ORIGINAL ARTICLE

# Deficits in information transfer between anaesthesiologist and postanaesthesia care unit staff: an analysis of patient handover

Naveed Siddiqui, Cristian Arzola, Mirza Iqbal, Kobika Sritharan, Laarni Guerina, Frances Chung and Zeev Friedman

**Background** The immediate postoperative period is important, as the patient recovers from the acute derangements resulting from the surgical insult and anaesthesia. Incomplete or incorrect communication between the anaesthesiologist and the postanaesthesia care unit nurse during the transfer process may lead to dangerous clinical mistakes. The literature examining handovers from operating room to the postanaesthesia care unit is scarce.

**Objectives** The primary objective of this study was to examine the current transfer practice through observation of handovers between the anaesthesiologists and the postanaesthesia care unit staff in order to identify data omissions. The secondary objective was to learn which data items the clinicians and nurses thought were a necessary part of the transfer process and whether this information was communicated at the time of handover.

**Design** A prospective observational study.

**Setting** Academic hospital in Toronto, Canada.

**Participants and interventions** After Research Ethics Board approval, a prospective observational study was conducted at a university-affiliated teaching centre. During a 2-month period, multiple observations of patient handover were performed. The data provided were marked on a checklist. At the end of the study, participating nurses and physicians were surveyed regarding the necessity of communicating different items on the checklist.

**Results** A total of 526 transfers were observed. Of 29 data items examined, only two items (type of surgery and analgesics given) were reported in more than 90% of handovers. Only three items (difficult intubation, ST-wave changes and co-morbidities/healthy) were reported in more than 80% of cases. Many items deemed as needed to be reported by the participants in the study were not communicated.

**Conclusion** This study demonstrates that the handover process is inconsistent and in some cases information defined as important by the physicians and the nurses is not transferred. Further studies need to investigate whether a handover protocol leads to a minimisation of omissions in information transfer.

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**Keywords: anaesthesia, handover, postoperative care, recovery period**

## Introduction

The immediate postoperative period is a time of significant physiological flux, during which the patient recovers from the acute derangements resulting from anaesthesia and surgery. On arrival in the postanaesthesia care unit (PACU), the patient is re-evaluated by the anaesthesiologist, who then gives a verbal report to the responsible nurse. Incomplete or incorrect transfer of information at this point can lead to clinical errors.[1] It is now well established that the transfer of information during a handover is essential to patients' safety.[2,3] In a previous study, 37% of errors discovered during the transfer process were associated with verbal exchanges between the nurses and physicians.[4] In another retrospective study, communication errors were the leading cause of adverse events and were associated with twice as many deaths as clinical inadequacy.[5]

There is a growing body of literature describing the importance of handovers between various healthcare providers. The importance of examining which data items health professionals conceive as important to the handover process has been recognised. However, there are only a few studies which have examined the interprofessional (e.g. anaesthesiologist and nurse) quality of patient handover. With the notable exception of the recently published study by Nagpal *et al.*,[6] previous studies investigating handover following surgery have used qualitative assessments only.[7,8] In addition, the evaluation of the transfer process was performed by a care provider involved in it, which may have led to observer bias.[9]

The main purpose of the present study was to examine the current handover practice between the anaesthesiologists and the PACU staff in a large teaching centre in order to identify information omissions. As a secondary objective, we examined which information items the clinicians and nurses deemed to be a necessary part of the verbal transfer process.

## Methods

Ethical approval for this study (MSH REB# 07-0161-E) was provided by the Mount Sinai Hospital Research

From the Department of Anaesthesia and Pain Management, Mount Sinai Hospital (NS, CA, MI, LG, ZF) and Department of Anesthesiology, Toronto Western Hospital, University Health Network (KS, FC), University of Toronto, Toronto, Ontario, Canada

Correspondence to Dr Naveed Siddiqui, MD, Assistant Professor, Department of Anaesthesia and Pain Management, Mount Sinai Hospital, University of Toronto, 600 University Avenue, Toronto, ON M5G 1X5, Canada
Tel: +1 416 586 5270; fax: +1 416 586 8664; e-mail: naveed.siddiqui@uhn.ca



