Introduction

Objectives
- Determine the optimal capacity of the Outpatient Surgery Center (OSC) for a rural hospital based on the future demand.
- Analyze workflow processes for improved room turnover to increase throughput.
- Use Discrete Event Simulation (DES) to model the physical layout and flow of patients and colleagues.
- To provide scenarios for decision making to reach a cost-effective viable decision.

Methods (continued)

- Patient tracks were modeled within a simulation from the collected data which generated a real-world view of patient flow through the system.
- The model was run over the week for an analysis on room utilization.
- The factors being analyzed are:
  1. Room reservation
  2. Number of beds
  3. Number of surgery patients
  4. Number of treatment patients

Assumptions of the Model
- There are several factors that will constrain the model. Experimental trials altering the factors will allow for an analysis on room utilization. The factors being analyzed are:
  1. Staffing is not considered
  2. All OR rooms have identical properties
  3. Only use 5 of the 6 ORs
  4. Treatment rooms could be used for surgery patients and vice versa

Running the Model
- The model was run over the workday from 5 am to 5 pm, although the process in reality finishes when the last patient is recovered. The outputs were calculated based off of 8 replications.

Results

- The original model proposed 18 rooms designated for Surgery (Rooms 5-22) and 4 separate rooms (Rooms 1-4) in a common area for Treatment. Rooms would be filled based on a logical sequence for nurses.

- An additional model was created that treated all 22 rooms the same regardless of whether the patient was there for surgery or a treatment. This eliminated designated rooms and allowed for interchangeability.

Conclusions

The optimal bed capacity allows for potential future growth and would maximize room utilization by limiting the number of idle rooms (idle rooms waste healthcare resources) while providing the best patient experience.

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