

ORIGINAL RESEARCH

Clinical audit of operation notes at the Department of Surgery, Addis Ababa University

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Abstract

Background

Operation notes capture the key findings and details of a surgical procedure and are critical to its safety. The Royal College of Surgeons of England has set an internationally accepted standard for elements of quality operation notes, but no prior research has considered the conformity of Ethiopian teaching hospitals with these standards.

Methods

A cross-sectional sample was collected at 2 Addis Ababa University teaching hospitals: Menelik II Hospital (MIIH) and Tikur Anbessa Specialized Hospital (TASH). Guided by the 2014 best practice guidelines released by the Royal College of Surgeons of England (RCSE), we retrospectively analysed the data of patients who underwent surgery between 1 August and 31 October 2017.

Results

All notes (n=348) were handwritten. At both hospitals, operative findings, anaesthesia details, patient position, and incision type were documented >90% of the time. Residents wrote 98% of the notes at MIIH and 91% of the notes at TASH. Surgeons and assistants were identified in >96% of the notes from MIIH and TASH, while anaesthesia team members were identified in 88.5% and 5.7% of the notes from MIIH and TASH, respectively. Gauze and instrument counts were documented in 81.2% and 69.5%, and closure technique was described in 71.8% and 52.3% of the notes from MIIH and TASH, respectively. The operation note templates at both hospitals did not include fields for effective antibiotic prophylaxis, deep vein thrombosis prophylaxis, or estimated blood loss.

Conclusions

Operation notes in the studied hospitals were both incomplete and below the standards described by the RCSE guidelines, with specific concerns being insufficient documentation of technique and support staff, and missing documentation of antibiotic prophylaxis and blood loss. We recommend that Addis Ababa University implements a new operation note format incorporating RCSE requirements, increase the level of supervision provided by senior surgeons for notetaking, and improve surgical documentation training in the residency curriculum.

Keywords: operation notes, documentation, medical records, clinical audit, Ethiopia

Introduction

Operation notes capture the details of a surgical procedure, including personal details of the patient, indications for surgery, technical descriptions, intraoperative findings, and postoperative instructions.^[1] This document is critical to effective patient care, as operation notes are used for postoperative follow-up in the surgical ward and providing care instructions, and they may serve as a reference for other healthcare providers at a later time. Operation notes also serve as part of the primary record of patient care and may serve as evidence if medicolegal issues arise.^{[2],[3]} Fi-

nally, operation notes provide data for research and may be used for auditing the performance of hospitals and clinical staff.^[4]

As surgical procedures rely on operation notes for both caregiving and documentation, practice organizations have moved towards standardization. The Good Surgical Practice guidelines published by the Royal College of Surgeons of England (RCSE) recommend that operation notes be legible, typed (if possible), and accompany the patient from the operating theatre to recovery and the surgical ward.^[1] The guidelines also require the inclusion of specific clinical

and nonclinical details. To date, few thorough audits of operation notes have been performed in the Ethiopian setting. Therefore, this study aimed to assess the quality of surgical operation notes and associated factors affecting the quality of these notes at the Department of Surgery at the College of Health Sciences of Addis Ababa University (AAU), with respect to the RCSE guidelines.

Methods

Two teaching hospitals affiliated with AAU were selected for this audit: Tikur Anbessa Specialized Hospital (TASH) and Menelik II Hospital (MIIH). TASH is among the largest hospitals in Ethiopia, with over 700 beds, out of which approximately 140 are surgical beds. The hospital serves approximately 370 000 to 400 000 patients per year. The Department of Surgery provides inpatient care, outpatient services, and follow-up clinics, covering elective and emergency surgery, with 9 operating theatres, 4 orthopaedic tables, a minor operating theatre, and a 24-hour emergency service. MIIH is also located in Addis Ababa and serves as an affiliate teaching hospital for the AAU School of Medicine. It has 120 surgical beds, about 100 of which are dedicated to general surgery, in addition to 4 fully furnished operating theatres.

This audit reviewed operation notes for patients admitted for surgery from 1 August through 31 October 2017, using the updated 2014 RCSE guidelines as a quality benchmark. The 2014 RCSE guidelines state that operation notes should include date and time; whether the procedure was an emergency or elective; names of the personnel involved (operating surgeons and assistants, theatre anaesthetist, scrub nurse); the operative procedure performed; incision details; the operative diagnosis and findings; any problems or complications; any extra procedures performed and why they were performed; details of tissue removed, added or altered; identification of any prostheses used, including the serial numbers of prostheses and other implanted materials; details of the closure technique, anticipated blood loss, antibiotic prophylaxis (when applicable), and deep vein thrombosis (DVT) prophylaxis (when applicable); detailed postoperative care instructions; and the signature of the individual who documented these details.^[1]

From the pool of patients admitted and operated on at TASH and MIIH from August through October 2017, we randomly selected a sample of comparable size (n=350) to similar studies, and we retrospectively extracted data using a structured data compilation form after excluding patients with missing records (n=2). Interns and general practitioners at the 2 facilities collected the data after receiving training regarding how to use the data collection instrument. The collected data were subsequently checked for completeness by supervisors and the principal investigator. The data were entered and analysed using SPSS Statistics, version 20.0.1 (IBM Corp., Armonk, NY, USA). Descriptive analyses were performed on explanatory variables using frequency tables and summary statistics.