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Ethics Board (Chairperson Dr R. Heslegrave) on July 2007. It was conducted at the PACU of a teaching centre affiliated to the University of Toronto. A checklist was developed to identify the communication of specific data items during the handover between anaesthesiologists and PACU nursing staff (Fig. 1). The selection of the items on the checklist was based on the contents of the anaesthesia record sheet and items which could not be verified by a chart review were excluded. The items were finalised using a literature review and consultation with six clinical experts through a Delphi process. These experts were all attending anaesthesiologists with a special interest in quality assurance. We searched the electronic databases *MEDLINE*, *EMBASE* and *PsychINFO* using keywords such as recovery room, operating room, interdisciplinary communication, information transfer, errors, quality and adverse events in various combinations to explore the literature related to this topic.

The checklist comprised four sections: the patient's preoperative physical status and demographic data, the intraoperative details and anaesthesia management, significant intraoperative events and postoperative directives. To avoid bias, all the participating anaesthesiologists and nurses were blinded to the exact nature of the observation process. All participants signed a generalised consent form, indicating their willingness to participate in a quality assurance study/audit. The content of the checklist was unknown to them.

**Fig. 1**

Patient number: _____ Staff / Fellow / Resident

| *Data Items* | *Responses* | | | |
|---|---|---|---|---|
| | *Yes* | *No* | *N/A* | *Comments* |
| Patient's name | | | | |
| Age | | | | |
| Sex | | | | |
| ASA | | | | |
| Underlying diseases/healthy | | | | |
| Medications/no meds | | | | |
| Allergies/NKDA | | | | |
| Weight | | | | |
| Height | | | | |
| Type of surgery | | | | |
| Time in OR | | | | |
| Anaesthesia type | | | | |
| Estimated blood loss | | | | |
| Positioning | | | | |
| Difficult intubation if present | | | | |
| BP changes* | | | | |
| ST changes (if present) | | | | |
| Non-sinus rhythm if present | | | | |
| Desaturation ($SpO_2$ <92%) | | | | |
| Broncho/laryngospasm | | | | |
| Hypothermia <35.5°C | | | | |
| Urine output if catheterised | | | | |
| Amount of fluids given | | | | |
| Analgesics given | | | | |
| CVP/arterial line insertion | | | | |
| Blood products if given | | | | |
| Anti N/V agents if given | | | | |
| Vasopressors if given | | | | |
| AntiHTN meds if given | | | | |

Handover checklist. antiHTN, antihypertensive; anti-N/V, antinausea and vomiting; ASA, American Society of Anesthesiologists' physical status; BP, blood pressure; CVP, central venous pressure; yes, item communicated during the handover; N/A, not applicable; NKDA, no known drug allergy; no, item not communicated during the handover; OR, operating room; $S_pO_2$, oxygen saturation. *if systolic <60 or >180 mmHg, or diastolic <40 or >90 mmHg.

The purpose of the study was disclosed at the end of the study and physicians unwilling to participate could have their data withdrawn from the study.

During a 2-month period, observations of handovers were made and the information transferred by the anaesthesiologist to PACU staff was noted. All the handovers were followed by one trained observer in the PACU. This observer was an anaesthesia research fellow who was neither a part of the research team nor involved in the clinical care of the patients. Before the start of the study, the observer performed multiple assessments of the entire handover process, made notes of the verbal content of the handover and marked each item on the checklist. During the pilot phase, the assessments made by the observer were confirmed by two of the study investigators (N.S., Z.F.). In addition, a similar audit and chart review was conducted 2 weeks into the study period to verify the accuracy of data.

A convenience sample of five to eight sequential handovers per day was selected. The selection of these observations was based on the time of entry to the PACU on a 'first come, first served' basis. Data collection was performed throughout the day and on every weekday to minimise sampling bias for specific types of procedures. Due to logistic issues and the small number of cases performed over weekends and 'after-hours', these transfers were excluded.

