Improving systematic recording and discussion of intraoperative adverse events (iAEs): results of a context analysis

Dr. phil. Zuzanna Kita

On behalf of the Project CIBOSurg-Team: Salome Dell-Kuster , Katrin Burri-Winkler, Anne Auderset (*University Hospital Basel*), Amanda van Vegten (*University Hospital Zurich*), Christoph Burkhardt (*at that time Cantonal Hospital Graubünden*), Judith Winkens (*Lindenhofspital Bern*) Monika Finsterwald and Lauren Clack (*Institute for Implementation Science in Health Care, University of Zurich*).

LINDENHOFGRUPPE

luzerner kantonsspital
LUZERN SURSEE WOLHUSEN

Radboudumc

eoc

INSELSPITAL
UNIVERSITÄTSSPITAL BERN
HÔPITAL UNIVERSITAIRE DE BERNE

Universitätsspital Basel

Kantonsspital Graubünden

CHUV Centre hospitalier universitaire vaudois

Universität Zürich[UZH]

USZ Universitäts Spital Zürich

Topics

- Safe Surgery Checklist and adverse events
- Why the CIBOSurg Project?
- Implementation Science within CIBOSurg Project: Context Analysis
- Results of the Context Analysis
- Conclusion and next steps

WHO project "Safe Surgery Saves Lives"

Surgical Safety Checklist

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

Before induction of anaesthesia
(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

Before skin incision
(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

Before patient leaves operating room
(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

3 parts of Safe Surgery Checklist

Sign in

90%

Bevor induction of anaesthesia

- ✓ Patient identity, site, procedure confirmed
- ✓ Consent confirmed
- ✓ Site marked

- ✓ Pulse oximeter on patient and functioning
- ✓ Allergy?

- ✓ Difficult airway/aspiration risk?

- ✓ Risk of >500ml blood loss (7ml/kg in children)?

Time out

90%

Bevor skin incision

- ✓ Team members introduced themselves (name and role)

- ✓ Patient identity, site, procedure confirmed

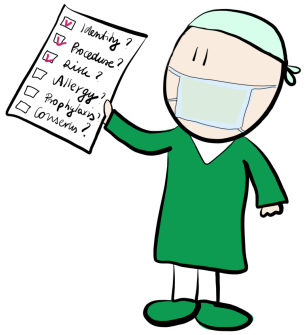
- ✓ Anticipated critical events?

- ✓ Critical or unexpected steps, operative duration, anticipated blood loss?
- ✓ Patient-specific concerns?
- ✓ Sterility confirmed? Equipment issues or any concerns?

- ✓ Antibiotic prophylaxis given within the in last 60 minutes?
- ✓ Essential imaging displayed?

Max. 50%

Sign out



Before patient leaves operating room

- ✓ Name of the procedure confirmed

- ✓ Instrument, sponge and needle counts correct?

- ✓ Specimen labelled (Including patient name)?

- ✓ Any equipment problems addressed?

- ✓ key concerns for recovery and management of the patient?

Adverse events (iAEs)

Every year, over 300 million surgical procedures are performed worldwide and over 900,000 in Switzerland. Intra- and postoperative adverse events (iAEs, pAEs) occur in up to one third of all patients undergoing surgery.

14% postoperative complications are preventable with full compliance with WHO Safe Surgery Checklist!

Kennerly et al. 2014; Dell-Kuster et al. 2020; Mayer et al. 2016

Classifications of adverse events (AE)

