Improving Patient Wait Times at the Weinberg Outpatient Infusion Center

In 2018, a student group from the Whiting School's Master of Science in Engineering Management (MSEM) was tasked with finding reasons why patients faced significant delays throughout the course of their appointments at the Weinberg Outpatient Infusion Clinic, one of many branches of the Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins Hospital. Patients there regularly had to wait longer than 30 minutes after their scheduled appointment time to begin infusions, which may last upwards of seven hours. These delays created serious implications for patient satisfaction and also affected nurses and clinical staff, as even one delay could create a domino effect, pushing back subsequent appointments.

Analysis revealed that 55.6% of patients started their treatments more than 30 minutes after their scheduled appointment times due to a variety of delays. Upon reviewing more than 200 cases, the student consultants identified the root causes for many types of delays by decomposing the problem. The major causes for delays involved the inefficient scheduling process (36.78%), personal delays (17.24%) such as patients coming late to the clinic, and inadequate information and time management (16.09%).

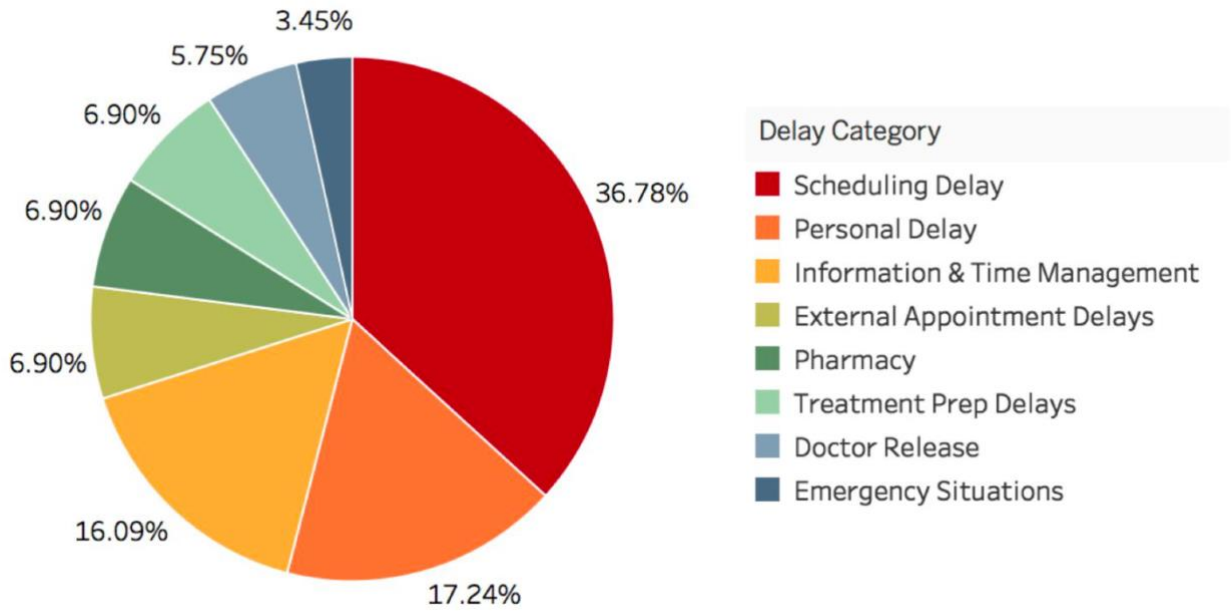

Figure 1. Breakdown of Delay Categories

The solutions proposed by the student consultants were categorized into 2 groups: preventive and adaptive, suggesting a few modifications to the existing system at Weinberg in order to make it more robust.

Preventive Solutions:

- Have a scheduler to reschedule certain appointments in advance to avoid delays
- Improve iQueue system to consider the parameters that warrant manual reallocation.
- Build an alert system into iQueue to warn nurses if they violate primary constraints

Adaptive Solutions:

- Add a check-in tablet at the entrance of the clinic's waiting room
- Install monitors in the waiting room and clinic

Sample solutions are shown below:

Figure 2. Waiting Room Display Prototype

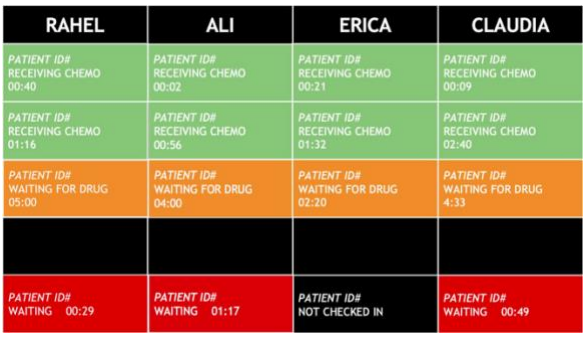

Figure 3. Inside Clinic Display Prototype

After 8 weeks of observation, these recommendations, along with several additional suggestions from the MSEM student consultants, were gladly accepted by Johns Hopkins Hospital in the final presentation. As a result, they not only made the days at Weinberg run more smoothly, but also incrementally improved the outlook for the nurses and patients.