

An audit of preoperative evaluation of general surgery patients at Dr George Mukhari Hospital

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Abstract

Background: Preoperative evaluation of a patient is the fundamental component of anaesthetic practice. Inadequate documentation and record keeping on the preoperative evaluation form (PEF) can be a major obstacle to attaining good practice and improving patient outcomes following operative procedures. The aim of the study was to conduct an audit of the anaesthetic preoperative evaluation of general surgery patients at Dr George Mukhari Hospital (DGMH), Garankuwa.

Method: This was a retrospective study, using a sample of 88 files of general surgery patients who underwent elective surgery during 2008 at DGMH. The proportion of complete information recorded on the PEF used at DGMH was compared with a modified standardised PEF that uses the Global Quality Index (GQI).

Result: Seventy-five of the 88 files (85%) that were retrieved contained the PEF. The modified GQI scores for the sample of 75 patients ranged between 33.3-100%. The mean modified GQI score was $72.2 \pm 13.9\%$. The median was 73.3%, while the lower quartile was 60%, and the upper quartile, 80%. The GQI scores were low for the following criteria: preoperative diagnostic procedure (46.7%), medications prescribed by surgeons (46.7%), and preoperative fasting status (32%); and very low in terms of recording patients' weight (34.7%) and the history of allergies (34.7%) reported during the preoperative assessment. The PEF was completed in full in line with the modified GQI score in only in 1.3% of the files.

Conclusion: The overall quality of the preoperative evaluation was relatively incomplete with regard to a number of the modified GQI score criteria, suggesting the need for improvement in the completion of preoperative assessment of patients by anaesthetists at the hospital.

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Introduction

The study was conducted to understand how anaesthetists at Dr George Mukhari Hospital (DGMH), Garankuwa, completed preoperative assessments of their patients using the preoperative evaluation form (PEF) before surgery. Anaesthetists are responsible for the preoperative assessment of the patients whom they anaesthetise. The aim of assessing the patients is to improve the operative outcomes.¹ The current method of preoperative preparation practices at DGMH for elective surgical patients involves reviewing the patient a day before the elective operation, examining the results ordered by the surgeons, ordering premedication drugs, and documenting any findings in the PEF.

Inadequate documentation and record-keeping in the PEF is one of the biggest obstacles to attaining good practice and improving patient outcomes. The American Society of

Anesthesiologists' (ASA) ethical guidelines for the practice of anaesthesiology state that "anaesthesiologists have ethical responsibilities to their patients and should provide preoperative evaluation".² A comprehensively completed PEF is an important tool in the anaesthetic management of a patient, and plays a significant role in the medico-legal arena.³ The Australian Incident Monitoring Study (AIMS) reported that inadequate preoperative assessment and management were associated with a sixfold increase in patient mortality.⁴ Conversely, the quality of information recorded during the preanaesthetic visit is improved by using a standardised form.⁵ The information obtained then tends to be complete and concise.

An audit of anaesthetic record-keeping conducted at the Christiaan Barnard Memorial Hospital, Cape Town, revealed that less than one-third of all records were found to be complete and legible.⁶ The authors reported an unacceptable standard of anaesthetic record-keeping.

As the abovementioned type of audit had not yet been undertaken in the specified setting, it was difficult to estimate the magnitude of the problem. The standard of practice set by the South African Society of Anaesthesiologists (SASA) involves the adequate completion of an anaesthetic record.⁷

The aim of the study was to conduct an audit of the anaesthetic preoperative evaluation of general surgery patients at DGMH.

Method

The research took the form of a retrospective study conducted at DGMH. The files of 1 000 general surgery patients who underwent elective surgery at the hospital during 2008 were retrieved, with the consent of the hospital management. The appropriate sample size for the study population was statistically determined and was achieved. For the study population of 1 000, using a 95% confidence level and a 10% confidence interval, the sample size was 88. Every tenth file was systematically selected until the sample size was achieved, in order to minimise sampling bias. Before reviewing the PEFs, a list of important items to include in a PEF was derived, using the Global Quality Index (GQI) in order to prevent bias. Each item was weighted by its perceived importance in terms of anaesthetic management and medico-legal documentation. Fifteen items were extracted as the modified version of the GQI by Ausset et al.⁵ Following a study that was undertaken by Takata et al, the rationale for modifying the GQI was to incorporate other important items in preoperative assessment.³ The criteria incorporated in the modified GQI are reflected in Table I. The most important consideration was to identify whether or not each criterion was requested as reflected by a recording on the PEF. According to the modified GQI, a blank recording was considered as “not asked for”, and to be substandard.

