Experience with the WHO Surgical Safety Checklist

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Despite years of efforts by organizations throughout the world "wrong site" surgery has proven to be a resilient opponent. The purpose of present review article is to revisit the various tools that have been designed specially the WHO Surgical Safety Checklist (SSCL), the purpose of which is to improve patient safety and prevent errors in the site of surgery. Three items were the corner stone of this review. Firstly effectiveness of the tools specially the WHO SSCL, secondly approach of those responsible for implementation and thirdly adherence by organizations to the provided guideline. A general review of the available data showed a clear improvement in patient safety. As a whole medical personnel considered SSCl and other tools as a good addition but these tools have yet to prove their worth in the prevention of "wrong site" surgery. There is a need to strive continuously for improving patient safety and to capitalize on the advances made in this regard to prevent this menace. At our Rawalpindi Medical University affiliated Holy Family Hospital efforts are in place for improving ways and developing protocols to curb the evil of wrong site surgery. We currently adopted a new way proposed by Ragusa et al in which we experimented with keeping the surgical instruments and trolley outside the OR away from the surgery team members. Thus preventing distraction of team members till the completion of SSCl. Additionally the Anesthetist took the responsibility of the implementation of the SSCL. This method also prevented the hierarchal style seen in the operation theatres. [1,2] These sentinel events policy was published in 1996.[3] By the Joint Commission. This commission is an independent body which has 20,500 health care facilities accredited with it in the USA. The aim of this policy was to help individuals and organizations to learn from their mistakes and achieve the objective of patient safety and zero rate of wrong site surgery[4]. Wrong site surgery mean surgery done on the wrong patient, surgery on the wrong site or may be a wrong surgery on the wrong patient.[4]
After review of the record the American Academy of Orthopedics claimed that the orthopedic surgeons have a 25% likelihood of operating a wrong site during their careers. After this claim a campaign "Sign Your Site" was started which proposed that surgeons should sign the surgical site before surgery is done.[5] A similar scheme known as the "SMaX" which stands for signing, marking and X-ray of the spine segment was launched by the North American Spine Society in 2001.[6] In 2004 The Joint Commission proposed a Universal Protocol. The Commission made it compulsory for all medical facilities under its accreditation to adopt it.[7] This document included confirmation of patient and surgical site, its marking and time out before any elective surgery. The World Health Organization (WHO) a subsidiary of the United Nations, which is charged with managing the global health affairs, developed the "surgical Safety Checklist" in the year 2008. This checklist was a product of the "Safe Surgery Saves Lives" campaign. According to this document three phases have been identified in any surgery,. i.e., "Sign In" prior to the anesthesia induction, "Time Out" before incision and "Sign Out" before the patient leaves the operating room. [8-10]

Unfortunately in 2009 Stahel et al found an increased number of wrong site surgery. [11] This was preceded by the Joint Commission report with similar findings.[10] Following these disappointing results the Commission further augmented the importance given to the issue by declaring the Universal Protocol as the National patient Safety Goal.[12,13] This review article goes through the studies and literature recently published as SSCL and similar tools that have been developed over time to prevent wrong site surgery and improve patient care. The aim was to identify how effective is the SSCL in achieving its goals. Hurdles in the achieving maximum results were also identified. The thinking and view point of those involved in the implementation were sought, emphasis was also placed on how thoroughly organizations comply with the provided guidelines.

