

Patient Safety Tip of the Week

December 13, 2022

Surgical Teams – the “Consistency Score”

In our several columns on “after hours” surgery (see list below) we noted one of the likely contributing factors may be that you are often operating with a team that is likely different from your daytime team. We can’t overemphasize the importance of teamwork in the OR.

So, what about surgery during regular hours? Does inconsistency of team composition impact performance in the OR then as well? Researchers at the Hospital for Special Surgery in New York developed a unique metric to study that issue. The “consistency score” was developed after it was anecdotally observed that significant variability may exist between surgical teams depending on scheduling and hiring cycles at their institution ([Kirksey 2022](#)).

Because more than 500 members of hospital staff were involved in total joint arthroplasty procedures with 38 surgeons, the consistency score calculation was a percentage based on the weighted graph consisting of all team members who had worked with the surgeon over the prior 90 days until the time of the particular surgery. (Team roles taken into consideration in this calculation were the surgeon, anesthesiologist, scrub technician, circulating nurse, first assistant, and second assistant.)

The actual score is quite complicated, so you have to go to the original article for details. But the score assigns weights to various factors and additional covariates were created to account for confounding and effect modification. The consistency score association with over 18,000 total joint arthroplasties was then analyzed.

THA (Total Hip Arthroplasty) surgical teams with greater consistency were associated with shorter surgical processing times compared with surgeries with team members who have worked together less frequently: there was a significant 4.1-minute decrease ($p = 0.008$) in surgery duration for a single 10-percentage point increase in the consistency score. In addition, for a single 10-percentage point increase in consistency score, the patient-in-to-procedure-start time was 3.0 minutes faster ($p = 0.0006$), and there was a

0.3-minute decrease in procedure-end-to-patient-out duration ($p = 0.009$) and a 1.7-minute decrease in turnover time ($p = 0.001$). The consistency score was not significantly associated with hospital-acquired complications.

TKA (Total Knee Arthroplasty) surgical teams with greater consistency had shorter surgical processing times than surgeries with team members who have worked together less frequently. Patient-in-to-procedure-start time was 2.6 minutes faster ($p = 0.0001$) and surgery duration was 3.4 minutes faster ($p = 0.05$) for a single 10-percentage point increase in consistency score. In addition, there was a 0.2-minute decrease in time from procedure-end-to-patient-out ($p = 0.01$) and a 1.1-minute decrease in turnover time ($p = 0.03$) for a single 10-percentage point increase in consistency score. Hospital-acquired complications were not significantly associated with consistency scores for TKA.

Thus, for both THA and TKA, the consistency score showed that better team consistency was associated with improved OR efficiency without any increase in adverse events.

The authors note that they were able to develop the “consistency score” metric because they had that huge database on total joint arthroplasty procedures. They suspect hospitals with low volumes of such surgeries might have difficulty using the metric.

We’re not at all surprised to see that OR efficiency improved as consistency of the OR teams improved. We are a little surprised that there was not a concomitant decrease in surgical complications. Our multiple columns below have discussed the association of complications or adverse events with procedure duration. It may be that the mean decrease in OR duration, though statistically significant, may not have been great enough to reduce complications.

Some of our previous columns on “after-hours” surgery:

- September 2009 [“After-Hours Surgery – Is There a Downside?”](#)
- October 2014 [“What Time of Day Do You Want Your Surgery?”](#)
- January 2015 [“Emergency Surgery Also Very Costly”](#)
- September 2015 [“Surgery Previous Night Does Not Impact Attending Surgeon Next Day”](#)
- October 4, 2016 [“More on After-Hours Surgery”](#)
- August 15, 2017 [“Delayed Emergency Surgery and Mortality Risk”](#)
- October 24, 2017 [“Neurosurgery and Time of Day”](#)
- December 2019 [“Surgeon On-Call Shifts”](#)
- October 13, 2020 [“Night-Time Surgery”](#)

Our prior columns focusing on surgical case duration:

- March 10, 2009 [“Prolonged Surgical Duration and Time Awareness”](#)
- January 2010 [“Operative Duration and Infection”](#)
- July 21, 2012 [“Surgical Case Duration and Miscommunications”](#)

- August 26, 2014 “[Surgeons’ Perception of Intraoperative Time](#)”
- December 30, 2014 “[Data Accumulates on Impact of Long Surgical Duration](#)”
- November 24, 2015 “[Door Opening and Foot Traffic in the OR](#)”
- July 26, 2016 “[Confirmed: Keep Your OR Doors Closed](#)”
- November 7, 2017 “[Perioperative Neuropathies](#)”
- December 2017 “[A Fix for OR Foot Traffic?](#)”
- January 2021 “[Operative Time and Postoperative TKA Complications](#)”

References:

Kirksey M, Sasaki M, Grace D, et al. A Novel Network-Based Metric of Surgical Team Consistency Opens Opportunities to Improve Hospital Performance and Care Value. NEJM Catalyst 2022; 3(12): December 2022
<https://catalyst.nejm.org/doi/full/10.1056/CAT.22.0244>



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