

AUDIT ON COMPLETENESS OF OPERATIVE NOTES DOCUMENTATION AT A TEACHING HOSPITAL IN LAHORE PAKISTAN

Ayesha Afzal¹, Nauman Ismat Butt^{2*}, Huzaifa Nadeem¹, Imania Khizar¹, Barak Waris², Ammara Akbar¹, Muhammad Shaheryar Siddique¹

1. Department of Surgery & Allied, Chaudhary Muhammad Akram Teaching and Research Hospital, Azra Naheed Medical College, Superior University Lahore Pakistan
2. Department of Medicine & Allied, Chaudhary Muhammad Akram Teaching and Research Hospital, Azra Naheed Medical College, Superior University Lahore Pakistan

*Correspondence: nauman_ib@yahoo.com

ABSTRACT

OBJECTIVE:

This study employed a baseline internal audit design to assess completeness of operative notes documentation at a teaching hospital in Lahore Pakistan.

METHODS:

This observational cross-sectional retrospective audit study utilized a standardized checklist to assess completeness of operative notes, drawing on guidelines from the Islamabad Healthcare Regulatory Authority, Punjab Healthcare Commission and the Royal College of Surgeons, after ethical approval from Institutional Ethical Review Committee of Azra Naheed Medical College, Superior University Lahore Pakistan. The audit reviewed all medical records of Department of Surgery and allied specialties from April to June 2025. A total of 227 records were retrieved; however, 24 records were excluded due to missing or damaged operative notes. The audit was conducted on 203 operative notes. The results were analyzed using SPSS version 23.

RESULTS:

A total of 203 records were assessed. Key findings included high compliance in date (191, 94.1%) and time of procedure (188, 92.6%) but patient identification was documented in only 28 (13.8%). Names of surgeon and assistant (203, 100%), operative finding (201, 99.0%), doctor signature (197, 97.0%), name of operative procedure (196, 96.6%), operative diagnosis (186, 91.6%) and details of tissue removed, added or altered (183, 90.1%) were reasonably well documented. There were gaps in type of elective/emergency procedure (54, 26.6%), prosthesis use (44, 21.9%), any extra procedure performed with reason (36, 17.7%), anticipated blood loss (32, 15.8%), complications encountered (19, 9.4%) and DVT prophylaxis (07, 3.4%).

CONCLUSIONS:

While some components of operative notes were well-documented, deficiencies persist in areas critical to patient safety and quality care. Continued measures such as revising the operative notes form, training sessions, regular audits and feedback are needed to uphold and enhance documentation practices.

KEYWORDS:

audit, operative notes, patient care, medical documentation, hospital records, Pakistan.

INTRODUCTION

Operative notes are vital records in any surgical unit and are the professional responsibility of the operating surgeon [1]. A well-documented note supports coordinated care by providing key details for the post-operative and critical care teams. These notes help guide essential decisions such as antibiotic use and thromboprophylaxis, which are often made by the surgeon during the procedure [2]. As such, the quality of operative documentation has a direct impact on patient outcomes and effective post-surgical management. Medical records serve both clinical and legal purposes, documenting the patient's interaction with healthcare services, facilitating communication among providers and support continuity of care in both hospital and community settings [2,3]. Clear documentation becomes especially critical during handovers, where poor-quality notes can lead to delays and errors [3,4]. Properly maintained records help ensure comprehensive care, provide legal protection, and are often used in research, resource planning, and quality improvement.

To recognize deficiencies in our documentation practices, we undertook a clinical audit to evaluate the quality of operative notes at our hospital. Clinical audits are a well-established tool for ensuring adherence to standards and driving improvements in healthcare delivery [5,6]. Our focus was on assessing the completeness of operative notes to identify critical areas for improvement and implement targeted interventions. Accurate and comprehensive operative notes documentation is essential for maintaining continuity of care, preventing medical errors and enhancing patient safety. Incomplete or inaccurate notes can lead to post-operative complications, medication errors and compromised patient outcomes. The rationale for our study was to transform operative notes documentation from a potential liability into a cornerstone of clinical excellence and patient-centered care.

