MIT Medical – Improving Urgent Care Operations

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Dennis Burianek / Maurie Carr / Oana Costea / Mason Grimshaw

MITMedical

Project Overview

Problem Statement: (**1**) What are the operational challenges at MIT Medical Urgent Care? (**2**) What steps can MIT Medical take to improve the patient experience and real <u>and</u> perceived wait times at Urgent Care? (3) What measurement and data collection approach should they take in doing so?

Project Background: MIT Medical is a multi-specialty practice group with 100 medical staff across two locations. It serves three distinct populations and their dependents (students, faculty/staff, and retirees) not only through the provision of care but also through a self-funded health plan. Urgent care handles roughly 15% of total annual visits and operates 7 days per week, providing assessment and treatment of urgent but non-life threatening conditions.
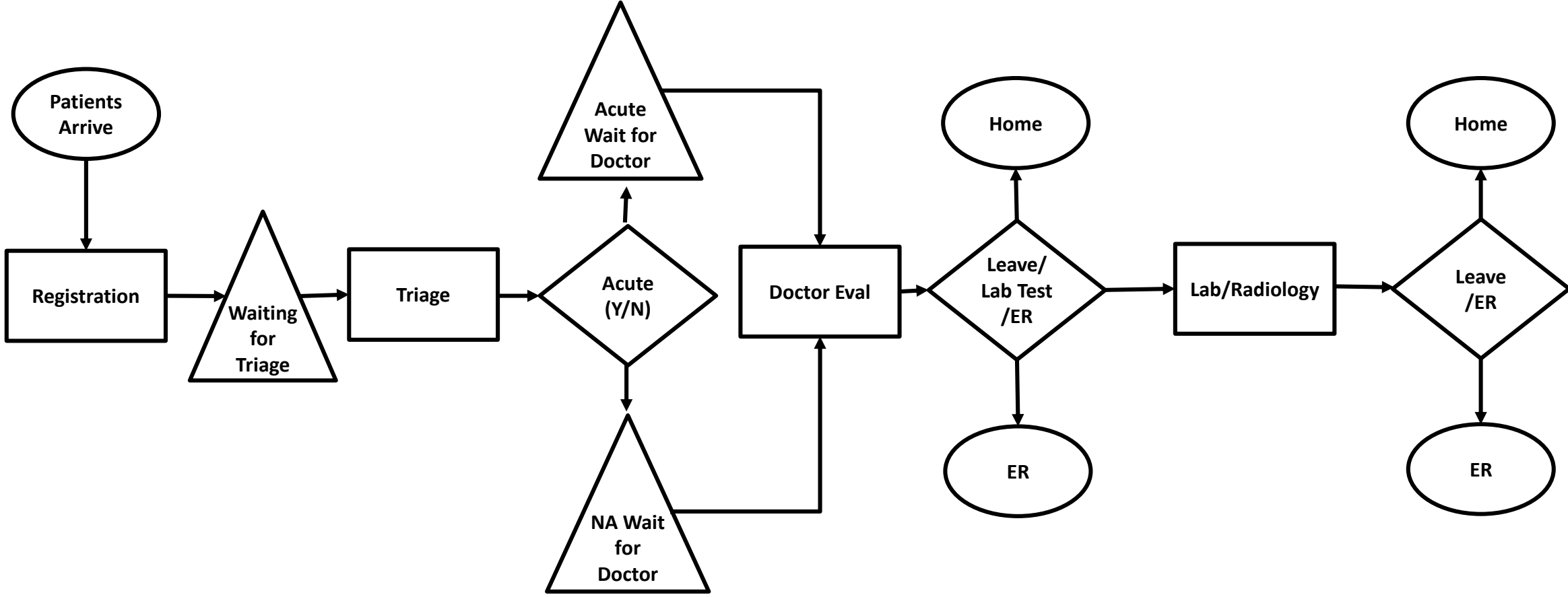
Student Team

Dennis   Maurie   Oana   Mason

Patient Flow at Urgent Care

Data Collection

Sources

Pre-Existing	MIT Medical Collected	MIT Student Team Collected
• 2015-2017 FY summary data • 2017 FY historical data (Arrival time, Patient type, Diagnoses) • Press Ganey	• Number of patients in waiting room (15 min intervals) • Arrival times for pilot week • Staffing	• Patient self-reported cycle times (paper survey) • Satisfaction/perceptions of urgent care (online survey)

Insights

- Wait times can be long (2+ hours) during peak hours
- Staffing is not matched to known demand (10 AM to 4 PM and Monday spikes)
- Perceptions of urgent care are worse than reflected performance

Data Analysis

- <u>Estimating Wait Times</u>: # of patients in the waiting room combined with the arrival rate (lambda) allowed us to estimate wait times for urgent care that reflected actual experience as understood through patient surveys (Little's Law: L = Lambda * W)

- <u>Comparing Staffing to Patient Arrivals</u>: Analyzed staffing patterns against patient arrivals to determine whether staffing levels and transitions were appropriate to spikes in demand

- <u>Generating Cycle Times</u>: Averaged "time in" versus "time out" for patient reported data to understand overall system time and bottlenecks

- <u>Understanding Experiences and Perceptions</u>: Surveyed 55 patients to understand experience and perceptions of urgent care qualitatively

Modeling Urgent Care

Summary: Developed a model based on historical data to show the impact of system changes on overall cycle times and wait times for patients using SimPy in Python. Delivered an interactive tool to MIT Medical to evaluate proposed improvements (staffing allocations, # of exam rooms, etc.).

