

Improving the quality of the surgical preoperative assessment in a district general hospital

Jacob Koris, Catherine Hopkins
NHS England

Abstract

At Leicester General Hospital, England, patients are assessed by a team of junior doctors for elective colorectal and hepatobiliary procedures. After a number of same day cancellations, a large discrepancy was identified between the findings at the preoperative assessment clinic and the anaesthetic assessment on the day of surgery. After a multidisciplinary meeting was held, three interventions were decided on with an aim to bring the preoperative assessment in line with the anaesthetic assessment. Firstly, a set of guidelines was written and introduced for the junior doctors to use as a reference when assessing patients. Secondly, a proforma was designed specifically to prompt users to include essential details which were being missed in the assessment, having audited 100 patients' notes. Thirdly, a preoperative investigation "calculator" was recommended for each patient to simplify compliance with the National Institute for Health and Care Excellence (NICE) guidance for preoperative assessment.

Before and after each intervention was introduced, a cohort of 50 patients were followed looking for differences in findings in the history, examination, investigations, and fitness for surgery between the preoperative assessment in clinic and the anaesthetic assessment on the day of surgery. Initially 68% of patients were compliant for details in the history, 76% for examination, 32% for choice of preoperative investigations, and 100% for fitness for surgery decision. After all three interventions had been introduced, 96% of patients were compliant for history, 94% for examination findings, 88% had the correct choice of preoperative investigations, and 100% had the same decision on fitness for surgery.

The interventions described proved to be cheap and effective methods of improving the quality of the preoperative assessment, bringing it in line with the anaesthetic assessment and reducing the risk of same day cancellations.

Problem

More than 1 000 patients have elective colorectal or hepatobiliary surgery each year at Leicester General Hospital, England. Occasionally procedures would have to be cancelled on the day of surgery, either for logistical or clinical reasons. Clinical reasons for same day cancellation included the presence of previously unknown diagnoses or poorly controlled comorbidities. Same day cancellations have an impact both on patients who are required to undergo further investigations and management, delaying their procedure, and the hospital with operating lists being left incomplete.

At Leicester General Hospital each patient undergoes a preoperative assessment in the weeks leading up to their scheduled procedure. This assessment is conducted by a team of junior doctors in their first year of employment. Once the assessment is complete there is an opportunity for any investigations or further management to be completed before patients are seen by an anaesthetist on the morning of the procedure.

It was felt that the problems causing cancellations could be avoided by improving the effectiveness of the preoperative assessment clinic.

Background

The effective use of a preoperative assessment has been shown to reduce the number of same day cancellations.[1]

Although differences in findings of a preoperative assessment between a nurse led and doctor led clinic have been assessed in the past,[2] the authors could find no study comparing seniority or specialty of doctors affecting preoperative findings.

Other studies have identified issues with the preoperative assessment in the past whereby patients thought fit for surgery at the initial assessment were determined not to be by the anaesthetist,[3] but no interventions have been investigated as possible sources of improvement.

Baseline measurement

Although a significant problem, the low absolute number of same day cancellations made it an inappropriate measure of the quality of the preoperative assessment. Instead, we compared the findings of the junior doctor in the preoperative assessment clinic to that of the anaesthetist on the day of the procedure used as our "gold standard", to determine whether the findings were compliant.

A cohort of 50 patients were identified attending the preoperative assessment within the same week. These were followed to the day of their surgery, and the patients' notes were assessed looking for differences in four factors: history, examination, investigations ordered, and fitness for surgery. Any difference identified meant the initial assessment was deemed "non-compliant."

Our aims were for 100% compliance between the findings at the preoperative assessment and findings on the day of surgery.

See supplementary file: ds6602.docx - "Table 1"

Design

Having discussed the issues with the anaesthetic team, several reasons for same day cancellations were identified, which included missed diagnoses, poorly controlled comorbidities, and a lack of appropriate preoperative investigations.

