Quality Improvement Study

Getting it right first time (GIRFT): A closed loop study of hip arthroplasty documentation in a trauma and orthopaedic department

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ABSTRACT

Introduction: The objectives of this study conducted in the University Hospital of North Tees, UK were to: (i) Identify if the current hip arthroplasty documentation met good compliance with the Getting It Right First Time (GIRFT) hip arthroplasty guidance (ii) Improve current documentation with a transition from hand-written notes to an online typed personalised operative hip arthroplasty template (iii) Improve the quality of documentation and adherence to GIRFT guidance in hip arthroplasty

Methods: We led a team of 7 doctors to review University Hospital of North Tees compliance against 24 criteria laid out by GIRFT. After examining 20 operative records retrospectively at random from a spread of orthopaedic consultants in the department, it was shown that there was poor compliance against GIRFT guidelines. We proposed a pragmatic solution of incorporating a pre-populated hip arthroplasty online template adhering to GIRFT guidance into our local ‘Trackcare’ system. Following that, we closed the audit loop by prospectively reviewing 20 operative notes.

Results: Our initial results showed that poor compliance ranging 0%-100% over the 24 criteria. The findings of the 24 criteria with the online hip arthroplasty template in place showed a significant improvement between 80 and 100% compliance over the 24 criteria.

Conclusion: The majority of the issues identified are modifiable risks factors which were amenable to some simple pragmatic solutions. A review of a single surgeon template has shown that it is simple to use, has excellent compliance (has pre-populated 24 criteria), takes 6–7 min to complete the operative notes, easily auditable and thus appears promising in minimising medico-legal claims for surgeons and the Trust.

1. Introduction

Get It Right The First Time (GIRFT) is a national initiative that first published a report in 2012. The report focused on cost savings and recommended changes to orthopaedic practice to improve patient outcomes [1]. Furthermore, in 2015 GIRFT reviewed 120 NHS trusts and reported variation in practice and outcomes, device and procedure selection, cost and infection rates in orthopaedics [2]. GIRFT also identified that clinicians and staff at all levels were unaware to litigation claims made against their departments and released a Surgical Specialties Litigation Data Pack in December 2017 to learn from clinical negligence claims and benchmark their performance against the national average [3]. In June 2019, GIRFT released a new Litigation Data Pack for all trusts in England with refreshed surgical specialties litigation data and new medical specialties litigation data to support and advance the work carried out by trusts in response to the previous data packs [3]. GIRFT best practice guidance was then produced from analysis of medical negligence claims notified to NHS Trusts and its methodology currently spans across 40 surgical and medical specialties [3].

Total Hip Replacements (THR) and Total Knee Replacement (TKR) are among the commonest surgical procedures performed in England [1]. Orthopaedics was found to have the second highest litigation rates after obstetrics and gynaecology, accounting for more than 50% of claims if obstetrics and gynaecology is excluded [2]. Given that, GIRFT aimed to publish the first of its best practice guidance based on claims learning in orthopaedic surgery, specifically focusing on THR and TKR [3]. This was crucial as inadequate documentation had huge medico
legal consequences such as pay outs of £150,000 for not documenting protection of sciatic nerve or £50,000 failure to identify leg length discrepancy [4]. Following the publication of GIRFT, British Hip Society (BHS) and British Orthopaedic Association (BOA) best practice guidance in July 2019 for THR [5], we reviewed the University Hospital of North Tees hip arthroplasty documentation compliance against the 24 criteria outlined in the THR best practice guidance. We then implemented a computerised proforma adhering to the guidance and following that, we

![Fig. 1. Total hip arthroplasty proforma.](image-url)
closed the loop the audit.

To date, there have been studies looking into documentation in orthopaedics against BOA guidelines [6–8], 2008 RCS Good Surgical practice guidelines [9,10] and 2014 RCS Good Surgical Practice guidelines [8,11]. However, to our knowledge we are the first orthopaedic unit to study documentation of hip arthroplasty against July 2019 GIRFT, BHS and BOA guidance. Of note, our audit findings were accepted and presented as a poster at the British Orthopaedic Association (BOA) Virtual Congress on the 18–25 Sept 2020 and the preliminary closed loop findings were accepted and presented in a poster at the Association Surgeons in Training (ASiT) virtual International Surgical Summit on the October 17, 2020.

