

## **Executive Summary**

### **Introduction:**

Delivery of effective healthcare services depends on multitude of requirements. An important factor among them is the availability of essential devices that could be categorized either in to surgical and general inventory items. Those inventory items belong to a large range, ranging from costly instruments like PET scanners to inexpensive items like mercury thermometers. Government of Sri Lanka (GOSL) spends a large sum of money annually, in purchasing as well as maintaining those.

Purchasing and commissioning of those equipment are relatively straightforward procedures. Regrettably, the procedures for maintaining those have not developed up to the expected standards. It has led to the piling up of defective or out-of-service equipment due to malfunctioning in government hospitals. This mere fact stresses the need to upgrade the quality of maintenance and repair status while ensuring the quality of repaired surgical as well as general equipment.

Principal Investigator (PI) in his working career observed a large collection of unusable inventory items belonging to both surgical and general inventory items at D.G.H Negombo. Most of the unusable equipment were declared to be decommissioned following the usual GOSL procedures. In a detailed analysis of the status of those obsolete items, PI found that a few dozens of equipment could be repaired or resurrected by low-cost interventions. Depending on the above observations, this research project was launched with the following objective.

## **Objective:**

To improve the resurrection practices of selected unusable inventory items in D.G.H. Negombo

## **Methodology:**

This was a hospital - based cross-sectional descriptive study with an assessment followed by an interventions and a post interventional assessment. There were three phases in the study which spanned over a period of one and a half years from August 2022

. In phase one detailed study was conducted to find out the following details:

- Estimating the resurrectable obsolete items in all units of the hospital.
- Identifying existing maintenance, repair, and resurrection processes at the D.G.H. Negombo
- Selection of feasible and practicable interventions to be implemented based on the results of pre-intervention and stakeholder discussions.

In phase two a package of interventions was developed which aimed at:

- Streamlining the maintenance unit of the hospital
- Improving coordination with the Biomedical Engineering Division (B.M.E.) to resurrect valuable equipment for reuse.
- Facilitate volunteered servicers from trained and skilled technicians from outside sources to enhance the resurrection process.

In phase three outputs and outcomes of the intervention were evaluated.

## **Results and Discussion:**

The interventions made through the research project made significant improvements to the processes of maintenance, repair and resurrection of inventory items at D.G.H. Negombo.

Satisfaction about the procedures adopted by the maintenance unit increased significantly ( $p < 0.001$ ) suggesting the adherence to a streamlined process by both maintenance staff and the end users i.e., unit in-charges.

The space occupied by the unusable inventory items in the unit and the safety of the equipment have also reflected improvement due to the removal of precondemned equipment to a separate precondemning store ( $P < 0.001$ ). This was crucial in releasing unit space and providing better patient care services. This is further confirmed by the finding of significant improvement ( $P < 0.001$ ) in the traceability of items by both the maintenance unit and the units that holding the inventory of the given item.

The repair time was reduced due to several reasons including the availability of new tools and spare parts within the hospital premises and the training provided to the maintenance unit staff.

The interventions of the project were helpful to resurrect and reuse in large number of inventory items which were pronounced as unusable inventory items. Among them there were general inventory items such as wheelchairs 50 (78%), patient trollies 30 (79%), patient beds 28 (76%) and surgical inventory items such as multipara monitors (basic) 12 (60%), oxygen regulators 25 (76%), sucker machines 18 (78%). Percentages represent the number of items resurrected in each item group.

## **Conclusion and Recommendations:**

The interventions introduced to the process of resurrection of unusable inventory items in D.G.H. Negombo have improved the maintenance and repair processes. It was able to help the hospital to continue patient care services without disrupting the treatment process. It has also saved a reasonable amount of expenditure by not acquiring new equipment to replace the unusable equipment.

Through continuous dialogue, the project was able to improve the coordination between the Biomedical Engineering Division of the Ministry of Health and the institution.

The project recommends that the hospital should sustain the maintenance unit with the necessary machinery, tools and trained technicians with greater supervision and should continue to explore the possibility of resurrecting more unusable equipment prolonging their lifespan. The staff needed to be given further training and skill development for the conduction of resurrecting unusable items.

**Key Words:** Resurrection, Maintenance unit, Inventory items, D.G.H. Negombo