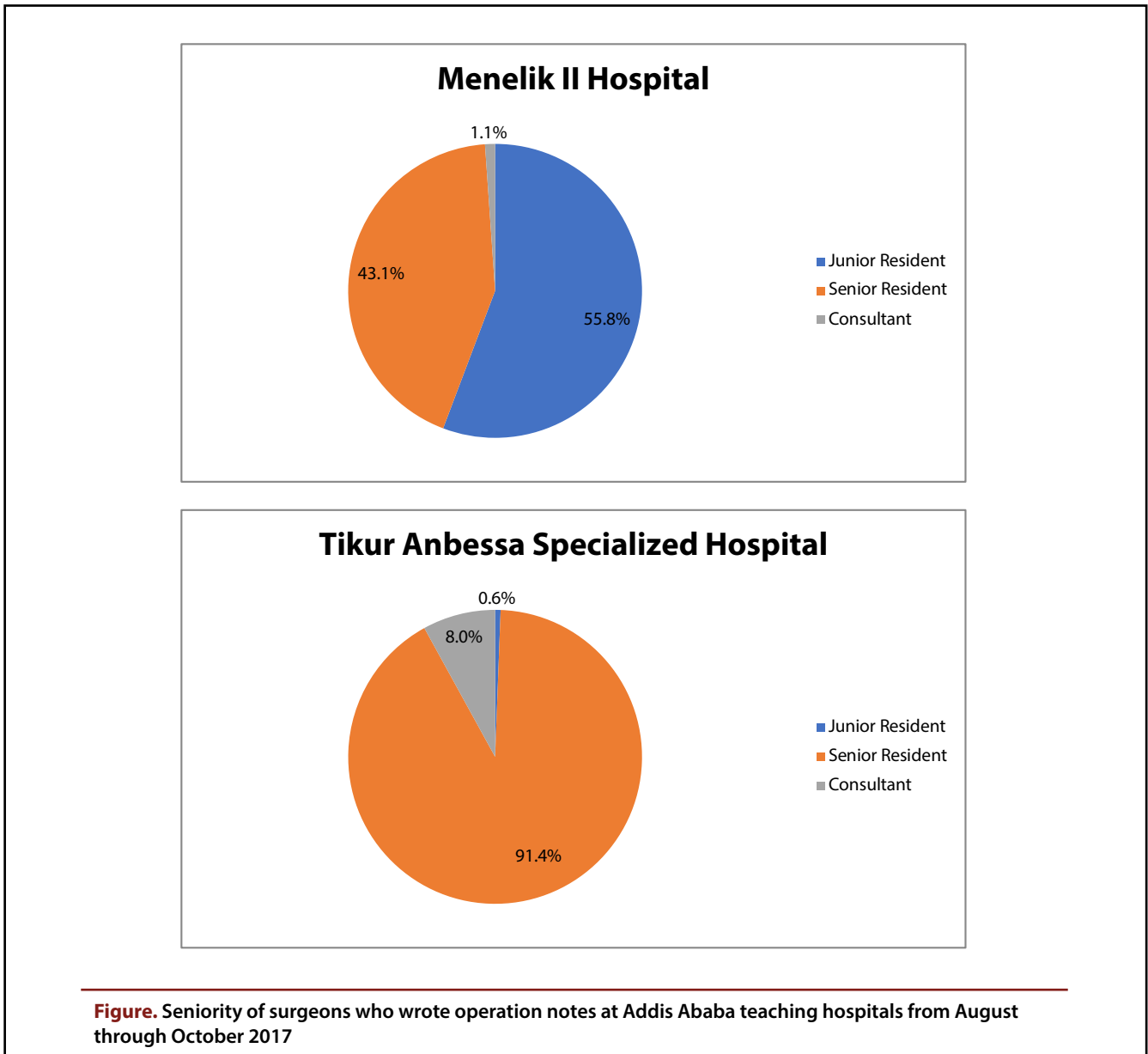
Results

We collected and reviewed 348 operation notes from both hospitals and found that neither MIIH nor TASH utilized typed operation notes. Handwritten notes were kept for both emergency and elective procedures; 61.5% and 83.9% of the collected notes were for elective procedures at MIIH and TASH, respectively. These notes were mostly written by residents: 55.7% of notes at MIIH were written by junior residents, 43.1% of notes at MIIH were written by senior residents, and 91.4% of notes at TASH were written by senior residents. Only 1.1% and 8% of notes were written by consultant surgeons at MIIH and TASH, respectively (Figure 1).

