POLICY STATEMENT

Handover Education in Canadian Residency Programs

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Resident Doctors of Canada (RDoC) represents over 10,000 resident doctors across Canada. Established in 1972, we are a not-for-profit organization providing a unified, national voice for our membership. RDoC collaborates with other national health organizations to foster excellence in training, wellness, and patient care.

Handover Education in Canadian Residency Programs

Resident physicians play a major role in Canadian health care, providing a significant portion of front- line services in both ambulatory and hospital settings. During a patient's treatment course, however, the responsibility for patient care is transferred frequently between health care providers each day – a process termed handover, handoff, sign-out or sign-over.[1] In this paper, handover will refer to the transfer of accountability for patient care.

Handover is a vulnerable time in patient care and a significant factor in adverse events. Recognizing the relationship between transfer of care and patient safety, the World Health Organization has prioritized communication in patient care handover as one of its High 5 Patient Safety Initiatives.[2] In 2007 the Joint Commission on Accreditation of Healthcare Organizations similarly distributed standards focused on improving patient handovers.[3]

Handovers in medical settings are frequent and often transpire under suboptimal circumstances.[4] A survey found that 60% of Canadian surgical residents spent less than 5 minutes preparing for handover.[5] Residents also rated nearly one-third of handovers from their peers as poor. Clinical uncertainty from inadequate handover is most likely to occur during times of reduced coverage, such as overnight and weekends, further compounding the risk.

National and international efforts to restructure resident work hours and reorganize service schedules have also identified the importance of handover and handover education. A primary concern with such changes has been the potential corresponding increase in patient handovers.[4,6] With each handover there is increased risk of loss of information between care providers that could negatively impact patient care.[7,8]

In many instances, the implementation of alternative call models has increased the number of daily handovers and their inherent risk to continuity of care and patient safety. In a recent RDoC survey this was cited as one of the top three reasons why 22% of residents opposed scheduling changes. Half of the respondents had either witnessed (33%) or been directly involved (16%) in an adverse event that they

Table 1. Recommendations

RDoC believes that patient safety can be enhanced by improved handover education. We recommend that:

1. Each patient handover should incorporate direct verbal interaction between care providers. Given the complexity of the handover process, using both verbal and written communication will ensure safe and accurate transfer of patient care.

2. Handover should take place in a quiet area where distractions are minimal. Sufficient time must be allotted for the handover.

3. The handover process should employ evidence-based tools and be standardized for each clinical setting. There are a variety of mnemonics and aids that may be adapted to the particular needs of a clinical setting.

4. A formal handover curriculum should be an accreditation standard for medical education, reflecting the core competencies of the CanMEDS framework.

5. Physicians require both didactic and interactive training in handover. The interactive component is especially important, and supervised evaluation of handover should be part of the training curriculum. A senior or chief resident, faculty member, or program director should regularly observe each resident's handover performance and provide formal feedback.

felt could have been prevented through better handover. Handover most often occurs after long hours on call, and in the same survey nearly 80% of residents indicated that work-related fatigue had a negative effect on patient care in the form of medical errors.[9]

As recognition of the risks associated with handovers grows, it is essential that residency programs develop a formal handover curriculum that provides high-quality training to ensure patient safety and optimal care across all settings.

Evidence

In recent years, increasing interest in the handover practices of medical trainees has identified key components of effective handover as well as barriers that impede it.

Mode of Communication

Effective communication is fundamental to safe and efficient handover.[10] Verbal communication is perhaps the most important and frequently used method. A number of verbal techniques employed in complex industries, such as aviation, are also useful in medicine.[11] One common verbal method is face- to-face handover with interactive questioning and the use of structured communication.[1,12] Other strategies include prioritizing the most unwell patients, providing anticipatory guidance on likely issues, and providing 'to do' lists.[13] Despite the importance of and opportunity for verbal communication, residents frequently experience multiple interruptions during handover sessions. Limited access to a quiet, dedicated space, inadequate time for information transfer, and lack of supervision all decrease handover quality.[1,14]

Written handover strategies are often used to circumvent challenges that can arise from multiple verbal handovers. These include misinterpretation, distortion of information through omission, or incorporation of extraneous information that may depend on time of day and the experience or level of the trainee.[4,14,15] Use of simple, standardized handover sheets can decrease the number of inappropriate tasks, improve handover completeness, and increase efficiency.[16,17] However, the utility of handover sheets alone is limited by the accuracy of information provided, since there is no opportunity for clarification.[18] In addition, the daily task of updating lists can be time-consuming.[14]

Electronic medical records are often cited as a means of decreasing information errors.[19] However, these systems are not without challenges as they still require care providers to manually enter information.[20] Such systems may be costly and require additional integrated computer support systems.[21] Although technology can improve handover, when used alone it can result in the omission of valuable patient data. For example, use of a computer alert system alone rather than a phone call for critical lab results resulted in 45% of urgent lab results going unchecked.[22] Residents prefer verbal communication and the opportunity to ask questions for clarification.

