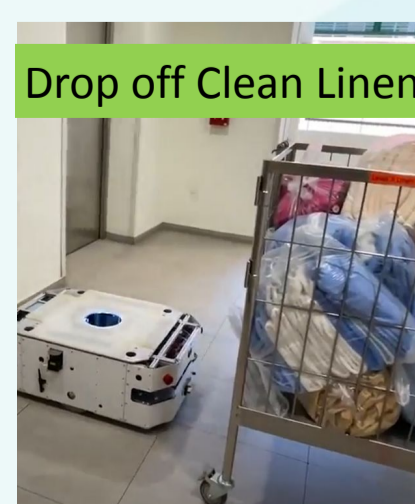
Linen Chute



L1 Laundry Room



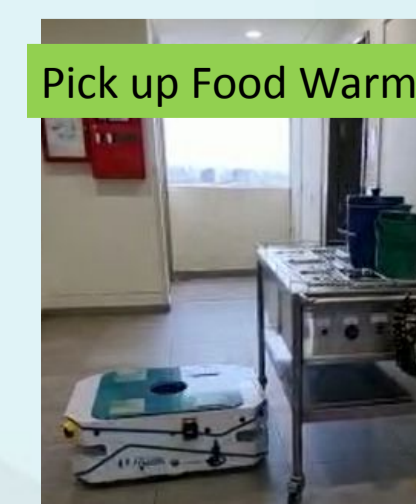
Deliver Clean Linen



Drop off Clean Linen



Return Empty Trolley



Pick up Food Warmer



Pick up Food Warmer