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Assessing current handover practices in surgery: A survey of non-consultant hospital doctors in Ireland

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ABSTRACT

Background: Handovers of care are potentially hazardous moments in the patient journey and can lead to harm if conducted poorly. Through a national survey of surgical doctors in Ireland, this paper assesses contemporary surgical handover practices and evaluates barriers and facilitators of effective handover.

Methods: After ethical approval and pre-testing with a representative sample, a cross-sectional, online survey was distributed to non-consultant hospital doctors (NCHDs) working in the Republic of Ireland. A mixed-methods approach was used, combining data using triangulation design.

Main findings: A total of 201 responses were received (18.5%). Most participants were senior house officers or senior registrars (49.7% and 37.3%). Most people (85.1%) reported that information received during handover was missing or incorrect at least some of the time. One-third of respondents reported that a near-miss had occurred as a result of handover within the past three months, and handover-related errors resulted in minor (16.9%), moderate (4.9%), or major (1.5%) harm. Only 11.4% had received any formal training. Reported barriers to handover included negative attitudes, a lack of institutional support, and competing clinical activities. Facilitators included process standardisation, improved access to resources, and staff engagement.

Conclusions: Surgical NCHDs working in Irish hospitals reported poor compliance with international best practice for handover and identified potential harms. Process standardisation, appropriate staff training, and the provision of necessary handover-related resources is required at a national level to address this significant patient safety concern.

Introduction

Clinical handover is 'the exchange between health professionals of information about a patient accompanying either a transfer of control over, or of responsibility for, the patient' [1]. Handovers between doctors caring for a patient are potentially vulnerable periods in the patient journey and, when not performed effectively, can lead to patient harm [2]. On average, surgical patients see more doctors than other in-patients [3], and due to their acuity of illness and frequent need for intervention, face particular risk. Surgical doctors balance many competing issues to deliver safe care, including staffing constraints, varying scheduled and emergency care responsibilities, critically unwell patients with complex care needs, frequent transfers and operating theatre duties. In this complex care environment, handover omissions carry a real risk of patient harm.

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Since the introduction of the European Working Time Directive in 2003, shorter shift lengths have increased handover frequency without a corresponding evolution in handover practice or training. Several well-established handover guidelines exist, published as early as 2004 [4–6], and national regulatory bodies stress the importance of handover competency [7]. Despite this, surgical doctors receive little training in safe and effective handover [8–11] and when they do, teaching methods are not standardised [12].

Handover practices within Irish hospitals are poorly understood, highly variable, and no previous national audit has been reported. There appears to be little understanding of the supports necessary to ensure that doctors can achieve and maintain competency in handover, nor of the association between best practice in handover and patient safety. Through a recent multi-site assessment of surgical handover, the authors found that non-consultant hospital doctors (NCHDs) in Ireland are key stakeholders and participants in the handover process [21]. A greater understanding of national handover practice will assist in identifying both best practice and opportunities for improvement.

This national survey of NCHDs working in surgical specialties aims to (1) determine if handover is happening, (2) determine the standard of this handover based on existing evidence, and (3) evaluate barriers to, and facilitators of, effective handover.

Materials and methods

After receiving Institutional Review Board approval from the Royal College of Surgeons in Ireland (RCSI) Research Ethics Committee, a cross-sectional, mixed-methods, online survey was distributed to surgical NCHDs working in the Republic of Ireland. The Consensus-Based Checklist for Reporting of Survey Studies (CROSS) was followed to report this study.

Data collection methods

A pilot version of the survey was developed based on:

- Published surveys evaluating surgical handover practices [8–11,13, 14].
- International handover guidelines [4–6].
- National risk management guidelines [15] (for definitions of risk, Table 1)

Following expert review by the research team and members of the institutional Quality Enhancement Office (QEO), a pre-test phase was carried out with a group of consenting national representatives from the Irish Surgical Training Group (ISTG) committee. This group was chosen via purposive sampling to be as representative as possible, including NCHDs from the areas of general surgery (n = 2), orthopaedics & trauma (n = 1), plastics and reconstructive surgery (n = 1), cardiothoracics (n = 1), vascular surgery (n = 1), otorhinolaryngology (n = 1), neurosurgery (n = 1), and core surgical training (n = 1). NCHDs were interviewed after survey completion to gain feedback on time taken to complete the survey, question order, clarity, ambiguity, applicability to their specialty, and suggestions for additional questions. The survey was refined based on feedback and tested again prior to distribution. The final version for distribution contained 34 questions across six sub-sections.

