Improving documentation in surgical operation notes

ABSTRACT

Background: Accurate documentation in surgical operation notes is crucial in facilitating the postoperative care of surgical patients and forms an important medicolegal document. This study audited the quality and completeness of documentation in surgical operation notes at a single district general hospital against the Royal College of Surgeons (2014) *Good Surgical Practice* guidelines, and looked to improve clinical practice through improved compliance with these guidelines.

Method: A total of 101 operation notes were audited from a variety of surgical specialities in November 2014 (cycle 1) and 100 notes in May 2015 (cycle 2). Documentation was audited against 19 standards found in the Royal College of Surgeons guidelines. The results were presented at the trust clinical governance meeting. Interventions included clinician education, aide memoires in theatres and the introduction of a new operation note.

Results: Six of the 19 standards had >90% compliance in cycle 1 and 12 out of 19 in cycle 2. There were dramatic improvements in documentation in many fields including time (4% to 60%, $P<0.0001$), elective or emergency procedure (1% to 83%, $P<0.0001$), problems or complications (67% to 100%, $P=0.016$), estimated blood loss (2% to 73%, $P<0.0001$), antibiotic prophylaxis (47% to 96%, $P<0.0001$), venous thromboembolism prophylaxis (43% to 83%, $P<0.0001$) and signature (78% to 97%, $P<0.0001$).

Conclusions: This audit has demonstrated that significant improvements in documentation in operation notes can be achieved through simple interventions. The introduction of an improved operation note that addresses each standard from the Royal College of Surgeons guidelines helped to guide clinicians to include important and relevant information.

Accurate, complete and readily available documentation in medical records is a crucial aspect of patient care and clinical governance. Documentation in operation notes is no exception, and the Royal College of Surgeons of England (2014) has produced guidelines titled *Good Surgical Practice* which outline the minimum standards of documentation expected here (*Table 1*).

High quality operation notes are important not only for the postoperative management of the surgical patient but also from a medicolegal perspective. The majority of health-care staff looking after a patient in the postoperative period are not present during the procedure itself, and so key aspects of management rely on a surgeon's documentation of the events during the procedure and instructions for postoperative care. From a medicolegal perspective, should information be required regarding a patient's stay in hospital, inaccurate and incomplete operation notes may hinder resolution of such cases. Good note-keeping can protect doctors from litigation.

Previous audits have compared clinical practice against these standards at a departmental (Bateman et al, 1999; Shayah et al, 2007; Rogers and Pleat, 2010; Whitehead-Clarke et al, 2015), trust (Singh et al, 2012), and a regional level (Baigrie, 1994; Severn Audit and Research Collaborative in Orthopaedics, 2016). Compliance with standards is often very poor, many operation notes are illegible, and there is variation in practice between trusts. However, these studies have shown that simple interventions can achieve significant improvements in clinical practice.

This audit assessed the quality, accuracy and legibility of documentation in operation notes at a large district general hospital in the UK against the Royal College of Surgeons

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Table 1. Standards for documentation in operation notes from the Royal College of Surgeons (2014) *Good Surgical Practice*
Date
Time
Elective or emergency procedure
Names of the operating surgeon and assistant
Name of the theatre anaesthetist
Operative procedure carried out
Incision
Operative diagnosis
Operative findings
Any problems or complications
Any extra procedure performed and the reason why it was performed
Details of tissue removed, added or altered
Identification of any prosthesis used, including the serial numbers of prostheses and other implanted materials
Details of closure technique
Anticipated blood loss
Antibiotic prophylaxis
Venous thromboembolism prophylaxis
Detailed postoperative care instructions
Signature

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guidelines, and then aimed to produce an improvement in practice through simple interventions.

Methods

Data were collected prospectively over a 3-week period in December 2014 from operation notes completed by different surgical specialities (colorectal, upper gastrointestinal, urology, vascular and breast surgery). Compliance was measured against the 19 standards found in the Royal College of Surgeons guidelines (*Table 1*). Each operation note was also assessed for legibility as 'very clear', 'difficult to read but legible' or 'illegible'. There were four auditors in total, three were involved in both cycles and one (HM) for only the second cycle.

