STIVEN CATALYST

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MANAGEMENT REVIEW

Management without theatre.



OPERATIONS

THE SECOND CHECK: WHAT IT CATCHES

Two nurses and a planted error, thirteen studies of the double check, the errors a second person catches and those they repeat, what bedside scanning changed, the overrides that show where it is bypassed, and a card.

33% of nurses caught a planted dose error when a second nurse checked, in a simulation; 9% when one checked alone.

KOYAMA ET AL., 2020

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NO. 95 · OPERATIONS

In this issue

Wherever a mistake is costly, a second person is asked to check: the dose, the load, the payment, the release. The rule feels safe and costs a second person's time. This issue asks when the second check catches errors, when it only feels safe, and what changed where a device took over part of it.

In a simulation, a second nurse lifted the catch of a wrong vial from 54% to 100%, and of a dose error only from 9% to 33%. A review of 13 hospital studies found too little evidence that double checks lower errors, and none that they lower harm. ISMP explains which errors a second person catches. Scanning at the bedside went with 41% fewer administration errors, and its override logs show where it is bypassed. A card closes the issue.

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.

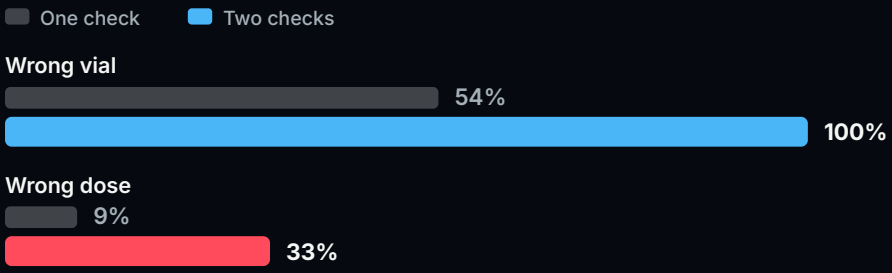
Practice
The steps and the card are proposals to try, not research results.

COVER STORY

Two nurses, one planted error

In a trial in a medical education centre, 43 pairs of emergency and intensive care nurses cared for a simulated patient. Two errors were planted: a wrong vial and a wrong weight-based dose. One group gave a drug that policy said needed a second check, insulin; the other a drug that needed one, midazolam.

NURSES WHO CAUGHT THE PLANTED ERROR, BY KIND OF CHECK (SIMULATION, 2018)



With two, every wrong vial was found, and two dose errors in three still went through. Both errors were found more often when the checker worked independently than when told what to expect, and the review notes that deference to a more senior nurse was seen in this trial.

OUR READING

A second look reads the label. It does not redo the arithmetic unless the check asks for it.

Source: Alain K. Koyama, Claire-Sophie Sheridan Maddox, Ling Li, Tracey Bucknall & Johanna I. Westbrook, BMJ Quality & Safety 29(7), 2020

Douglass et al. (2018) as reported in the review by Koyama et al. (2020). Small groups, wide confidence intervals; the two groups gave different drugs, and nurses may check insulin more closely anyway.

THE NUMBERS

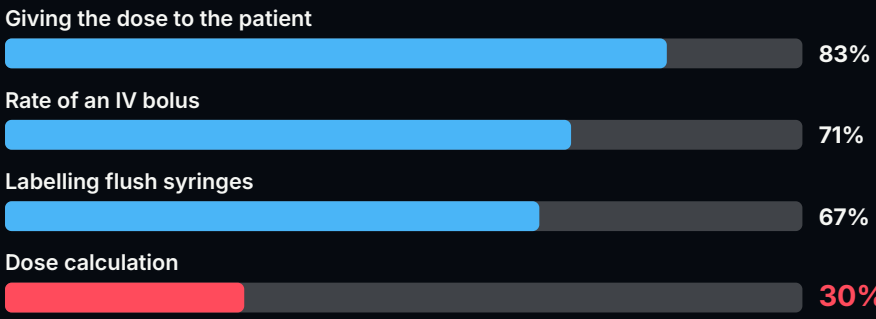
Thirteen studies, three good ones

Alain Koyama and colleagues searched five databases up to October 2018 for hospital studies of double checks when medicines are given. They found 13. Of the three of good quality, one linked double checks with fewer errors, one found no clear link, and one counted only whether the steps were followed.