Table 1
Definitions of risk [15].

Risk level	Definition
Near miss	An incident that was prevented from occurring due to timely intervention or chance, and which could have resulted, in unintended or unanticipated harm to a patient.
Negligible harm	Adverse event leading to minor injury but not requiring first aid.
Minor harm	Adverse event leading to minor injury requiring first aid treatment.
Moderate harm	Significant injury requiring medical treatment, not long-term or permanent.
Major harm	Major injuries/long term incapacity or disability requiring medical treatment.
Extreme harm	Incident leading to death or major permanent incapacity.

Sample size calculation

According to the study by Johner et al. in 2013 'Most residents (60%) reported that face-to-face handovers occurred most of the time or always. However, 40% reported that these handovers were rarely or never conducted in a quiet, private setting. More than one-quarter (26.7%) reported that most of the time the handovers were interrupted one or more times [13]. Assuming a similar level of reporting by Irish doctors within ± 5% precision around the 27%–40% response rate (i.e. 95% confidence interval ± 5% either side of estimated percentage), then the minimum sample size required for the survey was n = 369.

Survey administration

All Senior House Officers (SHOs) and Registrars working in surgery in Ireland (n = 1084) were invited to participate using single-stage, voluntary sampling with multiple rounds. The online survey was developed using the enterprise version of SurveyMonkey® (SurveyMonkey Inc., San Mateo, CA) and remained open for responses between March and September 2023. It was distributed via email from relevant departments within the national surgical training body (RCSI) and advertised using posters, college e-zines, social media, presentation at a national surgical conference, and training days. Participants were provided with a link or QR code which directed them to the participant information leaflet, consent form, and survey questions. Informed consent was obtained from each respondent. Data collected were anonymous and to assure confidentiality, responses were managed by the RCSI QEO during the data collection period.

Analysis

A mixed-methods approach, specifically the validating quantitative data model (a form of triangulation design [16]) was used. This includes open-ended questions at the end of the survey to validate and expand on quantitative findings. Descriptive data are presented as absolute frequencies and percentages of overall number of responses to the survey, and medians with their ranges.

Qualitative analysis and reflexivity

Qualitative analysis of free-text comments was carried out through inductive thematic analysis [17] by two independent investigators (JR and AS) to identify reoccurring patterns in the data. At the time of analysis, JR had seven years' experience as a surgical NCHD in Irish hospitals in training and non-training roles. She reviewed the quantitative analysis prior to analysing the open-ended questions. AS is a non-clinician with an interdisciplinary background in research, education, policy and practice relating to children, young people, and adults. She did not review quantitative findings prior to qualitative analysis. The two investigators met to discuss interim analysis and then again to discuss final themes and sub-themes identified. NVivo software (NVivo qualitative data analysis software; QSR International Pty Ltd. Version 12.7.0, 2019) aided data management.

Results

Survey responses were received from 201 participants (18.5% response rate). Most participants were working at senior house officer and specialist/senior registrar level (n = 100, 49.7%; n = 75, 37.3%) in general surgery and orthopaedics (n = 104, 51.7%; n = 30, 14.9%;

Table S1). A comparison of response rates between the survey and nationally reported employment figures for NCHDs (training registrars and non-training senior house officers and registrars) across the 11 surgical subspecialties indicated a relatively accurate depiction. In 82% (n = 9) of the subspecialties surveyed, the response rates were within 3% of the national figures. The median rate of missing responses for each question was 14.4% (1–25.4%; Table S1) and data were assumed to be missing at random. Information to examine non-response error was unavailable.