Interventions following the first audit cycle were three-fold:

1. Clinician education in the form of presentation of results and current guidelines for best practice at the surgical department's clinical governance meeting
2. An aide memoire displayed throughout the theatres to remind surgeons about the Royal College of Surgeons guidelines, including at each theatre's computer terminal and theatre staff room
3. Revision of the original operation note proforma to make it specifically address each of the 19 standards from the Royal College of Surgeons guidelines. This was available electronically for surgeons wishing to type rather than hand-write their operation note.

Practice was re-audited, and the audit loop closed, in May 2015 by collecting the same data over a 3-week period. Statistical analysis was performed using www.graphpad.com and a two-tailed Fisher's exact test calculated for each standard. A P value of <0.05 was considered statistically significant.

Results

A total of 101 operation notes were audited in cycle 1 and 100 notes in cycle 2. Of the 19 standards, six had >90% compliance in cycle 1, and 12 had >90% compliance in cycle 2 (*Figure 1*). Improvements in compliance were seen in 16 of the 19 standards between audit cycles, 10 of which were statistically significant (P<0.05) (*Table 2*).

The standards with the most dramatic improvements in documentation included time (4% to 60%, P<0.0001), elective or emergency procedure (1% to 83%, P<0.0001), problems or complications (67% to 100%, P=0.016), estimated blood loss (2% to 73%, P<0.0001), antibiotic prophylaxis (47% to 96%, P<0.0001), venous thromboembolism prophylaxis (43% to 83%, P<0.0001) and signature (78% to 97%, P<0.0001).

Legibility of operation notes was similar in both audit cycles (P=0.26) (*Figure 2*).

