Changes in Medical Errors after Implementation of a Handoff Program

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Background

Communication issues in medicine are considered to be a major ingredient in patient safety incidents and harm (2/3 of events according to Joint Commission). Handovers (the Canadian term for the transfer of a patient's care from one health care professional to another, as in at shift change) are considered particularly risky communication tasks in health care. Numerous reports and organizations have called for more effective handovers and curricula to make this happen (handover is a key competency in CanMEDS 2015). However, there is no clear and widely accepted method for teaching handover that has a positive impact on patient outcomes.

Purpose

Starmer's group set out to build on their previous work with the IPASS mnemonic & implementation bundle to see if using their handover method in multiple settings improved care.

Type of paper

Research: Multicenter Observational before-and-after educational trial

**Warning** This was a complex study. This is one of our longer KeyLIME abstracts! We have distilled down a big study to the essentials for you.

Key Points on the Methods

This study was a 9-centre before-and-after educational trial of the effect of the IPASS method on patient outcomes in pediatric clinical teaching units. The methods are complex and multimodal. Briefly, Starmer et al implemented a bundle of 7 elements:

1. IPASS mnemonic (illness severity, patient summary, action list, situation awareness and contingency plans, synthesis by receiver)
2. 2 hour workshop on TeamSTEPPS & IPASS
3. 1 hour role playing / simulation practice
4. e-module
5. faculty development for supervisors
6. direct observation tools for supervisors
7. change campaign ingredients (logo, process, posters, etc)

They implemented at each site an 18-month process:

1. 6 month preintervention data gathering
2. 6 month implementation
3. 6 month postintervention data gathering

Data was gathered by trained unblinded RNs who reviewed all documents on the wards 5 days/week. Written handovers were analyzed and oral handovers were audio recorded. Surveys of residents were done daily (with consent & cookies).

They also did a time & motion study of resident work and surveyed participants for satisfaction with the training.

They looked at a ton of measures, including:

1. patient demographics
2. case complexity
3. "Medical Error" rates (preventable failures of care)
4. "Near Miss" rates (preventable failures that did not lead to adverse events)
5. "Preventable Adverse Event" rates (unintended consequences of care with harm)
6. "Nonpreventable Adverse Event" rates (not defined)
7. Duration of handover
8. Process quality measures of written & oral handover
9. Resident workflow (including time on computers & patient care)
10. The colour of the paint on the walls
11. The daily humidity (ok not really the last 2)
12. Etc.

**Key Outcomes**

The bottom line is that this is reported as a positive trial. Out of 10,710 admissions, there was a 23% relative reduction in errors (24.5 to 18.8/100). 30% reduction in preventable adverse events (4.7-3.3/100). 21% reduction in near misses (19.7 to 15.5/100). No change in nonpreventable events.

Types of adverse events were related to diagnosis, history, physical, other therapies. NOT related to Rx, falls, procedures, or infections. Care was better in 6/9 sites, despite handover improving in all. No change in handover duration, workflow.

Interestingly, 60% of residents already had training in handover prior (went up to 98.9%). Satisfaction with training was only 72%.

There were also a number of threats to the validity of this study. A few to consider:

- this was a study of association, not causation
- the IPASS bundle was implemented, so we don't know what worked...Was it the communications training? Was it the culture change?
- Not all sites improved...In fact 1/3 did not. Why? This should give us pause.
- The reviewers and data gatherers were unblinded to study phase. This can be a major source of bias.
- Why didn't Rx errors improve?
- Why was satisfaction with the training just mediocre (72%)?
- 60% of residents already had prior handover training...Is that generalizeable to your program?

**Key Conclusions**

The authors conclude that all residents should be taught a systematic handover method to make care better.

**Spare Keys – other take home points for clinician educators**

1. Great example of a major and complex med ed trial
2. Carefully look for confounders as in this complex intervention