Handover logistics

Handover occurrence & staff attendance

Handover occurrence was variable. NCHDs reported that morning and evening end-of-shift handovers were not a routine occurrence in 14.4% (n = 29), and 52.7% (n = 106) of cases, respectively. Face-to-face handover was the most commonly used method (n = 123, 61.2%), however, many NCHDs primarily used other methods of information transfer, including mobile phone messaging applications (text or WhatsApp; n = 19, 9.5%) or handover sheets alone (n = 27, 13.4%). Morning handovers were most commonly attended by registrars (n = 165, 82.1%) and senior house officers (n = 145, 72.1%), with less frequent attendance by interns (n = 103, 51.2%) and consultants (n = 57, 28.3%). Other healthcare professionals (physician associates and nursing staff) rarely attended morning handover (n = 25, 12.4%). Similar patterns were seen for evening handovers attendees, although the overall frequency of attendance was lower (Table S1).

Available handover facilities

Location

Handover was often carried out in a dedicated office or tutorial room (n = 94, 46.7%). The majority of remaining locations raised concerns for patient confidentiality, including wards, ward rounds, the emergency department (ED), and hospital coffee shops (Table S1). Many NCHDs reported that the handover space available to them was not large enough (n = 75, 37.3%), not free from distraction (n = 86, 42.8%), or not confidential (n = 72, 35.8%).

IT resources

Most NCHDs (n = 111, 55.2%) reported difficulty accessing at least some of the information technology (IT) resources required for handover. The most commonly absent resources were functioning computers (n = 85, 42.3%) and printers (n = 76, 37.8%). While 74.6% (n = 150) could access an electronic system with patient details and locations, this system was often not up-to-date (n = 60, 40%). As such, locating patients prior to the ward round and handover was challenging, with NCHDs having to physically attend wards (n = 78, 38.8%) or the bed manager's office (n = 12, 5.9%) to find their patients.

Hospital protocol

The majority of NCHDs (n = 148, 73.6%) were unaware of a handover protocol in their institution. Only 9.4% (n = 19) received protected handover time and 33.8% (n = 68) reported that on-call shifts overlapped to allow for handover. The majority of NCHDs (n = 158, 78.6%) had to carry out handover-related duties outside of their rostered hours at least some of the time.

Patient safety

One-third of NCHDs (n = 68, 33.8%) felt that the handover process in their current hospital was unsafe. Within the past three months, 30.8% (n = 62) reported that a near-miss had occurred as a result of handover; 16.9% (n = 34) reported minor or negligible harm, 4.9% (n = 10) reported moderate harm, and 1.5% (n = 3) reported an occurrence of major or extreme harm. Additionally, 28.3% (n = 57) reported that a patient had been unintentionally missed on the post-take ward round due to inadequate handover within the preceding month. Most people (n = 171, 85.1%) reported that information received during handover was missing or incorrect at least some of the time; however, most felt able to ask questions during handover when needed (n = 159, 79.1%).

Education and training

The majority (n = 143, 71.1%) felt that handovers were beneficial to their learning. Only 11.4% (n = 23) had received any formal handover training, delivered on a training programme (n = 16, 69.6%), via an e-learning module (n = 9, 39.1%), or as part of a hospital induction programme (n = 5, 21.7%).

Qualitative analysis (Table 2)

A total of 131 (65.2%) respondents provided 282 free text answers to the open-ended questions at the end of the survey. Thematic analysis of these responses revealed two major themes:

Theme 1: Barriers to effective handover practice

a) Institutional cultural barriers and perception of handover

Some staff were noted to downplay the importance of handover. NCHDs reported that at times it was not prioritised by their peers, senior colleagues including consultants, other hospital services (e.g., the ED), and the hospital itself. Doctors who worked in surgical roles for long periods of time were also reported to be resistant to change in handover practice.

b) Lack of institutional support

The lack of protected handover time, or a set period of time where the handover team are not contacted except for life-threatening emergencies, was cited as a major barrier to effective practice, impacting team availability and further worsening time constraints. Functioning information technology (IT) resources and reliable methods of locating patients were also felt to be inadequate. The process was reported to be non-standardised, with a lack of institutional handover protocols, and rostering practices were felt to be unsupportive of handover. Lastly, NCHDs reported a lack of staff training and feedback in effective handover practice.

c) Competing clinical and administrative activities

Many activities competed for the time and attention of staff who needed be present at the handover, including, reviewing new referrals from the ED, attending pre-handover patient rounds, and completing handover documentation. This led to fatigue, poor handover punctuality, attendance, and quality.

