Gap Analysis Report - Pneumatic Tube Delivery Data

We were able to acquire some but not all data needed for our gap analysis, as the dataset we were provided contained timestamps for when orders were placed and administered, but there was not much information on the steps in between. To address the lack of quantitative data, we conducted our gap analysis using a combination of the available timestamps and our interviews from shadowing Dr. Fackler in the PICU. We found that the biggest unknown in the delivery process was the transition from the pharmacy to the PICU through the pneumatic tube, as there is no alert system for when the antibiotics have arrived at the tube stations in the PICU. Although shipments from the pharmacy to the PICU only take around 2.4 minutes on average, there are about 140 cases per month where it takes longer than 3 minutes, with the longest delivery taking more than 23 minutes. This information can be found in Figure 1.

According to Mr. Gimburg, the pneumatic tube system that Hopkins uses is very old and can run into issues with ghost carriers, where a capsule may get stuck, but the system won't recognize that and will send another capsule, causing the desired delivery locations to all be offset by one. Problems like these require a complete shutdown of the system and manual delivery during that time. Even when shipments do arrive within a couple minutes, the lack of an alert system leads to infrequent checking of the tube station, and we observed that nurses took up to 10 minutes to pick up a capsule from the PICU tube station once it had arrived.