The verbal content of the handover was marked against the data items on the checklist. These items were coded as 'yes', 'no' or 'not applicable' as appropriate, based on the information in the anaesthesia record and the notes of the observer. 'Yes' or 'no' were marked if an item on the checklist was communicated or not, respectively. 'Not applicable' was marked if an item such as a difficult intubation was neither present nor communicated. Omissions were marked as 'no' when such events occurred during the procedure but were not communicated. For this purpose, following the handover, the chart was reviewed to identify the occurrence of such events which were not reported. Handovers in which details were missed by the observer or confirmation of the checklist items could not be verified through chart review were not included in the final analysis.

After completion of the observation process, the data checklist was sent to the participating anaesthesiologists and nursing staff for their feedback. For each item of the checklist, they were asked to indicate whether they thought it was a required part of the verbal report to the PACU staff at the time of transfer of patient care. Their responses were marked as either 'yes', 'no' or 'only when applicable'. We also recorded comments for each item.

The data were entered into a spreadsheet (Microsoft Excel 2007 version 12, Redmond, Washington, USA) and results were reported as simple percentages with 90% confidence intervals (CIs) for each item on the checklist using STATA 9.2 for Macintosh (College Station, Texas, USA).

## Results

We observed the handovers throughout the regular hours of the weekdays for 2 months.

During the study period, 709 PACU admissions were recorded. Of these, 103 were weekend and 'after-hours' cases. A total of 526 handovers were included in the study. Eighty transfers were either excluded due to missing information or were not recorded. Of these transfers, 32.5% were performed by attending anaesthesiologists, 46.7% by anaesthesia fellows and 20.9% by anaesthesia residents. None of the participants asked to be withdrawn from the study.

Communication of patients' demographic data items during handover is presented in Table 1. Items on the checklist not communicated to the PACU staff during handover in the majority of cases included information such as positioning during surgery (99% of handovers; 90% CI, 98.2 to 99.7), the American Society of Anesthesiologists' (ASA) physical status (93% of handovers; 90% CI, 90.6 to 94.5), estimated blood loss (88% of handovers; 90% CI, 85.4 to 90.2), desaturation events ($S_pO_2 < 90\%$) (81% of handovers; 90% CI, 65.5 to 91.2) and volume of intraoperative fluid administered (62% of handovers; 90% CI, 58.5 to 65.6). The only items which were communicated in over 90% of handovers were information regarding the type of surgery and the analgesia given intraoperatively (Tables 2 and 3).

After the completion of the observation process, the data checklist was sent to all participating anaesthesiologists for their feedback regarding the need for communicating each of the items during handover. The response rate was 92%. Items which more than 90% of anaesthesiologists agreed should be included in the checklist were underlying disease/health, allergies/no known allergies, type of

**Table 1 Patient demographics not reported during handover**

| Data item | Observations ($N = 526$) *n* | Percentage (90% CI) |
|---|---|---|
| **Height** | 524 | 99 (98.8 to 99.9) |
| **Weight** | 514 | 98 (96.3 to 98.6) |
| **ASA grade** | 488 | 93 (90.6 to 94.5) |
| **Age** | 231 | 44 (40.2 to 47.5) |
| **Patient's name** | 191 | 36 (32.8 to 39.9) |
| **Medications** | 171 | 32 (29.1 to 36.0) |
| **Allergies/NKDA** | 121 | 23 (20.0 to 26.2) |
| **Co-morbid conditions or healthy** | 61 | 12 (9.3 to 14.1) |

No significant difference in the distribution of handovers among the staff, residents and fellows. 90% CI, 90% confidence interval; ASA, American Society of Anesthesiologists' physical status; *n*, response for particular item in the column; *N*, total responses; NKDA, no known drug allergy.

