Ottawa Heart Institute Research Corporation Technology Management Program

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I. INTRODUCTION

The absence of a structured technology management program for research equipment in the Ottawa Heart Institute Research Corporation (OHIRC) had been a deterrent leading to increased downtime, unrepairable equipment, low collaboration between researchers, poor long-term capital planning, and increased costs. Apart from furniture, consumables, and fixtures, there is an active fleet of approximately 1700 pieces of equipment of which a few are being managed through service contracts. Therefore, a new technology management program for research equipment was developed, and currently oversees the inventory, documentation, scheduled and unscheduled maintenance, initial inspection, contract management, equipment procurement, decommissioning, and research grant application assistance. The designed workflows, processes, and tools are aligned with pre-existing processes in the Biomedical Engineering (BME) department supporting the clinical activities at University of Ottawa Heart Institute (UOHI). A permanent, full-time BME Technologist dedicated to research equipment has been hired to fulfill long-term program requirements. The strategy has been slowly integrated into the existing framework, and it is currently under analysis to identify efficiencies and fulfill researchers' needs. Through the expertise of the BME department and clinical engineers within it, this work presents a novel strategy to manage research equipment within a healthcare facility.

II. METHOD

Project success was achieved by incorporating the following elements: managerial techniques; development of a standard operating procedure (SOP); a project committee including principal investigators, laboratory staff, upper management, and clinical engineers; an inventory strategy; service contract management; a plan for commissioning and disposal of equipment; and detailed workflows and diagrams for corrective maintenance (CM), preventative maintenance (PM) and procurement. In addition, the Microsoft PowerApps management tool was utilized (Fig. 1) along with the assignment of a technologist within the BME department dedicated to research equipment.

Time Frame: Scope set to 1 year Gantt Chart planification.

Efficiency Analysis: The indicators to assess program efficiency were equipment downtime, number of work orders (WOs), PM compliance, number of assets inventoried, savings, and number of service contracts being managed.

UOHI Research Technologist III: New in-house service model, and budget approved to no charge labour.

Asset management: BME computerized maintenance management system (CMMS), PowerApps and SharePoint.

Fig. 1 PowerApps Management Tool – Homepage

III. RESULTS AND DISCUSSION

According to the results shown in Table 1, the program has had a positive impact on OHIRC, improving the quality of equipment service records, increasing the uptime of equipment, incorporating better predictability of costs, introducing savings, and facilitating collaboration between researchers. Research and healthcare equipment life cycle management, regulatory standards, funding, and stakeholders are different; however, both can be managed by a BME department by closing the gap between institutions.

Table 1 Indicators before and after the program launched in Feb 2022.

Indicator	Year 2021	Feb to Nov 2022
WOs	21	103
PM Compliance	60%	75.4%
Assets Inventoried	3867	4043
Savings (Labour)	$2,428	$17,485
Service Contracts	11	36
Downtime	NA	Reduced
Quality Survey	NA	Satisfied