A novel approach to improving operating room efficiency in pediatric hospital by parallel processing

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Introduction: Ever growing financial pressure requires hospital systems to optimize efficiency in operating room (OR) utilization. Use of Lean and Six Sigma methodologies increase OR efficiency and financial performance while maintaining patient safety1, 2. In our hospital the estimated cost of unused OR time is 61 USD per minute. As a method of improving OR efficiency we designed a pilot study to decrease turn over time. It was recognized that our turn over times were prolonged because the circulating nurse had to complete OR preparation before assessing & transporting the patient to the OR. To balance patient safety & OR performance by eliminating the disadvantages of sequential processes we changed the existing practice of patient transport to the operating room. We removed the circulating RN from the equation & introduced a Childâ€™s Life personnel*. A consistent and reproducible paralleled process system was created to fasten OR turnover time.

Methods: This was an observational controlled study. It was conducted over a period of 16 operating room days (16 weeks, one day a week). The study was conducted in a pediatric urology room, with relatively the same lists. On 8 of the days the new system was employed & on 8 days the old routine was carried out. We measured OR turn over time, which was defined as the time from one patient exiting the room to the next patient entering the room.

The following changes were implemented in the new paralleled process system: The circulating RN no longer had to go to the holding area to assess the patientâ€™s readiness for surgery. Instead, it was done by the anesthesiologist & a holding area RN. The patient was no longer brought to the OR by the circulating RN and anesthesiologist when the room setup was completely done. Instead, the circulating RN informed the anesthesiologist when the time necessary to complete setup & instrument count equaled the anticipated anesthesia induction time. At this point the anesthesiologist and a Childâ€™s Life representative brought the patient to the operating room & the induction of anesthesia paralleled final surgical setup. The anesthesia team consisted of an anesthesia attending and a fellow. The attending assessed each patient in the holding area & assures their readiness in parallel of the previous case, however, this practice is a routine & not new in our hospital.

At the end of the study we assessed the mean turn over time in both groups. Obvious outliers were excluded from calculations.

Results: There were 23 turn-over times recorded in the study group, and 28 in the control group. The mean turn-over time in the study group was 17 min compared to 24 min in the control group.
Conclusions: Process improvement was demonstrated by changing sequential operations to parallel. These changes reduced operating turn over times by 7 minutes. At the end of a year OR savings would be striking and would allow an additional one or two cases per day.

Conflict of interest: None

*Child’s Life personnel routinely work with children in the holding area. In a friendly & playful manner they familiarize children with anesthesia mask & breathing in the mask among other things. The main goal of their work is to decrease patient & their family’s anxiety. Oftentimes they would escort special needs children in the operating room.

References:
