STIVEN CATALYST

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MANAGEMENT REVIEW

Management without theatre.



OPERATIONS

CHECKLISTS: ONE LIST, TWO RESULTS

Nineteen items that came with fewer complications in eight hospitals, the same idea with no measurable effect in 101 others, six hospitals with one list and six results, how a list is built for use, and a card to review one.

36%

average fall in complications in eight hospitals after the WHO checklist; in 101 hospitals in Ontario, no significant change (2014).

HAYNES ET AL., 2009

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In this issue

Checklists are cheap, short and easy to copy, so they spread fast. The same list has come with fewer deaths in one study and with no measurable change in another. This issue asks what made the difference, and what a manager can check before adding one more list to a shift.

In 2009 a 19-item WHO checklist was followed by fewer complications and deaths in eight hospitals. In Ontario, 101 hospitals adopted checklists under public reporting, and neither deaths nor complications changed significantly. In six Dutch hospitals one list gave six different results, and patients whose list was filled in more fully had fewer complications. NASA's research on cockpit checklists and the WHO manual show what makes a list usable, and a card helps review one.

Stiven Janaqi EDITOR · STIVEN CATALYST

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HOW TO READ THIS ISSUE

Figure
Every figure has its source and year at the foot of its page.

Our reading
Where the editor interprets rather than the research, it says so.

Practice
The steps and the card are proposals to try, not research results.

COVER STORY

Nineteen items, three pauses

Between October 2007 and September 2008, eight hospitals in Toronto, New Delhi, Amman, Auckland, Manila, Ifakara, London and Seattle introduced the WHO Surgical Safety Checklist: 19 items, confirmed aloud by the team at three moments of an operation.

01	**Sign in**	Before anaesthesia: identity, site, consent, pulse oximeter, allergy, airway, risk of blood loss.
02	**Time out**	Before the incision: everyone named, patient and site confirmed, critical steps reviewed, antibiotics given.
03	**Sign out**	Before the patient leaves: the procedure, the counts, the specimen labels, equipment problems, concerns for recovery.

11.0 → 7.0%
of patients had a complication, before and after

1.5 → 0.8%
died in hospital, before and after

The authors do not claim to know exactly why. All six safety steps they measured were done for 34.2% of patients before and 56.7% after; antibiotics on time rose from 56% to 83%. Teams also had to pause, introduce themselves and brief one another. Being observed may have played a part; the study could not fully separate it.

OUR READING

The list brought no new medicine. It made the team say aloud, every time, steps most of them already knew and often skipped.

Source: Alex B. Haynes et al., New England Journal of Medicine 360(5), 2009

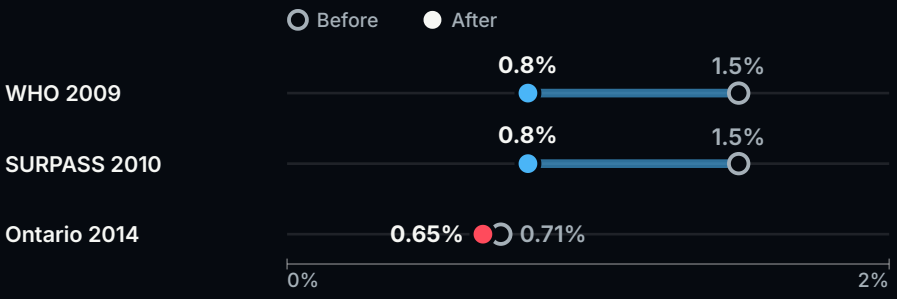
Before-and-after study without a control group; 3,733 and 3,955 patients, complications counted in hospital up to 30 days. The three pauses are shortened from the study's Table 1.

THE NUMBERS

One list, other results

From July 2010, Ontario's Ministry of Health required hospitals to report publicly how often they used a surgical checklist. David Urbach and colleagues compared 109,341 operations in three months before each hospital's checklist with 106,370 in three months after, in 101 hospitals.

DEATHS AFTER SURGERY BEFORE AND AFTER A CHECKLIST, THREE STUDIES



Ontario's hospitals reported compliance of 98% or more after June 2010. No formal team training was required, and implementation was not standardised. Adjusted complications went from 3.86% to 3.82%; like the change in deaths, not significant. Six hospitals had significantly fewer complications, three significantly more.