Interviews with the doctors who performed the preoperative assessment were conducted. They were asked what they thought the barriers to a successful assessment were, and responses were collated to identify common themes. Based on responses and discussions between the surgical and anaesthetic teams a number of improvements were recommended. These included:

1. Written guidelines covering the essential aspects of the preoperative assessment
2. Redesigning the preoperative assessment proforma
3. Introduction of an "investigation calculator."

It was felt that by making improvements to the systems by which patients were assessed in the preoperative clinic, reliable and sustainable improvements to assessment quality would be made. This also eliminated the problem of the doctors conducting the assessment being rotated every four months, which would have required repeating direct education as an intervention for each new rotation.

The quality improvement team introduced these three interventions in a staggered manner throughout March 2014. The guidelines were based on current best practice and were reviewed by the consultant anaesthetist to ensure they met expected standards. It encompassed guidance for the history and examination of the patient as well as guidelines for the management of significant comorbidities. The redesign of the assessment proforma was agreed after an audit of the note keeping identified omissions in the assessment, and was specifically designed to prompt the assessor to address these points. Finally, an existing free to use online tool was introduced to ensure the appropriate preoperative investigations were being arranged. This simplified the National Institute for Health and Care Excellence (NICE) guidelines on preoperative tests for elective surgery,^[4] making it easier to ensure that the correct tests were being ordered for each patient assessed.

At the time each intervention was introduced the baseline measurements were repeated looking for improvements to compliance.

Strategy

PDSA cycle 1: Introduction of written guidelines for preoperative assessment

It was felt that written guidance would act as a reference and standardise the preoperative assessment. The guidelines were written by the authors and a consultant anaesthetist and underwent several iterations before completion. The result was a 22 page document that covered all aspects of the history, examination, and investigations of the preoperative assessment, and a section on the appropriate management of significant comorbidities. Guidance was also available concerning when an operation should be postponed on clinical grounds.

Once the guidelines were prepared they were distributed among the junior doctor team and feedback was collected. The guidelines went through three cycles of feedback and rewriting before they were complete. Once finalised, contact details were also provided to allow the guidelines to be updated if scenarios were encountered that hadn't been covered.

Measurements of compliance of the preoperative assessment and anaesthetic assessment were repeated for a further 50 patients.

PDSA cycle 2: Redesigning the assessment proforma

An audit was conducted assessing the quality of the note keeping of the preoperative assessment. Thirteen essential details that needed to be included in every assessment were agreed between the senior anaesthetic team, and 100 patients' notes were assessed for their inclusion. Having identified substandard note keeping, the proforma was specifically designed to prompt users to include all relevant information. The audit was repeated, showing a significant improvement in the note keeping of the preoperative assessment clinic. While not a direct measure of the assessment quality itself, the quality of the note keeping was used as a surrogate measure for this purpose.

Measurements of compliance of the preoperative assessment and anaesthetic assessment were repeated for a further 50 patients.

PDSA cycle 3: Introduction of a preoperative investigation "calculator"

A common factor identified as a barrier to a successful preoperative assessment was difficulty in following the NICE guidelines for preoperative investigations. There are a number of free to use online tools that simplify the process of deciding which investigations are required under which conditions. However, having performed an audit of 100 patients attending the preoperative assessment clinic over the preceding month it was found only 33% of the patients had the appropriate preoperative investigations organised according to NICE guidelines. A validated tool was recommended to the assessment team and they were requested to use it for each patient. The audit was then repeated over the course of the following month, with an improvement in compliance to NICE guidelines to 88%.

Measurements of compliance of the preoperative assessment and anaesthetic assessment were repeated for a further 50 patients.

Results

After each stage of the project 50 patients were followed from the preoperative assessment to the anaesthetic assessment on the day of surgery. Each patient was assessed for discrepancies between the findings in the clinic and the findings of the anaesthetist.

Table 2 compares the quality of the preoperative assessment before we started our quality improvement project and after each PDSA cycle. We have seen a significant improvement in the quality of the preoperative assessment that is more consistent with the anaesthetic assessment immediately preceding surgery. It is worth noting that at each stage of the quality improvement project the junior doctors' assessment of whether or not the patient was fit for surgery was in keeping with the anaesthetists' impression, and no improvement was necessary.

