



# Impact of Standardized Surgical Checklist on Communication and Team Work among Interdisciplinary Surgical Team

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## BACKGROUND

- A surgical time out is a hospital policy in the operating rooms of Los Angeles County + University of Southern California Medical Center (LAC + USC) performed before a surgical incision. This is a final verbal confirmation of patient's identification, planned surgery, and other critical safety elements in the surgery.
- Compliance with effective surgical time out at LAC + USC has been poor resulting in improper administration of required antibiotics, inadequate preparation of intraoperative apparatus, late blood product requests, time delays, etc.
- A innovation project was implemented to improve compliance in effective surgical time out at LAC + USC. The project was called *Standardized Surgical Checklist* (SSC). SSC, when implemented effectively, is known to reduce complication and mortality rates following surgery (Tang et al., 2014), and can promote good communication and teamwork among medical care team (Fudickar, Horle, Wilfang, & Bein, 2012; Lyons & Popejoy, 2014).

## PURPOSE

**Primary Aim:** To improve communication and teamwork among physicians, nurses, anesthesia providers, and technicians using the SSC after 2 weeks of implementation at LAC + USC.

### Secondary Aims:

- To achieve at least 90% compliance in using the SSC
- To decrease post-operative patient complications after the SSC is implemented
- To provide education and training in the use of SSC to at least 80% of the surgical team
- To increase satisfaction of interdisciplinary surgical team concerning the utilization of the SSC

## Standardized Surgical Checklist:

All other activities are suspended (unless life threatening emergency)	YES
All critical team members present	YES
Time out dialogue (per facility policy) identified	YES
Introduction by name and role	YES
Anesthesia/Sedation Record has been previously confirmed with the patient's ID band at the procedure site	YES
Once in the operating room, the patient's name has been verified against the patient's ID band, the anesthesia/sedation record and any other ID on the patient's identification	YES
Confirmed Patient's Name and DOB/MSRN	YES
Procedure matched to the patient's consent	YES
What's in the blood bank?	YES
Type and Screen	YES
Prophylactic antibiotic (given within 60 minutes prior to skin incision), except for Vancomycin and Fluoroquinolones	YES
Relevant images properly labeled & displayed	YES
Correct site or laterality (based on marked site)	YES
Correct positioning	YES
Needed implants are present, available, & ready	YES
Needed equipment & supplies are present, available, & ready	YES
Any equipment concerns	NO
Fire Risk/Precautions Assessment Completed?	YES
Surgeon: NO YES see below	Anesthesia Provider: NO YES see below
Antibiotic specific concerns	YES
Other concerns for antibiotic administration	YES
Case Duration	YES
Surgical Preparations	YES

## MATERIALS AND METHODS

**Design.** Pre- and post-innovation survey using a 5-point Likert scale to assess the perceived level of communication and teamwork improvement among the interdisciplinary surgical team before and after implementation. Also, a retrospective chart review of surgical cases for post-operative complications were conducted after the innovation project was launched.

**Setting.** LAC + USC, one of the biggest public hospitals in the US and performs more than 12,000 surgeries (LAC Department of Surgery, 2014) annually. The surgery and anesthesiology department of LAC + USC provides services in 25 main ORs.

**Sample.** Interdisciplinary members of the surgical care team such as surgeons, anesthesia providers, circulating RN's, and technicians. Participants came from 30 surgical cases randomly selected before and after the implementation of the project. Excluded participants were those who did not actively participate in the actual time out, those who were not present in the majority of the surgical case, and those who refused to participate in the survey. The total number of participants for both surveys was 219.

