Challenges facing the introduction of the WHO surgical safety checklist: A short experience in African countries

Pierre C Kariyo[i], Joyce Hightower[i], Jean Bosco Ndihokubwayo[ii], Prosper Tumusiime[i] and Chris Mwikisa[i]
Corresponding author: Pierre C Kariyo, e-mail: kariyop@zw.afro.who.int

SUMMARY—The concept of using a checklist in surgical care was energized by publication of the WHO in 2008 of the WHO surgical safety checklist (SSCL) An orientation workshop on the checklist was held in Harare for 15 African countries in 2011 and a survey conducted in 2012 with the aim of analysing the use and challenges/barriers to its use. Via a questionnaire the workshop participants were asked to explore their experience with the SSCL implementation, enabling factors as well as challenges encountered and methods used to overcome them. Of the 15 hospitals surveyed 10 (67%) had successfully implemented the checklist as by October 2012. Four out of ten hospitals (40%) adapted the SSCL to suit their local conditions while the other six (60%) used the generic WHO version. None of the implementing hospitals had completed implementation in all of the institution's operating rooms (OR). The mean compliance rate use of the checklist was 48.5% while the mean duration of use was 9.2 months. The main barrier to use identified were staff resistance in 70% of the hospitals that implemented the checklist and in all hospitals the perception that the SSCL was not really a priority. The enabling factors identified were the presence of strong hospital leadership support, group discussions and regular meeting to address arising issues from the use of SSCL and, in one hospital, making the SSCL mandatory. In conclusion, the implementation of the SSCL checklist has been successfully achieved in ten out of the15 hospitals oriented on the use. The main barriers relate to organizational and cultural reasons and need to be addressed through strong supportive leadership and a clear follow-up mechanism to review the status of implementation on a regular basis.

Voir page 55 pour le résumé en version française.
Ver a página 55 para o sumário em versão portuguese.

Surgery is an essential element of health care with an estimated 234 million surgical procedures performed each year in the world.[1] Complications are common and occur in 3% to 16% of all surgical procedures.[2] This may suggest that at least 1 million patients die and 7 million patients are injured due to surgical related complications annually.[2] Hence, the operating room (OR) is one of the most complex work environments in health care.[3] As part of its efforts to improve patient safety the WHO launched a world challenge in 2008, the WHO Safe Surgery Saves Lives programme. The aim of the programme is to harness political commitment and clinical will to address important patient safety issues, including inadequate anesthetic safety practice, avoidable surgical infection and poor communication among team members. These have proved to be common, deadly and preventable problems in all the countries and settings.[4] From 2008, the programme has focused on the use of a safe surgery checklist in operating rooms – the use of which has become increasingly widespread as studies have shown its use linked to a reduction in the rate of postoperative complications and deaths by more than one third.[5–9]

