Supervisor Name: Dr Jeremie Larouche

Project Title: Reducing surgical tray instrumentation counts for laminectomy procedures

Hospital/Research Institution: Sunnybrook Health Sciences Centre

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Field of Research (2 keywords): surgery, quality improvement

Department: Orthopedic Surgery, Neurosurgery, OR and Related Services

School of Graduate Studies Appointment (IMS, LMP, IHPME etc)? No
**Brief Project Description (<300 words):**

**Background:** Many hospitals are placing increased emphasis on cost reduction initiatives. Perioperative services are often examined as they typically comprise approximately one third of a hospital’s budget. Addressing the commonly encountered issue of poorly configured surgical trays is an opportunity to minimize inefficiency and reduce costs. A solution must take into account the conflicting issues of clinical need, costs, ease of batching, prevention of adverse clinical events, and minimization of wear-and-tear on instruments.

**Objectives:** The aim of this study was to determine the impact of a customized single-period inventory model (Newsvendor Model) in optimizing the surgical instrumentation required for laminectomy procedures.

**Methods:** This is a planned single-site quality improvement study conducted at a large academic hospital which performs over 750 laminectomy procedures annually. Two trays are required: 1) Laminectomy Tray (LT) and 2) Basic Neurosurgery Tray (BNT). As such, the focus of our study is to optimize these two trays. A trained observer will observe a surgeon’s instrument utilization in the operating room (OR) during 50 randomly selected laminectomy procedures. Processes in the MDRD and OR will also be observed to comprehensively quantify associated costs. The results of the observations will be applied to a mathematical model to determine ideal tray configuration. In addition, a clinician review (CR) of the trays will be performed for comparison.

**Student role:** This position will be remotely based. The student will analyze video footage of spinal surgeries at Sunnybrook Health Science Centre. They will be responsible for observing instrument utilization, aid in mathematical modelling, and be introduced to quality improvement research. The student will have weekly engagement with the supervisory group, consisting of multidisciplinary surgeons, physicians, research coordinators and health administrators.