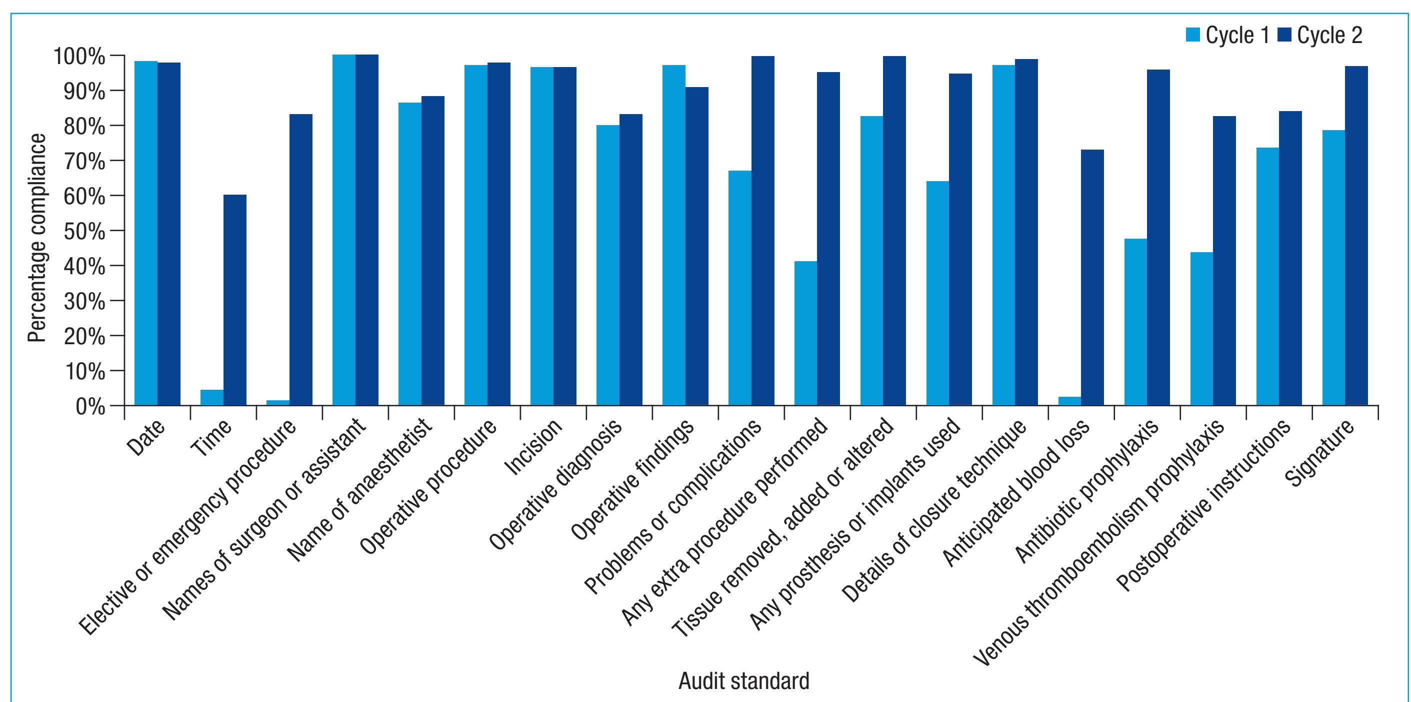
Discussion

Similar to previous studies this study demonstrated that documentation in operation notes was generally poor, with only six of 19 standards having >90% compliance. However, it could be argued that the most important standards, which if left incomplete would have serious patient safety issues, were well documented and these included the date, name of the surgeon, operation findings, procedure carried out, incision and closure.

With regards to complications encountered and any extra procedures performed, this was difficult to audit as if this was not documented clearly in the operation note the auditor could not be sure whether it had been omitted or did not occur, and so results from these two standards should be interpreted with caution.

In addition, there are standards from the Royal College of Surgeons guidelines that are often discussed (but not documented) or documented elsewhere. Antibiotic prophylaxis is documented in the intraoperative anaesthetic charts by the anaesthetist, but infrequently by the surgeon, estimated blood loss is discussed as part of the World Health Organization Surgical Safety Checklist ('sign-out'), and prosthesis or implant used is documented elsewhere in theatre documentation by non-scrubbed staff as and when these are used. Nevertheless,

Figure 1. Compliance with each of the standards of the Royal College of Surgeons (2014) guidelines in cycle 1 and 2 of the audit.



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it would be good practice to have these documented in one place for clarity and ease of access.

What is clear from the results is that a few, very simple interventions produced significant improvements in practice, with 16 out of 19 standards having better compliance in cycle 2. The intervention that is likely to have made the greatest impact is the change in the operation note proforma itself. The original proforma was a single-sided piece of paper which only specifically addressed seven standards from the Royal College of Surgeons guidelines, leaving a large white space for documentation of the rest. The inclusion of specific boxes on the new proforma for time, emergency or elective procedure, antibiotic prophylaxis, venous thromboembolism prophylaxis and blood loss will have prompted the surgeon to document these pieces of information.

Legibility of the operation notes remained unchanged, which is not surprising as the majority were hand-written in both cycles. Although an electronic version of the new operation note was made available to clinicians during cycle 2 uptake of this was limited and only a minority of operation notes were typed. Making the operation note electronic is one solution to this problem (Ghani et al, 2014).

In its commitment to eventually going paperless, the trust is in the process of switching to electronic operation notes. The results of this audit will be used to influence the makeup of this new electronic system, in particular the inclusion of the 19 standards from the Royal College of Surgeons guidelines. Furthermore, there will be integration with current electronic systems where operation data are already being input. This will reduce duplication of data entry such as the names of staff members present, procedure carried out and length of tourniquet time – these data are already input electronically by theatre staff and could easily be pulled through to the electronic operation note. It will also allow automated population of data fields such as date, time and patient details, and mandatory fields can be created which cannot be left blank to ensure completion of documentation.