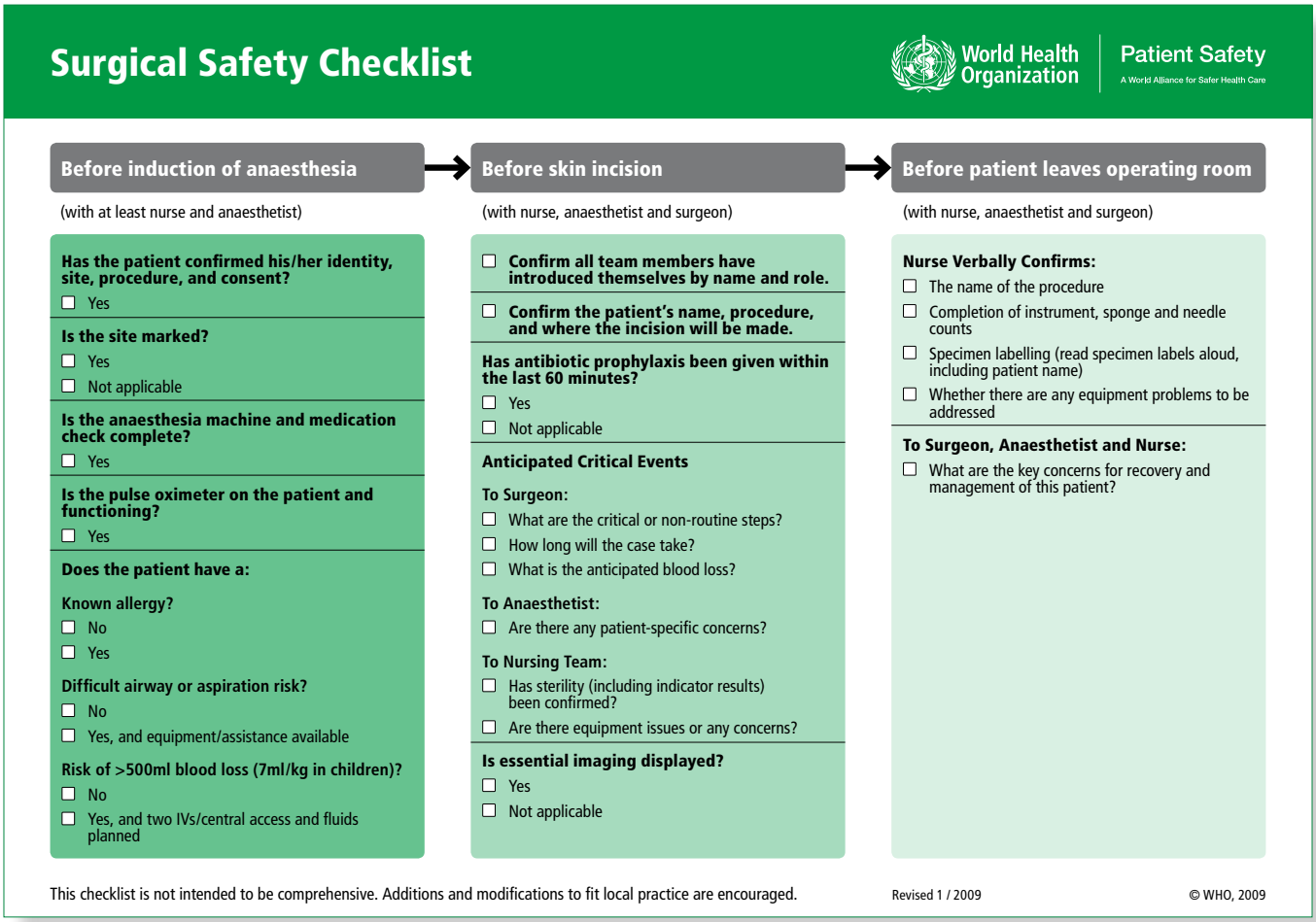
However, the introduction of the WHO SSCL into workflow patterns can be associated with some challenges.[10] To support Member States in implementing the WHO safety checklist in surgery WHO AFRO organized two workshops in Harare in 2011 which brought together senior surgeons and anesthesiologists

(from tertiary hospitals) from ten English-speaking and five French-speaking African countries to orient them on the tool and its implementation.

Country plans were developed during the workshop on how to implement the safety checklist. The workshop agreed on the following steps for the implementation process:

Step ❶ reporting to local authorities on the workshop and planned activities;
Step ❷ formation of a core team/ task force at facility level to facilitate implementation;
Step ❸ adaptation of the safety checklist;
Step ❹ start implementation at facility level; and
Step ❺ plan for national rollout/ formation of national team/task force and integration of patient safety training in the medical curriculum.

i WHO, Intercountry Support Team for Eastern and Southern Africa
ii WHO, Regional Office for Africa



Surgical Safety Checklist

World Health Organization | Patient Safety
A World Alliance for Safer Health Care

Before induction of anaesthesia → **Before skin incision** → **Before patient leaves operating room**

(with at least nurse and anaesthetist)

Has the patient confirmed his/her identity, site, procedure, and consent?
☐ Yes

Is the site marked?
☐ Yes
☐ Not applicable

Is the anaesthesia machine and medication check complete?
☐ Yes

Is the pulse oximeter on the patient and functioning?
☐ Yes

Does the patient have a:

