

could. Numerous studies have shown that simply by implementing team communication practices such as preoperative huddles we can reduce complications and adverse events, increase efficiencies and reduce costs. But how do we make it easy? How do we make it sustainable? We evaluated the effect of a structured digital preoperative huddle through a mobile app among the surgeons, anesthesiologists, nurses and operating room staff on quality, efficiency and team collaboration. We report the results of this effort. **Materials and Methods:** We implemented a workflow which included an asynchronous digital huddle through a mobile app in neurosurgery cases. We used non-participating surgeons working at the same operating rooms as controls for the surgeons who were compliant with the workflow and compared objective and subjective outcomes in the pre- (March 2021 to February 2022) and post- (March 2022 to August 2022) intervention periods for each group. Primary quality outcomes included morbidity and mortality, as defined by the department's criteria, and readmissions rate. Primary efficiency outcomes included the differences in time to incision, rate of delays in case starts, rate of cases that overrun by >30 minutes, and rate of accurate case time prediction within 15% and 30 minutes. Secondary subjective outcomes measures included surveys filled out by the anesthesia and nursing staff. **Results:** Participating surgeons performed 1554 and 689 cases in the pre- and post-intervention periods respectively. Compliance rate with the workflow among participating surgeons was 77%. Non-participating surgeons performed 985 and 409 cases in the pre- and post-intervention periods respectively. Among participating surgeons, there was a statistically significant decrease in readmissions rate (8.16% to 5.48%,  $p = 0.028$ ) before and after intervention, while it did not change for non-participating surgeons (5.89% to 6.6%,  $p = 1$ ). Rate of morbidity and mortality decreased more for participating (from 5.08% to 3.63%,  $p = 0.09$ ) than for non-participating surgeons (from 3.21% to 2.79%,  $p = 0.76$ ) but did not reach statistical significance for both groups. There was a significant decrease in time to incision (66 mins to 63 mins,  $p = 0.02$ ) and rate of cases that overrun by > 30 minutes (41.5% to 36.22%,  $p = 0.02$ ). There was a significant increase in the rate of accurate case time prediction within 15% and 30 minutes (34.6% to 43.1%,  $p = 0.0005$ ) for participating surgeons. All the above efficiency outcomes did not change for non-participating surgeons. Rate of delayed starts was lower for participating surgeons in the post-intervention, but it did not reach statistical significance (6.94% to 5.34%,  $p = 0.15$ ). The rate of delayed starts for non-participating surgeons remained the same (7.10% to 7.54%,  $p = 1$ ). Nursing and anesthesia staff subjectively reported improvement across numerous domains of quality and efficiency. The average rate for the digital huddle ease of use was 4.3/5. **Conclusion:** Implementation of structured digital preoperative huddles resulted in significant

decrease in readmission rates and improved efficiency outcomes within 5 months. Technology is key for a scalable and sustainable adoption of these game changing practices.

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### AI30: Robustness of results of RCTs in spine surgery - A fragility analysis

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**Introduction:** Many trials in Spine surgery were characterised by fewer outcome events along with a small sample size. Fragility Index helps us identify the robustness of the results from such studies with statistically significant dichotomous outcomes. To assess the robustness of statistically significant outcomes from randomised control trials (RCTs) in spine surgery using Fragility Index (FI) which is a novel metric measuring the number of events upon which statistical significance of the outcome depends. **Materials and Methods:** We conducted independent and in duplicate, a systematic review of published RCTs in spine surgery from PubMed Central, Embase and Cochrane Database. RCTs with 1:1 prospective study design and reporting statistically significant dichotomous primary or secondary outcomes were included. FI was calculated for each RCT and its correlation with various factors was analysed. **Results:** 43 trials met inclusion criteria with a median sample size of 139 (IQR:80-319) and median reported events per trial was 48 (IQR:24-112). The median FI score was two (IQR 1-7), which means if we switch 2 patients from non-event to event, the statistical significance of the outcome is lost. The FI score was less than the number of patients lost to follow-up in 18/43 trials. The FI score was found to positively correlated with sample size ( $r = 0.491$ ,  $p = 0.001$ ), total number of outcome events ( $r = 0.416$ ,  $p = 0.006$ ) and journal impact factor ( $r = 0.348$ ,  $p = 0.022$ ) while negatively correlated with p-value ( $r = -0.417$ ,  $p = 0.005$ ). Funding and year of publication did not have a significant correlation. **Conclusion:** Statistically significant dichotomous outcomes reported in spine surgery RCTs are more often fragile and outcomes of the patients lost to follow-up could have changed the significance of results and hence it needs caution before transcending their results into clinical application. The addition of FI in routine reporting of RCTs would guide readers on the robustness of the statistical significance of outcomes.