

Improving residents' handovers through just-in-time training for structured communication

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Abstract

In a recent quality assurance project we learned that nearly half of the handovers we examined were characterized as unsatisfactory by our residents, who provided examples in which their anxiety had been piqued and patient care had been affected. These reports substantiated a growing body of literature on the relationship between the quality of handover and the quality of patient care, so we sought to improve the quality and consistency of the in-hospital handovers undertaken by our internal medicine residents. Senior residents attended morning report for three consecutive month long blocks and evaluated the quality of the handovers using an observational protocol comprised of 16 aspects of effective handover.

During the first block, the resident observed a median of eight of the 16 practices occurring across the 46 handovers, and a large amount of variability. At the beginning of the subsequent block we presented a concise introduction to a structured handover procedure (SBARR). The median quality of the subsequent 33 handovers rose to 11, and the variability decreased considerably. In the next block we refined the SBARR orientation to focus on the errors observed in the previous blocks, and the improvement in the quality and variability was sustained. The minor change, which requires few resources to sustain, had a favourable impact on the quality of our residents' in-hospital handovers.

Problem

Over the last year we have become sensitive to the quality of in-hospital handovers that involve our internal medicine residents, staff, and teaching physicians. In a provisional examination, we interviewed on-call residents and asked them if anything had happened during their shift for which handover should have prepared them but did not. Forty percent of the responses were positive. When asked what information was missing the residents reported, in order of frequency, code status, contingency plans, and important information.[1] When asked about the problems this caused, the residents reported most frequently that it led to delayed or duplicated care and that it piqued their anxiety while caring for patients.

Background

The quality and safety of patients' care is affected by their care providers' knowledge of their medical status. Information about a patient's current situation, history, other providers' assessments, and recommendations for care avert near misses and adverse events. Unfortunately, such information does not always pass seamlessly from current to subsequent care teams, and incidents occur. The Agency for Healthcare Research and Quality identifies lapses in communication between providers as the leading cause of preventable errors in malpractice claims [2]; the Joint Commission ties ineffective care transitions to higher rates of readmission,[3] and the Institute of Medicine attributes a substantial proportion of preventable adverse events to communication errors during handover.[4]

Several recent studies indicate that these problems extend to contexts like ours: in-hospital handovers involving internal medicine residents. One study revealed that on-call trainees omitted 40% of clinically important issues during morning handover.[5] Another observed numerous critical data omissions and a lack of anticipatory guidance, which often preceded near-misses and adverse events.[6] Researchers have also reported that interruptions and distractions are a routine aspect of handover.[7, 8] Each of these issues are regularly listed as indicative of poor handover.

Baseline measurement

From numerous forms of handovers that occur daily throughout our teaching hospitals, we selected one which presented manageable challenges in observation, description, and improvement. It occurs at the same time and place everyday, it is structured (somewhat), and it occurs in the hospital that houses our offices.

It involves senior residents handing over two categories of patients: 1) those that have been admitted from a previous shift, and 2) those the residents have admitted and assessed and who require re-assessment or discharge. The residents are transferring the care of these patients to a group comprised of staff physicians, junior attendings, and some junior residents who together will look after these patients during the day. The event occurs in a dedicated room at a regular time scheduled for the handover. These handovers are embedded in a larger event called "morning report".

To estimate the quality of these handovers a senior resident observed each event for a full block, which lasts approximately one month. The observations were guided by a protocol drawn from the

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literature and revised for our setting.[9] The revised protocol contained 16 items such as "clinical condition described," "code status noted," and "to-do list provided," each of which were judged dichotomously (See figure 1). A favourable judgment was recorded as a "1," and tallying these created a quality score for each handover. Most of the judgments were made in real time; however, three required further information. To determine whether "essential information was included," "non-essential information was excluded," and "clinical condition was described," the observer examined the charts of the patients that had been handed-over after the morning report concluded.

At the conclusion of the block we tallied a quality score out of 16 for each handover, calculated the median, and we constructed a run chart.

See supplementary file: ds7030.docx - "Rourke-BMJ-Quality-protocol"

Design

The project proceeded in four stages. First, we observed the handovers throughout one complete block to estimate their quality; second, we implemented a minor change and evaluated the handovers during a second block, and third, we refined the change and evaluated a final block. The evaluation was facilitated by the creation of a run chart that represented the handover quality from all of the handovers observed across all of the block, and by the calculation and comparison of the means and variance of quality between blocks.

Strategy

The setting that we studied already incorporated common system-level recommendations for effective handover; they occurred in a dedicated room free of distractions at a consistent time each morning. Yet, during our observations of the handovers in the first block, we found that their quality varied considerably from one handover to the next and from one resident to the next. We felt this might be improved by introducing the residents to the process of a structured handover. We chose the SBARR structure (situation - background - assessment - recommendations - review) because it is currently used by many of the allied health professionals in our setting and because it has been identified as a structure that is particularly germane to handovers that occur during morning report.

Currently, on the first day of the block, staff present the residents with an overview of the setting and their responsibilities, and we used this event as a forum for our introduction. Our 10-minute presentation was delivered in-person with the aid of projected slides. It included a concise overview of evidence connecting structured handovers to safe patient care and a terse explanation of the SBARR approach to structuring handover. The presenter explained the concept represented by each letter of the acronym and provided examples of appropriate patient information for each concept. After observing handovers throughout the subsequent block we used our results to focus our SBARR presentation on

recurrent weaknesses. Principal among these was the second 'R' of the communication structure, "Review," which directs the receivers of a handover to demonstrate their understanding of the presenters' communication.