Known allergy?
☐ No
☐ Yes

Difficult airway or aspiration risk?
☐ No
☐ Yes, and equipment/assistance available

Risk of >500ml blood loss (7ml/kg in children)?
☐ No
☐ Yes, and two IVs/central access and fluids planned

(with nurse, anaesthetist and surgeon)

☐ **Confirm all team members have introduced themselves by name and role.**

☐ **Confirm the patient's name, procedure, and where the incision will be made.**

Has antibiotic prophylaxis been given within the last 60 minutes?
☐ Yes
☐ Not applicable

Anticipated Critical Events

To Surgeon:
☐ What are the critical or non-routine steps?
☐ How long will the case take?
☐ What is the anticipated blood loss?

To Anaesthetist:
☐ Are there any patient-specific concerns?

To Nursing Team:
☐ Has sterility (including indicator results) been confirmed?
☐ Are there equipment issues or any concerns?

Is essential imaging displayed?
☐ Yes
☐ Not applicable

(with nurse, anaesthetist and surgeon)

Nurse Verbally Confirms:
☐ The name of the procedure
☐ Completion of instrument, sponge and needle counts
☐ Specimen labelling (read specimen labels aloud, including patient name)
☐ Whether there are any equipment problems to be addressed

To Surgeon, Anaesthetist and Nurse:
☐ What are the key concerns for recovery and management of this patient?

This checklist is not intended to be comprehensive. Additions and modifications to fit local practice are encouraged.

Revised 1 / 2009

The overall aim of this article is to analyse the challenges or barriers and enabling factors identified by the implementing teams following the Harare workshop. The specific objectives of the study were:

a) to assess the implementation process of the WHO surgical safety checklist;
b) to identify challenges and barriers; and
c) develop a strategy for effective and sustainable use.

Methods

The survey was conducted from 15–31 October 2012. Data on implementation were collected using an electronic questionnaire sent to 15 participating hospitals from 15 countries which had sent representatives to the orientation workshop in Harare in 2011. The questionnaire targeted members of the hospital surgical team. All the hospitals targeted were tertiary hospitals. The questionnaire explored the extent of use of the checklist (completeness, compliance, proportion of beneficiaries among patients undergoing surgery, adaptation of the checklist or use of the original WHO version), the barriers and challenges arising and how they overcame them. "Complete implementation" was defined as achievement of thorough and consistent use of the checklist in all operating rooms and "incomplete implementation" as partial or inconsistent checklist use.[10] The compliance rate was defined by the percentage of surgical patients who benefited from SSCL use during a surgical procedure.

Results

Ten out of fifteen hospitals (67%) had successfully implemented the checklist by October 2012. Four out of ten hospitals (40%) had adapted it to suit their local conditions, while the other six (60%) used the generic WHO version. None of the implementing hospitals had completed the implementation in all ORs. The compliance rate is given in Table 1.

The mean duration of use of the SSCL was 9.2 months (varying from 4 to 15 months). The compliance rate varied from 10–90% (mean: 48.5%). All three parts of the checklist were consistently completed in six out of ten hospitals (60%). The checklist implementation started in one OR and use was rolled out in other ORs in seven of the ten hospitals (70%); and three out of ten (30%) started in all ORs simultaneously. The use of the checklist was captured in the patient's record in seven of ten implementing hospitals (70%).

Out of the ten hospitals who had implemented the checklist the enabling factors identified were: strong hospital leadership (60%); group discussions and regular meetings to address issues arising (60%); and a management decision to make using the checklist mandatory in one hospital (10%). Only 40% collected indicators to monitor the effectiveness of the checklist on the outcome of the patients. The following indicators were collected: mortality rate following surgery for (40%) of hospitals; surgical site infection for (40%); and unplanned return to the OR for (40%). None of the countries surveyed had started the national rollout of the SSCL implementation as at the end of October 2012.