intraoperative

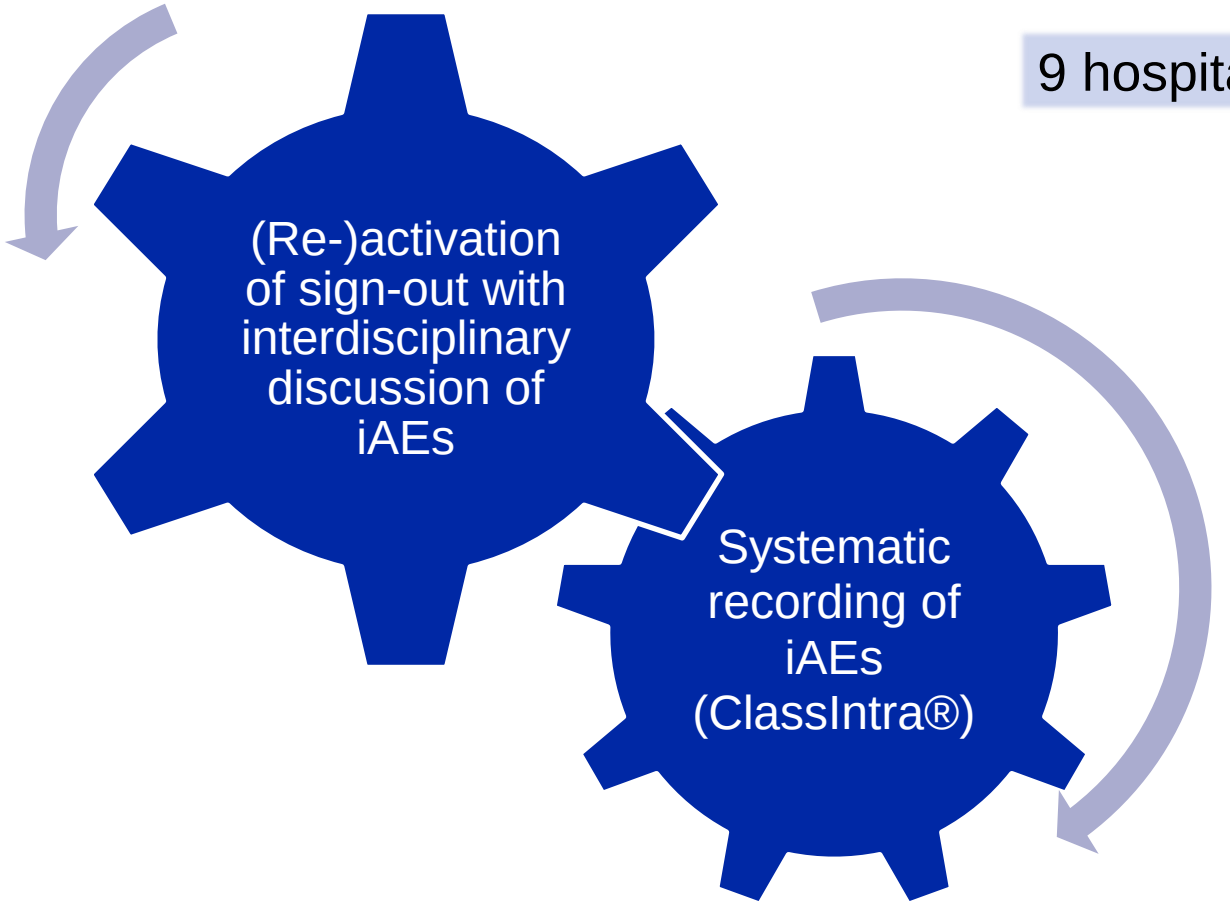
IAEs according to ClassIntra® are defined as any deviation from the ideal intraoperative course including anaesthesia- and surgery-related events.

ClassIntra® includes 5 degrees of severity.

postoperative

Postoperative adverse events (pAE)
Clavien-Dindo

Project CIBOSurg - ClassIntra® for better outcomes in surgery



9 hospitals, 5 surgical discipline

CIBOSURG

Aim: Improve perioperative collaboration and postoperative patient outcome

implementation science approach

http://www.cibosurg.ch/

Abdominal surgery, Urology, Orthopaedics / Traumatology, Vascular surgery

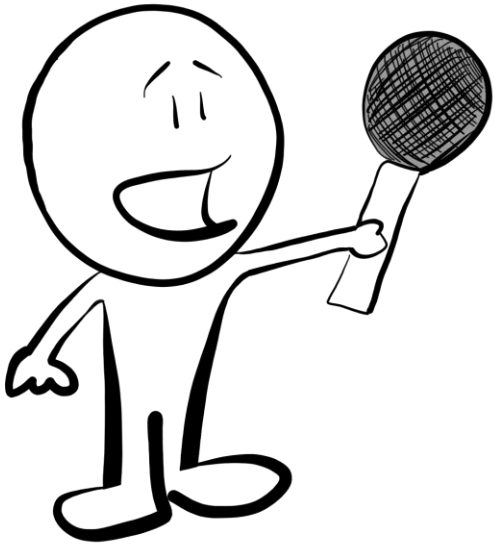
CIBOSurg: Context analysis

Implementation object:

Routine information exchange and documentation of iAEs

in the sign-out phase

at different hospital sites and in different disciplines



Research questions:

What barriers/support factors influence the implementation of routine information exchange on / systematic documentation of iAEs during the sign-out phase?

What barriers/support factors influence sustainable adherence during the sign-out phase?

What needs can be derived from this for a sustainable implementation of ClassIntra®?