Table 2 Intraoperative variables and adverse events not reported during handover

| Data items | Observations ($N = 526$) *n* No | *n* N/A | Percentage (90% CI) |
|---|---|---|---|
| **Procedure time** | 523 | – | 99 (98.5 to 99.8) |
| **Positioning** | 522 | – | 99 (98.2 to 99.7) |
| **Estimated blood loss** | 463 | – | 88 (85.4 to 90.2) |
| **Desaturation ($S_pO_2 < 90\%$)** | 25 | 495 | 81 (65.5 to 91.2) ($N = 31$) |
| **Nonsinus rhythm if present** | 3 | 522 | 75 (24.8 to 98.7) ($N = 4$) |
| **Hypothermia <35.5°C if present** | 25 | 487 | 64(49.6 to 76.8) ($N = 39$) |
| **Urine output if catheterised** | 83 | 394 | 62 (55.4 to 69.9) ($N = 132$) |
| **Broncho/laryngospasm if present** | 1 | 524 | 50 (2.5 to 97.4) ($N = 2$) |
| **Anaesthesia type** | 220 | – | 42 (38.2 to 45.4) |
| **BP changes*** | 37 | 425 | 36 (28.6 to 45.2) ($N = 101$) |
| **Difficult intubation if present** | 3 | 506 | 15 (4.0 to 34.3) ($N = 20$) |
| **ST changes if present** | 2 | 512 | 14 (2.5 to 38.5) ($N = 14$) |
| **Type of surgery** | 21 | – | 4 (2.6 to 5.6) |

No significant difference in the distribution of handovers among the staff, residents and fellows. 90% CI, 90% confidence intervals; BP, blood pressure a If SBP >180 or <60 mmHg, DBP >90 or <40 mmHg; *n*, response for particular item in the column; *N*, total responses; 'N/A', not applicable; 'no', the item was not communicated; $S_pO_2$, oxygen saturation. *If systolic <60 or >180 mmHg, or diastolic <40 or >90 mmHg.

surgery and difficult intubation if present. More than 80% of the anaesthesiologists agreed on the need to include 19 out of 29 items on the checklist (Table 4).

We also recorded the response from the PACU nurses regarding the need for communicating each item on the checklist. The response rate for the PACU nurses was 57%; of 21 PACU nurses, 12 responded to our survey. More than 80% of the responders agreed on the need to include 17 of the 29 items on the checklist. Most of the nurses were not in favour of communicating patient demographic data, but most agreed on the need to communicate intraoperative events such as estimated blood loss, difficult intubation, ST-wave changes, desaturation, hypothermia, urine output and analgesics given (Table 5). Items which physicians and nurses perceived as important to report during the handover compared with actual reporting rates are shown in Figs 2–4.

## Discussion

The results of our study demonstrate that the handover process of surgical patients from the operating room to PACU is not consistent and in many cases information is not communicated by the anaesthesiologists to the PACU nursing staff. It also demonstrates that there is a range of different opinions among healthcare providers as to which items need to be included in the verbal handover. More importantly, it shows that items perceived as essential for the handover process are not consistently communicated in the majority of cases.

Incomplete or poor-quality handovers have been implicated as a source of adverse events and near misses in hospitalised patients.[10–12] A clearly articulated and complete handover process is regarded as one of the important components of patient risk management.[13]

In our study, we observed that several potentially important items, as indicated by the physicians and nurses, were not communicated during handover. These included estimated blood loss, nonsinus rhythm, antihypertensive medications given during surgery and significant blood pressure changes during surgery. This was also true for items such as existence of co-morbidities and allergies to medication, which the majority of physicians and nurses indicated should be included in the final handover report.

The importance of structured checklists and a formalised handover process has been recognised in the medical literature. Haynes *et al.*[14] assessed the impact of a 19-item surgical safety checklist. The results of their study

Table 3 Intraoperative interventions not reported during handover

| Data item | Observations ($N = 526$) *n* No | *n* N/A | Percentage (90% CI) |
|---|---|---|---|
| **Vasopressors[a]** | 75 | 418 | 69 (61.3 to 76.7) ($N = 108$) |
| **Amount of fluids** | 327 | – | 62 (58.5 to 65.6) |
| **Antihypertensive agents[a]** | 11 | 506 | 55 (34.6 to 74.1) ($N = 20$) |
| **Antiemetic agents[a]** | 167 | 174 | 47 (42.9 to 51.9) ($N = 352$) |
| **Blood products[a]** | 18 | 477 | 37 (25.2 to 49.4) ($N = 49$) |
| **CVP/arterial line insertion** | 2 | 520 | 33 (6.2 to 72.8) ($N = 6$) |
| **Analgesics** | 31 | – | 6 (4.2 to 7.8) |

No significant difference in the distribution of handovers among the staff, residents and fellows. 90% CI, 90% confidence interval; CVP, central venous pressure; *n*, response for particular item in the column; *N*, total responses; 'N/A', not applicable; 'no', the item was not communicated. [a]If administered intraoperatively.

