



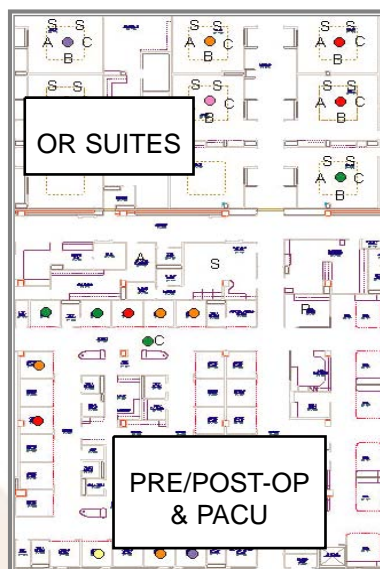
## Case Study: Providence St. Vincent Medical Center - Portland, OR - Surgical Services

### Visualizing the Problem:

Providence St. Vincent Medical Center (PSVMC) was preparing to occupy its new Surgical Services facility and was committed to ensuring the most successful implementation possible. The challenge was to determine exactly how the new Department would operate and identify opportunities to optimize performance, positively affecting the institution, staff and patients.

Considering the size (53 Pre/Post-Op beds, 27 ORs, and 27 PACU beds) of the new Surgical Services facility, the fact that the expansion would be staged in two phases, and the complexity of running an operation with multiple inputs and constraints, it was determined that the use of discrete event simulation modeling was the only way to get a **prospective** look at how certain decisions would affect operations, enabling PSVMC to identify, test out, and quantify which implementation ideas would work best.

PSVMC experienced a successful engagement with ProModel Healthcare Solutions. The team created a comprehensive computer generated simulation model to plan patient flow, determine optimal case placements, and identify preferred staffing models.



### Analyzing the Situation:

The project was implemented in two phases to meet the medical center's move-in schedule.

**Phase I** - Tested & evaluated the following considerations to ensure successful transition to the new Pre-Op, Post-Op and PACU areas:

- Effect on new facility of case volume adjustments
- Scheduling of patient entry into Pre-Op beds
- Comparison of alternative patient care models
- Identification of capacity constraints with optimal solution scenarios

**Results:** PSVMC was able to:

- Identify the most efficient block-scheduling scenario
- Confirm sufficient Pre/Post-Op capacity to admit patients upon arrival to the hospital
- Determine the appropriate number and timing of beds to be made available
- Evaluate staffing requirements based on a decision to "not open all available beds"
- Initiate experimentation to assess an improved staff assignment model

**Phase II** - Tested and evaluated various case assignment models to determine how to best incorporate the current day surgery cases into the new main OR and open up the entire Pre/Post-Op area:

- Evaluated case specialties and case acuity to develop a plan that allowed for better efficiencies and a decreased need for open rooms later in the day
- Determined the best utilization for two ORs with close proximity to Pre/Post-Op area
- Identified best location for pediatric patients
- Determined best nursing assignment models for Pre-Op and Post-Op care
- Identified effect on patient wait times as related to staff allocations/reductions

**Results:** Identified preferred patient flow model where patients were assigned to Pre/Post-Op beds, based upon assignment to a specific Core/OR, and nurses were assigned to patients based upon the OR assignment:

- Decreased the amount of time a patient had to wait pre-operatively to be seen by a nurse
- Allowed patients to be admitted upon arrival to the hospital, reducing start-up bottlenecks and improving customer satisfaction
- Increased the percentage of patients ready 30 minutes prior to scheduled procedures
- Decreased delays in patients going from PACU to Post-Op

- Allowed physicians, staff, and management to see prospective data on how patients would flow in the new facility-assisted with "buy-in" and acceptance before moving in to the new facility
- Defined nursing assignment scenarios and assessed for impact, including assignments by: OR Core, patient type, zone, etc.)

### Optimizing the Solution:

Given the value, flexibility and accuracy of the model, PSVMC intends to continue to use it to plan for ongoing volume adjustments due to the opening of both an outpatient orthopedic surgery center and a pediatric surgical unit. They also plan to evaluate the case scheduling process, determine needs for additional pieces of equipment and instruments, and determine the impact of having individual surgeons alternate cases between two rooms.

Ensuring optimal performance in a complex and highly interactive environment is challenging and often requires substantial process change, which unto itself can be difficult and not without controversy. The best way to identify optimal solutions, and then demonstrate the rationale for change with physicians, staff, and administrators, is with numbers... scientifically accurate numbers. With ProModel's simulation solution, PSVMC was able to quantitatively and graphically compare current practice to alternate scenarios and generate a compelling case for the recommended solutions.

In addition to improving overall performance, they were able to show how the move to the new facility would positively affect each stakeholder, especially patients, through reductions in wait times and length of stay.