Table I: Modified GQI criteria

Name
Age
Airway
Cardiopulmonary status
Surgical procedure
Preoperative diagnosis
Preoperative vital signs
Per oral status
Medications
Allergies
Weight
ASA
Anaesthetic history and complications
Assessment
Plan

$GQI = 100 \times (a-b)/a^5$ = the percentage of proportion of criteria present on the anaesthetic form to the 15 GQI criteria, where *a* is the total number of criteria selected (i.e. *a* = 15) and *b* is the number of criteria lacking.

The number of hospital files that did not contain the PEF was expressed as a percentage of the total number of files

reviewed in the study. The GQI was calculated for each file, and for the sample. The results were presented using simple descriptive statistics.

Results

The results are summarised in Table II below. In the majority of cases, namely 75/88 (85.2%), the PEFs were available in the patient files and reviewed. Thirteen (14.8%) files lacked the PEF. The proportion of complete information recorded in the 75 PEFs was compared with a modified standardised PEF using the GQI.

The modified GQI scores for the sample of 75 patients ranged between 33.3-100%. The mean of the modified GQI scores was 72.2 ± 13.9%. The median was 73.3%, while the lower quartile was 60%, and the upper quartile, 80%.

Table II: Modified GQI criteria and its presence in the PEF

Modified GQI criteria	Presence in the PEF (%)
Name	100
Age	97.3
Airway assessment	85.3
Cardiopulmonary status	100
Surgical procedure	97.3
Preoperative diagnosis	46.7
Preoperative vital signs	69.3
Per oral status	32.0
Medications	46.7
Allergies	34.7
Weight	65.3
ASA	60.0
Anaesthetic history and complications	90.7
Assessment	61.3
Plan	96.0

Figure I shows that the overall GQI distribution was Gaussian, with a rightward shift

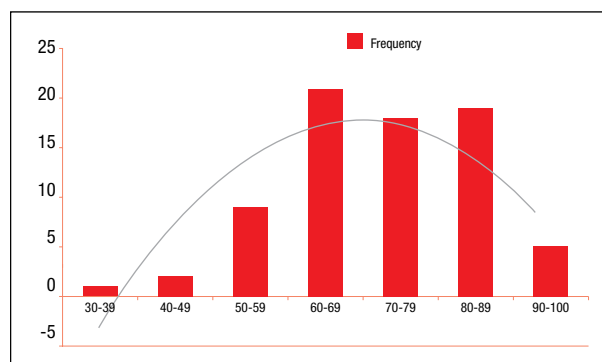


Figure I: The distribution of the modified GQI score, with 95% confidence interval for each item being ± 10%

Discussion

Of the criteria in the modified GQI, the DGMH anaesthetists usually recorded “name of the patient”, “cardiopulmonary status”, “patient’s age”, “surgical procedure”, “anaesthetic plan”, “anaesthetic history and complications”, and “airway assessment”. There was inadequate recording of the following criteria: “preoperative diagnostic procedure”, “medications prescribed by surgeons”, and “preoperative fasting status”. A worrying trend was the deficiency in the recording of the “patient’s weight” and “previous allergies” during the preoperative assessment.

In only 1.3% of the cases, the preoperative assessment of patients was completed in accordance with the modified GQI score. There have been relatively few studies on the quality of preoperative assessment, but to date, the most relevant study examined the adequacy of anaesthetic record-keeping. It was carried out by Raff and James in Cape Town,⁶ and revealed that only 29.9% of anaesthetic records met the minimum standards required for data entry and legibility. However, the study was based on perioperative, as opposed to preoperative, record-keeping. Whether this is the norm in South Africa remains unclear, but the findings of the current study raised concerns about the quality of the preoperative assessments undertaken by anaesthetists. With regard to preoperative assessment, Takata et al³ and Ausset et al⁵ concluded that the quality of information recorded at the preoperative/anaesthetic visit can be improved by using a standardised form.

Cardiovascular complications are potentially the most serious cardiovascular events that can take place,⁸ while pulmonary complications remain a major cause of morbidity and mortality for patients undergoing surgery and anaesthesia.⁹ Anaesthetists at DGMH tend to place emphasis on the assessment of cardiopulmonary status. Because no single or multiple tests can accurately predict difficult intubation, it is essential that a preoperative history and thorough examination of the airway be undertaken before anaesthesia.¹⁰ The finding that emphasis was placed on airway assessment was not surprising since a basic concern of the anaesthesiologist is invariably the patient’s airway,⁹ and proper assessment thereof is the mainstay of safe anaesthetic practice.⁴

Preoperative fasting is important in identifying aspiration risk factors and in modifying the subsequent anaesthetic plan.³ Preoperative fasting recommendations have been made to reduce the occurrence of pulmonary aspiration, and the ASA has published practice guidelines for preoperative fasting, based on available evidence.^{8,11} Recognising the fasting status of the patient could potentially avoid deaths related to anaesthesia caused by pulmonary aspiration and difficult airway.