0 / 13
studies measured harm to patients

52–97%
of doses were double-checked, where studies of adults counted it

STEPS OF THE DOUBLE CHECK FOLLOWED, ONE CHILDREN'S HOSPITAL, 2,000 OBSERVED DOSES (2014)



OUR READING

The step followed least was the calculation, the kind of error the checkers in the simulation missed most.

Source: Alain K. Koyama, Claire-Sophie Sheridan Maddox, Ling Li, Tracey Bucknall & Johanna I. Westbrook, BMJ Quality & Safety 29(7), 2020

The bars are the four weakest of 15 steps (Alsulami et al., 2014, as the review lists them); the other 11 were followed in 90% or more. Five of the 13 studies counted errors from self-reports or incident reports, which undercount them.

THE MODEL

What a second person catches

The Institute for Safe Medication Practices (ISMP, 2019) still backs the manual independent double check, but for a few high-risk tasks only, and only when done properly. It separates the errors a second person tends to catch from those they tend to repeat.

Usually caught: slips of one person	Often repeated: errors from the setting
A miscalculated dose	Look-alike packages and labels
Another person rarely makes the same slip	A complex task, unclear information
If the checker works alone, from the source	The checker works in the same conditions

Holding up a syringe and saying “This is 5 units of insulin, can you check it?” is ISMP's example of a check that is not independent. Failed checks come back to four habits: checking by routine, stopping once the first details look right, deferring to rank, and trusting that the other will catch it.

OUR READING

A check that is told the answer confirms it. Give the checker the source, not the result.

Sources: Institute for Safe Medication Practices, ISMP Medication Safety Alert! Acute Care 24, 2019; Alain K. Koyama, Claire-Sophie Sheridan Maddox, Ling Li, Tracey Bucknall & Johanna I. Westbrook, BMJ Quality & Safety 29(7), 2020

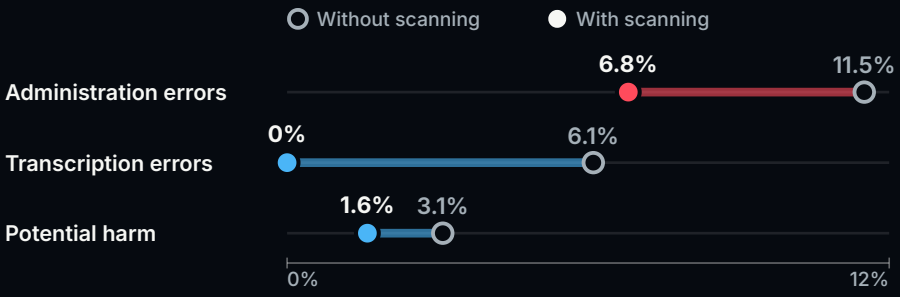
ISMP (2019), read in full; the columns follow its distinction between errors from within a person and from outside, the wording is the editors'. ISMP cites studies, mostly in pharmacies and simulations, in which such checks found up to 95% of errors; the 2020 review found little evidence of that at the bedside.

WHAT THE RESEARCH SAYS

What the scanner changed

In 2010 Eric Poon and colleagues compared units of an academic medical centre before and after a bar-code system that checks each medicine against an electronic administration record. Observers watched 14,041 administrations and reviewed 3,082 transcribed orders.

RATES PER 100 OBSERVED ADMINISTRATIONS; TRANSCRIPTION PER 100 ORDERS (2010)



Timing errors fell by 27.3%, but potential harm from them did not change significantly. The authors' verdict: fewer errors, not none. ISMP calls scanning more reliable than a second nurse for confirming drug, dose and patient, and sees the second nurse as the better check for pump settings and mixed-up lines.

OUR READING

A scanner makes the comparison every time, tired or not. It cannot check what is never scanned.

Sources: Eric G. Poon et al., New England Journal of Medicine 362(18), 2010 (via the abstract at PubMed); Institute for Safe Medication Practices, ISMP Medication Safety Alert! Acute Care 24, 2019