Theme 2: Facilitators of effective handover practice

a) Standardisation of the handover process

NCHDs favoured implementing institutional handover protocols with standardisation of handover time, location, attendance, attendee roles, and handover methods. Implementing protected time, in addition to supportive rostering practices, such as crossover of shift times, were thought to be important facilitators. NCHDs also mentioned standardisation at a national level, in addition to auditing the handover process.

Table 2
Findings of qualitative analysis.

Theme		Examples
1	Barriers of effective handover practice	
1a	**Institutional cultural barriers and poor staff engagement**	'Seen as a formality or an annoyance. Seen as a nursing type of activity.'
	• Negative attitudes towards handover	'Senior staff attitudes towards it. Sometimes it is rushed or ignored.'
	• Lack of prioritisation of handover	'Different team personalities-some value handover, others do not. Lack of consultant oversight. Poor time keeping.'
	• Cultural resistance to change	'No culture within hospital to prioritise surgical handover.'
	• Lack of consultant involvement	'...it's not something that is prioritised by consultants, and therefore by the rest of the team.'
		'Systemic resistance to change from doctors working there long time.'
		'No involvement of consultants in handovers'
		'Some NCHDs will omit details about a patient's medical/surgical background that is often important'
1b	**Lack of institutional support**	'lack of access to functioning IT systems.'
	• Inadequate IT resources	'Lack of dedicated space with appropriate IT facilities'
	• Lack of a dedicated handover space	'Inaccurate patient locations leads to lost time trying to find patients.'
	• Inadequate methods of locating patients	'Despite there being a designated handover time, bleeps and calls still come through for non-urgent queries during handover time.'
	• Lack of protected handover time	'There is no formal process.'
	• Poor standardisation of the process	'No uniform way of doing handover. Ends up being set up by team. On yourself to make sure good practice is done.'
	• Unsupportive rostering practices	'Rosters not scheduled to include [an] overlap period.'
	• Lack of staff training and feedback	'Lack of dedicated space, technology and training.'
		'Difficult to gauge how good a handover it is with no feedback.'
1c	**Competing clinical and administrative activities**	'Our SHOs also cover orthopaedics and see up to 22 patients in a 24 h period. For them filling out a document is very difficult.'
	• Including: reviewing referrals from ED, ward rounds, completing electronic handovers	'We morning round before the next team start so it can be [stressful] as an SHO to dovetail making your handover sheet whilst on call and whilst ED are still wanting to refer patient to you. It makes for a contentious and unsafe environment. It's not safe to accept a referral you have no time to see.'
	• Leading to: time constraints and poor attendance at handover	'Inadequate staffing levels to allow elective activities occur - team rushing for elective and trauma work instead of able to take time and listen.'
		'Covering multiple hospitals, physically cannot attend face to face.'
2	**Facilitators of effective handover practice**	
2a	**Standardising the handover process**	'A formal, hospital-wide structure to handover that is widely adopted.'
	• Implementing institutional handover protocols	'Agreed place/time for handover. [It's] very variable.'
	• Standardising:	' … with clear individual roles understood by each member.'
	– Handover time and location	'stricter enforcement of attendance and punctuality.'
	– Attendance and attendee roles	'ISBAR is great for handover, I would love for it to be the norm for all communication regarding patients.'
	– Handover method, e.g., ISBAR	'A universal protocol or electronic tool to be used for handover lists.'
	– Handover tool	'Have an established and respected bleep free handover time for each service.'
	• Implementing and enforcing protected handover time	'Purposeful 30 min overlap in rostered times for handover.'
	• Implementing supportive rostering practices: E.g., shift crossover	'Would like to see greater emphasis placed on handover going forward by RCSI, HSE, training bodies etc.'
	• Ensuring standardisation at a national level	'I believe there should be an agreed nationwide standard handover in all surgical departments.'
	• Carrying out audit of handover	'Do real hospital based audit and departmental audit because problems with handover might differ according to hospital, department, [region].'
2b	**Improving access to resources**	'IT infrastructure is key, easy to use systems that are up to date with patient locations and bloods.'
	• Ensuring access to functioning IT resources and sources of patient information	'Full EPR would make handover easier.'
	• Providing an appropriate, dedicated handover space that is confidential and free from distractions	'up to date locations of patients.'
		'Free from distractions in appropriate location and space with access to Imaging/Bloods.'
		'Adequate space where patient confidentiality can be maintained.'
	• Providing staff training	'Formal protocol/training to emphasise importance … '
	• Increasing staffing around handover times to accommodate for competing activities	'Have a crossover on call. Or 2 [SHOs] on call to divide the work.'
2c	**Improving staff engagement**	'It needs to be a culture of safety and completeness that develops from the consultants … down.'
	• Increased consultant involvement and support	'Needs engagement across the board from all Consultants and needs their backing and support In order to improve patient safety outcomes and treatment.'
	• Provision of feedback to junior staff on handover practices	'I've worked with several consultants who attend handover in person and use it as a teaching platform which keeps all parties interested and allows them to receive feedback on their thought processes and management decisions.'