The drug history is also an integral part of any medical assessment.¹² Details of the previous adverse drug

events, including allergies, must be recorded. Making such an assessment will assist in correct decision making. Accessing information on medications prescribed by surgeons equips anaesthetists with the knowledge of which drug interactions to anticipate with regard to the various anaesthetic drugs, and with awareness of the possible intraoperative administration requirements.³

As a minimum, the preanaesthetic examination should include taking the vital signs (e.g. blood pressure, heart rate, respiratory rate, and oxygen saturation), and measuring height and weight.⁸ Weight is very important for an anaesthetist with regard to the amount of drug dosage to be administered, ventilation parameters, selection of airway equipment, anticipation of intravenous access problems, and fluid management.³ Body mass index is calculated from the weight and height of the patient concerned, and is more accurate than weight alone in establishing the presence of obesity.⁸ During the preoperative assessment by DGMH anaesthetists, the majority of the parameters were not recorded, and blood pressure was the only frequently (92%) recorded vital sign.

Some risk assessment is important in preparing for anaesthesia. The surgical procedure and the current ASA risk classification system are the first attempts to quantify the risk associated with anaesthesia and surgery.⁸ The fact that 40% of the surgical patients did not have preoperative risk assessment completed also raises concern. Risk assessment is useful for comparing outcomes control costs, allocating compensation, postponing surgery until interventions improve risk, and facilitating difficult decision making regarding cancellations, or recommendations that a procedure not to be carried out when the risks are too high.⁸

More than half of the PEFs lacked preoperative diagnosis. This signifies lack of appreciation of the preoperative diagnosis, needed to verify the appropriateness of the surgical procedure by the anaesthetists. In other words, even if the surgical procedures were not justified, the chances are that, in more than 50% of the cases, the DGMH anaesthetists would still anaesthetise the patients. Such action has direct consequences in the medico-legal arena should an adverse event occur perioperatively or postoperatively.

Study limitations

The study had some limitations. Analysis of the medical records was done retrospectively. Retrospective analysis facilitated avoidance of the Hawthorne effect, whereby the knowledge that something is being observed changes the frequency of that which is being observed.¹³ Significant proportions (85%) of the PEFs that were located in the patients’ files were reviewed. The assessed criteria were determined prior to examining the patients’ records. Whether improving the quality of preoperative assessment directly translates into improved patient outcome is debatable.

The AIMS study showed that inadequate preoperative assessment and management were associated with a sixfold increase in mortality.^{4,5} The validity of choosing only 15 items for the GQI, in respect of any given information on the anaesthetic preoperative form, was justified by items being related to the most common adverse outcomes and damaging events in the ASA Closed Claim database.³

Peer review alone is inadequate to ensure the provision of high-quality care, or patient safety.¹⁴ Such a fact justifies the importance of the current clinical audit in assessing the quality of preoperative assessment, and in improving patient safety and outcome. Studies of this nature are lacking in South Africa, making it impossible to compare the audit with others. No randomised blinded anaesthetic outcome study has yet been undertaken to test whether preanaesthetic evaluations are of benefit. Furthermore, due to currently held ethical concerns, such a study is not likely.¹⁵ The assumption that the rate of serious adverse events could be reduced by carrying out a sound preoperative assessment is reasonable. Anticipating and preventing problems from occurring helps ensure patient safety and the maintenance of quality care. Anticipation of these problems begins during the preoperative visit when the anaesthetist first comes into contact with the patient. Preoperative assessment is targeted by malpractice attorneys, regarding lawsuits that address inadequate preoperative assessments.¹⁶ The importance of carrying out thorough assessments cannot be overemphasised.

Conclusion

With regard to a number of the modified GQI scores criteria, scoring of the overall quality of preoperative assessment was found to be incomplete. This suggests the need for improvement in the preoperative assessment of patients by anaesthetists at the DGMH in order to improve patient outcome. Overall, information recorded in the PEF used at the hospital was found to be incomplete, compared with the modified standardised preoperative form using the GQI. It is possible that all preoperative assessments currently undertaken in South Africa are substandard. It is likely that all hospital departments would benefit from a regular "chart review" audit. It is highly recommended that the Department of Anaesthesia at DGMH should adopt and adhere to the standardised PEF, with a focus on the 15 criteria of the modified GQI. A possible future audit might consider whether adopting the modified GQI score would improve patient outcome in the future. A study similar to the current one should be conducted in other South African academic centres, in order to assess compliance. A good starting point for the regular evaluation of charts would be a similar tool to the modified GQI score. It would be useful to be aware of the acceptable standard in First World countries, and to know how it compares to the South African standard.

Conflict of interest

None.

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