



Improving operation notes to meet British Orthopaedic Association guidelines

DAVID MORGAN, NOEL FISHER, AMAN AHMAD, FAZLE ALAM

Department of Trauma and Orthopaedics, Manor Hospital, Walsall, West Midlands, UK

ABSTRACT

INTRODUCTION Operation notes are an important part of medical records for clinical, academic and medicolegal reasons. This study audited the quality of operative note keeping for total knee replacements against the standards set by the British Orthopaedic Association (BOA).

PATIENTS AND METHODS A prospective review of all patients undergoing total knee replacement at a district general hospital over 8 months. Data recorded were compared with those required by the BOA good-practice guidelines. Change in practice was implemented and the audit cycle completed. Data were statistically analysed.

RESULTS A total of 129 operation notes were reviewed. There was a significant improvement in the mean number of data points recorded from 9.6 to 13.1. The least well recorded data were diagnosis, description of findings, alignment and postoperative flexion range. All had a significant improvement except description of findings. The operating surgeon writing the note improved from 56% to 67%. Detailed postoperative instructions also improved in quality.

CONCLUSIONS Surgeon education and the use of a checklist produce better quality total knee replacement operation notes in line with BOA guidelines. Further improvements may be made by making the data points part of the operation note itself.

KEYWORDS

Operation note – Guidelines – Total knee replacement – BOA – Good practice – Audit

CORRESPONDENCE TO

David Morgan, Department of Trauma and Orthopaedics, University Hospitals Coventry and Warwickshire, Clifford Bridge Road, Coventry CV2 2DX, UK
E: daimorgan@doctors.org.uk

Theatre operation notes are a mandatory part of patients' records and are important for the clinician and patient. They may be required for research/audit and also form part of the patients' medicolegal record. The Royal College of Surgeons of England¹ states that medical records are 'fundamental for clinical care and audit of surgical services' and the British Orthopaedic Association (BOA)² tell us 'good records are a basic tool of clinical practice', emphasising the importance of record keeping.

The BOA in association with the British Association for Surgery of the Knee (BASK) have set out guidelines for operation note keeping in the publication *Knee Replacement: A Guide to Good Practice*.²

This study audited the quality of operative note keeping for total knee replacements against the standards set by the BOA. The results were presented to the department, practice was changed and the audit cycle completed with a review of subsequent operation notes. We could find no published studies which examined the quality of notes against specific guidelines.

Patients and Methods

A prospective review was carried out of the operation note of every patient undergoing total knee replacement at a district general hospital over a total of 8 months. The information required by the BOA guidelines was broken down to individual data points and put onto a checklist. Added to this checklist were several other data points which are not required by the guidelines but which are clinically relevant and may be present in the note. Each operation note was compared against this checklist. Also recorded were the grade of operating surgeon and whether the operating surgeon wrote the note. If the entry on the operation note was illegible, it was not credited as a present data point.

The results of this preliminary audit were presented to the department and a change of practice was implemented. Everyone in the department was provided with a copy of the guidelines and lists of the required 20 data points were posted in the department and in the surgeons' room in theatre. The audit was then repeated to complete the cycle.

Statistical analysis was performed with Fisher's Exact Test and paired *t*-test where appropriate. A value of $P < 0.05$ was considered significant.

Results

There were 70 sets of notes reviewed for the initial audit and 49 for the re-audit.

Table 1 shows the percentage of the operation notes that had the required data point recorded. Percentages have been rounded up or down to the nearest whole. Results which are statistically significant with a value of $P < 0.05$ are indicated in bold.

Table 2 shows the results for the data points not included in the guidelines.

There was one operation note in the initial audit which was blank apart from the patient's details; no other operative record could be found in the patient's notes so this note scored 0 for all categories. The initial audit showed 56% of the operation notes written by the operating surgeon increasing to 67% in the re-audit ($P = 0.2537$). There was a

significant increase in the mean number of data points recorded per note from 9.6 to 13.1 ($P < 0.0001$). The mean number of data points recorded (13) was the same whether the operating surgeon or the assistant had written the note. There were no cases of the data being illegible.

Discussion

Legible notes accurately recording the necessary information should be produced for every operation by the operating surgeon. If the surgeon/assistant writing the operation note is not aware of all the information required, a substandard document will be the likely result.

Previous studies⁵⁻⁶ have shown that a general *aide memoire* or proforma based on The Royal College of Surgeons of England guidelines¹ helps produce better operation notes.