Methods

Qualitative approach

Capturing complex processes; individuals studied in everyday context; internal representativeness

2 site visits; 96 interviews with experts* (**purposive sampling**);

4 member-checking workshops; inter-hospital live event (incl. a World Café)

Data analysis

Rapid analysis (including an analysis workshop with the project team)

Conceptual approach: deductive – barriers, facilitators and needs (**CFIR / ERIC**); inductive – innovation (current status iAEs / familiarity ClassIntra®, applicability and benefits of ClassIntra®)

CFIR: Consolidated Framework for Implementation Research
ERIC: Expert Recommendations for Implementing Change Framework

*surgery, anesthesia, surgical nursing, postoperative team, QM/administration

Results of context analysis

	Carrying out of Sign-out	Exchange and recording of iAEs	Familiarity with ClassIntra®	(Anticipated) applicability of ClassIntra®	Perceived benefit of ClassIntra®
Hospital 1					
Hospital 2					
Hospital 3					
Hospital 4					
Hospital 5					
Hospital 6					
Hospital 7					
Hospital 8					
Hospital 9					

- Sign-out not implemented; iAEs are not recorded/exchanged; ClassIntra® is not known to any of the interviewees; (anticipated) applicability is not rated as good by any of the interviewees; benefits are not perceived
- Sign-out only partially carried out (dependent on person, discipline, only individual points, only informally, etc.); iAEs hardly recorded/exchanged; ClassIntra® only known to individual interviewees; (anticipated) applicability is only rated as good by individual interviewees; benefits are perceived sporadically
- Sign-out implemented, but not systematically carried out; iAEs partly recorded, exchange not systematic; ClassIntra® partly known to the interview partners; (anticipated) applicability is partly assessed as good; benefits are perceived by some of the interview partners
- Sign-out implemented and systematically carried out; iAEs systematically recorded incl. exchange; ClassIntra® known to all interview partners; (anticipated) applicability is rated as good; benefits are perceived by all interview partner

Results: barriers according to CFIR

CFIR domains	CFIR subdomains	Examples
Inner setting (hospital)	Structural characteristics: information technology (IT)	Overlapping or different IT systems, interface problems, different databases,lack of a standardised reporting system
	Structural characteristics: workplace infrastructure	Unclear structure, no clear responsibility, absence of team members, staff turnover, documentation of different data, pressure of efficiency, stress,
	Culture	Failure/blame culture, strong hierarchy
	Communication	Low quality of formal and informal information
Innovation (recording, discussion of iAEs)	Complexity & design	Clear definitions of iAEs, and case scenarios, access to documentation in the OR
Individuals (persons involved)	Motivation	Lack of self-confidence to talk about mistakes or complications, demotivation
	Capability	Knowledge and competence problems
	Others	Fear of legal consequences

Facilitators according to CFIR

CFIR domains	CFIR subdomains	Examples
Inner setting (hospital)	Culture	Supportive culture, speak-up culture,
	Communication	well-established formal and informal communication
	Structural characteristics: workplace infrastructure	Well-defined processes
Innovation (recording, discussion of iAEs)	Design	Access to ClassIntra® in OR, clear definitions of iAEs
	Others	Wording (“adverse events” vs. complications or mistakes)
Individuals (persons involved)	Motivation	Self-confidence, motivation through the clear benefit behind the innovation
	Others	Psychological reliefsecond/third victim or moral distress