Table 1. Checklist compliance rate and duration of use by hospital surveyed

Hospitals	Compliance rates	Duration of use
Kenyatta Hospital (Nairobi, Kenya)	90.0%	7 months
Princess Marina Hospital (Gaborone, Botswana)	23.0%	6 months
CHU Gabriel Touré (Bamako, Mali)	80.0%	10 months
UTH Lusaka (Zambia)	50.0%	16 months
Mulago Hospital (Kampala, Uganda)	10.0%	10 months
Mbabane Government Hospital (Swaziland)	60.0%	4 months
Windhoek central Hospital (Namibia)	10.0%	15 months
CHU Ravoahangy Andrianavalona (Madagascar)	37.5%	5 months
Centre Hospitalier de Moheli (Comoros)	50.0%	7 months
CHU Kigali (Rwanda)	70.0%	12 months
Mean	**48.5%**	**9.2 months**

Table 2. Barriers to implementation

Barriers identified	Frequency
Lack of senior leadership in the hospital	4/10 (40%)
Staff resistance	7/10 (70%)
Insufficient time to use the checklist	4/10 (10%)
Use of the checklist not seen as a priority	10/10 (100%)

Discussion

Ten of the 15 hospitals (67%) in the 15 countries which were trained on the use of the SSCL had successfully started implementing the checklist by the end of October 2012. The reasons why a third of the countries that were trained had not yet introduced the checklist was not looked into but should be investigated. All the hospitals targeted were tertiary hospitals. Indeed the Patient Safety Programme in AFRO assumed that implementing a new strategy in tertiary hospitals would facilitate the rollout in the country. However, since the mean compliance rate stands at 48.5%, more effort needs to be put in place to achieve full implementation for a meaningful risk reduction in surgical complications. This mean rate is low and suggests that the checklist is not routinely used and most of the patients operated in those hospitals may not benefit fully from the use of the SSCL. Moreover the compliance rate among the surveyed hospitals ranged from 10–90%. Vats *et al.* reported that compliance rates vary over time within a team and a hospital. In fact, the UK SSCL pilot study reported that compliance rate ranged from 42–79% during the first year of implementation.[10]

The use of the checklist was being documented in the patient's record in 70% of hospitals. This is not theoretically an issue if the use of the checklist is systematic and all three parts of the checklist completed. Regarding the barriers to the implementation of the checklist, most related to or depended on organizational and cultural factors (as previously reported by Fourcade *et al.*[5] The translation of a new concept into practice is always a big challenge and typically follows the theory of diffusion and innovation[11] – individuals acquire knowledge about the innovation, are persuaded by utility, make a decision to adopt, determine the usefulness of innovation, and then decide to continue using the innovation to full effect. This implies that education and local champions are keys to success.

However, a different approach was used in the UK[12] and France[13] where the national regulatory bodies (the National Patient Safety Agency in United Kingdom in January 2009 and the Haute Autorité de la Santé in January 2010) issued a directive for the implementation of the WHO Surgical Safety Checklist to be adapted nationally and used for every patient undergoing a surgical procedure. This national decision resulted in successful implementation throughout the two countries. The implementation of the checklist in the African context has largely been a voluntary initiative led by professionals without any supportive policy from the national health authorities or regulatory bodies. The WHO played a catalyst and supportive role by initiating the orientation workshop with the cooperation of the national health authorities in the targeted countries. Nevertheless, in one hospital the management of the hospital (CHU Andrianavalona in Antananarivo) made the use of the checklist obligatory. The real challenge is to scale up the use of the SSCL to all operating theatre teams.[14]

This survey identified supportive leadership as one of the enabling factors for the successful implementation of the safety checklist. The other factor was regular team meetings to review implementation progress. Leadership is a critical factor in motivating operating teams to adopt new ideas.[15] Vats *et al.*[10] reported the following factors as critical for successful implementation:

a) provide training and learning materials;
b) organizational leadership – senior clinicians make the checklist a clinical governance goal;
c) cultivate local champions;
d) clarify the role of each professional group;
e) organize regular audits;
f) support essential local adaptations but discourage oversimplification and modification for the sake of it.

