

ORIGINAL ARTICLE

Clinical Audit to Optimize Pre-Endoscopy Checklist in Patients Undergoing GI Endoscopy

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ABSTRACT

Background: Gastrointestinal endoscopy is widely used for diagnostic and therapeutic purposes, but preventable adverse events may occur because of inadequate pre-procedure assessment, incomplete documentation, and poor preparation. Standardized safety checklists can improve procedural safety, particularly in high-volume, resource-constrained healthcare settings.

Objective: To identify gaps in the existing pre-endoscopy checklist and evaluate the effect of an optimized checklist, aligned with European Society of Gastrointestinal Endoscopy guidance, on documentation, patient preparation, complications, and procedure completion.

Methodology: This single-center, two-cycle clinical audit was conducted at the Department of Gastroenterology, Mayo Hospital, Lahore. Patients undergoing elective upper or lower gastrointestinal endoscopy were included, whereas emergency procedures and cases with incomplete records were excluded. The baseline cycle reviewed 534 procedures. Following identification of deficiencies, the checklist was revised to include documentation of allergies, anticoagulant use, comorbidities, preparation status, and sedation-related risks. Staff training and written patient instructions were introduced, and the revised checklist was piloted before a re-audit of 565 procedures. Outcomes from both cycles were compared using proportions.

Results: Checklist adherence increased from 62% at baseline to 85% during the initial implementation period. Between the first and second audit cycles, allergy documentation improved from 58% to 96%, anticoagulant documentation from 42% to 89%, and compliance with fasting or bowel-preparation requirements from 70% to 92%. Sedation-related complications decreased from 0.9% to 0%, antibiotic reactions from 0.6% to 0%, and post-procedure bleeding from 4.7% to 1.2%. The proportion of completed procedures increased from 82% to 95%.

Conclusion: Optimization of the pre-endoscopy safety checklist was associated with improved clinical documentation, patient preparation, procedural completion, and reduced complications. A structured checklist supported by staff training, written patient instructions, periodic re-auditing, and digital integration may provide a practical, low-cost strategy for improving endoscopy safety in high-volume, resource-constrained hospitals.

Keywords: Gastrointestinal Endoscopy; Checklist; Clinical Audit; Patient Safety; Quality Improvement; Preoperative Assessment

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INTRODUCTIONS:

The purpose of the audit was to find any gaps in the current checklist and improve it in accordance with the criteria set forth by the European Society of Gastroenterology (ESGE)[5]. Improving adherence to safety regulations and minimizing procedural complexities were the main goals[3, 4]. Making sure that such improvements could be implemented in a high-volume, resource-constrained environment was a secondary goal.

Mayo Hospital, a 2400-bed tertiary care center in Lahore, receives one of the highest volumes of gastroenterology referrals in Punjab. Given this heavy caseload, ensuring patient safety through a standardized checklist was deemed essential. The objectives of this audit were therefore twofold: first, to identify specific local gaps in practice that contribute to complications at Mayo Hospital, and second, to align unit practices with ESGE

guidelines⁶, while accommodating resource limitations typical of a public-sector hospital in Pakistan.

Endoscopy safety checklist: The checklist included three phases: Sign In, Timeout, and Sign Out.⁷ These phases ensured correct identification, informed consent, review of medical history, equipment readiness, planning for sedation, documentation, and provision of post-procedure patient instructions. Other important aspects emphasized in the checklist include reviewing current medications, denture status, and documenting communicable diseases (e.g., HIV, HBV, HCV), all of which contribute to safer procedural planning.^{5,7} Checklists encourage team communication, ensuring that the patient has comprehensive and relevant information to perform a safe procedure and speaks out to highlight discrepancies.

METHODOLOGY:

The audit was conducted over 8 months, including both retrospective review and prospective re-audit. Participants were all patients undergoing elective GI endoscopy. Emergency cases and those with incomplete records were excluded. Data was collected by the participants from a pre-procedural checklist, and it was analyzed and reviewed as per the guidelines of the European Society of Gastroenterology. The pre-procedural checklist was modified after the 1st cycle to match the standards set by the European guidelines. This was a two-cycle clinical audit conducted against ESGE 2022 standards, with a baseline review followed by intervention and re-audit.

