



## Original research

# Improving the quality of operative notes for laparoscopic cholecystectomy: Assessing the impact of a standardized operation note proforma



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## HIGHLIGHTS

- An operation note proforma significantly increased compliance with guidelines for laparoscopic cholecystectomy.
- Procedure-specific proformas, can help to produce more complete and medico-legally robust operation notes.
- Proformas have been successfully validated in general and gynaecological surgery.
- To our knowledge this is the first demonstration of proforma use in general surgery.

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## ABSTRACT

**Introduction:** Operative notes are the recognized standard for documenting the details of an operation yet key procedural details are frequently missing. With the aim of improving standards, based on the Royal College of Surgeons (RCS) and Dutch Society of Surgery (DSS) Guidelines, we introduced an operation note proforma for use following laparoscopic cholecystectomy in a tertiary centre in the UK. **Methods:** This study audited 130 consecutive laparoscopic cholecystectomy operation notes against accepted guidelines across three hospital sites within the same NHS Trust. Following analysis of these operation notes a standardized operation note proforma was designed and introduced across the Trust, which included all items from the DSS and RCS guidelines in the form of keyword prompts or simple yes/no responses. A further 128 operation notes were analysed. Guideline compliance was compared pre- and post-introduction of the proforma. Non-parametric data were analysed using Fisher's exact and Mann–Whitney U tests. Statistical significance was set at  $p < 0.05$ .

**Results:** On a global assessment of operation note completeness against all guideline items, introduction of an operation note proforma significantly improved documentation rates for both DSS guidelines ( $p < 0.001$ ) and RCS guidelines ( $p < 0.001$ ).

**Discussion:** We have demonstrated that the introduction of a procedure-specific proforma to assist with writing the post-operative note following laparoscopic cholecystectomy can result in significant improvements in documentation of generic and procedure-specific items that should be recorded for every operation. Procedure-specific proformas, based on established guidelines can help to produce more complete and medico-legally robust operation notes.

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## 1. Introduction

Operative notes are the recognized standard for documenting the details of an operation. They allow the communication of intraoperative events to other healthcare professionals, which can

significantly impact upon future clinical decisions and operative procedures. Accurate and complete documentation has been correlated with good clinical care [1]. Furthermore, operative reports have an important role in medico-legal conflicts [2] as well as quality assurance.

Despite their importance the quality of operative reports is often poor with critical aspects of the procedure frequently missing [3]. The National Confidential Enquiry into Peri-Operative Deaths has

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identified documentation deficiencies as an increased risk for litigation and identified an urgent need for improvement [4]. The Royal College of Surgeons (RCS) has established generic guidelines outlining the minimum information required within operative notes [5], and standardization using procedure-specific operation notes has been shown to significantly improve adherence to these guidelines for hip hemi-arthroplasty [6].

Laparoscopic cholecystectomy is the most commonly performed minimally invasive surgical procedure in the UK, with over 50,000 procedures performed annually [7] and is associated with a relatively high incidence of complications [11], which are often only clinically apparent in the post-operative period [8], therefore clear and accurate operative notes are essential for the reviewing clinician. Further, a delay in recognition of complications correlates with the subsequent risk of litigation [9]. The Dutch Society of Surgery, incorporating previous guidelines from several international societies [10,11], has published specific guidance detailing a stepwise protocol for safe laparoscopic cholecystectomy [12]. Nonetheless, poor documentation of each step of this protocol has been demonstrated, including deficiencies in recording of trocar insertion, establishment of the critical view of safety, and gall bladder condition [13]. Poor or illegible documentation of surgical procedures often results in complications being indefensible in the face of litigation [14,15].

The aim of this study was to review the quality of laparoscopic cholecystectomy operative notes from both the emergency and elective setting across a single NHS Trust that included three teaching hospital sites. Notes were reviewed against the Royal College of Surgeons general guidelines and specific laparoscopic cholecystectomy guidance from the Dutch Society of Surgery. After identifying deficiencies in compliance with numerous key areas of these guidelines a standardized operation note proforma was developed, with the aim of creating a tool that would facilitate improved adherence to standards of documentation [Appendix I]. This proforma was then introduced across the hospital Trust and its impact assessed.