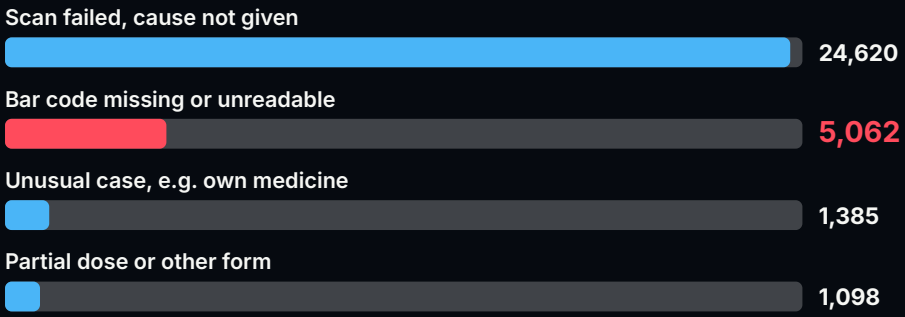
Before-and-after study in one centre, not a randomised trial; figures from the abstract only (the NEJM full text did not open), hence “via”. Errors and harm leave out timing errors; transcription is per order reviewed.

HOW IT IS MEASURED

Count the overrides

Ross Koppel and colleagues studied bar-code systems in five hospitals (2003–2006), watching nurses in two, and read a month of override logs from four. A dose charted without a confirming scan is an override: 10.3% on the medicine side, 4.2% on the patient side.

MEDICINE OVERRIDES BY STATED REASON, ONE MONTH, FOUR HOSPITALS (2005)



Among the 15 workarounds: copies of wristband codes stuck to carts, doorframes or belt rings; one package scanned twice for a full dose; alarms muted; a second nurse signing without looking.

OUR READING

An override log lists where the system and the work do not fit. Read it as that before reading it for names.

Source: Ross Koppel, Tosha Wetterneck, Joel Leon Telles & Ben-Tzion Karsh, Journal of the American Medical Informatics Association 15(4), 2008

Koppel et al. (2008). The reasons are the nurses' own entries; they show which causes exist, not how often each occurs. The authors found no workaround malicious. The linked essay is the author's view of what a scan proves. Checklists are in No. 85, mistake-proofing in No. 46.

More in the essay The scanner is a witness, not a judge

TOOL OF THE ISSUE

The second check card

One card for each check a team relies on, by a person or a device. The Poka-Yoke Register keeps devices such as a blocking scan on a test schedule: plant a deliberate error and see whether the check stops it.

01	**The error it must catch**	one named error, such as wrong dose or wrong patient, not “mistakes”
02	**From a person or the setting?**	a slip is caught by a second person; look-alike labels may fool both
03	**Could a device do it?**	a scan, a hard stop, a fixed setting; keep people for what devices cannot check
04	**Independent?**	the checker works from the source, not from what the first person says
05	**Last planted error**	date, and whether the check stopped it
06	**Skipped or overridden this month**	how many times, and the reasons given

Sources: Institute for Safe Medication Practices, ISMP Medication Safety Alert! Acute Care 24, 2019; Alain K. Koyama, Claire-Sophie Sheridan Maddox, Ling Li, Tracey Bucknall & Johanna I. Westbrook, BMJ Quality & Safety 29(7), 2020; Ross Koppel, Tosha Wetterneck, Joel Leon Telles & Ben-Tzion Karsh, Journal of the American Medical Informatics Association 15(4), 2008

The card is the editors' proposal, built on ISMP's advice, the review and the override study; it is not a tested instrument. Testing with a planted error is how the simulation measured detection.

Open the tool: Poka-Yoke Register stivencatalyst.com/tools/poka-yoke/

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.

Effectiveness of double checking to reduce medication administration errors: a systematic review
Alain K. Koyama, Claire-Sophie Sheridan Maddox, Ling Li, Tracey Bucknall & Johanna I. Westbrook, BMJ Quality & Safety 29(7), 2020
https://doi.org/10.1136/bmjqs-2019-009552

Independent Double Checks: Worth the Effort if Used Judiciously and Properly
Institute for Safe Medication Practices, ISMP Medication Safety Alert! Acute Care 24, 2019
https://home.ecri.org/blogs/ismp-alerts-and-articles-library/independent-double-checks-worth-the-effort-if-used-judiciously-and-properly

Effect of Bar-Code Technology on the Safety of Medication Administration
Eric G. Poon et al., New England Journal of Medicine 362(18), 2010 · via the abstract at PubMed
https://doi.org/10.1056/NEJMsa0907115

Workarounds to Barcode Medication Administration Systems: Their Occurrences, Causes, and Threats to Patient Safety
Ross Koppel, Tosha Wetterneck, Joel Leon Telles & Ben-Tzion Karsh, Journal of the American Medical Informatics Association 15(4), 2008
https://pmc.ncbi.nlm.nih.gov/articles/PMC2442264/

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