Reviewi: baseline(firstcycle)Normal spaceA total of 534 elective upper and lower GI endoscopies were reviewed in the baseline audit. Complications were recorded in 12% of procedures, with the most frequent issues being bleeding (4.7%) and sedation-related adverse events (0.9%)⁽⁸⁾. In 18% of patients, documentation was incomplete, particularly in relation to drug allergies and use of anticoagulants. The rate of procedure abandonment was 8%, primarily due to inadequate NPO and gut preparation or unrecognized comorbidities. These findings emphasized the urgent need for a structured and comprehensive checklist.

Analysis revealed four key factors contributing to complications: 1) antibiotic reactions due to undocumented allergies, 2) inadequate nil per oral (NPO) duration or gut preparation, 3) increased bleeding due to undocumented anticoagulant use, 4) sedation-related complications in patients with advanced comorbidities.

Review ii: Implementation of revised checklist Normal space Following the baseline audit, the revised checklist was introduced. Training sessions were conducted with 100% participation of consultants, residents, and nursing staff. Pilot testing showed marked improvements, with checklist adherence rates increasing from 62% at baseline to 85% during the initial months. Patient feedback also indicated greater satisfaction, particularly due to clear written instructions regarding NPO status. Preliminary monitoring suggested a decline in avoidable complications even before the re-audit cycle was formally conducted.

A multidisciplinary team optimized the checklist, adding documentation for allergies, anticoagulant use, comorbidities, and sedation limitations. Staff were trained, and patients were given written pre-procedure instructions. The revised checklist was piloted for six months before re-audit.

Review iii: re-audit and outcomes (second cycle)

After six months, 565 elective endoscopies were reviewed. Parameters included allergy documentation, anticoagulant history, Nill by mouth compliance, colon preparation, recognition of comorbidities, complications, and procedure completion rates.

Table 1. Comparison of Outcomes Between Cycle I and Cycle II

Parameter	Cycle I Cases/Controls (%)	Cycle II Cases/Controls (%)	Improvement (%)	P-value
Allergy documentation	58%	96%	+38%	<0.001
Anticoagulant documentation	42%	89%	+47%	<0.001
Adequate NPO status / Gut preparation	70%	92%	+22%	0.003
Sedation-related complications	0.9% (5 cases)	0%	Eliminated	0.02
Antibiotic reactions	0.6% (3 cases)	0%	Eliminated	0.04
Post-procedure bleeding	4.7%	1.2%	-3.5%	0.01
Completed procedures	82%	95%	+13%	<0.001

NPO, nil per os.

Figure 1: Complication Rates Before and After Checklist Optimization

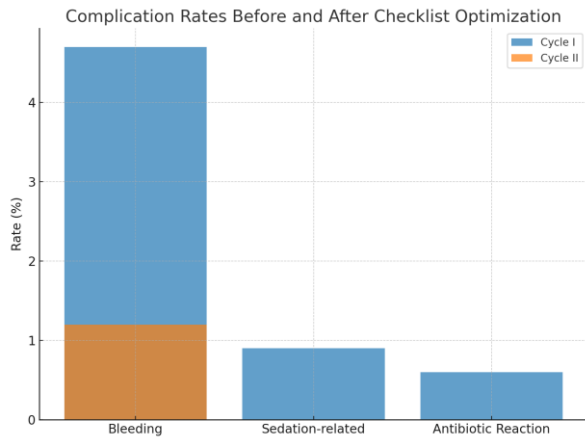
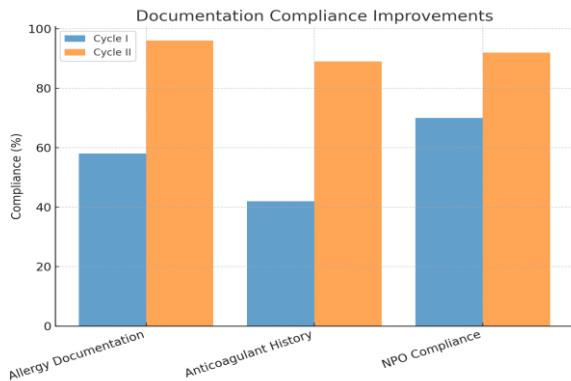