**Table 4** Feedback from anaesthesiologists regarding the necessity of communicating each item

| Data item | Responses indicating whether item needs to be communicated during transfer [*n* (%)] Yes (*N* = 63) | No (*N* = 63) | Comments |
|---|---|---|---|
| **Patient's name** | 58 (92) | 5 (8) | For better communication |
| **Age** | 59 (94) | 4 (6) | |
| **Sex** | 0 (0) | 63 (100) | No need |
| **ASA grade** | 28 (44) | 35 (55) | Give idea about patient's medical condition |
| **Underlying diseases/healthy** | 63 (100) | 0 (0) | |
| **Medications/no medications** | 53 (84) | 10 (16) | Only if a long list |
| **Allergies/NKDA** | 63 (100) | 0 (0) | |
| **Weight** | 5 (8) | 58 (92) | To calculate drug dosing |
| **Height** | 28 (44) | 35 (55) | Not at all necessary |
| **Type of surgery** | 63 (100) | 0 (0) | |
| **Time in OR** | 27 (43) | 36 (57) | Can be seen on the record |
| **Anaesthesia type** | 63 (100) | 0 (0) | |
| **Estimated blood loss** | 59 (94) | 4 (6) | Especially when there is significant loss |
| **Positioning** | 28 (44) | 35 (55) | For nonroutine positions |
| **Difficult intubation if present** | 63 (100) | 0 (0) | |
| **BP changes*** | 48 (76) | 15 (24) | If persistent and required treatment |
| **ST segment changes if present** | 60 (95) | 3 (5) | |
| **Nonsinus rhythm if present** | 62 (98) | 1 (1) | Requiring treatment |
| **Desaturation ($S_pO_2$<92%)** | 54 (86) | 9 (14) | |
| **Broncho/laryngospasm** | 58 (92) | 5 (8) | |
| **Hypothermia <35.5°C** | 56 (89) | 7 (11) | |
| **Urine output if catheterised** | 47 (77) | 16 (25) | Especially when it is low |
| **Amount of fluids given** | 58 (92) | 5 (8) | |
| **Analgesics given** | 62 (98) | 1 (1) | |
| **Lines** | 61 (97) | 2 (3) | |
| **Blood products given** | 62 (98) | 1 (1) | |
| **Antiemetic agents if given** | 58 (92) | 5 (8) | |
| **Vasopressors if given** | 36 (57) | 27 (43) | More than usual |
| **Antihypertensive agents if given** | 49 (77) | 14 (22) | |

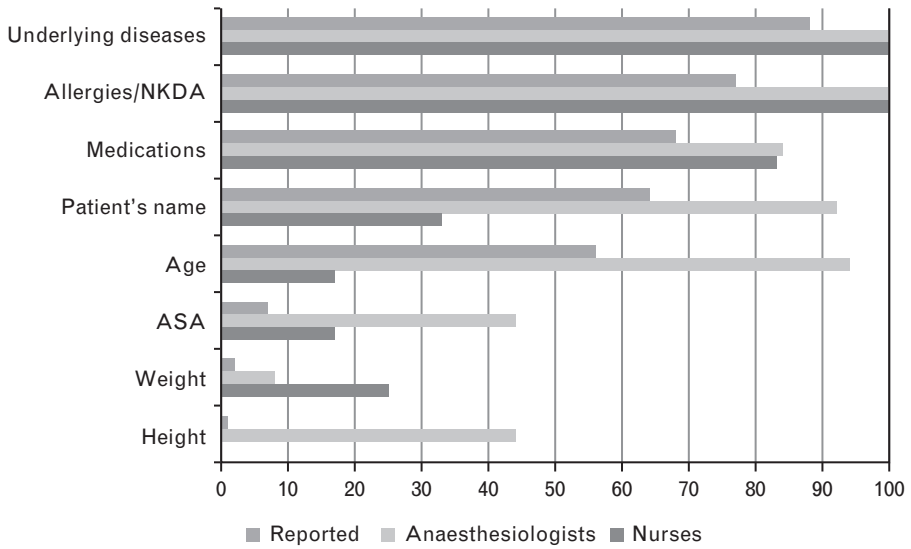
ASA, American Society of Anesthesiologists' physical status; BP, blood pressure; NKDA, no known drug allergy; OR, operation room. *If systolic <60 or >180 mmHg, or diastolic <40 or >90 mmHg.