Results

The observations occurred during the winter of 2014 - 2015 across three successive blocks. The number of handovers that were observed in each block were, successively, 46, 33, and 120. The variation was due to the fluctuating volume of cases in the wards during our observations.

The mean (SD) of the handover quality for each of the three successive blocks was $M = 8.59 (2.40)$, $M = 11.18 (1.01)$, and $10.66 (1.04)$. We compared these means using a one-way ANOVA and found that the differences were significant $F(2, 194) = 40.74$, $p < .001$. A post-hoc comparison using the Bonferroni method indicated that the handover quality of the first block was significantly lower than that of the second block ($p < .001$) and the third block ($p < .001$), but that the difference between the second and third blocks was not significant.

Analysis of our run chart proceeded according to the methods described by Perla, Provost, and Murray.[10] We constructed a baseline median from the 46 handovers observed in the first block (Median = 8), and we inspected the chart for shifts, trends, and runs. We identified 16 runs in the 46 handovers, a number sufficiently large to suggest that the quality of a handover from one patient to the next was random.

We extended the median calculated from the first block's handovers past the point at which we presented our introduction to structured handover, and we continued it to the end of the third block. An inspection of the chart revealed an improvement in the quality of handovers and a reduction in variability immediately following the presentation. An inspection of the chart representing handover quality in the third block suggests that the quality wavered during the first week, but settled into an improved level.

See supplementary file: ds6360.docx - "Run chart presenting the quality of handovers through three successive blocks."

Lessons and limitations

In our project, the arbiter of an effective handover is, ultimately, the 16-item observational protocol. Separately, each item radiates face validity; however, as a set the items may be problematic. Concision is an essential quality of effective handovers because the setting is hectic and because the cognitive process of transforming a large amount of information into a succinct summary is central to clinical reasoning. In this regard the 16-item set may penalize handovers that are precise, and it may reward handovers that are needlessly lengthy. Senior staff are particularly sensitive to these issues, and these staff can become a barrier to the intervention if they sense that it is counter to the efficient functioning of the system.

Conclusion

Our intervention was effective at addressing a problem with handover that was specific to our setting: the quality of our handovers varied substantially, and just-in-time training on a standardized procedure reduced some of the variability. Moreover, it improved the overall quality of our handovers. Continuing observations showed that the improvements were sustained after the intervention was refined. The relationship between variability and standardization was straightforward, and it might have been one of the easiest aspects of performance to address in this system.

The next issue for us to address may be more complicated. Some of our physicians are not convinced that our handovers require improvement or that there is a relationship between the quality of our handovers and the quality of our patient care. This issue is a threat to the success and sustainability of our changes, and it may be much more difficult to resolve. An evidence-informed approach, in which we continue to collect data and demonstrate a favourable relationship between provider education and patient care, may resolve this issue.

References

1. Whidden A & Rourke L. Resident handover: a quality improvement initiative. Proceedings of the 7th Canadian Quality Congress September 27 - 28 Edmonton Alberta Canada.
<http://canadianqualitycongress.com/public/technical-program-2015.pdf>
2. Agency for HealthCare Research and Quality. Patient safety primer: handoffs and signouts.
<https://psnet.ahrq.gov/primers/primer/9> Updated December 2014. Accessed October 12, 2015.
3. The Joint Commission. Transitions of care: the need for a more effective approach to continuing patient care. Published June 2014. Accessed October 12, 2015.
4. Blech S. Medical errors: five years after the IOM report. The Commonwealth Fund.
<http://www.commonwealthfund.org/Publications/Issue-Briefs/2005/Jul/Medical-Errors-Five-Years-After-the-IOM-Report.aspx>. Posted July 2005. Accessed October 12, 2015.
5. Devlin M, Kozij N, Kiss A, et al. Morning handover of on-call issues: opportunities for improvement. *JAMA Int Med* 2014; 174:1479-85.
6. Graham K, Marcantonio E, Huang G, et al. Effect of a systems intervention on the quality and safety of patient handoffs in an internal medicine residency program. *J Gen Int Med* 2013; 28: 986-93.
7. Habicht R, Block L, Silva K. Assessing intern handover processes. *The clinical teacher*. 2015 DOI: 10.1111/tct.12404
8. Manser T, Foster S, Gisin S, et al. Assessing the quality of patient handoffs at care transitions. *Qual Safe Health Care* 2010;19:e44-e44.
9. Leggio L. A validated tool to evaluate handovers in a clinical setting. *MedEd Portal*
<https://www.mededportal.org/colaborative/resource/836#sthash.2AddHPTj.dpuf> Accessed October 12, 2015.
10. Perla R, Provost L, & Murray K. The run chart: a simple analytical tool for learning from variation in healthcare processes. *BMJ Qual Saf* 2011 20:46-51.
doi:10.1136/bmjqs.2009.037895.

Declaration of interests

Nothing to declare.

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None.

Ethical approval

Our data collection, analysis, and dissemination processes were developed in accordance with our health region's guidelines for the protection of participants and their information, and our proposal was screened using the region's decision-support tool to determine whether projects are research, necessitating a full review by an ethics board, or quality assurance, constituting minimal risk. The process classified our project as a quality improvement project with minimal risk to participants which did not require full board review.