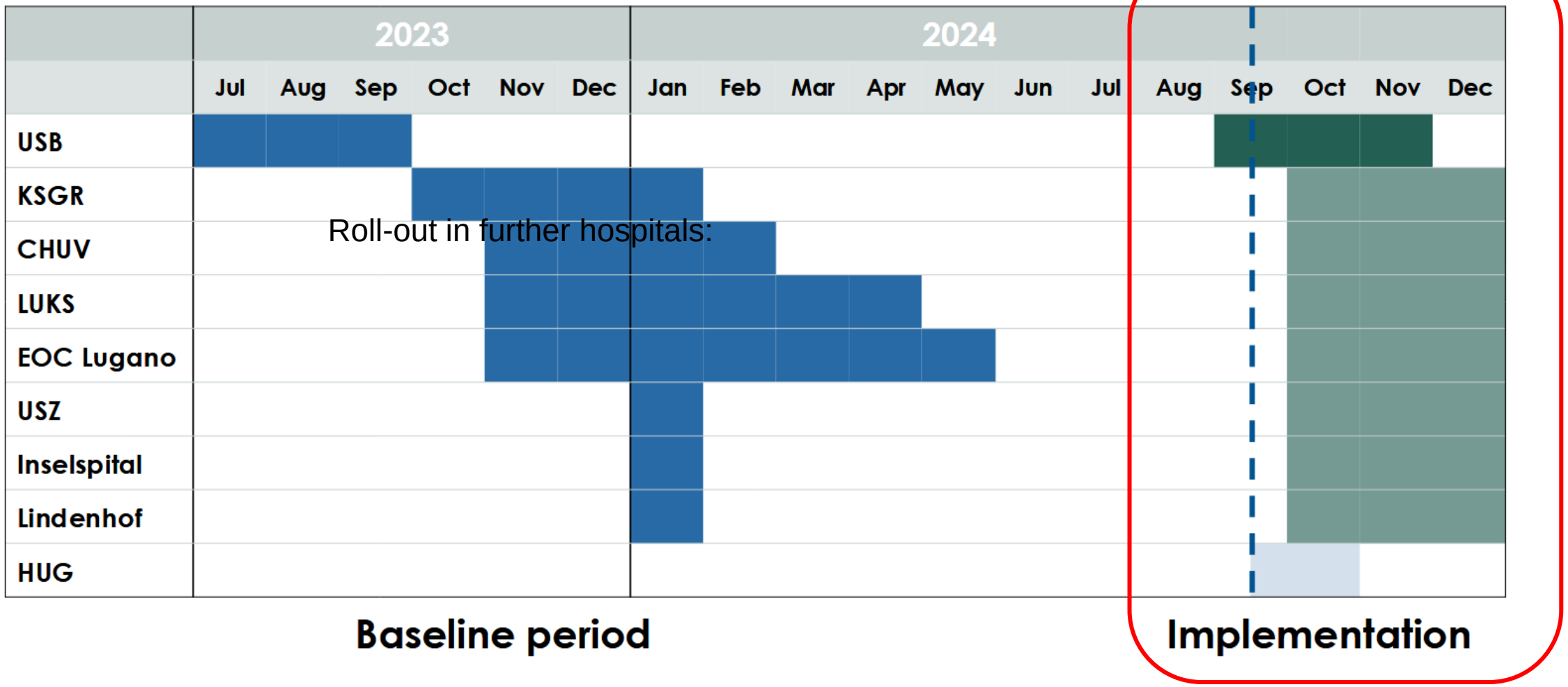
Suggestions for implementation according to ERIC

ERIC strategies (selection)	Examples
• Conduct local consensus discussions • Create a learning collaborative	Sharpen a comprehensive view of the entire patient treatment process ("patient journey"), consider cultural factors, allow for feedback and discussion formats, reduce general workload - particularly of key personnel, ask about prior knowledge, promote understanding and motivation
• Conduct educational meetings • Conduct local consensus discussions	Train and motivate staff, apply awareness-raising strategies
• Identify and prepare champions, identify early adopters • Recruit, designate and train for leadership	Establish implementation teams at each site, pilot in several disciplines then roll-out in entire hospital
• Create incentive / allowance structures	Coordinated recording, patient data management systems with forced functions, mandatory requirements for quality and the responsible parties
• External policy & incentives	Recognition by boards or professional associations and the relevant legislation

Conclusion and project wins

- The context analysis illustrated the heterogeneity of the initial situation particularly between involved disciplines within the various hospitals regarding barriers/facilitators and needs
- Each hospital has received its own report, with specific recommendations on implementation strategies
- The training materials were developed and made available
- Community development: 2 inter-hospital live events (incl. a World Café) so far!

Next steps: implementation, roll-out in hospitals



References

- Kennerly, D.A., et al., Characterization of adverse events detected in a large health care delivery system using an enhanced global trigger tool over a five-year interval. Health Serv Res, 2014. 49(5): p. 1407-25.
- James, J.T., A new, evidence-based estimate of patient harms associated with hospital care. J Patient Saf, 2013. 9(3): p. 122-8.
- Russ, S. et al. Measuring variation in use of the WHO surgical safety checklist in the operating room: a multicenter prospective cross-sectional study. J Am Coll Surg. 2015 Jan;220(1):1-11.e4.
- Dell-Kuster, S., et al., The Importance of Standardised Recording of Intraoperative Adverse Events: Key Features of an Ideal Classification System. Eur Urol, 2020. 77(5): p. 611-613.
- Dell-Kuster, S., et al., Prospective validation of classification of intraoperative adverse events (ClassIntra): international, multicentre cohort study. BMJ, 2020. 370: p. m2917.
- Mayer, E., et al. Surgical Checklist Implementation Project: The Impact of Variable WHO Checklist Compliance on Risk-adjusted Clinical Outcomes After National Implementation: A Longitudinal Study. Ann Surg. 2016 Jan;263(1):58-63.
- Van Vegten, A., et al. (2011). ChecklistenKULTur: Ein Pladoyer für den sinnvollen Einsatz von Checklisten. Schweizerische Ärztezeitung.

Thank you for your attention!

http://www.cibosurg.ch/