NCHD, Non-consultant hospital doctor; IT, Information technology; SHO, Senior house officer; ED, Emergency department; ISBAR, Identity, Situation, Background, Assessment, Recommendation; EPR, Electronic patient record.

b) Improved access to resources

These factors included ensuring access to functioning IT, including computers, printers, and electronic patient records, in addition to providing a standardised and readily available handover document. Other important resources included a dedicated handover space that is confidential and free from distractions, increased staffing around handover times, and the provision of staff training.

c) Improved staff engagement

NCHDs were eager for consultants to be more involved in the handover process. They felt that consultant support would improve the culture around handover, patient care, and safety. They also reported that increased consultant involvement would likely improve training opportunities with the provision of feedback on handover practices.

Discussion

Surgical NCHDs working in Irish hospitals reported a low level of compliance with international best practice for handover [4–6] on this cross-sectional survey. One-third of NCHDs felt that the current handover practices in their institutions were unsafe, and a high level of perceived patient harm was identified. A lack of formal training was identified (11.4% of respondents), with the majority of such training taking place outside of the hospital setting (78.3%). Reported barriers to effective handover practice included negative staff attitudes, a lack of support from institutions (including dedicated space), and competing clinical activities. Facilitators included process standardisation, improved access to resources, and increased staff engagement. Many of these findings are supported by a recent observational study in two Irish hospitals [21], and international experience [8–11,13,14].

The current study has demonstrated that existing national practice in surgical handover carries risks of patient harm, wasted staff time, and increased overtime, all factors with safety and cost implications. Many NCHDs reported near-misses and varying levels of perceived harm occurring because of handover in their recent experience. Other observational studies have shown direct negative effects on patient safety caused by poor handover [2]. In the current study, almost a third of participants reported patients being missed on a recent post-take ward round due to inadequate handover and inaccurate patient census information.

Inefficient systems also lead to wasted staff time, for example, almost all NCHDs in this study reported having to stay beyond their rostered hours to complete handover-related activities. Good handover practice has been shown to reduce staff overtime [18] and a previous study inferred cost-savings of £740,000 to £3.82 million in one hospital with an improved handover process [19]. Beyond the priority of patient safety, medicolegal claims associated with communication breakdowns, 40% of which are due to failed handovers, are more costly to defend [20]. Investment in training, supports and handover standardisation is clearly justifiable. Despite this, a major theme identified in the current study was a lack of institutional support. Quantitative and qualitative analyses demonstrated poor access to necessary IT resources, a lack of supportive rostering practices such as shift crossover, an absence of protected handover time, and minimal staff training and awareness regarding institutional protocols. Handover guidelines recommend that these supports are in place to ensure staff can perform handover effectively. Handover locations should be large enough [4], free from distraction [4–6], and confidential [5]. Yet, almost 50% of NCHDs in this study reported substandard available locations. The actual venues used were variable, with many raising concerns for patient confidentiality, including hospital coffee shops. Additionally, while electronic systems existed, many NCHDs lacked access to updated patient locating systems, requiring some of them physically attend areas of the hospital to find their patients. Automated systems reduce the risk that patients will be missed on ward rounds [14] and would likely save staff time and increase efficiency based on the findings of this study. In the absence of these necessary infrastructural and technological resources, it is unclear how effective future handover interventions can be.

