



PART FOUR: CHECKLISTS

In the previous chapters we explored the usefulness of patient surveys, tools to measure and compare treatment-related health outcomes of your patients and you also received a hands-on guide how to establish a Morbidity & Mortality meeting in your hospital.

The last chapter of the four-part e-tutorial deals with the issue of checklists. Checklists help to reduce human errors that can occur as a consequence of limited human memory. Before you take a patient in the operating theatre, there are a large number of tasks to complete; there are way too many to remember. By going through the checklist (with tick boxes) it ensures consistency and completeness of a series of tasks.

In the medical field checklists are slowly introduced. Recently, surgical checklists were introduced as a mandatory step prior to surgery to Australian operating theatres. While this is a great step forward, some of those checklists do not actually assist the surgeon in completing her/his tasks.

As the surgeon you will support the official hospital checklist, but nobody will argue with you if you run your own checklist in addition to the official hospital checklist. Below I give some hints how to develop those “private” checklists that you can use whether you work in the public or in a private hospital system.

How did checklists in the aviation industry develop?

In 1934 the US Army tested three models of aircraft. Boeing was the hottest contender. A test flight was part of the exercise. Boeing’s model 299 had an uneventful take off, a smooth climb but suddenly stalled and crashed. Several people died. An investigation found that the pilot forgot to release a lock prior to take off. The public opinion was that the proposed new plane was “too much plane for one man to fly.” Pilots sat down and put their heads together. What was needed was some way of making sure that everything was done; that nothing was overlooked. What resulted was a pilot’s checklist. Actually, four checklists were developed - takeoff, flight, before landing, and after landing. The Model 299 was not “too much airplane for one man to fly”, it was simply too complex for any one man’s memory. These checklists for the pilot and co-pilot made sure that nothing was forgotten. (<http://www.atchistory.org/History/checklist.htm>).

Surgery is a complex task consisting of multiple steps that require input from a multitude of staff. “Complex” means that unforeseen things can happen easily (“Expect the unexpected”). Every case is somehow different and an endless number of factors may influence what happens throughout an operation. We all made the experience that a case runs smooth if we work with regular staff and a case is hard if we need to verbalise and demonstrate every small detail to new members of the surgical team.



Surgical checklists help to ensure that certain tasks that need to be done have actually been carried out. The aim is to reduce the “forgetting” of a task, which could have rather serious consequences.

In surgery, a number of papers have been published recently and I consider the two papers below very relevant to our work:

The first study was conducted by WHO with a heavy focus on the quality of surgery in countries of the developing world and published in January 2009 (Haynes AB et al; N Engl J Med 2009; 360(5):491ff). The group of authors collected data on clinical processes and outcomes from almost 8000 patients. After the introduction of a checklist the perioperative death rate reduced from overall 1.5% to 0.8%. Inpatient complications occurred in 11.0% of patients at baseline and in 7.0% after introduction of the checklist. The study is often criticised because of severe shortcomings: The study design was not randomised but compared outcomes before and after the intervention. Confounding factors that could have influenced outcomes were not considered. Finally, hospitals which strictly adhered to the checklist had no improvement in outcomes, whereas hospitals with bad compliance had great improvements. Nevertheless, this study was considered exemplary by the Royal Australian College of Surgeons and has been used by healthcare administrators to hand down surgical checklists in Australian hospitals.

The second study is from Holland and overcomes most of the shortcomings from the above WHO study (de Vries EN, et al. N Engl J Med 2010;363:1928-37). The Dutch study developed 11 checklists and examines nearly 100 items, which are briefly displayed in table 1 below. The checklists apply not only to the operating theatre but also cover pre- and postoperative areas, the ward, the surgeon, anaesthetist and nursing staff.

Most importantly, the study included a control group. The results are very conclusive: Audit reduced the proportion of patients with at least one complication from 15.4% to 10.6%. Consistent with the WHO study, perioperative mortality dropped from 1.5% to 0.8%. In this study, compliance with the checklist did correlate with improvements in health outcomes. Patients with incomplete checklists had significantly more complications than those for whom checklists were completed. This study is proof that checklists work and decrease not only the risk for surgical complications but also death from surgery.

How do surgical checklists work?

In short: No one really knows. There are direct effects and indirect effects.

Direct effects: If a specialist forgets to take a “blood group and hold” and the patient sustains a vascular injury, the blood loss would be higher, which could cause further problems (respiratory failure, wound breakdown, cerebral oedema, etc).

Indirect effect: If a surgical team realises that a case is subject of review, the entire team would focus very hard on the case and try to get every detail right (“Hawthorne effect”). The checklist would counteract the effects from “normal” distraction.



Are checklists specific to the environment?

They most definitely are. We suggest that you accept that checklists are essential and current standard. You will also need to accept that checklists need to cover more than just the operating theatre. However, the environment you work in (public vs. private; what resources are available to you; etc) will definitely shape the checklist that makes most sense for you.

I work part time in a public hospital and as such I have no ownership of the checklist that we run at that hospital. I am just a very small wheel as part of a big organisation and I will fulfil my part to the best of my abilities. The checklist, which the health department supports is available in that hospital.

I also work as a private practitioner (visiting medical officer; VMO) at a private hospital. I am not employed by the hospital. My practice is organised through my surgery. I employ staff to assist me. While I am entitled to very little support through the hospital, my VMO status leaves me freedom how to run my practice. In theatre we still use the (WHO) hospital checklist. In addition, I run my own checklists independently. The overlap of those checklists is minimal. Overleaf is the checklist developed for SurgicalPerformance.



Checkpoint	What to check	Time point
Surgeon	Is surgery the best option? Is the patient medically fit for surgery; Allergies; Prosthesis; Anticoagulation/ blood thinning medication; Is an ICU bed necessary; Is frozen section required; Is bowel prep required; Airways issues for intubation; Order blood tests	Primary consultation
Surgical Team (together)	Correct patient, procedure, site re-confirmed with patient awake; blood group and hold available; reiterate significant surgical & medical history (allergies); medical imaging required & available; pregnancy test negative.	Pre-anaesthetic Bay
Surgeon	Positioning of patient; surgical equipment present in OT; Bean bag/warm cloud on the operating table;	Operating theatre
Surgeon	Procedure documented; instructions regarding drains, medication (anticoagulation), imaging, diet, wound care, mobilisation, NG tube.	Operating theatre postoperatively
Anaesthetist	Instructions regarding iv fluids, medication, anticoagulation, pain control; Concerns discussed about observations; Tests to be performed.	Operating theatre postoperatively
Surgeon	Intraoperative findings explained; VTE prophylaxis and analgesia charted and explained to patient; Instructions regarding drains, iv therapy, diet, mobilisation handed over to nurse.	Postoperative ward round
Ward medical officer	Pathology test discussed if available; instructions regarding wound care, diet, mobilisation, drains, anticoagulation, stoma; discharge medication charted; follow up appointment made; discharge summary done. Above instructions explained to patient and discharge information handed out.	Prior to discharge
Nurse	discharge medication handed out; follow up appointment (or other specialists) checked;	At discharge
Practice nurse	Follow-up on the phone regarding pain, wound, bodily functions.	3 to 5 days following discharge

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