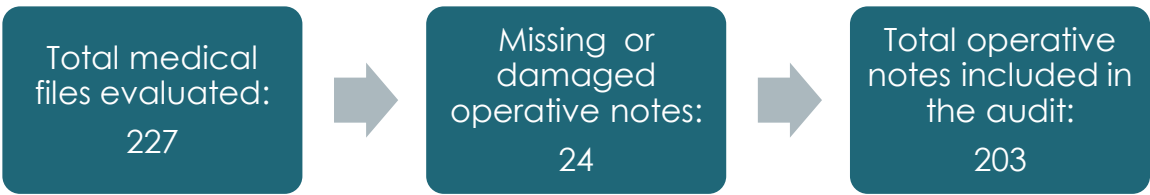
METHODOLOGY

This observational cross-sectional retrospective audit study was conducted in the Department of Surgery and Allied Specialties at Chaudhary Muhammad Akram Teaching and Research Hospital, Azra Naheed Medical College, Superior University, Lahore, Pakistan. A baseline internal audit design was employed to evaluate the completeness of operative notes documentation. Medical records that were incomplete due to missing or physically damaged operative notes were excluded from the analysis. This study was conducted after ethical approval from Institutional Ethical Review Committee of Azra Naheed Medical College, Superior University Lahore Pakistan prior to data collection, approval certificate dated April 30th, 2025. The study adhered to the ethical principles outlined in the Declaration of Helsinki (1964), as revised in 2000. Patient confidentiality and data privacy were rigorously maintained throughout the audit. No patient-identifiable information was included in the analysis and all procedures conformed to established ethical standards for healthcare research.

A standardized checklist was utilized to assess the completeness of various components of the operative notes, drawing on guidelines from both the Islamabad Healthcare Regulatory Authority (IHRA), Punjab Healthcare Commission (PHC) and the Royal College of Surgeons (RCS) [7,8,9]. The checklist consisted of 21 items, including patient identification, date and time of procedure, type of procedure (elective or emergency), names of the surgeon and assistant, name of the theater anesthetist, name of the operative procedure, type of incision, operative diagnosis, operative findings, any complications encountered, any additional procedure performed with reasons, identification of any prosthesis used along with serial numbers of implanted devices, details of tissue removed, added, or altered, details of the closure technique, anticipated blood loss, antibiotic prophylaxis, DVT prophylaxis, detailed post-operative care instructions, doctor's signature, and overall legibility of the documentation. Each item was evaluated as either 'documented' or 'not documented' for every operative note reviewed.

The audit reviewed all medical records of Department of Surgery and allied specialties from April 2025 to June 2025, employing a non-probability consecutive sampling technique. Operative notes within the study organization were mainly handwritten, with an operative note proforma available at the time of audit. The operative notes were written by the surgical residents under supervision of the consultant surgeons, in accordance with practices of the department. A total of 227 records were retrieved; however, 24 records were excluded due to missing or damaged operative notes, as illustrated in Figure 1. Consequently, the audit was conducted on a sample of 203 operative notes. The results were analyzed using SPSS version 23 by calculating the percentage completeness for each checklist item. This percentage was derived by dividing the number of operative notes that fulfilled the documentation criteria by the total number of records (203) included in the audit. Ninety-five percent confidence intervals (CIs) for proportions were calculated using the standard formula for the binomial distribution. All analyses were purely descriptive as the study was designed as a descriptive assessment of documentation completeness rather than a hypothesis-testing analysis.

FIGURE 1: AUDIT INCLUSION PROCESS



RESULTS

The audit included 203 operative notes and revealed varying levels of completeness as shown in Table 1. Key findings included high compliance in documenting date of procedure (191, 94.1%) and time of procedure (188, 92.6%) but patient identification was documented in only 28 (13.8%) of the cases. Other areas such as names of surgeon and assistant (203, 100%), operative finding (201, 99.0%), doctor signature (197, 97.0%), name of operative procedure (196, 96.6%), operative diagnosis (186, 91.6%) and details of tissue removed, added or altered (183, 90.1%) were reasonably well documented.