The date of surgery was documented in almost all operation notes reviewed: 99.4% of notes from MIIH and 98.3% of notes from TASH. However, the time and duration of surgery were not documented in any of the operation notes from MIIH, whereas only 3 notes from TASH recorded the time. The name of the operating surgeon and assistants were consistently documented: 97.7% of notes at MIIH and 96.6% at TASH documented the names of healthcare providers in the operating theatre. While the primary provider was consistently documented, this was not consistent for other participants. The name of the anaesthetist was documented in 88.5% of the notes from MIIH, but only 5.7% of notes from TASH included this information. Furthermore, the names of scrub nurses and runners were captured in 75.3% of the notes from MIIH, while these were absent from all notes retrieved from TASH.

The type of anaesthesia, the position of the patient, the type of incision, the operative diagnosis, and the intraoperative findings were documented in more than 90% of the notes (Table). The occurrence or nonoccurrence of complications was inconsistently documented, being included in 52.9% notes from MIIH and 40.8% of notes from TASH. The documentation of whether additional procedures were performed other than those initially planned was similarly inconsistent, occurring in 53.4% and 40.8% of notes from MIIH and TASH, respectively. The details of tissue removed were documented in 92% of notes from MIIH and 97.1% of notes from TASH. The details of wound closure were inconsistently documented, described in 52.3% and 71.8% of notes from MIIH and TASH, respectively. Gauze and instrument counts were also inconsistently documented, being reported in 69.5% and 81.2% of notes from MIIH and TASH, respectively.

Nearly all operation notes from both hospitals were signed, with 99.4% of the notes from MIIH and 98.3% of notes from TASH including signatures. However, there were differences between the 2 hospitals in terms of the documentation of surgical team member names. The names of the anaesthetists, scrub nurses, and runners were documented in almost all operation notes from MIIH. In the notes from TASH, the anaesthetist was only identified 5.7% of the time, and scrub nurses and runners were not identified at all. Notably, the majority of operation notes written at MIIH were written by the most junior member of the surgical team (Figure).



Discussion

Operation note writing is among the most important skills required of a surgeon, as appropriate documentation of a surgical procedure is vital for postoperative patient care.[4] While RCSE guidelines provide an accepted international standard, operation notes analysed in this and other studies have not consistently conformed to recognized standards. Incomplete operation notes hinder postoperative patient management, as notes written with illegible handwriting or those that use nonstandard abbreviations, for example, can confuse healthcare providers responsible for further patient care.[2] Moreover, incomplete notes are not useful in medicolegal cases, with 1 study reporting that up to 45% of operation notes cannot be used to support a defendant in a court of law.[2] As medicolegal issues continue to gain prominence in Ethiopia, proper documentation cannot be overemphasized.

In this study, the date of surgery was documented in almost all notes (98.3%-99.4%), which is similar to findings from other studies in Africa and elsewhere (92.6%-99%).[5] RCSE guidelines stipulate that both date and time should be recorded in operation notes, but time was rarely documented at the hospitals under study. The time of surgery was also commonly omitted in operation notes evaluated by investigators in Nigeria and Pakistan [6],[7]; however, a study conducted in Sudan found that the time was documented in 81% of notes.[5] The names of surgical team members were documented fairly consistently in the notes from MIIH, but the names of the anaesthetists and nurses were missing from all of the notes from TASH. This may have been due to differences in the formatting of operation note forms at the 2 hospitals. The aforementioned study from Sudan found that the names of the anaesthetists and scrub nurses were rarely documented (at rates of 13.9% and 0.9%, respectively).[5] This demonstrates an opportunity for a revised operation record sheet format, which, if linked to a preoperative safety

Table. Conformity to Royal College of Surgeons of England operation note standards at Addis Ababa University teaching hospitals

Operation note details	Percentage of notes conforming	
	Menelik II	TASH
Name of the operating surgeon and assistant		
Only the operating surgeon	2.3	3.4
Both the operating surgeon and assistant	97.7	96.6
Name of the anaesthetist	88.5	5.7
Name of the scrub nurses and runner		
Only the scrub nurse	13.8	0.0
Both scrub nurse and runner	75.3	0.0
Type of anaesthesia	92.5	90.8
Position of the patient	98.9	93.1
Type of incision	99.4	94.8
Operative diagnosis	96.6	93.7
Intraoperative findings	97.1	94.3
Any complication	52.9	40.8
Any extra procedure conducted	53.4	40.8
Details of the tissues removed	92.0	97.1
Details of closure	52.3	71.8
Gauze and instrument count	69.5	81.2
Signature	99.4	98.3
Operation notes written by		
Junior resident	55.7	0.6
Senior resident	43.1	91.4
Consultant	1.1	8.0

TASH, Tikur Anbessa Specialized Hospital

checklist, would facilitate the introduction of all surgical team members and the documentation of their names.