Compliance

After the initial positive feedback regarding the implementation of the SSCL later studies reported a

downhill trend in terms of compliance. Measures such as regular audit or tracking are necessary to improve compliance.[14-18] Kearns et al found improvement in compliance (61.2% to 79.7% pre-op checklist and 67.6% to 84.7% sign out with in a period of 1 year). [19] Helmio et al reviewed compliance with the SSCL 1 year after its introduction and found that Sign in, was done 62.3%, time out 61.1% and sign out was done in 53.6% of times. [17] The studies mentioned above looked at the compliance over a period of 1 year. It is observed that compliance decreased over the course of a busy day too. This phenomenon was termed as "Time out Fatigue".[1]

Throughout literature not even a single study showed a 100% compliance. Thus there must be factors that adversely affected implementation of the SSCL. Vats et al upon review of their experience in the implementation of the SSCL found many illustrations of incorrect usage. [16] These included incomplete filling of the form, going through the list hastily. High handed replies by senior members and going through the list in the absence of key members.[16] The localized five impediments towards the complete implementation of the SSCL are lack of knowledge about the SSCL and unease regarding its use, the hierarchal system in the OR,issues with the timing of the "Time Out",the recurrence of questions and addition of questions that were irrelevant in certain surgeries in an attempt to make the SSCL all-inclusive and comprehemsive.[16,19]

Awareness and approach

It is imperative to have the support of all involved for the successful implementation of the SSCL.[20] A review of the available data indicated that even though there is a positive image of SSCL in the minds of the health care professionals there are always a few key members who limit its usage. In this regards cooperation from the Surgeons was found to be minimum.[14-15] On the other hand anesthetist and nurses were more willingly adopting the new protocols, considering it a step towards better communication and moral boosting.

In a study conducted by Helmio et al found that 76.0% users thought it was a good tool for improved safety and 68% thought it was helpful in error omission. [17] On the whole 93% responded that they wanted that SSCL should be adopted during their surgeries.

A few studies indicated that SSCL was in fact considered an undue addition in the emergency case scenarios.[19] Some medical professionals complained that prompting the names of the patients multiple times caused apprehension and anxiety.[14] This however was refuted later on by the researchers.[18]

Boosting patient safety

The literature is full of studies indicating the positive effects of WHO SSCL. A recent meta-analysis indicated that the WHO SSCL decreased post-operative complications and death after surgery. A key improvement was the timely administration of antibiotics.[15,21-23] One of the main aim of the WHO SSCL was to enhance communication between team members.[9] Quite a few events when probed led to the finding that a lack of communication between the key team members was to blame.[11,13] SSCL has proven its worth in the recent past studies establishing itself as a valuable tool in improving communication between the team members and reducing mishaps.[15,18,24-26]

Prophylaxis against wrong site surgery

It has been stated by The Joint Commission that events of wrong site surgery reporting is voluntary. Thus the reported events signify only a small number of the actual events. It is extremely difficult to fully determine whether the efforts that are in place are actually bearing fruit or not. Panesar et al found that 28 out of 133 wrong site surgeries could be easily prevented by the use of SSCL.[22] Thus giving an indirect idea how SSCL is improving outcomes. Treadwell et al claimed that since wrong site surgery is rare, therefore showing a statistically significant reduction requires an insanely large sample size. Thus the claim that SSCL is decreasing wrong site surgery is very difficult to judge. A review conducted by Devine et al found no research based support that the Universal Protocol reduced the rates of wrong site or wrong level surgery. [27] heye claimed that it is the clinical expertise that enhance the SSCL ability to prevent the wrong site operation.

Other considerations

An important consideration is surgical site marking prior to the patients' entry in the OR. This practice was made compulsory under the Universal Protocol. A kink in its armour is well demonstrated by a reported incidence in which a patient underwent a carpel tunnel surgery instead of trigger finger release.[28] Thus this practice prevented wrong site surgery but a wrong procedure on the correct side was still possible. A suggestion in this regard would be that the surgeons

should site mark the patient by themselves while they are in the holding area. This will have two benefits, firstly it will finish off any ambiguity/confusion about the site of surgery and secondly it will improve the understanding of the patient regarding the site and the size of the surgical incision. In one study it was noticed that many patients were unaware of their surgical site. [29]

An innovative system was suggested by the Canadian Orthopedic Association "Operate through your initials". Although this approach was effective but it had its short comings. An example in this regard would be patients with splints or casts. A surgeon would not be able to sign site or incision in these cases.[30,31] In many such cases removing the cast would be painful and site could only be signed after the patient had been anaesthetized.