OUR READING

A compliance rate of 98% counts ticks. It says nothing about whether anyone stopped to check.

Sources: Alex B. Haynes et al., New England Journal of Medicine 360(5), 2009; Eefje N. de Vries et al., New England Journal of Medicine 363(20), 2010 (via the authors' version in E. N. de Vries's thesis (University of Amsterdam, 2010)); David R. Urbach et al., New England Journal of Medicine 370(11), 2014

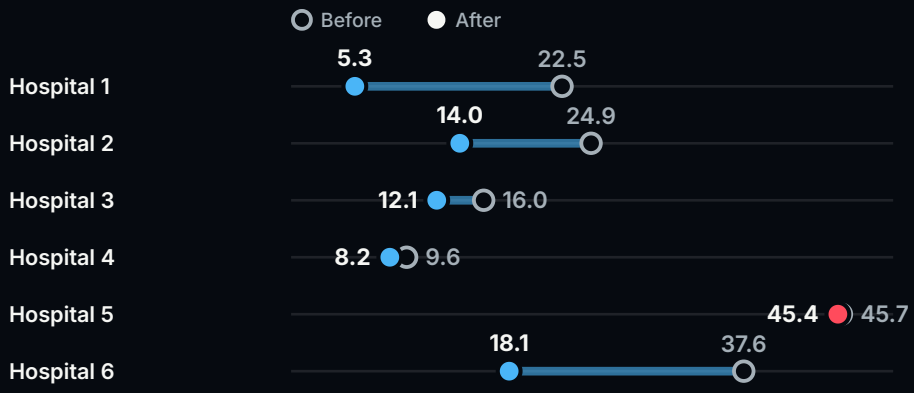
Deaths in hospital up to 30 days (WHO), in hospital (SURPASS), in hospital or within 30 days, adjusted (Ontario): compare direction, not level. Ontario used administrative data, the other two staff on site. SURPASS covered the whole hospital stay.

WHAT THE RESEARCH SAYS

Six hospitals, six results

The Dutch SURPASS checklist follows the surgical patient from admission to discharge, not only in the operating room. Six hospitals with high standards of care introduced it over nine months; five similar hospitals did not, and served as controls.

COMPLICATIONS PER 100 PATIENTS IN THE SIX SURPASS HOSPITALS



In the control hospitals, complications went from 30.4 to 31.2 per 100 patients. In a sample of 1,146 lists, a median of 80% of items was filled in. Patients whose list was filled in above that median had 7.1 complications per 100; those below it, 18.8.

OUR READING

One list, six results. The authors point to how fully each hospital used it and how far it had become part of the work.

Source: Eefje N. de Vries et al., New England Journal of Medicine 363(20), 2010 (via the authors' version in E. N. de Vries's thesis (University of Amsterdam, 2010))

Hospitals in the authors' random order; 5 and 6 are academic, with sicker patients and larger operations. Completeness was checked in about 26% of procedures; patients with fuller lists may differ in other ways too.

THE MODEL

A list built for the shift

For NASA, Asaf Degani and Earl Wiener observed 42 airline crews on 72 flights and read the reports of checklist failures; their report appeared in 1990. In 2009 the WHO set its own rules for adapting the surgical list. The two agree on more than they differ.

01	**Short**	Five to nine items per section, under a minute each (WHO). At an airline with 81 items for start, taxi and take-off, pilots worried about poor discipline.
02	**Critical items first**	Interruptions come late in a list; what must not be missed goes near the top.
03	**Say the value**	“Flaps 15”, not “checked”: a reply that states the setting can be heard to be wrong.
04	**Spoken by the team**	Used only as a written form, the WHO expects the list to be far less effective.
05	**Not a dumping site**	An item added after every incident makes the list longer and its use weaker.
06	**Tested before rollout**	One team, one day; change it and try again (WHO).

OUR READING

Every item added to a list takes a little attention from the items already on it.

Sources: Asaf Degani & Earl L. Wiener, NASA Contractor Report 177549, 1990; World Health Organization, 2009

Rules shortened by the editors from Degani & Wiener's Appendix A (1990) and the WHO manual (2009). The aviation report covers airliners' normal checklist. Designing out the need to remember is No. 46, poka-yoke.