**Table 5** Response from nurses regarding the necessity of communicating each item

| Data items | Responses indicating whether item needs to be communicated during transfer [*n* (%)] Yes (*N* = 12) | No (*N* = 12) | Comments |
|---|---|---|---|
| **Patient's name** | 4 (33) | 8 (67) | Already on the stamp |
| **Age** | 2 (17) | 10 (83) | Already on the stamp |
| **Sex** | 0 (0) | 12 (100) | Obvious no need to communicate |
| **ASA** | 2 (17) | 10 (83) | |
| **Underlying diseases/healthy** | 12 (100) | 0 (0) | |
| **Medications/no medications** | 10 (83) | 2 (17) | On anaesthesia record sheet |
| **Allergies/NKDA** | 12 (100) | 0 (0) | |
| **Weight** | 3 (25) | 9 (75) | To calculate drug dose |
| **Height** | 0 (0) | 12 (100) | Not at all necessary |
| **Type of surgery** | 9 (75) | 3 (25) | |
| **Time in OR** | 6 (50) | 6 (50) | Can be seen on the record |
| **Anaesthesia type** | 12 (100) | 0 (0) | |
| **Estimated blood loss** | 12 (100) | 0 (0) | |
| **Positioning** | 2 (17) | 10 (83) | Only if unusual |
| **Difficult intubation if present** | 12 (100) | 0 (0) | |
| **BP changes*** | 10 (83) | 2 (17) | When required treatment |
| **ST changes (if present)** | 12 (100) | 0 (0) | |
| **Nonsinus rhythm if present** | 5 (42) | 7 (58) | If patient unstable |
| **Desaturation ($S_pO_2$<92%)** | 12 (100) | 0 (0) | |
| **Broncho/laryngospasm** | 8 (67) | 4 (33) | Only when treated |
| **Hypothermia <35.5°C** | 12 (100) | 0 (0) | |
| **Urine output if catheterised** | 12 (100) | 0 (0) | |
| **Amount of fluids given** | 3 (25) | 9 (75) | Only for long cases |
| **Analgesics given** | 12 (100) | 0 (0) | Comment when patient is sleepy or in pain |
| **Lines** | 12 (100) | 0 (0) | |
| **Blood products given** | 12 (100) | 0 (0) | |
| **Antiemetic agents if given** | 10 (83) | 2 (17) | |
| **Vasopressors if given** | 11 (92) | 1 (8) | |
| **Antihypertensive agents if given** | 12 (100) | 14 (22) | |

ASA, American Society of Anesthesiologists' physical status; BP, blood pressure; NKDA, no known drug allergy; OR, operation room. *If systolic <60 or >180 mmHg, or diastolic <40 or >90 mmHg.