While institutional shortcomings play a role in poor compliance, staff accountability cannot be overlooked. Poor attitudes towards handover and resistance to change were noted in this study, factors which could also explain the variability in practice seen. For example, while most handovers took place face-to-face, NCHDs also reported using unidirectional means of communication to transfer patient information, such as mobile phone messaging applications. In addition to data protection issues, this raises concerns for the quality of these handovers. The handover process must involve two-way communication to ensure that a shared understanding has been reached, and ideally should be face-to-face [6]. This could be addressed through the introduction of formal handover meetings which have been shown to impact patient care by reducing hospital and intensive care unit length of stay [22]. NCHDs were eager for greater consultant involvement in the handover process, reporting that it would likely improve handover culture and training opportunities through provision of real-time feedback. Feedback after simulated handover practice is well-received by students [23] and likely improves the learning experience. Few studies have looked specifically at the impact of consultant leadership on surgical handover; however, improved senior on-call supervision and training leads to increased handover occurrence, and a reduction in the number of patients who receive inadequate investigation and treatment [24].

Study limitations

Interns were not included in this study. National policy requires separate ethical approval from each of seven intern training networks before circulating a survey to interns in Ireland, which exceeded available resources. The poor reported attendance of interns at handovers suggests they are not as involved in the process as they should be. Their perspectives may be best suited to future qualitative studies targeting barriers and facilitators of their participation and increased awareness of learning opportunities.

The response rate for this survey was lower than anticipated despite a comprehensive communication strategy, multiple rounds, and attempts at recruitment. This smaller sample size necessitated a revised margin of error, of approximately $\pm 6.24\%$ at a 95% confidence level. It is important to acknowledge this change in precision when evaluating the findings. Yet despite this imprecision, our survey identified significant risks associated with handover that demand attention and further study. Additionally, the proportion of NCHDs in each subspecialty were similar to the national employment statistics for the majority of specialties included, indicating a good level of representation within the sample. Online surgical surveys result in lower response rates [25]; but to include the widest geographical area possible, this modality was still considered the most achievable method of distribution for our target population. Longer surveys such as this one also result in smaller numbers of responses [26]; however, it is very difficult, if not impossible, to comprehensively assess this topic using a shorter survey.

Additionally, staff-reported near misses and adverse events are subjective measures. A national mixed-methods observational study might provide a more thorough assessment but would require significant time and budget, resources that would likely be better spent in timely process improvements given the compelling areas of risk identified in this study. Despite these limitations, this study remains the largest published study evaluating handover practices amongst surgical NCHDs in Ireland and provides a national perspective, in addition to identifying important barriers and facilitators.

Conclusion

Handover practice by surgical NCHDs in Ireland is highly variable, not standardised, and appears not to be a priority for some clinicians and institutions. Necessary resources for safer practice are often lacking. This study identifies omissions and perceived patient harm rates associated with sub-optimal handover practice that are unacceptable. Standardising the handover process to reduce variability in practice, and the provision of adequate facilities, resources, and training is required at a national level to address this significant patient safety concern.

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Data statement

Data pertaining to this submission are not publicly available in a data repository, however, the authors can provide this information upon reasonable request.

Declaration of competing interest

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The authors have no conflicts of interest to declare.

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Appendix A. Supplementary data

