We Need More Green Dots:
Digital Decision Support for Post-Surgical Care

Problem Statement
Hospitals are a complex, dynamic ecosystem where hundreds of decisions are being made every second. Many of the most important patient decisions are made in the perioperative department, through which all surgical patients must go.

Within this department, few people make more critical patient decisions than the post-anesthesia care unit (PACU) Charge Nurse.

Value Generation

Problem Statement
The outcome of this project is a centralized, digital interface that delivers curated decision-support to stakeholders in real time.

The application helps the PACU Charge Nurse make nurse-patient allocation decisions by approximating patient acuity through predicting the next disposition of patient.

What We Built

Modeling Disposition

Disposition Prediction

Influencing Features and Key Callouts

All the information to make the allocation decision in one place, saving clicks through Epic and calls to the OR.

Common-Sense Nurse Baseline

Adding Pre-OP and Intra-Op Features

Working with anesthesiologists and other medical experts, we collected the features that are most predictive of patient acuity.

17,000+
Patients

6 Million+
Data Points

Used Bayesian Optimization to tune hyperparameters and Databricks MLFlow to track and record experiments.

Model Tuning

Finding the optimal settings for the predictive model.

Final Results

90%
Accuracy In Predicting Disposition Post-Surgery

+37%
Over Baseline

When deciding if a patient needs one nurse, or two nurses, having this information definitely makes that decision easier.

-PACU Charge Nurse

Information sooner

All relevant information, all in one place

PACU Charge Nurse

Decision-Support Wish List

- All relevant information, all in one place
- Information sooner

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