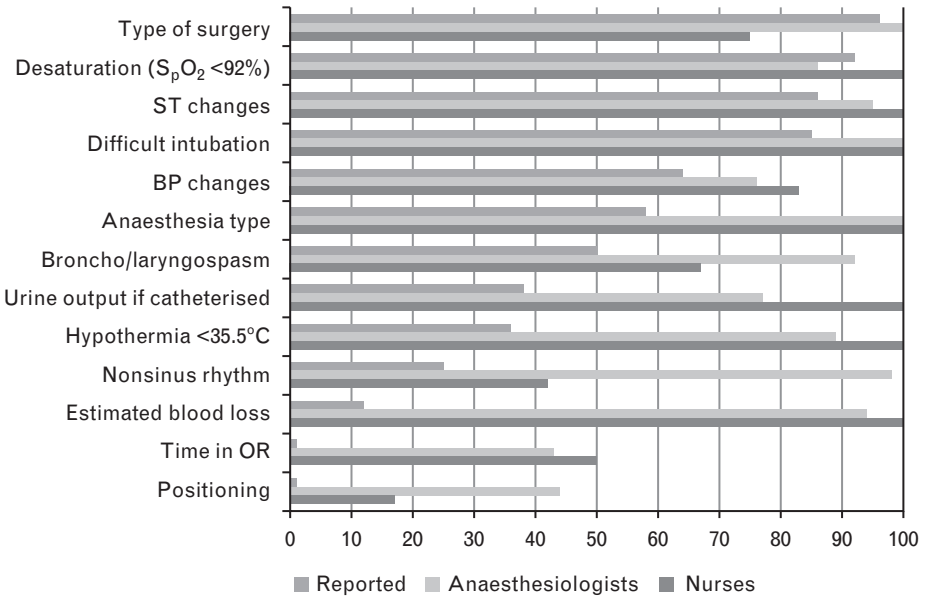
**Fig. 2**




The percentage of handovers in which demographic data were communicated and the percentage of anaesthesiologists and nurses who deemed that communication of each item was necessary. ASA, American Society of Anesthesiologists' physical status; NKDA, no known drug allergies.

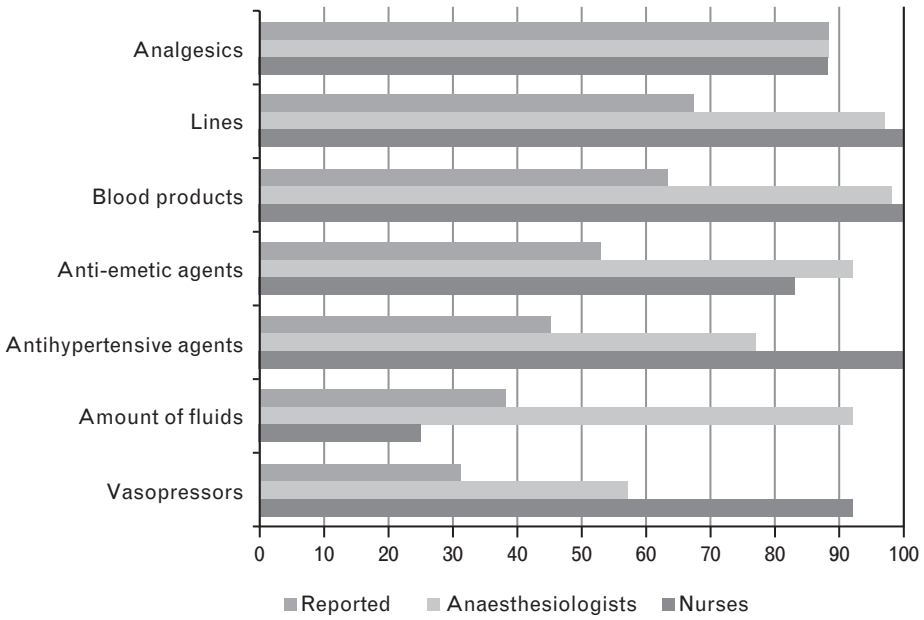
showed that, after the introduction of the checklist, the mortality rate and complications declined to almost half. A study by Joy *et al.*[15] investigated whether the implementation of a standardised handover protocol could reduce the number of errors occurring during patient transitions from the operating room to the ICU. Their results showed that a formalised handover protocol can reduce human error and help to prevent adverse outcomes. The results of our study further strengthen these findings and underline the importance of a structured checklist during the transfer of patients to the PACU.

**Fig. 3**




The percentage of handovers in which intraoperative variables and adverse events were communicated and the percentage of anaesthesiologists and nurses who deemed that communication of each item was necessary. ASA, American Society of Anesthesiologists' physical status; BP, blood pressure; OR, operating room.