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References

[1] Cohen MD, Hilligoss PB. The published literature on handoffs in hospitals: deficiencies identified in an extensive review. BMJ Qual Saf 2010;19(6):493–7.
[2] Horwitz LI, Moin T, Krumholz HM, Wang L, Bradley EH. Consequences of inadequate sign-out for patient care. Arch Intern Med 2008;168(16):1755–60.
[3] Whitt N, Harvey R, McLeod G, Child S. How many health professionals does a patient see during an average hospital stay? N Z Med J 2007;120(1253):U2517.
[4] Bywaters E, Calvert S, Eccles S, Eunson G, Macklin D, McCullough C, et al. Safe handover: safe patients. British Medical Association 2004. Available at: https://salford-repository.worktribe.com/output/1362271/safe-handover-safe-patients/ [Accessed 6 January 2023].
[5] Royal College of Surgeons of England. Safe handover: guidance from the working time directive working party. London: RCS; 2007 [Available at: https://www.rcseng.ac.uk/library-and-publications/rcs-publications/docs/safe-handover/. [Accessed 6 January 2023].
[6] Abdellatif A, Bagian JP, Barajas ER, Cohen M, Cousins D, Denham CR, et al. Communication during patient hand-overs: patient safety solutions, volume 1, solution 3, May 2007. Joint Comm J Qual Patient Saf 2007;33(7):439–42.
[7] Irish Medical Council. Guide to professional conduct & Ethics for registered medical practitioners. 2024 [Available from: https://www.medicalcouncil.ie/news-and-publications/publications/guide-to-professional-conduct-and-ethics-for-registered-medical-practitioners-2024.pdf. [Accessed 2 November 2023].
[8] Puzio TJ, Murphy PB, Virtanen P, Harvin JA, Hartwell JL. Handover practices in trauma and acute care surgery: a multicenter survey study. J Surg Res 2020;254:191–6.
[9] Saleem AM, Paulus JK, Vassiliou MC, Parsons SK. Initial assessment of patient handoff in accredited general surgery residency programs in the United States and Canada: a cross-sectional survey. Can J Surg 2015;58(4):269–77.
[10] Sadideen H, Hamaoui K, Saadeddin M, Cogswell L, Goodacre T, Jefferis T. Handover practice amongst core surgical trainees at the Oxford School of Surgery. J Educ Eval Health Prof 2014;11:3.
[11] Babu MA, Nahed BV, Heary RF. Investigating the scope of resident patient care handoffs within neurosurgery. PLoS One 2012;7(7):e41810.
[12] Gordon M, Hill E, Stojan JN, Daniel M. Educational interventions to improve handover in health care: an updated systematic review. Acad Med 2018;93(8):1234–44.
[13] Johner AM, Merchant S, Aslani N, Planting A, Ball CG, Widder S, et al. Acute general surgery in Canada: a survey of current handover practices. Can J Surg 2013;56(3):E24–8.
[14] Van Eaton EG, Horvath KD, Lober WB, Rossini AJ, Pellegrini CA. A randomized, controlled trial evaluating the impact of a computerized rounding and sign-out system on continuity of care and resident work hours. J Am Coll Surg 2005;200(4):538–45.
[15] Health Service Executive. Incident management framework. 2020 [Available from: https://www.hse.ie/eng/about/who/nqpsd/qps-incident-management/incident-management/hse-2020-incident-management-framework-guidance.pdf. [Accessed 17 August 2023].
[16] Creswell JW, Clark VLP. Designing and conducting mixed methods research. 2007.
[17] Braun V, Clarke V. Using thematic analysis in psychology. Qual Res Psychol 2006;3(2):77–101.
[18] Sadri A, Dacombe P, Ieong E, Daurka J, De Souza B. Handover in plastic surgical practice: the ABCD principle. Eur J Plast Surg 2014;37(1):37–42.
[19] Dean J, Phillips G, Turner W, Refson J. Demonstrating improved surgical communication and HAndoveR generates earlier discharges (DISCHARGED). J Patient Saf 2018;14(3):e39–44.
[20] Humphrey KE, Sundberg M, Milliren CE, Graham DA, Landrigan CP. Frequency and nature of communication and handoff failures in medical malpractice claims. J Patient Saf 2022;18(2):130–7.
[21] Ryan JM, Simiceva A, Eppich W, Kavanagh DO, McNamara DA. End-of-shift surgical handover: mixed-methods, multicentre evaluation and recommendations for improvement. BJS open 2024;8(2):zrae023.
[22] Lee JC, Horst M, Rogers A, Rogers FB, Wu D, Evans T, et al. Checklist-styled daily sign-out rounds improve hospital throughput in a major trauma center. Am Surg 2014;80(5):434–40.
[23] Holt N, Crowe K, Lynagh D, Hutcheson Z. Is there a need for formal undergraduate patient handover training and could an educational workshop effectively provide this? A proof-of-concept study in a Scottish Medical School. BMJ Open 2020;10(2):e034468.
[24] Bass E, Patel S. Improving the handover and care of acute urological admissions. BMJ Qual Improv Rep 2015;4(1).
[25] Banning LB, Meyer VM, Keupers J, Lange JF, Pol RA, Benjamens S. Surveys in surgical education: a systematic review and reporting guideline. Eur Surg Res 2021;62(2):61–7.
[26] Deutskens E, De Ruyter K, Wetzels M, Oosterveld P. Response rate and response quality of internet-based surveys: an experimental study. Market Lett 2004;15:21–36.