2. Methods and materials

2.1. Operation reports

In our first audit cycle a total of 25 handwritten operative records were collected retrospectively between October 2019–November 2019 from a spread of orthopaedic consultants in the department. The hospital audit department selected the 25 elective operative notes at random without the knowledge of 2 doctors (non-surgeons) collecting the data. 5 illegible handwritten notes were excluded and before exclusion, illegible handwriting was agreed upon by a second person. We discussed our findings in our clinical governance meeting and proposed a pragmatic solution of incorporating a hip arthroplasty online proforma in our local ‘Trackcare’ computerised system. The design of an online hip arthroplasty proforma (Fig. 1) was discussed with senior registrars and consultants. The proforma was also modifiable as needed by individual surgeons. A second audit cycle was commenced prospectively assessing compliance of 20 typed elective operative notes with the aid of the computerised proforma between October 2020–November 2020. The data was collected by 2 doctors (one surgeon and one non-surgeon). The assessment of the operative notes both retrospectively and prospectively in both cycles of the audit were conducted in line with SQUIRE 2.0 guidelines.

2.2. Standards

The pre-populated online proforma was designed with adherence to all 24 criteria in line with the GIRFT, BHS and BOA July 2019 hip arthroplasty guidance (5).

2.3. Report assessment

Operative notes were assessed using a score sheet consisting of a 24 point system. The parameters were strictly based on the standard mentioned above. One point was awarded for each parameter. Any variable that was missing from an individual parameter resulted in a score of zero. Details of accessing the proforma during documentation of operative notes and how it should be completed were discussed.

2.4. Statistical analysis

Data were tabulated within a SPSS computer spreadsheet such that the overall percentage of accuracy could be calculated. Our results were not normally distributed, favouring analysis using Man Whitney-U test. The prevalence of individual criteria were compared using Fisher’s Exact Test. A value of p < 0.05 was considered significant. All data were rounded to three significant figures and was collected confidentially in accordance with Data Protection Laws and Caldicott Principles.

3. Results

A total of 25 operative notes were analysed retrospectively from the first cycle of our audit and 20 operative notes were analysed prospectively in our second cycle of our audit.

Table 1 illustrates the percentage compliance both in handwritten and typed notes with computerised operative proforma against GIRFT, BHS and BOA July 2019 guidance with data points recorded. Percentages have been rounded up to the nearest whole. Results p < 0.05 are statistically significant and in bold.

4. Discussion

Contemporaneous operative documentation is pivotal to ensure good communication between healthcare professionals. The General Medical Council (GMC) deem proper note keeping is essential for good practice [12]. Furthermore, The Royal College of surgeons (RCS) published Good Surgical Practice Guidelines in 2008 which advise that operative notes should comply with guidelines to ensure better patient care, for research, for audit and medico-legal purposes [13]. In attempt to put this advise into practice, we have adhered to GIRFT, BHS and BOA July 2019 hip arthroplasty guidance [5] as a goal standard.

Orthopaedic documentation has also previously been quoted to consist of “untidy one liners” [14] and a study showed 34% “illegible” [15]. We found in our first cycle, of 75% Registrars vs 25% consultants who had documented, 20% (n = 5) of handwritten operative notes had illegible components and were removed from analysis. Hence, revision of Good Surgical Practice Guidelines in 2014 have further emphasised that operative notes should “preferably be typed” [13] with studies demonstrating a 100% improvement in legibility [15]. We also found that some documentation met with good compliance against the criteria
Table 2

In Table 1, Out of the 24 data points, the handwritten operative notes scored an average of 12 (n = 20) while typed notes with the computerised proforma scored an average of 22 (n = 20). The increase from 50% to 92% was statistically significant (p < 0.05) using Man Whitney-U test. Of the 24 data points, statistical significance (p < 0.05) was showed in 15 of the data points using Fisher’s Exact test. Table 2 showed improvement in legibility from 80% to 100% and a reduction in time taken to document from an average of 25 min–7 min.

![Table 2](image)

(Table 1) such as 100% (n = 20) documentation of informed consent, 100% (n = 20) presence of WHO checklist, 100% (n = 20) drugs used in surgery, 80% (n = 16) anaesthetist name and grade and 80% (n = 16) surgeon name and grade. However, we noted that these criteria were automatically prompted completion due to using the WHO checklist during the three phase check: “sign in”, “time out” and “sign out”; which cover criteria such as consent, allergy medication check, introduction of team by name and role with the aid of existing proforma such as consent forms, drug charts and name of staff in operative notes. Furthermore, the design of the GIRFT, BHS and BOA July 2019 design also incorporated the WHO checklist which was referenced in the guidance [5] which would explain that because WHO checklist was present in 100% (n = 20) of the cases, these criteria would be expected to also have good compliance. Furthermore, we found 100% (n = 20) compliance that manufacture label and due to use of a sticky label in operative notes.