See supplementary file: ds6601.docx - "Table 2. Results of the PDSA cycles on compliance between preoperative assessment and anaesthetic assessment"

Lessons and limitations

When initially planning the project we were hoping to compare the number of same day cancellations for clinical reasons before and after the project. This proved to be difficult as there was no way to determine if patients had been cancelled for clinical or logistical reasons. Secondly, the absolute number of same day cancellations was small, and it would have been difficult to show any differences without conducting the project for a much longer time period.

It was decided that a suitable surrogate would be a comparison between the findings of the junior doctor in the preoperative assessment clinic and the findings of the anaesthetist on the day of surgery, which would act as our comparator. A limitation of using this as our measurement was the delay between the preoperative assessment clinic and the day of surgery. It is plausible that issues could have arisen between these dates, although the average wait was two weeks, and as such improvements to the preoperative assessment clinic wouldn't change the compliance of findings. Although this may have led to assessments being found non-compliant, we felt the impact would be small and differences would be minimal due to the short delay to surgery.

During PDSA cycle 2 we conducted an audit on the quality of the preoperative assessment itself. We used note keeping as a surrogate during this audit, as it was impossible to measure the assessment itself. This also meant it was possible that details were elicited during the assessment but weren't recorded. It was felt that if findings hadn't been recorded we had to assume they hadn't been elicited. Poor note keeping can also cause medicolegal problems, which this audit helped to address.

In the planning stage of the project we considered an educational

project aimed directly at the junior doctors performing the assessment; instead it was decided that a set of written guidelines would be of greater benefit. This was for two reasons: firstly, junior doctors rotate every four months, and therefore an educational project would need to be repeated for each new intake. While not a problem in itself, it was felt this was labour intensive and would require diligence to ensure the teaching remained a high standard. Secondly, a written set of guidelines can be referred to at any time, including during an assessment if necessary. This meant it acted as a framework to reduce variation between assessors. One of the strengths of this improvement project is that the results should remain consistent despite a high turnover of staff, as changes have been made to the systems currently in place.

There were no significant financial costs to the interventions introduced in this project. The guidelines were distributed as an electronic book available through the trust intranet, there was no increase in cost for the redesigned proforma, and the investigation tool was free to use.

Conclusion

The quality of the preoperative assessment of patients undergoing elective surgery at Leicester General Hospital was improved with the introduction of the three interventions described. The interventions used were simple, reproducible, and cost effective, and improvements will be maintained even with different staff. Initially there was a large difference identified between the preoperative assessment performed by junior doctors and the anaesthetists on the day of surgery, which has now been reduced. Further studies will be required to see if this is an issue unique to Leicester General Hospital or if it affects other institutions as well.

References

1. Knox M, Myers E, Hurley M. The impact of pre-operative assessment clinics on elective surgical case cancellations. *Surgeon* 2009;7(2):76-8.
2. Kluger MT, Tham EJ, Coleman NA, Runciman WB, Bullock MF. Inadequate pre-operative evaluation and preparation: a review of 197 reports from the Australian incident monitoring study. *Anaesthesia* 2000;55(12):1173-8.
3. Nicholson A, Coldwell CH, Lewis SR, Smith AF. Nurse-led versus doctor-led preoperative assessment for elective surgical patients requiring regional or general anaesthesia. *Cochrane Database Syst Rev* 2013;11:CD010160.
4. National Institute for Health and Care Excellence. Preoperative tests for elective surgery. NICE Guidelines [CG3]. 2003. <https://www.nice.org.uk/guidance/cg3>

Declaration of interests

Nothing to declare

Acknowledgements

Many thanks to Mr. B. Singh - Consultant General Surgeon

Ethical approval

This project was determined to be exempt from ethical approval as it was deemed a quality improvement project based on current systems of practice rather than a study on human subjects. Therefore, local policy meant that ethical approval was not required.