**Fig. 4**




The percentage of handovers in which intraoperative interventions were communicated and the percentage of anaesthesiologists and nurses who deemed that communication of each item was necessary. ASA, American Society of Anesthesiologists' physical status; NKDA, no known drug allergies.

We found that information about intraoperative analgesia was communicated consistently. Analgesia is perceived as an integral and crucial part of the anaesthesia process with direct implications on the patient's behaviour in PACU and therefore it is almost always reported. Charting of vital signs after arrival at PACU was also consistent, probably because our anaesthesia records have a designated area for charting the postoperative vital signs.

Our findings of the inconsistent transfer of patient information between the anaesthesiologists and PACU nursing staff may have several causes. One may be the lack of specific guidelines by professional organisations on the subject of patient transfer.[16] The existing guidelines do not address the content or conduct of the handover. In common with other aspects of communication, this process is taught informally as a part of professional practice.[17,18]

The results of this study lead to the assumption that introducing a formal checklist to the process may decrease omissions of communication of critical information. Nagpal *et al.*[6] developed a Postoperative Handover Assessment Tool (PoHAT) which reliably identifies deficiencies in the current methods of postoperative handover. In order to improve outcomes, in addition to formalising handover content, examining the quality of communication during handover is also an important aspect of quality control. Manser *et al.*[19] developed a comprehensive rating tool to assess the quality of handovers. They identified three factors (information transfer, shared understanding and working atmosphere), which could potentially affect the quality of handovers.

At the end of the observation process, we collected data from the anaesthesiologists regarding the significance and importance of each item on the checklist. This was done to help to formalise a structured and practical transfer checklist. Our results indicate there is a difference between what anaesthesiologists think needs to be reported and what is actually reported during handover.

The reasons for not reporting items which were perceived as essential intraoperative information during the handover could be multifactorial and may depend on the type of surgical cases and the patient handover culture of the hospital. We observed several factors which could have led to omission of data items during the handover. The short turnover time between patients in the operating theatre may be one of the main reasons that the anaesthesiologist rushed through the handover. The anaesthesia trainees performed the majority of handovers and this could have led to deficits in communication. These factors may indicate that a site-specific handover checklist needs to be formulated in accordance with personal and departmental preferences and practice.

There are several limitations to this study. The information transferred during handover is greatly affected by the type of surgery and the local practice of the medical centre. Therefore, our results may not be applicable to

other centres. In addition, the quality of the transfer may be influenced by the professional experience of the anaesthesiologist. A longer period of observation would allow analysis of the influence of experience and seniority on handover practice. Nurse anaesthetists are not part of our practice and their performance of handover might be different. Another limitation of our study could be sampling bias. The transfers were observed as a convenience sample; the observations were conducted throughout the day and every weekday to minimise the sampling bias but not all patient transfers were observed. Reliance on a single trained observer improved the accuracy of data collection but excluded the possibility of observing simultaneous admissions to the PACU. Also, for logistical reasons, it was not possible to collect data 'after hours' and at weekends. This may create a bias because the handovers during late hours in which the transfer of data may be deficient were not observed. However, the vast majority of procedures take place during the weekdays and we believe those were adequately captured. We did not actively control for the length or type of procedure, or for the number of handovers by each anaesthesiologist. Potentially, one anaesthesiologist could have been responsible for a large number of cases, but due to the nature of practice in our centre, this is highly unlikely. Specific items on the checklist and their importance might vary from case to case; however, it is beyond the scope of this manuscript to evaluate each and every item against an adverse outcome in this study. Another major limitation, as in all studies of this nature, is the dependence of the data analysis on the quality of charting. If an incident has not been charted, it would not be included as a possible omission.

In conclusion, this study demonstrates that the handover process is inconsistent and that, in many cases, information is not communicated by the anaesthesiologists to the PACU nurses. Our data also highlight the fact that the information which is perceived as important for the handover process by the healthcare workers is not communicated consistently in the majority of cases. Although the majority of data could be retrieved from the anaesthesia chart by the nurses, this would be a time-consuming and inefficient practice. The implementation of a structured PACU handover protocol and checklist could minimise the omission of important information and streamline the transfer process.

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