## 2. Methods

### 2.1. Study design and intervention

Ethical approval was obtained from the clinical audit department of the Oxford University Hospitals Surgery and Oncology Division, and the audit was registered with Datix ID 2914. From April–November 2013, 130 consecutive operation notes on adults >18 years undergoing laparoscopic cholecystectomy were identified using Janus™ audit software and retrieved from the Surgical Emergency Unit, John Radcliffe Hospital, Oxford (emergency setting), Horton Hospital, Banbury (elective setting) and Churchill Hospital, Oxford (elective setting). Following analysis of these operation notes a standardized operation note proforma was designed (supplement 1) which included all items from the DSS and RCS guidelines in the form of keyword prompts or requiring simple yes/no responses, with white space for further details to be recorded. This proforma was disseminated around all three hospital sites, and a further review of operation notes following laparoscopic cholecystectomy was carried out from February–August 2014, for which 128 consecutive operation notes were retrieved.

### 2.2. Data extraction

A standardized data extraction proforma was created based on the Dutch Society of Surgery (DSS) guidelines for operation documentation post laparoscopic cholecystectomy, which identify six key steps: (1) Introduction of trocars under direct vision; (2)

Condition of the gallbladder; (3) Establishment of the critical view of safety; (4) Placement of the clips; (5) Haemostasis of the liver bed and (6) Removal of trocars under vision. Additionally, iatrogenic gallbladder perforation with leak of bile and gallstones is an important problem that is often not recorded [16,19]. Therefore a seventh step was also recorded: (7) Iatrogenic gallbladder damage.

'Condition of the gallbladder' was defined as a description of the presence or absence of acute/chronic inflammation or adhesions. Critical view of safety was defined as "completely unfolding Calot's triangle by mobilizing the gallbladder neck from the gallbladder bed of the liver before clipping and transecting the cystic artery and duct". 'Adequate placing of the clips' was defined as "clips encircling the entire tubular structure", and 'adequate haemostasis of the liver bed' was defined as "either checking actively by pulling up the liver by lifting of the gallbladder or pushing up the liver edge by means of an instrument". Finally, 'Iatrogenic gallbladder damage' was defined as a statement that confirmed or refuted the occurrence of bile or stone spillage into the peritoneal cavity.

Data were also extracted based on the RCS guidance for operation notes across nine domains: (1) Date and time; (2) Elective/Emergency procedure; (3) Name of operating surgeon and assistant; (4) Procedure performed; (5) Incision utilized; (6) Operative findings; (7) Details of closure technique; (8) Post-operative care instructions and (9) Signature.

Data were extracted by two authors working independently. To ensure inter-observer agreement the data extraction form was first trialled on a random selection of 10% of operation notes for analysis by both investigators, with results checked for consistency. Each item was rated as either "described" (1) or "not described" (0). To minimize bias, blinding of data extraction to details of location, urgency, operating surgeon and patient identifiable information was conducted by a third author.

### 2.3. Outcomes

There were two primary end points in this study: (1) Degree of compliance with Dutch society of Surgeons guidance; (2) Degree of compliance with RCS guidance.

There were three secondary end points: (1) Variation in completeness of operative note according to seniority of surgeon writing the operation note (registrar, consultant); (2) Variation in completeness of operative note according to setting (elective, emergency); (3) Variation in completeness of operative note according to time of day when the operation note was written (day [defined as 08:00–17:00], evening [17:00–midnight], night [midnight–0800]).

### 2.4. Statistical analysis

Results were compared pre- and post-introduction of the proforma. Non-parametric data were analysed using Fisher's exact and Mann–Whitney U tests. Statistical significance was set at  $p < 0.05$ .

## 3. Results

### 3.1. Uptake

Uptake of the operation note proforma, which was disseminated around all three hospital sites was high, with 124/128 (97%) operation notes retrieved written using the template.

### 3.2. Compliance with DSS guidelines

Fig. 1 summarises the degree of compliance with DSS guidelines before and after introduction of the proforma. There were

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