Handover Methods

The fundamental question of what information to include is critical to safe, timely and effective handover.

Identifying patients who are at risk of deterioration is difficult, even for the most experienced clinicians.[23] Intuitively, physicians should focus on those patients who are most ill and may require intervention in the near future. However, physicians cannot reliably prioritize patients for handover based on illness severity. While Physiologic Scoring Systems (PSS)[24,25] can predict patient deterioration, these scores have yet to be applied in the context of prioritizing patients at handover.

Promising research by Bittman et al[26] describes a novel scoring system to prioritize handover by illness severity using the pneumonic IHAND:

1. **I**nvestigations pending,
2. Currently located in a **H**igh acuity unit,
3. **A**bnormal vital signs in the preceding 24 hours,
4. **N**ewly admitted in the last 24 hours, and
5. **D**ying.

Use of this tool in a large academic tertiary care centre has shown moderate success in predicting which patients to emphasize during handover.

Independent of the mode, certain information is universally essential: [1,4,27,28]

1. Identifying patient information
2. Current clinical status
3. Code status
4. Pending investigations
5. Tasks to be completed

To ensure this information is included, acronyms or mnemonics have become the most frequently used tools for standardizing content. This principle is borrowed from high-reliability organizations where high-quality outcomes are expected despite frequent unexpected events, and where the results of missed information could be catastrophic, much like modern hospitals.[28]

According to Risenburg[4] there are at least 24 mnemonics for handovers described in the literature as of 2008. The most cited (70%) is SBAR (Situation, Background, Assessment, Recommendation). One study showed that internal medicine residents preferred the mnemonic SIGNOUT (Sick or DNR, Identifying data, General hospital course, New events of the day, Overall health status/clinical condition, Upcoming possibilities with plan, rationale, Tasks to complete overnight with plan, rationale) when compared to SBAR. The I-PASS (Illness severity, Patient Summary, Action list, Situation awareness, Synthesis by receiver) study group has implemented their handover tool in approximately 9 pediatric hospitals in both the United States and Canada.[29]

Handover tools are used more often in medical specialties than surgical specialties.[5] Despite the wide availability of standardized handover tools, a recent study revealed that 0 of 8 Canadian surgical programs surveyed used them. When handover did occur in these programs, code status was rarely included and the attending physicians were present only half of the time.

The Canadian Medical Protective Association[30] has recently included handover education as part of its Good Practices Guide, which provides examples of structured communication approaches without endorsing a specific mnemonic, as few have yet been validated.[4] While there is little data regarding the content of formalized handover, a one-size-fits-all mnemonic will likely not apply to all clinical scenarios or meet the needs of all practice settings.[4,31]

Other health care disciplines face similar handover challenges.[32] Literature from the nursing profession highlights the impact of communication problems, time constraints, environmental issues, and human factors such as high patient loads and long shifts on effective handover. Organizational hierarchy and social cul-

tures have also been shown to impede communication and handover. Efforts to improve handover practices among nurses mirror those described in medical literature. Standardized handover, concurrent verbal and written handover, and face-to-face handover are techniques that have been used successfully to improve the quality of patient handover among nurses. However, there is little evidence that any specific structure is beneficial in all clinical settings.