Assumptions:

- Fixed-time/patient (5 min @ registration, 3 min @ triage, 20 min @ assessment)
- No downtime, providers take lunch
- Demand is more or less consistent year over year with lower demand between semesters and in the summer

Performance:

Real Arrivals vs. Simulated Arrivals
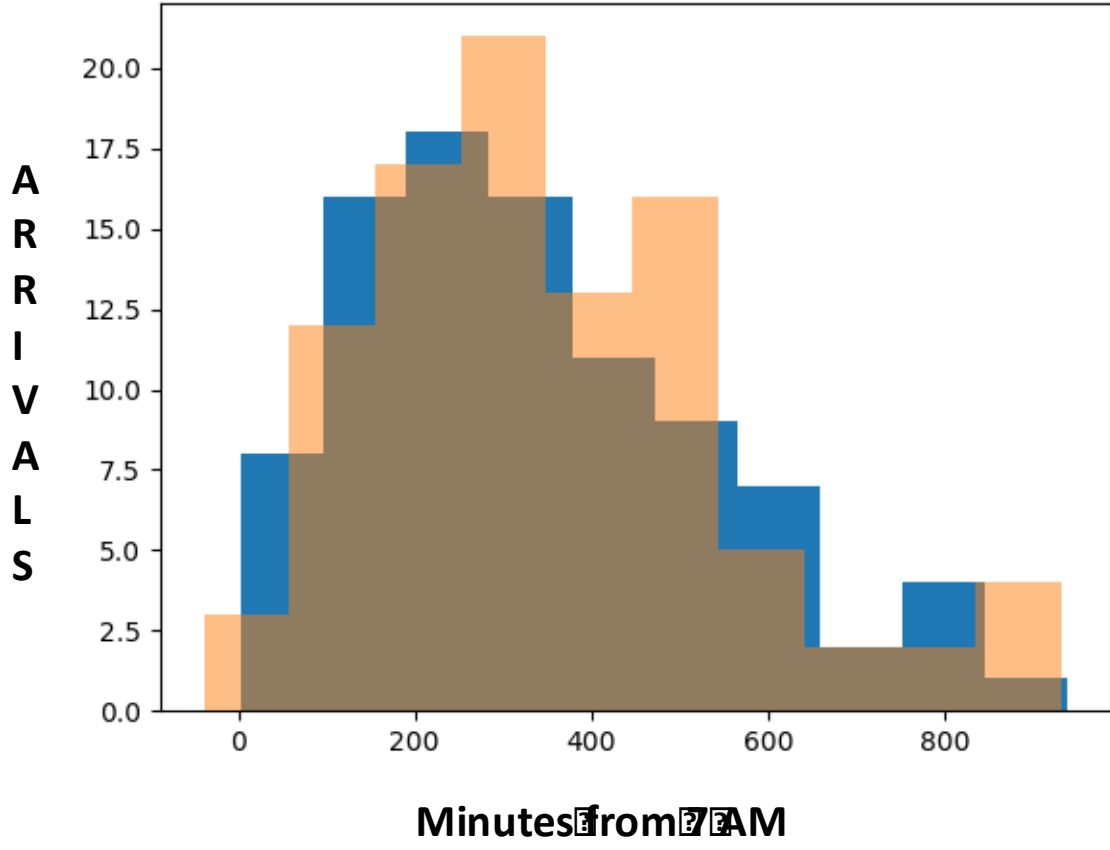
Cycle Accuracy

	Delta Between Model and Base Data
Average Cycle Time	+4
Cycle Time StDev.	-2
Average Wait Time (Triage to Provider)	+12
Wait Time StDev. (Triage to Provider)	+3

Conclusions:

- Adding providers drastically reduces cycle times (each provider is assumed to see 3 patients per hour)
- Adding exam rooms has a limited effect on reducing cycle time
- Smoothing demand reduces cycle times
    - Moving 10 patients from Monday to Saturday and Sunday reduces average cycle time on Monday by 45 minutes

Final Recommendations Overview

Operating Philosophy
- Clarify philosophy of urgent care
- Decide primary care on demand v. urgent care practice
- Align operations to meet strategy

Operations
- Same day appointments
- Fast track for simple conditions
- Outpost in Z-Center
- Centralize supplies
- Standardize exam rooms

Technology & Data Collection
- Data to collect
    - Time In/Out for each step of patient's journey
    - Arrival Times
    - Staffing Technology
- Implement ClockWise MD or other wait time tech

Staffing
- Centralize scheduling for all disciplines
- Match staffing to variations in demand
- Consider teaming of MAs and cross training front desk staff

Patient Education
- Provide online and interactive resource for UC
- Market UC to patients
- Demonstrate UC is adapting to feedback in real time