HOW IT IS MEASURED

Ticked or used?

After the crash of Delta flight 1141, which took off without flaps, investigators timed the checklist on the voice recorder: less than a second between “flaps” and “fifteen, fifteen, green light”. Pilots told Degani and Wiener the list can become a “sing-song”, recited from memory.

01	**Watched, not only reported**	Someone sees the list in use a few times a month; a compliance figure alone counts ticks.
02	**Values spoken**	Replies give the reading, so a wrong one can be heard.
03	**Time per section**	Near a minute; far less may mean it is recited, far more that it is too long.
04	**Stops that happen**	How often the list held the work: an item missing, a step repeated.
05	**Changed by its users**	The last change came from the people who run it, and was tried before it spread.

OUR READING

A list is in use when it can stop the work. If it never has, it is probably being recited.

Sources: Asaf Degani & Earl L. Wiener, NASA Contractor Report 177549, 1990; World Health Organization, 2009; David R. Urbach et al., New England Journal of Medicine 370(11), 2014

The marks are the editors', drawn from Degani & Wiener (1990), the WHO manual (2009) and the Ontario study (2014). The NTSB timing is as Degani & Wiener report it. Standard work, the base a list checks, is No. 35.

More in the essay A good SOP is not a document

TOOL OF THE ISSUE

The checklist review card

One card per list, filled in with the people who use it. Start with one team: in the WHO pilot, sites that began in many operating rooms at once met the most resistance. Leader Standard Work puts watching the list on a leader's daily round.

01 The list and its moment — which work, which pause: before the start, before the step that cannot be undone, at the end

02 Items — how many per section; which ones stopped the work last month

03 Critical items — the two or three that must never be missed; are they near the top?

04 The replies — does each reply state a value or a fact, not “checked”?

05 Observed use — watched how often, by whom; time per section; what was skipped

06 Change — what to remove, what to add; where it is tried first; next review date

Sources: Asaf Degani & Earl L. Wiener, NASA Contractor Report 177549, 1990; World Health Organization, 2009; Eefje N. de Vries et al., New England Journal of Medicine 363(20), 2010 (via the authors' version in E. N. de Vries's thesis (University of Amsterdam, 2010))

The card is the editors' proposal, built on Degani & Wiener's guidelines (1990), the WHO manual (2009) and the SURPASS data on completeness (de Vries et al., 2010).

Open the tool: Leader Standard Work stivencatalyst.com/tools/leader-standard-work/

SOURCES AND METHOD

Every figure has a source.

The figures in this issue come from the sources below. The year shows how recent each one is.

A Surgical Safety Checklist to Reduce Morbidity and Mortality in a Global Population
Alex B. Haynes et al., New England Journal of Medicine 360(5), 2009
https://doi.org/10.1056/NEJMsa0810119

Introduction of Surgical Safety Checklists in Ontario, Canada
David R. Urbach et al., New England Journal of Medicine 370(11), 2014
https://doi.org/10.1056/NEJMsa1308261

Effect of a Comprehensive Surgical Safety System on Patient Outcomes
Eefje N. de Vries et al., New England Journal of Medicine 363(20), 2010 · via the authors' version in E. N. de Vries's thesis (University of Amsterdam, 2010)
https://doi.org/10.1056/NEJMsa0911535

Human Factors of Flight-Deck Checklists: The Normal Checklist
Asaf Degani & Earl L. Wiener, NASA Contractor Report 177549, 1990
https://ntrs.nasa.gov/citations/19910017830

Implementation Manual: WHO Surgical Safety Checklist 2009
World Health Organization, 2009
https://www.who.int/publications/i/item/9789241598590

EDITORIAL METHOD

Each figure was checked for its year, its publisher and what it measures, in the full text where it could be opened. A source read only in a summary, an abstract or excerpts is marked “via”. A figure not confirmed in what was read is marked so on its page, or left out. The editor's interpretation is marked “Our reading”.



MANAGEMENT REVIEW

Management without theatre.

Every issue, one management question, checked against the best research.

ALL ISSUES

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Edited by Stiven Janaqi, who answers for it; “the editors” in this publication means him. Its texts, translations, layout and the checking of figures against their sources are done in working sessions with Claude, an AI model by Anthropic.
stivencatalyst.com/how-this-is-made.html