Educational Curriculum

Recognizing the complexity of handover, the Accreditation Council for Graduate Medical Education recommends that all training programs have formal curricula in patient handover that incorporate key competencies.[33] This recommendation is strengthened by the observation that trainees' handover skills improve as they gain seniority, implying handover is a learned skill. Published curricula have taken various forms that include didactic sessions, interactive workshops and web-based modules.[34-37] In general these programs improve trainee-perceived preparedness for handover, and are believed to improve care.[38,39] Interactive programs were seen by residents as most successful. Direct supervision and feedback on handover skills were also viewed as valuable components of a handover curriculum.[40]

Currently there is a paucity of formal handover education in Canadian postgraduate medical training programs. Most residents develop their handover skills through informal observation of senior residents or staff physicians.[9] RDoC's 2013 National Resident Survey revealed that only 1 in 6 residents received training as part of orientation, while only 2 in 10 received handover training during an academic half-day, or as part of another dedicated session.[9]

Conclusions

Effective patient handover is essential to ensure patient safety and optimal medical care. Despite this, most residents in Canada do not receive formal training in this essential area. A variety of educational methods, including formal didactic sessions and observation with feedback from more senior physicians, have been shown to improve handover skills. While standardized tools may improve consistency and accuracy of handover, the clinical environment and time barriers to efficient handover must also be addressed. Each residency program should tailor handover curriculum and tools to meet the unique needs of its clinical settings.

Additionally, current literature primarily describes outcomes related to handover practices in discipline specific settings. An important area for further investigation may include the implementation of standardized handover at a system or institutional (i.e. hospital) level.

References

1. Solet D, Norvell, M, Rutan G, Frankel RM. Lost in translation: Challenges and opportunities in physician-to-physician communication during patient hand-offs. Acad Med 2005; 80:1094–99.

2. World Health Organization. High 5s Project action on patient safety. Geneva (Switzerland): The Organization; 2010. Available: http://www.who.int/patientsafety/implementation/solutions/ high5s/en/#

3. The Joint Commission. National Patient Safety Goals. Available: www.joint-commission.org/patientsafety/nationalpatientsafety goals/

4. Riesenber LA, Leitzsh J, Massuci JL, Jaeger J, Rosenfeld, JC, Patow C, Padmore JS, Karpovich KP. Residents' and attending physicians' handoff: A systematic review of the literature. Acad Med 2009; 84:1775–87.

5. Widder S, Pagliarello G, Parry NG, Klassen D, Hameed SM. Acute general surgery in Canada: A survey of current handover practices. Can J Surg 2013; 56:24–28.

6. Charap M. Reducing resident work hours: Unproven assumptions and unforeseen outcomes. Ann Intern Med 2004; 140:814–15.

7. Gandhi TK. Fumbled handoffs: One dropped ball after another. Ann Intern Med 2005; 142:352–58

8. Volpp KGM, Grande D. Residents' suggestions for reducing errors in teaching hospitals. N Engl J Med 2003; 348:851–55.

9. Canadian Association of Internes and Residents National Survey Results 2013. Ottawa: CAIR; 2013.

10. Horwitz LI, Krumholz HM, Green ML, Huot SJ. Transfers of patient care between house staff on internal medicine wards: A national survey. Arch Intern Med 2006; 166:1173–77.

11. Patterson ES, Roth EM, Woods DD, Chow R, Gomes JO. Handoff strategies in settings with high consequences for failure: Lessons for health care operations. Int J Qual Health Care 2004; 16:125– 32.

12. Philibert I. Use of strategies from high reliability organisations to the patient handoff by resident physicians: Practical implications. Qual Saf Health Care 2009; 18:261–66.

13. Sinha M, Shriki J, Salness R, Blackburn PA. Need for standardized sign-out in the emergency department: A survey of emergency medicine residency and pediatric emergency medicine fellowship program directors. Acad Emerg Med 2007; 14:192–96.

14. McSweeney, M, Lightdale JR, Vinci, RJ, Moses J. Patient Handoffs: Pediatric resident experiences and lessons learned. Clin Pediatr 2011 ;50:57–63.

15. Chang VY Arora VM, Lev-Ari S, D'Arcy M, Keysar B. Interns overestimate the effectiveness of their hand-off communication. Pediatrics 2010; 125:491–96.

16. Petersen LA, Orav EJ, Teich JM, O'Neil AC, Brennan TA. Using a computerized sign-out program to improve continuity of inpatient care and prevent adverse events. Jt Comm J Qual Improv 1998;24:77–87.

17. Ram R, Block B. Signing out patients for off hours coverage: Comparison of manual and computer-aided methods. Proc Annu Symp Comput Appl Med Care 1992; 114–18.

18. Arora V, Kao J, Lavinge D, Seiden S, Meltxer D. Medication discrepancies in resident sign-outs and their potential to harm. J Gen Intern Med 2007; 22:1751–55.