Moderate compliance was seen with type of incision (139, 68.5%), detailed post-operative care instructions (134, 66.0%), details of closure technique (111, 54.7%), antibiotic prophylaxis (94, 46.3%) and name of theater assistant (97, 47.8%). However, there were gaps in areas such as type of elective/emergency procedure (54, 26.6%), identification of any prosthesis used, including the serial numbers of prosthesis and other implanted devices (44, 21.9%), any extra procedure performed with reason (36, 17.7%), anticipated blood loss (32, 15.8%), complications encountered (19, 9.4%) and DVT prophylaxis (07, 3.4%).

TABLE 1: RESULTS OF AUDIT FOR COMPLETENESS OF OPERATIVE NOTES (N=203)

Checklist Item	Audit Completeness	95% Confidence Interval
Patient identification	28 (13.8%)	9.2 – 19.0
Date of procedure	191 (94.1%)	90.4 – 96.7
Time of procedure	188 (92.6%)	88.5 – 95.6
Type of procedure (Elective/Emergency)	54 (26.6%)	20.7 – 33.1
Names of surgeon and assistant	203 (100%)	98.2 – 100
Name of theater anesthetist	97 (47.8%)	41.0 – 54.6
Name of the operative procedure	196 (96.6%)	93.1 – 98.5
Type of incision	139 (68.5%)	61.6 – 74.7

Operative diagnosis	186 (91.6%)	87.2 – 94.9
Operative finding	201 (99.0%)	96.5 – 99.9
Complications encountered	19 (9.4%)	5.4 – 13.4
Any extra procedure performed with reason	36 (17.7%)	12.8 – 22.6
Identification of any prosthesis used, including the serial numbers of prosthesis and other implanted devices	44 (21.9%)	16.2 – 27.2
Details of tissue removed, added or altered	183 (90.1%)	85.9 – 93.3
Details of closure technique	111 (54.7%)	47.9 – 61.5
Anticipated blood loss	32 (15.8%)	11.0 – 20.6
Antibiotic Prophylaxis	94 (46.3%)	39.5 – 53.1
DVT prophylaxis	07 (3.4%)	0.9 – 6.0
Detailed post-operative care instructions	134 (66.0%)	59.4 – 72.6
Doctor signature	197 (97.0%)	94.1 – 98.9
Legibility	187 (92.1%)	87.9 – 95.1

DISCUSSION

The present study aimed to evaluate the completeness of operative notes documentation by conducting an initial audit so that areas of improvements may be identified. The findings of this audit underscore significant variability in the quality and completeness of operative note documentation in a tertiary care teaching hospital. While some aspects, such as the names of the surgeon and assistant (100%), operative findings (99.0%), and doctor's signature (97.0%), demonstrated high compliance, other essential components were notably underreported. Patient identification, for instance, was recorded in only 13.8% of the notes, raising serious concerns about common gaps in documentation that could impact clinical communication, traceability and medico-legal accountability. In Karachi Pakistan, Khan et al. carried out a comparable study to report that the operating surgeon's name, the procedure performed and post-operative instructions were documented in 99%, 99%, and 89% of cases, respectively [10].

Accurate and comprehensive operative notes serve as a critical communication tool between surgical teams, anesthetists, and post-operative care providers. This audit reveals that several key documentation areas are frequently overlooked, particularly those concerning risk mitigation such as DVT prophylaxis (3.4%) and documentation of complications (9.4%). Moderate compliance was observed in items like type of incision (68.5%) and post-operative care instructions (66.0%). While these figures are not alarmingly low, they still indicate room for improvement. A particularly concerning observation was the limited documentation of prosthesis details and serial numbers (21.9%), which is essential for patient safety, especially in the context of implant recalls or post-operative complications. Our results align with findings of previous studies which have reported similar deficiencies [11,12,13].

The audit by Khalid et al. highlighted the need for systemic changes in surgical documentation practices in another teaching hospital from Lahore Pakistan [2]. These findings are echoed in our audit, suggesting that poor documentation is a widespread issue rather than an isolated occurrence. Lorenzetti et al. highlighted audit/feedback, regular reminders, templates and multi-faceted education as effective strategies to improve clinical documentation, especially where electronic medical records (EMRs) are lacking [14]. Similar audits outside the operative room setting have found active approaches including audit/feedback and templates to be more effective than passive ones such as printed materials in engaging clinicians [15,16,17]. Callen et al. also emphasized the importance of adaptability, system integration and stakeholder buy-in for successful implementation [18]. While many hospitals now use EMRs with clear benefits [19,20], paper-based documentation remains common in numerous hospitals, underscoring the relevance of our audit.