Our findings support these recommendations. Most hospitals (70%) that implemented the checklist started in one theatre and then expanded use to all theatres. Starting in one or a few ORs and rolling out is largely seen as a good way progress.[16,17] However, this needs to be further investigated to assess the sustainability of the checklist use over time. In 30% of hospitals implementation was started in all theatres at the same time but the challenges they faced did not differ from the hospitals that used a phased approach. According to WHO guidelines,[16,17] the implementing hospitals are encouraged to collect indicators to monitor the patient's outcome of the checklist implementation. Only 4 out of the 10 hospitals have an outcome

collection tool. These indicators are regarded as reliable in assessing the effectiveness of a SSCL.[1,18]

Conclusion

The implementation of a SSCL is undoubtedly intended to improve the outcome of surgical care and thus the quality of care in general. However, its introduction and sustaining its use is not easy. Literature[8] indicates that over time, compliance of surgical staff is good but needs follow up and sustained education sessions including meetings to review and address the barriers in a comprehensive and sustainable way. This preliminary assessment appeals for a more structured evaluation of the initiative to be undertaken in the near future. The impact of introducing the checklist to surgical outcomes also needs to be evaluated.

References

1. Borchard A *et al.* "A systematic review of the effectiveness, compliance and critical factors for implementation of safety checklists in surgery", *Annals of Surgery*, 256(6), 2012, 925–33.
2. World Alliance for Patient Safety. *Safe Surgery Saves Lives*, World Health Organization, Geneva, 2008, 8.
3. Nilsson L *et al.* "Implementing a pre-operative checklist to increase patient safety: a one-year follow up of personnel attitudes", *Acta Anaesthesiologica Scandinavica*, 54(2) 2010, 176–82.
4. World Alliance for Patient Safety. *Safe Surgery Saves Lives,* World Health Organization, Geneva, 2008.
5. Fourcade A *et al.* "Barriers to staff adoption of a surgical safety checklist", *British Medical Journal Quality and Safety,* 2011.
6. De Vries EN *et al.* "Effect of a comprehensive surgical safety system on patient outcomes", *New England Journal of Medicine,* 363, 2010, 1928–37.
7. Haynes AB *et al.* "A surgical safety to reduce morbidity and mortality in a global population", *New England Journal of Medicine,* 360, 2009, 491–9.
8. Haynes AB *et al.* "Changes in safety attitudes and relationship to decreased post operative morbidity and mortality following implementation of a checklist-based surgical safety intervention", *British Medical Journal Quality and Safety* 20, 2011, 102–107.
9. De Vries EN *et al.* "Prevention of surgical malpractice claims by use of a surgical safety checklist", *Annals of Surgery,* 253, 2011, 624–8.
10. Vats A *et al.* "Practical challenges of introducing WHO surgical checklist: UK pilot experience", *British Medical Journal,* 340, 2010, b5433.
11. Rogers EM. *Diffusion of Innovations,* New York, Free Press, fifth edition, 2003.
12. National Patient Safety Agency (UK). *WHO Surgical Safety Checklist,* Patient Safety Alert 29 January 2009.
13. Rateau F *et al.* « Check-list 'Sécurité du patient au bloc opératoire': une année d'expérience sur 40 000 interventions au CHU de Nice » Annales Francaises d'Anesthesie et de Reanimation, 30, 2011, 479–483.
14. Walker IA *et al.* "Surgical safety checklists: do they improve outcomes?", *British Journal of Anaesthesia,* 109(1), 2012, 47–54.
15. Edmondson AC. "Speaking up in the operating room: how team leaders promote learning in interdisciplinary action teams", *Journal of Management Studies,* 40, 2003, 1419–52.
16. Conley DC *et al.* "Effective surgical safety implementation", *Journal of the American College of Surgeons,* 21, 2011, 873–879.
17. WHO. *Safe Surgery Saves Lives, Starter Kit for Surgical Checklist Implementation* (http://www.who.int/patientsafety/safesurgery/testing/participate/starter_kit-sssl.pdf).
18. Hurtado JJ *et al.* "Acceptance of the WHO Surgical Safety Checklist among surgical personnel in hospitals in Guatemala City", *BioMed Central Health Services Research,* 12, 2012, 169.