Interestingly, while there were criteria in the WHO checklist such as surgical approach and critical steps, these had poor compliance in terms of documentation in the operative notes although they had taken place during surgery. We noted, when there was no form of prompt or aid, compliance was poor (Table 1), especially in areas of high litigation [3, 4] such as 15% (n = 3) documentation of protection of the sciatic nerve and 20% (n = 4) leg length, neurological and vascular status. When discussed in the clinical governance meeting, we agreed a standardised template would resolve the areas of poor compliance as 24 criteria proved too many to remember while documenting, an average of 20–30 min to document and lack of available uninterrupted time to complete documentation in between surgeries. Furthermore, orthopaedic studies have also showed better compliance with the use of paper proformas [6, 16,17] as well as electronic templates [8]. Coughlan et al. study compared both the use of handwritten proforma in a first audit cycle [9] and computerised proforma in a second audit cycle [11], of which computerised notes were superior in legibility and compliance albeit the addition of orthopaedic specific headings to their computerised proforma in the second cycle [11]. This is in line with Barrit et al. [17], who also compared handwritten and electronic notes and advised the use of computerised proforma as the ideal choice. Additionally, the benefit of electronic proforma’s also includes increased speed of data input with minimal training [18], cheap to design and implement [8], storage of data in a secured drive [8], ease of auditing [8] and accessible remotely [11]. In our second cycle with documentation completed 100% by registrars using an online computerised proforma and typed operative notes, we managed to emulate these results with 100% legibility (Table 2) and significant improvement in compliance (Table 1) which indirectly reduces risks to litigation claims [19]. In addition, we managed to demonstrate minimal variation in documentation with a standard proforma, reduced operative documentation time from an average of 20–30 min to an average of 6–8 min (Table 2) with the computerised proforma and typed notes.

We found that there were still criteria that could have improved compliance; 80% (n = 16) anaesthetist name and grade, 95% (n = 19) trial of implant size and further testing, 95% (n = 19) record of component size, taper, manufacturer and expiry dates and 95% (n = 19) final position of documents, hip stability and range of movement. When discussed with an orthopaedic registrar, we noted that there was difficulty accessing a computer due to lack of computers in the work station. This led to having to document retrospectively, at times hours after the surgery, although it took 6–7 min to complete, access to a computer proved a challenge and a time lapse and time pressures to complete documentation is a contributing factor to error. This finding is consistent with Barrit et al. study that advised a well equipped work station is required for electronic and typed notes to be used effectively [17]. Of note, while the serial number for both prosthesis and cement batch number achieved 100% compliance, we found that this was inputted into paper notes via sticky labels. This is an ongoing issue which was also noted in Coughlin et al. study [11]. We plan to incorporate additional text in the current computerised operative note proforma similar to the suggestion made by Coughlin et al. to allow for an electronic record for these details [11].

Limitations of our study include sample size. Ideally, a larger case load should have been collected however this was partly due to the impact caused by COVID-19 pandemic on current practice in our Trust. We also noted that in our second cycle of the audit, it was only registrar led, who were more comfortable and engaging with a computer interface which may have influenced the time taken to complete documentation. Hence, generalisability to consultant colleagues would not be possible although with further training we would expect this would be feasible in practice. However, given a pre-populated proforma that serves as an aide-memoir [6], it replicates experience of evidence-based practice, thus we do not think it would significantly compromise quality of documentation. Lastly, we acknowledge the pre-populated proforma serves as a prompt and is still subject to human error as it still requires an operating surgeon to complete the documentation. The improvement of documentation has been taken seriously by our orthopaedic department and will be subject to further re-auditing in the future with improvements such as increased number of desktop for orthopaedic surgeons.

5. Conclusion

We have successfully achieved our aims and identify if current hip arthroplasty documentation had poor compliance in majority of the parameters set against the GIRFT, BHS and BOA hip arthroplasty July 2019 guidance. We have also showed an improvement in current documentation compliance against the mentioned guidance with a transition from hand-written operative notes to an online typed personalised operative hip arthroplasty template. Lastly, we have improved the quality of documentation with legible operative notes with evidence-based practice.

We plan to introduce text box in our computerised template to address issue of serial number and cement batch number documentation and to get more desktops in theatre to avoid significant time lapse in documentation. We also plan to reassess the compliance of orthopaedic documentation in the future with a larger sample size and to share our orthopaedic department’s approach with other specialties in our Trust in accordance with the GIRFT initiative (>40 specialties), to ensure we comply with best guidance available.

Ethical approval

None to declare.

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Author contribution

Jasmesh Sandhu-study concept, design, data collection, data analysis and writing the paper.
Hemant Sharma - Statistics, data collection and data analysis.
Yamen Jabr - Data collection and interpretation.
Raghavendra Sidaginamale - Study concept and design, Data analysis.
Rajanikanth Logishetty - Study concept and design, Data analysis and interpretation.
Nick Cooke - Data analysis and interpretation.
Nigel Brewster - Study concept and design.

Trial registry number
1. Name of the registry:
2. Unique Identifying number or registration ID:
3. Hyperlink to your specific registration (must be publicly accessible and will be checked):

Guarantor
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Consent
No patients or animals were directly involved in this study.

Declaration of competing interest
None to declare.

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