The lack of completeness in certain areas may be attributed to several factors including system-related reasons. Firstly, the absence of a fully enforced structured operative note template with mandatory fields may allow omission of critical

clinical details such as patient identification, thromboprophylaxis and implant information. Secondly, since most of the operative notes were made by surgical residents, there could be an issue of them not being trained adequately on the medico-legal and other medical documentation aspects. Time pressure in the busy operating theaters could also add up to incomplete documentation, especially for items perceived as non-critical or routine. From a system perspective, reliance on handwritten documentation may also contribute to variability in completeness and legibility, limiting standardization and increasing the risk of omission errors [21,22]. It is also important to note that incomplete operative reports have serious medico-legal implications. In fact, the operative report is the legal document of the surgical operation; thus, lack of certain crucial information such as patient identification, intra-operative problems, prosthesis information and prophylaxis could put the health professionals in jeopardy, especially in the event of adverse events arising from the operation [23,24].

Furthermore, the lack of completeness in certain components of operative notes is likely multifactorial and reflects both individual and systemic challenges. Contributing factors include lack of proper attention to the process of documenting during the surgical training of residents, poor enforcement of documentation principles during practice and high workload burden in the operation theatres. Failure to use structured templates with compulsory items in documentation may also lead to incompleteness since the process was mostly handwritten. Inconsistency in the supervision and provision of feedback to junior surgical residents who are mainly in charge of documentation may also contribute to it. There is need to improve the documentation process through such methods as revision of operative note proformas, incorporation of mandatory fields for critical patient safety elements, structured training programs for surgical trainees, implementation of regular audit and feedback cycles within surgical departments. Additionally, the use of EMRs with mandatory fields for critical items may also improve compliance [25,26].

There are certain limitations which should be acknowledged. Since this study was based on a retrospective analysis of documented files, our findings would be limited by any inaccuracies in the documentation, thus creating an element of information bias. Furthermore, there was a risk of observer bias when extracting information from documents; however, the use of a standardized checklist mitigated variability. This audit was carried out in one teaching tertiary hospital, and thus the findings might not necessarily be generalized to other healthcare facilities that use a different documentation process or workflow. Also, the study could have suffered from temporal limitations due to the short data collection period, which may have limited the ability to capture broader trends or variations in documentation practices over time. Future efforts could explore integrating mandatory fields into electronic health records or other systemic solutions to improve compliance. Future research should explore these aspects and consider including a wider range of healthcare facilities. Based on our findings, ongoing monitoring of documentation is recommended, with targeted efforts to improve documentation practices. Implementing more comprehensive training for healthcare professionals on detailed documentation could help address these deficiencies.

CONCLUSIONS

While some components of operative notes were well-documented in our study, major deficiencies persist in areas critical to patient safety and quality care such as patient identification, thromboprophylaxis, antibiotic information and implants/prostheses documentation. There is need for certain measures to be put in place, which include revising the form used for documenting operative notes by making sure that there are fields which are mandatory to fill for critical items; training sessions for surgeons and their trainees to ensure that documentation standards are met; and regular audits and feedback to ensure compliance. Continued efforts, targeted interventions and possibly systemic changes are needed to uphold and further enhance documentation practices, thereby supporting better clinical care and medico-legal standards.

AUTHORS' CONTRIBUTION:

AA: Conception and design; literature research; data collection, assembly and patient record assessment; final critical review and corrections.

NIB: Conception and design; data analysis and interpretation; manuscript writing; final critical review and corrections.

HN: Data collection, assembly and patient record assessment; final critical review and corrections.

IK: Literature research; data collection, assembly and patient record assessment; manuscript writing.

BW: Conception and design; literature research; data collection, assembly and patient record assessment; data analysis and interpretation; manuscript writing.

AA: Literature research; data collection, assembly and patient record assessment; manuscript writing.