**Innovation.** The innovation can be summarized in 4 steps:

- Step 1:** Baseline survey. Participants were the surgical care team members in the first surgical case performed each day starting on November 15, 2015 until 30 surgical cases were selected.
- Step 2:** Two weeks before project implementation, educational sessions delivered in a variety of teaching modes (i.e.: conference and huddle presentations, SSC video presentations, dissemination of SSC brochures, verbal coaching, etc.) to the members of interdisciplinary surgical care team.
- Step 3:** Implementation of the innovation—the SSC.
- Step 4:** After 2 weeks of implementation, members of the surgical team in randomly selected 30 surgical cases completed the post-innovation survey. Chart reviews were conducted on these 30 cases to determine post-operative complications using the criteria set by the American College of Surgeons National Quality Improvement Project (Haynes et al., 2011).

## RESULTS

### Impact of SSC.

The results from an independent t-test demonstrated that the mean improvement score for both communication (t=-3.704, df=190, p<.001) and team work (t=-3.028, df=184, p=.003) were significantly higher in the post-innovation group than in the pre-innovation group. Zero percent complication rate had been documented in all 30 cases after the innovation was implemented.

### Fidelity Outcomes.

There was 100% compliance among providers in terms of the performance of the time out using the SSC in all 30 cases included in the post-survey. On the other hand, the planning committee had successfully provided educational support or training as regard the SSC to 83% of the post-innovation group.

### Satisfaction Outcomes.

Ninety-six percent of the post-innovation group responded that the SSC was easy-to-use and 97% of the same group wanted the SSC to be implemented to self if ever that they will have their own surgeries.

Outcome Measure	Operational Definition	Data Source	Analysis
Communication	Improved perception in communication among the providers within the case as manifested by increased mean score perception in the innovation (X1) group compared to non-innovation group (X0).	Pre- and Post-survey	t- test
Teamwork	Improved perception in team work within the case as manifested by increased mean score perception in the X1 group compared to X0.	Pre- and Post-survey	
SSC compliance	Percentage of surgical cases where SSC was implemented by surgical team.	Pre- and Post-survey	Descriptive statistics (Percentage)
Participation in the education/training	Percentage of the end users who received any form of education/training regarding the innovation.	Post-survey	
Satisfaction to SSC	Percentage of the end users who perceived the innovation as easy-to-use.	Post-survey	
Implementation of SSC to Self	Percentage of the end users who will allow the SSC to be implemented to self should they have their own surgeries.	Post-survey	
Complication Rate	Percentage of post-operative complication on 30 random surgical cases after the implementation	Electronic Medical Record	

## CONCLUSIONS

The standardization of surgical pause by means of a checklist in the operating rooms of LAC + USC compared to the traditional time out practice evidently improved communication and team work among interdisciplinary care team. Pivotal facilitators that led in the successful implementation of the project were educational session or training, meticulous planning process by the project leaders, and the support from hospital management. Lastly, continuing education and re-training of surgical staff, re-assessing the elements included in the actual checklist, and providing audits and feedbacks to the end-users are key to sustainability.

## BIBLIOGRAPHY

- Fudickar, A., Horle, K., Wilfang, J., & Bein, B. (2012). The effect of the WHO Surgical Safety Checklist on complication rate and communication. *Drach Anesth/Int.* 19(42), 695-701. doi:10.3233/arash-2012-0695
- Haynes, A. B., Weiser, T. G., Berry, W. R., Lipsitz, S. R., Breizat, A.-H. S., Dellinger, E. P., . . . Group, F. t. S. S. L. S. (2011). Changes in safety attitude and relationship to decreased postoperative morbidity and mortality following implementation of a checklist-based surgical safety intervention. *BMJ Qual Saf.* 20(1), 102-107. doi:10.1136/bmjqs-2009-040022
- LAC Department of Surgery (2014). Operating room summary report. Retrieved from Los Angeles, Department of Surgery
- Lyons, V. E., & Popejoy, L. L. (2014). Meta-analysis of surgical safety checklist effects on teamwork, communication, morbidity, mortality, and safety. *Research Journal of Nursing Research.* 36(2), 245-261. doi:10.1177/0019491913505782
- Tang, R., Rannuthugala, G., & Cunningham, F. (2014). Surgical safety checklists: a review. *ANZ Journal of Surgery.* 84(3), 148-154. doi:10.1111/ans.12168