Figure 2: Documentation Compliance Improvements



DISCUSSION:

The re-audit demonstrated significant improvements: allergy documentation increased from 58% to 96%, anticoagulant documentation from 42% to 89%, NPO/ gut preparation compliance from 70% to 92%, and complication rates were markedly reduced. Procedure completion rates improved from 82% to 95%, benefiting 74 additional patients over 6 months. Similar quality improvement programs have been reported around the world, highlighting the global importance of safety checklists in endoscopy. A research from the United Kingdom found that implementing the WHO-style endoscopic safety checklist reduced procedure-related events by 30%, owing mostly to improved pre-procedure documentation and communication.⁸

Following a standardized pre-endoscopy checklist increased consent paperwork from 78% to 98% and decreased same-day cancellations in Australia, according to a 2018 audit by the Gastroenterological Society of Australia (GESA). Similar to this, a multi-center audit conducted in Ireland found that using a structured timeout checklist based on the WHO Safe Surgery framework significantly reduced sedation-related problems and increased completion rates.⁸ Similarly, an audit from AIIMS New Delhi (2021) in India revealed a 25% decrease in avoidable consequences and highlighted practicality at public hospitals with little resources. Normal space gains seen in this audit, especially the near-elimination of sedation and allergic problems, are comparable with global trends when compared to international data, demonstrating that organized checklists are useful even in settings with limited resources. This demonstrates

that systematic, low-cost measures can enhance patient safety culture.

Despite advancements, obstacles include employee turnover, a lack of electronic recordkeeping, and inconsistent adherence during night shifts align with issues documented worldwide. According to the Canadian Association of Gastroenterology (2020), checklist fatigue and staff compliance are the main problems impeding long-term sustainability. As outlined in our action framework, addressing issues calls for continued education and digital solutions. Normal spaceThe guidelines of the American Society for Gastrointestinal Endoscopy (ASGE)^{5,9} and the European Society of Gastrointestinal Endoscopy (ESGE), which both support organized pre-procedure safety procedures to reduce preventable risk, are likewise in line with the audit's findings. These frameworks help close the gap between healthcare systems with high and low resources on a local level. Normal spaceThese advancements demonstrate how even straightforward measures, such organized checklists, can result in significant decreases in problems in public sector hospitals with large patient volumes and limited resources.^{3,5}

Limitations: Night shift non-compliance and a decrease in staff turnover were the major limitations of the study.

Action plan and recommendations: Sustainability: Quarterly internal audits and nurse-led compliance checks. Normal space2. Digital Integration: Incorporate checklist into electronic medical records to achieve >95% compliance. Normal space3. Continuous Training: Monthly refresher workshops and simulation training. Normal space4. Expansion: Extend optimized checklist to advanced GI procedures (e.g. ERCP, EUS), potentially benefiting more patients.

Conclusion: Optimizing the endoscopy safety checklist resulted in significant improvements in documentation, compliance, patient safety, and procedural success, as confirmed by the second audit cycle. Procedure completion rates rose by 13%, and complications were considerably decreased. To provide high standards of care throughout the gastroenterology/endoscopic service, sustained improvements necessitate ongoing monitoring, digital integration, and expansion to other endoscopic procedures.

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Author's Contribution:

ZA: Conceived and designed the study, involved in data collection, performed statistical analysis and writing the manuscript.

WM, AP, MA, ZI, SI, YA, SM, MAF: Collected the data, critical review and preparation of manuscript.

All authors have read, approved the final manuscript and are responsible for the integrity of the study.

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