MSS: Conception and design; data analysis and interpretation; final critical review and corrections.

ACKNOWLEDGMENTS:

The authors acknowledge the use of **ChatGPT (OpenAI)** in assisting with the language refinement and editing of this manuscript. The authors reviewed the changes, and take full responsibility of the manuscript content.

ETHICS STATEMENT:

This study was conducted after ethical approval from Institutional Ethical Review Committee of Azra Naheed Medical College, Superior University Lahore Pakistan prior to data collection. The study followed standards laid down in the 1964 Declaration of Helsinki, revised in the year 2000. The audit assessed medical records only, with no direct exposure to patients. Patient confidentiality and data privacy were strictly maintained throughout the study. No patient-identifiable information was used in the analysis, and the study adhered to ethical guidelines for healthcare research.

STATEMENT ON DATA AVAILABILITY:

Data generated or analysed during this study are available from the corresponding author upon reasonable request.

References

1. Younis MU. Importance Of Efficient Operation Note Writing: Review Of Guidance. J Ayub Med Coll Abbottabad. 2021;33(1):145-149.
2. Khalid A, Shahzad MZUA, Ahmed H, Gilani A, Khan KH. Audit of Operative Notes Against Royal College of Surgeons Guidelines in a Tertiary Health Care Surgical Unit in Lahore. Cureus. 2022;14(9):e29313. doi: 10.7759/cureus.29313.
3. Gkiala A. Assessing the Correct Documentation of Time and Physician Information on Medical Records in the Emergency Department of Queen's Hospital: An Audit and Re-audit. Cureus. 2022;14(12):e33000. doi: 10.7759/cureus.33000.
4. Bunting J, de Klerk M. Strategies to Improve Compliance with Clinical Nursing Documentation Guidelines in the Acute Hospital Setting: A Systematic Review and Analysis. SAGE Open Nurs. 2022;8:23779608221075165. doi: 10.1177/23779608221075165.
5. Waris B, Butt NI, Khizar I, Afzal A, Baber A, Javed U. Assessing completeness of emergency notes documentation: an audit and re-audit to enhance quality of patient care. J Liaquat Natl Hosp. 2026;4(1):39–46. doi: 10.37184/jlnh.2959-1805.4.3.
6. Omair W, Jawaid MB, Imam AA. Exploring the role of audit and feedback cycle in primary healthcare quality improvement. BMJ Open Qual. 2025;13(Suppl 1):e003089. doi: 10.1136/bmj-oq-2024-003089.
7. Islamabad Healthcare Regulatory Authority. IHRA standards for hospitals. [Internet]. 2021. Available from: <https://ihra.gov.pk/wp-content/uploads/2021/10/IHRA-Standards-for-Hospitals/>.
8. Punjab Healthcare Commission. Minimum Service Delivery Standards (MSDS). Lahore: PHC. Available from: <https://www.phc.org.pk/#/cg#msds/>.
9. The Royal College of Surgeons of England. Good surgical practice. London: The Royal College of Surgeons of England; 2014. p.10. Available from: <https://www.rcseng.ac.uk/standards-and-research/gsp/>.
10. Khan MUR, Ahmed S, Shamim MS, Azhar M, Rehman SU. Operative notes at surgical units of a tertiary care hospital. J Surg Pak (Int). 2010;15(1):57–9.
11. Javid M, Swaminathan SP, Jebasingh AV, Velayutham M, Mani R. A prospective closed loop audit on the quality of the operative notes in a general surgical unit in a quaternary care centre. Int Surg J. 2020;2(7):382–4. doi: 10.18203/2349-2902.isj20200049.