The type of anaesthesia, position of the patient, type of incision, operative diagnosis, and intraoperative findings were documented in more than 90% of the notes at the 2 hospitals that we investigated, and this was comparable with previous studies. Closure technique was less frequently documented, however; the proportions of 52.3% and 71.8%

at MIIH and TASH, respectively, were lower than the rates observed in the previously mentioned studies conducted in Nigeria (82%)[7] and Pakistan (69%)[6] but higher than the proportion observed in the study carried out in Sudan (26.9%).[5] We also found that most operation notes were written by surgical residents who had never been trained on how to write operation notes. This is concerning, as it has been previously shown that trainees struggle to produce high-quality operation notes without assistance.[8] In the study conducted in Pakistan, the majority (86.5%) of operation notes were also written by trainee surgeons.[6] While globally, only 10% to 18% of institutions offer operative note writing as part of their residency programme curricula, and most senior surgeons have never received such training, it has been shown that teaching operative note writing has improved the quality of documentation.[4],[9]

Although all of the operation notes were assessed as legible in this study, it has been shown that handwritten operation notes are often illegible,[10] while typed electronic notes have demonstrated full legibility.[11],[12] For this reason, RCSE guidelines recommend that operation notes should be typed whenever possible.

RCSE guidelines also call for the documentation of anticipated blood loss, antibiotic prophylaxis, and DVT prophylaxis, all of which were not regularly recorded in the operation notes that we analysed from TASH and MIIH. These omissions are particularly troubling, as a lack of properly documented DVT and antibiotic prophylaxis increases the likelihood of adverse safety incidents,[13] and a lack of blood loss estimation creates obstacles for adequate postoperative transfusion care, if needed. It may be advisable to go further than the RCSE guidelines in measuring estimated blood loss as well as anticipated blood loss, especially in the event of a divergence between the 2 quantities. These omissions call for the systematization of both the body of the operation note form and of postoperative care orders linked to the operative findings. Incorporation of these elements into a new operation note format, again, linking to a preoperative safety checklist, if possible, would align AAU operation notes with the RCSE 2014 operation note guidelines.

An amended operation note format should include clearly marked spaces to enter details, such as the time of surgery, names of the entire surgical team, and preoperative safety signoffs, some of which were missing from the templates in use during the period under study. Intraoperatively, the operation should have a systematized description, with clear sections to describe details of the incision, findings, procedure, difficulties or complications, estimated blood or fluid loss, and closure—all of which were mixed into 1 field of text. Furthermore, operation notes should always be linked to itemized postoperative care instructions, with clear spaces to note monitoring, fluid management and transfusion needs, analgesia, antibiotics, DVT prophylaxis, other medication requirements, diet or exercise restrictions or recommendations, physiotherapy (if needed), wound care instructions, and planned discharge time.

Conclusions and Recommendations

This audit found the information presented in AAU Department of Surgery operation notes to be below the standards recommended by 2014 RCSE guidelines, and it identified serious weaknesses in key areas. The first recommendation is for AAU hospitals to adopt the RCSE guidelines as a baseline to standardize operation notetaking, with some modifications. In accordance with the guidelines, AAU should implement improved, standardized operation notes with clear itemized sections for preoperative safety checks, team members, the date and time of surgery, intraoperative procedure details, and postoperative care instructions, as outlined above. This amended format should include spaces to enter details, such as time, the names of all surgical team members, safety signoffs, and blood loss estimations, which were missing from the templates used during the period under study.

A further recommendation is for the operation notes to be written by the most senior member of the surgical team who participated in the surgery. AAU surgical residents should be guided on writing operation notes as part of their residency training, with a formal module at the start of training focusing on documentation standards and report writing. Senior surgeons must take further time to walk trainees through the details of successfully writing operation notes, rather than assuming that trainees know how to write proper notes. Finally, the 2 hospitals should introduce typed operation notes, preferably stored electronically to ensure their longevity and security. The combination of education and a standardized electronic operation note format carries a clear connection with improved operation note quality.^{[14],[15]}

To complete the audit cycle, the extent to which clinical staff comply with the above recommendations (once implemented) should be analysed in tandem with surgical outcomes research to demonstrate the projected beneficial impact on patient safety.^[16] Frequent future auditing of the quality of records kept will also help maintain high standards of documentation to facilitate safe surgical care.

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