This will ultimately lead to a sustained improvement in clinical practice (making documentation more complete, accurate, standardized and quicker to complete), make future audit easier, and make notes more legible.

Figure 2. A comparison of legibility of operation notes in cycle 1 and 2 of the audit.

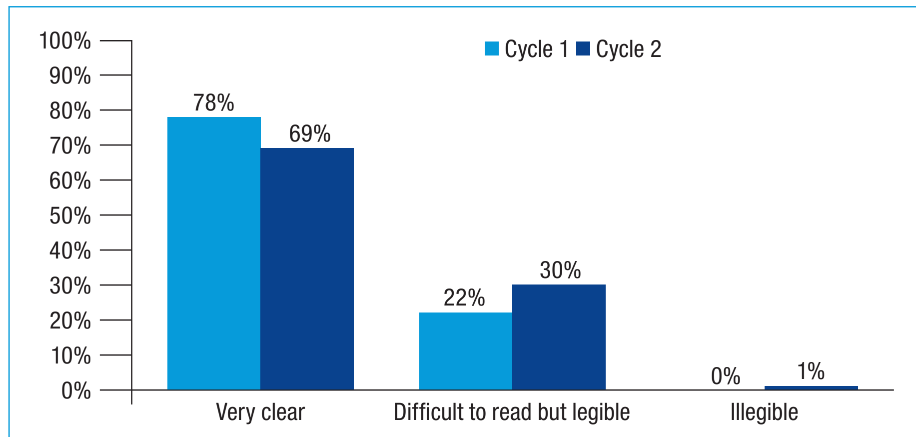

Table 2. Results and statistical analysis of compliance against the Royal College of Surgeons (2014) guidelines in cycle 1 and 2 of the audit

	Cycle 1			Cycle 2			
Field	**Yes**	**No**	**%**	**Yes**	**No**	**%**	***P* value***
Date	99	2	98%	99	2	98%	1
Time	4	97	4%	61	40	60%	<0.0001
Elective or emergency procedure	1	100	1%	84	17	83%	<0.0001
Names of surgeon or assistant	101	0	100%	101	0	100%	1
Name of anaesthetist	87	14	86%	89	12	88%	0.834
Operative procedure	98	3	97%	99	2	98%	1
Incision	80	3	96%	91	3	97%	1
Operative diagnosis	81	20	80%	84	17	83%	0.716
Operative findings	98	3	97%	92	9	91%	0.134
Problems or complications	18	9	67%	15	0	100%	0.016
Any extra procedure performed	9	13	41%	20	1	95%	0.0002
Tissue removed, added or altered	19	4	83%	61	0	100%	0.0046
Any prosthesis or implants used	14	8	64%	19	1	95%	0.0221
Details of closure technique	98	3	97%	100	1	99%	0.621
Anticipated blood loss	2	99	2%	74	27	73%	<0.0001
Antibiotic prophylaxis	35	39	47%	92	4	96%	<0.0001
Venous thromboembolism prophylaxis	30	39	43%	78	16	83%	<0.0001
Postoperative instructions	74	27	73%	85	16	84%	0.0849
Signature	79	22	78%	98	3	97%	<0.0001

Two-tailed Fisher's exact test.

Conclusions

This study demonstrated that significant improvements in documentation in operation notes can be achieved through

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simple interventions. The introduction of an improved operation note that addresses each standard from the Royal College of Surgeons (2014) guidelines helps to guide clinicians to include important and relevant information. **BJHM**

Conflict of interest: none.

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KEY POINTS

- Operation notes are an important piece of documentation in the patient's notes which are often poorly completed.
- Simple interventions, such as redesigning the operation note proforma, can lead to significant improvements in practice.
- Although some data are documented elsewhere, best practice is to document everything in one place.
- Hand-written operation notes can sometimes be difficult to read and therefore a potential source of error.
- Ultimately, creating an electronic operation note will lead to more accurate, complete and legible operation notes and sustained improvements in practice.

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