A slightly personal touch by the anaesthetist

Health care personnel at our hospitals are continuously striving to improve patient safety and prevent wrong site surgery. In our institute the department of anaesthesia took matters in their own hands. On elective days a single anesthetist was charged with the responsibility of ensuring the implementation of the checklist for one OR throughout the day. On the morning of surgery upon provision of list for his/her OR. He goes to the holding area ensuring the site and side marking. He

accompanies the patient to the OR and here we again took the lead in implementing of the WHO SSCL instead of the nurse. This way the hierarchal approach in OR as pointed by the Vats et al was cleansed. [16] Senior surgeons who were reluctant to follow the nurses as pointed by Helmio et al also started following the protocols. [17]

An approach model suggested by Ragus et al was also implemented. [1] Instruments trolley were kept away from the operating tables till the completion of the surgical Time Out. This prevented the staff members from getting distracted in the setting up of trolleys and ensured full attention of the key team members during the checklist. This concept was derived from the aviation industry protocols issued by the National transport and safety board which dictates that engines of the aircraft cannot be switched on before the completion of the check list.[32] Thus the SSCL works as the reminder tool for the OR staff to ensure all checks are completed before surgery is started.

Conclusion

Despite decades of efforts the dream of zero wrong site surgery has not been achieved so far. Putting in place measures like WHO SSCL have improved the conditions and are considered a positive addition by the health care professionals. There is always room for improvement and there is a need that health care systems continuously improve and audit there safety protocols to keep pace with the evolving needs.

References

1. Ragusa PS, Bitterman A, Auerbach B, Healy III WA. Effectiveness of surgical safety checklists in improving patient safety. Orthopedics. 2016 Mar 31;39(2):e307-10.
2. Nwosu A. The horror of wrong-site surgery continues: report of two cases in a regional trauma centre in Nigeria. Patient Saf Surg. 2015; 9(1):1186-89
3. The Joint Commission. About the Joint Commission. http://www.jointcommission.org/about_us/about_the_joint _commission_main.aspx.
4. The Joint Commission. Comprehensive accreditation manual for hospitals: update 2. http://www.jointcommission.org/assets/1/6/CAMH_24_SE _all_CURRENT.pdf. 2015.
5. Canale ST. Wrong-site surgery: a preventable complication. ClinOrthopRelat Res. 2005; 433:26–29.
6. North American Spine Society. Sign, mark and x-ray (SMaX): prevention of wrong-site spinal surgery. https://www.spine.org/Documents/ResearchClinicalCare/S MAX2014Revision.pdf. .
7. Wrong site surgery and the Universal Protocol. Bull Am Coll Surg. 2006; 91(11):63-67.
8. World Health Organization. About WHO. http://www.who.int/about/en. Accessed June 8, 2015.
9. World Health Organization. World alliance for patient safety: implementation manual surgical safety checklist. http://www.who.int/patient-safety/safesurgery/tools_resources/SSSL_Manual_finalJun0 8.pdf?ua
10. The Joint Commission. Sentinel event data: event type by year. http://www.jointcommission.org/assets/1/18/Event_Type_ by_Year_1995-2Q_2014.pdf. .
11. Stahel PF, Sabel AL, Victoroff MS. Wrong-site and wrong-patient procedures in the universal protocol era: analysis of a prospective database of physician self-reported occurrences. Arch Surg. 2010; 145(10):978–984.
12. Alander DH, Carmack DB. Joint Commission updates requirements for Universal Protocol. AAOS Now. http://www.aaos.org/news/aaosnow/dec09/clinical8.asp.
13. The Joint Commission. National patient safety goals. http://www.jointcommission.org/assets/1/6/2015_NPSG_ HAP.pdf.
14. Fourcade A, Blache JL, Grenier C, Bourgain JL, Minvielle E. Barriers to staff adoption of a surgical safety checklist. BMJ QualSaf. 2012; 21(3):191–197.
15. Sewell M, Adebibe M, Jayakumar P. Use of the WHO surgical safety checklist in trauma and orthopaedic patients. IntOrthop. 2011; 35(6):897–901.
16. Vats A, Vincent CA, Nagpal K, Davies RW, Darzi A. Practical challenges of introducing WHO surgical checklist: UK pilot experience. BMJ. 2010; 340:5433-37.
17. Helmiö P, Takala A, Aaltonen LM, Pauniaho SL, Ikonen TS. First year with WHO Surgical Safety Checklist in 7148

