Stage 1 Improvements

The scanner units were placed in three rooms that were in close proximity to each other, which allowed the use of one central control room to monitor all of them. The scanning rooms were moved nearer to the patient waiting room, which shortened the walk and saved more than a minute in transit time compared to the previous process.

The team also made several “low-tech” improvements that shortened specific process components. One of these was the use of prefilled injection syringes for the contrast material administered to patients. Chairs were also removed from the central control room, allowing nurses and technologists to move more quickly within that room and between the control room and the scanning rooms.

Stage 2 Improvements

The second stage was aimed at further reducing the time associated with CT process components based on the recognition that human-based (versus scanner-based) tasks represented the largest bottlenecks. Specifically, IV placement was moved from the CT scanner room (a financially disadvantageous use of an expensive resource) to a separate room dedicated to IV line placement. This process-flow change allowed greater labor specialization with regard to IV placement; specialized nurses focused on doing the IV work in a centralized location, which resulted in greater efficiency for the clinic. Because the nurses were more expert in IV placement than those previously responsible for this step, the modification also yielded a reduction in poor placements, which improved patient comfort and care.

Stage 3 Improvements

Although the modifications made thus far boosted the CT process’s efficiency sinificantly, there remained room for further improvement in the use of human resources and the sequencing of components. In this stage, therefore, the team modified the process to involve the technologist more efficiently and made formerly sequential processes parallel.

The new process required two full-time CT technologists and one half-time nurse. Nurses were used more sparingly, as one nurse could be shared between two CT scanner rooms now that the IV line placement was performed in a separate area. Separating the task of placing the IV line also freed the CT scanner room for more productive use—namely, performing CT scans.

By contrast, the number of CT technologists had to be increased to use the scanner more efficiently. One CT technologist was required to set up the CT protocol and perform the scan. However, because CT image reconstruction was faster and because less technologist interaction was needed, the technologist could be used to “turn over” the CT scan room (i.e., clean up and change the linens on the scanner table). The second CT technologist assisted with establishing the CT protocol and performing the scan, but now had primary responsibility for helping patients off the scanner table, returning them to the waiting area, and returning with the next patient.