This study compared our operation notes for total knee replacement against the specific guidelines set out by the BOA.² The guidelines were broken down into 20 individual data points (Table 1). It is important to note that not all of these data points are universally applicable: 'details of bone

Table 1 Percentage of the operation notes with required data point recorded

Data point	Initial audit ($n = 70$) Notes with data point (%)	Re-audit ($n = 49$) Notes with data point (%)
Date*	99	100
Surgeon's name*	90	100
Assistant's name(s)*	99	98
Consultant responsible*	87	90
Diagnosis*	7	45
Procedure performed*	96	100
Incision*	93	92
Additional procedures for exposure	7	22
Description of findings*	7	18
Details of soft tissue releases	1	55
Details of soft tissue excision	0	0
Details/stickers of prosthesis + cement*	99	100
Details of bone graft	1	12
Details of implant alignment/rotation*	13	86
Postoperative flexion range*	11	84
Tourniquet time	16	27
Sutures used*	33	65
Intra-operative difficulties/complications	0	2
Postoperative instructions*	99	100
Signature*	97	100

*Data points which are applicable to all total knee replacements.

Statistically significant results ($P < 0.05$) are indicated in bold.

Table 2 Percentage of the operation notes with data points not included in the guidelines

Data point	Initial audit (n = 70) Notes with data point (%)	Re-audit (n = 49) Notes with data point (%)
Type of anaesthetic	30	73
Pre-operative antibiotic	27	69
Postoperative 'routine'	21	10
Postoperative antibiotics	56	81
Postoperative mobilisation	69	84
Postoperative check bloods	59	86
Postoperative X-ray	67	86
Postoperative thromboprophylaxis	16	16

Statistically significant results ($P < 0.05$) are indicated in bold.

graft', for example, would not be part of every total knee replacement. There are 14 data points (denoted by an asterisk in Table 1) which are applicable to all total knee replacements, giving 14 out of 20 as the minimum score for a complete note.

The mean number of points recorded at first audit was 9.6 improving to 13.1 ($P < 0.0001$) at re-audit. The diagnosis (7%), description of findings (7%), details of alignment/rotation (13%) and postoperative flexion range (12%) were all poorly recorded initially. The greatest improvements were for details of alignment/rotation (86%) and postoperative flexion range (84%). Despite an increase in recording of diagnosis (to 45%; $P < 0.0001$) and description of findings (to 18%; $P = 0.0833$), these two universal data points were still poorly recorded.

The BOA guidelines² require 'immediate postoperative instructions' but are no more specific on this point. Some form of postoperative instruction was recorded on all notes except one. The data collected for specific postoperative instructions (Table 2) showed a significant improvement in quality despite not being part of the guidelines. This suggests that the improvements seen in the required data points had a beneficial knock-on effect into other areas of note keeping.

The guidelines state that it is best practice that the operative notes be made and signed by the operating surgeon.² In the initial audit, only 56% of the notes were written by the surgeon; this improved to 67% ($P = 0.2537$). The low

numbers of operating surgeons writing the note is attributed to an initial lack of awareness of guidelines along with the majority of procedures being carried out by consultants, some of whom felt that having the assistant write the note is a useful teaching tool.

In the re-audit, the mean number of data points recorded was the same ($n = 13$) whether the surgeon or assistant wrote the note. The operating surgeon, however, is likely to record the data with better accuracy and detail.

Despite the changes, not all of the notes were of the required standard. Further improvements may be made by continued surgeon education, attaching the checklist to the note or producing a template operation note with the required fields left blank for the surgeon to complete.

The BOA also produces guidelines for total hip replacement⁷ and a study on these by the senior author yielded similar results.

All of the operation notes in this study were hand-written but other institutions may use notes typed on computer or dictated for typing. In these cases, templates or checklists are also likely to improve note keeping. This study emphasises the fundamental importance of a good quality operation note and is specifically applicable to total knee and total hip replacements.

Conclusions

Surgeon education, audit and the use of a specific checklist produces better quality total knee replacement operation notes in line with BOA good practice guidelines. Further improvements may be made by making the data points part of the operation note itself.

References

1. The Royal College of Surgeons of England. *Guidelines for Clinicians on Medical Records and Notes*. London: RCSE, 1994.
2. British Orthopaedic Association and British Association for Surgery of the Knee. *Knee Replacement: A Guide to Good Practice*. London: BOA, 1999.
3. Bateman ND, Carney AS, Gibbin KP. An audit of the quality of operation notes in an otolaryngology unit. *J R Coll Surg Edinb* 1999; **44**: 94–5.
4. Din R, Jenna D, Muddu BN. The use of an *aide-memoire* to improve quality of operation notes in an orthopaedic unit. *Ann R Coll Surg Engl* 2001; **83**: 319–20.
5. The Royal College of Surgeons of England. *Operation Notes: an audit of The Royal College of Surgeons of England guidelines*. <www.edu.rcsed.ac.uk/lectures/lit39.htm>.
6. McGregor-Riley J, Ali F, Al Hussainy H, Sukumar S. Proformas can improve the quality of orthopaedic operation notes. *J Bone Joint Surg Br* 2003; **85** (Supp II): 124.
7. British Orthopaedic Association. *Primary Total Hip Replacement: A Guide to Good Practice*. London: BOA, 2006.