

Project Statement: identify bottlenecks and inefficiencies along patient pathway to improve patient wait times in the outpatient department (OPD).

Courtesy of Ali S. Kamil, Dmitriy E. Lyan, Nicole Yap, and MIT Student. Used with permission.



Patients wait at the walk-in counter for hours everyday to see a doctor at LVPEI.

The Opportunity

LV Prasad Eye Institute (LVPEI) is an eye care hospital in Hyderabad, India, that has served over 15 million people, 50% of its patients at free of cost. Its mission is to provide equitable and efficient eye care to all sections of the society. The hospital naturally faces large patient volumes and is concerned that its capacity constraint is creating long wait time for its patients. Opportunity exists in capturing dynamic changes in patient demand and patient pathway to expose the bottlenecks and inefficiencies in the system that is creating long patient wait time.



Non-paying patients have a separate waiting area.



Dr. Rajeev, with whom we conducted our first Time and Motion study.

Pre-trip & On Site Work

Starting in January, our team conducted research with local hospitals in Boston, including Massachusetts General Hospital, Massachusetts Eye and Ear Hospital, and Mount Auburn Hospital, to identify best practices in managing patient flow.

In March, the team visited LVPEI for two weeks. In order to understand the patient pathway and effectiveness of current scheduling system, the team conducted Time and Motion studies in four of the OPD clinics, interviewed various stakeholders, and conducted patient surveys at the walk-in counter and checkout counter.



Dr. Prashant Garg takes opportunities to mentor his Ophthalmologist and Optometrist Fellows throughout the day.



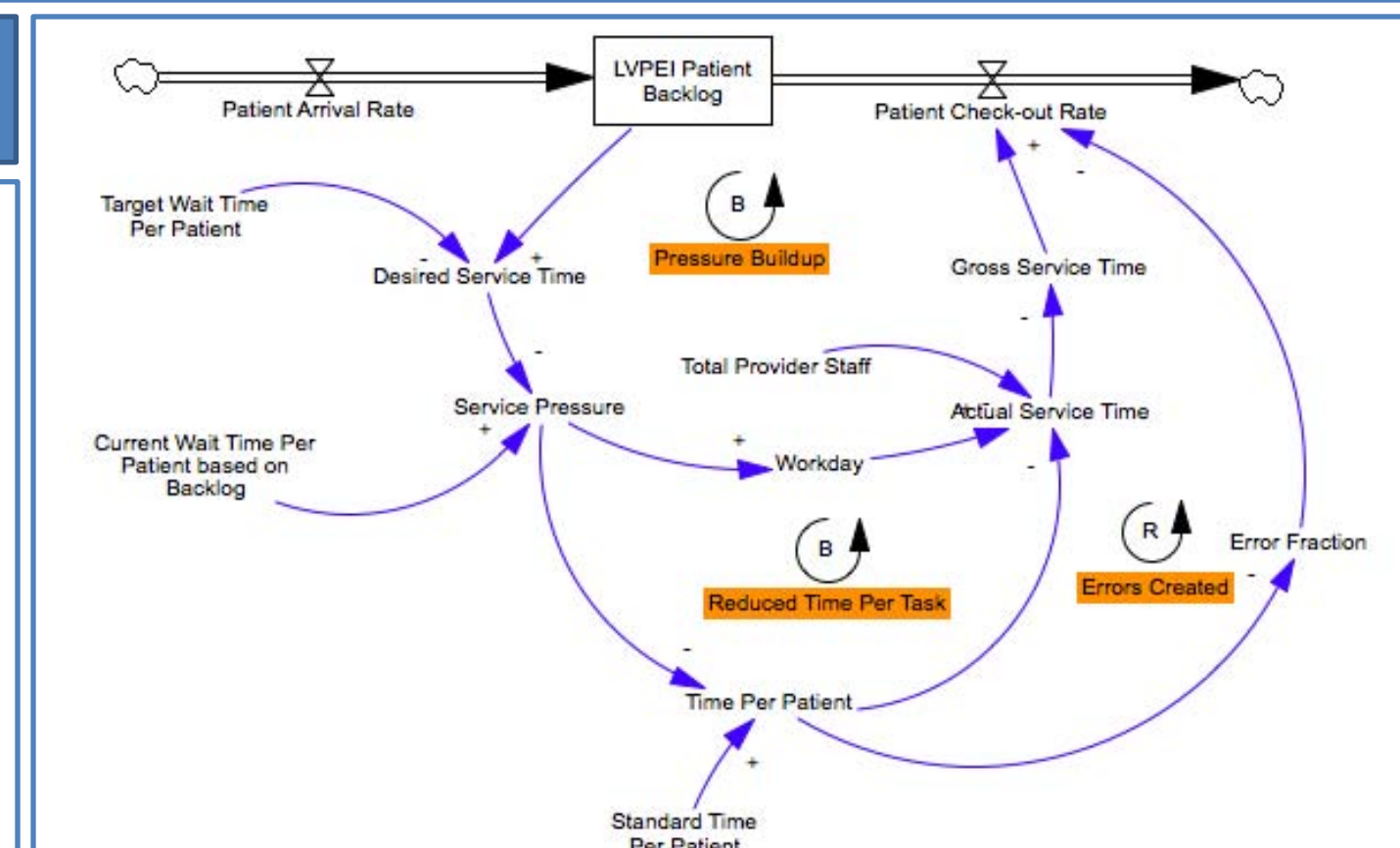
The team had our eyes examined by Dr. Pravin Krishna and his lead optometrist.

Post-trip Work

Based on the variables that we have identified as contributing to the patient wait time and clinic-specific trends we have observed, we returned to Boston and validated these factors and trends using data collected on-site, and additional data collected post-visit. The team used system dynamics approach to map out the relationships between these variables that contribute to the rates of patient movement along each step of the pathway and identified systemic causes of increase in patient waiting time. We had the opportunity to present our key insights and recommendations to LVPEI's Vice Chair, which will serve as a framework for the hospital's next steps.

System Dynamics Analysis

The team identified key policies and causal relationships within LVPEI's operations that contributed to increased patient waiting time. The loop to the right, for example, portrays the relationship between patient backlog and service rate. As more patients accumulate in the backlog, service pressure increases. The workday must increase in order to accommodate all the patients waiting, while at the same time practitioners work faster and spend less time with each patient, in an effort to clear the backlog. As an unintended consequence, error rates increase and patient appointments actually takes longer than they should have due to rework.



System Dynamics model portraying the relationship between patient backlog and service rate.

Student Team Bios

Ali Kamil has worked in consulting and public service for the past 6 years. He is a system design and management fellow at MIT Sloan. Post MIT he intends to pursue a career in social entrepreneurship in emerging markets. **Dmitriy Lyan** has worked in investment management and software development industry and is completing his degree in Engineering and Management at MIT 2013. He plans to apply his talents in impact investing and social entrepreneurship. **MIT Student** has worked in finance and aims to be in social business after completing her MSc in Management Studies in 2013. **Nicole Yap** is looking to apply her management consulting background to the development of sustainable global health strategy after completing her MSc in Management Studies in 2013.

“To create excellent and equitable eye care systems that reach all those in need.”

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