12. Bhatti DS, Ahmad R, Asad A. Royal College of Surgeons Guideline Adherence on Improvement of Operative Notes: A Six-Month Closed Loop Audit. *Cureus*. 2020;12(5):e7970. doi: 10.7759/cureus.7970.
13. Zahid MJ, Ijaz A, Hidayat W, Jan MA, Rafi H, Nawaz H, et al. Assessing Adherence to Royal College of Surgeons Guidelines: A Closed-Loop Audit of Operation Notes in a Tertiary Healthcare Unit. *Cureus*. 2023;15(9):e45743. doi: 10.7759/cureus.45743.
14. Lorenzetti DL, Quan H, Lucyk K, Cunningham C, Hennessy D, Jiang J, et al. Strategies for improving physician documentation in the emergency department: a systematic review. *BMC Emerg Med*. 2018;18(1):36. doi: 10.1186/s12873-018-0188-z.
15. Samad A, Naz F, Butt NI, Ashraf Z, Ghoauri MSA, Naveed RM. Clinical Audit on Accuracy and Timeliness of Patient Admission Notes to Improve Quality of Care at a Tertiary Care Hospital. *Pak J Public Health*. 2024;14(2):99-102. doi: 10.32413/pjph.v14i2.1380.
16. Awad MSA, Mohamednour MF, Rafat FA, Altijani M, Elfatih A, Hamed FJM, et al. Documentation of Inpatient Medical Records: A Clinical Audit. *Clinical Audit*. 2024;16:9–17. doi: 10.2147/CA.S451630.
17. Waris B, Butt NI, Afzal A, Khizar I. Audit and re-audit of discharge summaries completeness: A strategy to improve patient care quality. *Pak J Med Sci*. 2025;41(10):2831–6. doi: 10.12669/pjms.41.10.12224.
18. Callen J, Paoloni R, Li J, Stewart M, Gibson K, Georgiou A, et al. Perceptions of the effect of information and communication technology on the quality of care delivered in emergency departments: a cross-site qualitative study. *Ann Emerg Med*. 2013;61(2):131-44. doi: 10.1016/j.annemergmed.2012.08.032.
19. Bedrikovetski S, Kopunic HS, Procter N, Murshed I, De Fontgalland JS, Traeger L, et al. Use of the Australian and New Zealand Audit of Surgical Mortality (ANZASM) to determine potentially preventable deaths after emergency general surgery. *Surgery*. 2025;184:109444. doi: 10.1016/j.surg.2025.109444.
20. Ali M, Hussain M, Mushtaq M, Ali A, Zaib H. Discharge Perfection: Assessing Documentation Quality at Mardan Medical Complex, Pakistan (2024 Audit Debut). *Cureus*. 2024;16(7):e65625. doi: 10.7759/cureus.65625.
21. Sendlhofer G, Pregartner G, Gombotz V, Leitgeb K, Tiefenbacher P, Jantscher L, et al. A new approach of assessing patient safety aspects in routine practice using the example of "doctors handwritten prescriptions". *J Clin Nurs*. 2019;28(7-8):1242-1250. doi: 10.1111/jocn.14736.
22. Hassan RME, Hamimy RSA, Elmahi AA, Ali HA, Wadi WYA. Assessing Good Prescription Writing Practice at the Pediatric Outpatient Clinic, Atbara Teaching Hospital, Sudan: A Clinical Audit. *Cureus*. 2025;17(4):e82334. doi: 10.7759/cureus.82334.
23. Adam AMA, Alhadi IAH, Ahmed MAMM, Abdelrahman M, Alnaeem MYA, Ibrahim RAA, et al. Clinical Audit of Postoperative Documentation in the Kassala Teaching Hospital, Sudan: Compliance With Royal College of Surgeons of England Guidelines. *Cureus*. 2025;17(8):e90948. doi: 10.7759/cureus.90948.
24. Alqudah M, Aloqaily M, Rabadi A, Nimer A, Abdel-Hafez S, Almomani A, et al. The Value of Auditing Surgical Records in a Tertiary Hospital Setting. *Cureus*. 2022;14(1):e21066. doi: 10.7759/cureus.21066.
25. Jedwab RM, Franco M, Owen D, Ingram A, Redley B, Dobroff N. Improving the Quality of Electronic Medical Record Documentation: Development of a Compliance and Quality Program. *Appl Clin Inform*. 2022;13(4):836-844. doi: 10.1055/s-0042-1756369.
26. Kannampallil T, Adler-Milstein J. Using electronic health record audit log data for research: insights from early efforts. *J Am Med Inform Assoc*. 2022;30(1):167-171. doi: 10.1093/jamia/ocac173.