19. Flanagan M, Patterson ES, Frankel, RM, Doebbeling BN. Evaluation of a physician informatics tool to improve patient handoffs. J Am Med Inform Assoc 2009; 16:509–15.

20. Raptis DA, Fernandes C, Chua W, Boulos PB. Electronic software significantly improves quality of handover in a London teaching hospital. Health Informatics J 2009; 15:191–98.

21. Koppel R, Metlay JP, Cohen A, Abaluck B, Localio AR, Kimmel SE, Strom BL. Role of computerized physician order entry systems in facilitating medication errors. JAMA 2005; 293:1197–203.

22. Kilpatrick ES, Holding S. Use of computer terminals on wards to access emergency test results: A retrospective audit. BMJ 2001; 322:1101–03.

23. Gardner-Thorpe J, Love N, Wrightson J, Walsh S, Keeling N. The value of Modified Early Warning Score (MEWS) in surgical in-patients: A prospective observational study. Ann R Coll Surg Eng 2006; 88: 571–75.

24. Subbe CP, Kruger M, Rutherford P, Gemmel L. Validation of a modified early warning score in medical admissions. Q J Med 2001; 94(10):521–26.

25. Duckitt RW, Buxton-Thomas R, Walker J, et al. Worthing physiological scoring system: Derivation and validation of a physiological early-warning system for medical admissions. An observational, population-based single-centre study. Br J Anaesth 2007; 98(6):769–74.

26. Bittman J, Tam P, Little C, Khan N. Effectiveness of a novel scoring system to prioritize internal medicine in-patients for handoff. 2013. Submitted for publication.

27. Warrier S. Improving physician hand-offs. Med Health Rhode Island 2011; 94:344–45.

28. Starmer AJ, Spector ND, Srivastava R, Allen AD, Landrigan CP, Sectish TC; I-PASS Study Group. I-pass, a mnemonic to standardize verbal handoffs. Pediatrics 2012; 129:201–04.

29. The I-Pass Study. Available: http://www.ipasshandoffstudy.com/about (accessed 20 June 2013).

30. Safer handovers through structured communications. Ottawa: Canadian Medical Protective Association; 2012. Available: https://www.cmpa-acpm.ca/cmpapd04/docs/ela/goodpracticesguide/pages/communication/Handovers/safer_hand overs_through_structured_communications-e.html (accessed 7 June 2013).

31. Kemp CD, Bath JM, Berger J, Bergsman A, Ellison T, Emery K et al. The Top 10 List for a safe and effective sign-out. Arch Surg 2008; 143:1008–10.

32. Reisenberg LA, Leitzsch J, Cunningham JM. Nursing handoffs: A systematic review of the literature. Am J Nurs 2010; 110(4):24–34].

33. Accreditation Council for Graduate Medical Education. Common Program Requirements. Available: http://www.acgme.org/acgmeweb/Portals/0/PFAssets/ProgramRequirements/CPRs2013.pdf

34. Gakhar, B Spencer AL. Using direct observation, formal evaluation, and an interactive curriculum to improve the sign-out practices of internal medicine interns. Acad Med 2010; 85:1182– 88.

35. Vidyarthi AR, Arora V, Schnipper JL, Wall SD, Wachter RM. Managing discontinuity in academic medical centers: Strategies for a safe and effective resident sign-out. J Hosp Med 2006; 1:257– 66.

36. Horwitz LI, Moin T, Green ML. Development and implementation of an oral sign-out skills curriculum. J Gen Intern Med 2007; 22:1470–74.

37. Telem DA, Buch KE, Ellis S, Coakley B, Divino CM. Integration of a formalized handoff system into the surgical curriculum: Resident perspectives and early results. Arch Surg 2011; 146:89–93.

38. Wayne J, Tyagi R, Reinhardt G, Rooney D, Makoul G, Chopra S et al. Simple standardized patient handoff system that increases accuracy and completeness. J Surg Educ 2008; 65:476–85.

39. Farnan JM, Paro JAM, Rodriguez RM, Reddy ST, Horwitz LI, Johnson JK et al. Hand-off education and evaluation: Piloting the observed simulated hand-off experience (OSHE). J Gen Intern Med 2010; 25:129–34.

40. Chu ES, Reid M, Schulz T, Burden M, Mancini D, Ambardekar AV et al. A structured handoff program for interns. Acad Med 2009; 84:347–52.

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