otorhinolaryngological operations: use and user attitudes. Clin Otolaryngol. 2012; 37(4):305–308.

18. Garnerin P, Arès M, Huchet A, Clergue F. Verifying patient identity and site of surgery: improving compliance with protocol by audit and feedback. Qual Saf Health Care. 2008; 17(6):454–458.

19. Kearns RJ, Uppal V, Bonner J, Robertson J, Daniel M, McGrady EM. The introduction of a surgical safety checklist in a tertiary referral obstetric centre. BMJ QualSaf. 2011; 20(9):818–22.

20. Collins SJ, Newhouse R, Porter J, Talsma A. Effectiveness of the surgical safety checklist in correcting errors: a literature review applying Reason's Swiss cheese model. AORN J. 2014; 100(1):65–79.

21. Bergs J, Hellings J, Cleemput I. Systematic review and meta-analysis of the effect of the World Health Organization surgical safety checklist on postoperative complications. Br J Surg. 2014; 101(3):150–58.

22. Haynes AB, Weiser TG, Berry WR. A surgical safety checklist to reduce morbidity and mortality in a global population. N Engl J Med. 2009; 360(5):491–99.

23. Panesar SS, Noble DJ, Mirza SB. Can the surgical checklist reduce the risk of wrong site surgery in orthopaedics? Can the checklist help? Supporting evidence from analysis of a national patient incident reporting system. J OrthopSurg Res. 2011; 6:18-22.

24. Lingard L, Regehr G, Orser Bl. Evaluation of a preoperative checklist and team briefing among surgeons, nurses, and anesthesiologists to reduce failures in communication. Arch Surg. 2008; 143(1):12–17.

25. Takala RS, Pauniaho SL, Kotkansalo Al. A pilot study of the implementation of WHO surgical checklist in Finland: improvements in activities and communication. Acta Anaesthesiol Scand. 2011; 55(10):1206–14.

26. Treadwell JR, Lucas S, Tsou AY. Surgical checklists: a systematic review of impacts and implementation. BMJ QualSaf. 2014; 23(4):299–318.

27. Devine J, Chutkan N, Norvell DC, Dettori JR. Avoiding wrong site surgery: a systematic review. Spine 2010; 35(suppl 9):S28–S36.

28. Ring DC, Herndon JH, Meyer GS. Case records of the Massachusetts General Hospital: case 34-2010. A 65-year-old woman with an incorrect operation on the left hand. N Engl J Med. 2010; 363(20):1950–57.

29. DiGiovanni CW, Kang L, Manuel J. Patient compliance in avoiding wrong-site surgery. J Bone Joint Surg Am. 2003; 85(5):815–19.

30. Wright PH, Burnaby BC. Committee on Orthopaedic Practice & Economics (COPE) position paper on wrong sided surgery in orthopaedics. http://www.coa-aco.org/library/health-policy/wrong-sided-surgery-in-orthopaedics.html.

31. Wong DA, Lewis B, Herndon J, Martin C Jr, Brooks R. Patient safety in North America: beyond "operate through your initials" and "sign your site."J Bone Joint Surg Am. 2009; 91(6):1534–41.

32. Degani A, Wiener E. Cockpit checklists: concepts, design, and use. Hum Factors. 1993; 35(2):28–43.
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