


# Learning from regret

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**Background:** Death after surgery is infrequent but can be devastating for the surgeon. Surgeons may experience intense emotional reactions after a patient's death, reflecting on their part in the death and the patient's loss of life. Excessive rumination or feelings of regret may have lasting negative consequences, but these reactions may also facilitate learning for future decision-making. This qualitative study analysed surgeons' reflections on what might have been done differently before a patient's death and explored non-technical (cognitive and interpersonal) aspects of care as potential targets for improvement.

**Methods:** In Australia's Queensland Audit of Surgical Mortality, surgeons reflect on factors surrounding the death of patients in their care and respond to the open-ended question: in retrospect, would you have done anything differently? Framework analysis was applied to surgeons' responses to identify themes relating to non-technical aspects of care.

**Results:** Responses from 1214 surgeons were analysed. Two main themes were identified. Dilemmas and difficult decisions confirmed the uncertainty, complexity and situational pressures that often precede a surgical death; regret and empathy for patients featured in some responses. In the second main theme, communication matters, surgeons cited better communication, with patients, families, colleagues and at handover, as a source of reflective change to improve decision-making and reduce regret.

**Conclusion:** Surgical decision-making involves uncertainty, and regret may occur after a patient's death. Enhancing the quality of communication with patients and peers in comprehensive assessment of the surgical patient may mitigate postdecision regret among surgeons.

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## Introduction

Surgical decision-making frequently involves complexity, uncertainty, time pressure and limited information<sup>1</sup>. If a patient dies, surgeons may experience emotional reactions, including disappointment, sadness, rumination, perceptions of missed opportunities and possibly regret<sup>2–6</sup>. Regret may be an unavoidable part of clinical practice and differs from the response to medical error because, even following the best decisions and actions, adverse outcomes occur<sup>7,8</sup>. Excessive rumination and feelings of regret can have adverse and lasting consequences for health and well-being, job satisfaction and patient care<sup>7,8</sup>. Regret can also have a positive consequence: rumination about whether different decisions and actions might have resulted in a better outcome may be an important coping strategy for surgeons that can also generate learning and improved future practice<sup>4</sup>. Learning through self-reflection after surgical incidents can promote

mindfulness of the possibilities of adverse events, and can have a powerful impact on changing or reinforcing patient safety behaviours<sup>9,10</sup>.

Determining in retrospect that different actions may have led to a more favourable outcome does not in itself imply regret. According to Zeelenberg and Pieters<sup>11</sup>, there are two preconditions for the experience of regret: personal responsibility and the realization that a different decision would have been better. Regret can refer to action taken (commission regret) or not taken (omission regret). A good decision-making process may alleviate regret even when the outcome is poor<sup>12</sup>.

Although regret may be a relatively common emotional response for healthcare professionals when clinical decisions result in an adverse outcome<sup>7,8</sup>, it has received little attention in the surgical context. Systematic reviews have examined the extent and predictors of regret experienced by patients in relation to healthcare decisions<sup>13</sup>, including surgery<sup>14</sup>, but less is known about healthcare professionals'

experience of regret following adverse events. Wilson and colleagues<sup>14</sup> identified 73 studies that focused on postoperative regret among surgical patients. In contrast, only two studies addressed surgeons' regret, and both were confined to hypothetical scenarios that addressed anticipated rather than actual postoperative regret.

Critical reflection is a core competency for surgeons<sup>15,16</sup> and a central component of the Australian and New Zealand Audit of Surgical Mortality<sup>17</sup>, which incorporates the Queensland Audit of Surgical Mortality (QASM). QASM data offer an opportunity to analyse individual surgeons' reflections, to gain a collective understanding of factors that might have led to improved patient outcomes. Cattanaach and co-workers<sup>18</sup> categorized surgeons' reflections on contributors to patient deaths and found that, with the benefit of hindsight, 18 per cent of 2575 surgeons would have managed their patients differently. Operative and clinical management were the most common areas of reflective change. Also highlighted were non-technical aspects of care: cognitive and interpersonal skills, including decision-making, teamwork and communication, which combine with technical factors and clinical expertise to underpin safe surgical practice<sup>19</sup>. Non-technical skills are recognized as important contributors to adverse surgical events, but are difficult to capture in traditional quantitative analyses of reasons for surgical mortality<sup>20</sup>.

The present study aimed to explore surgeons' reflections on what might have been done differently for patients who had died under their care. The focus was on non-technical aspects of care rather than surgeons' technical skills. A secondary aim was to explore the presence of regret in surgeons' responses using the abovementioned preconditions for regret<sup>11</sup>: personal responsibility and the realization that another decision could have been better.

## Methods

This retrospective study was focused around the QASM Surgical Case Form, which is completed by all surgeons following the death of a patient in their care. It encourages surgeons to reflect on issues surrounding the death by asking: in retrospect, would you have done anything differently? Those who respond in the affirmative are invited to provide further details in free-text format. Responses from surgeons were collected between 2007 and 2017. These ranged in length from several words to extended paragraphs of text. There was no change in the inclusion criteria for the duration of the study and no practising surgeons were excluded.

## Analysis

Responses were analysed using the framework method<sup>21</sup>, a form of thematic analysis that involves a series of iterative phases<sup>22</sup>: familiarization with the data; coding; developing and applying a thematic framework; charting the full data set; and interpretation. Two authors led the analysis (a social scientist and experienced qualitative researcher, and a surgeon and QASM clinical director).

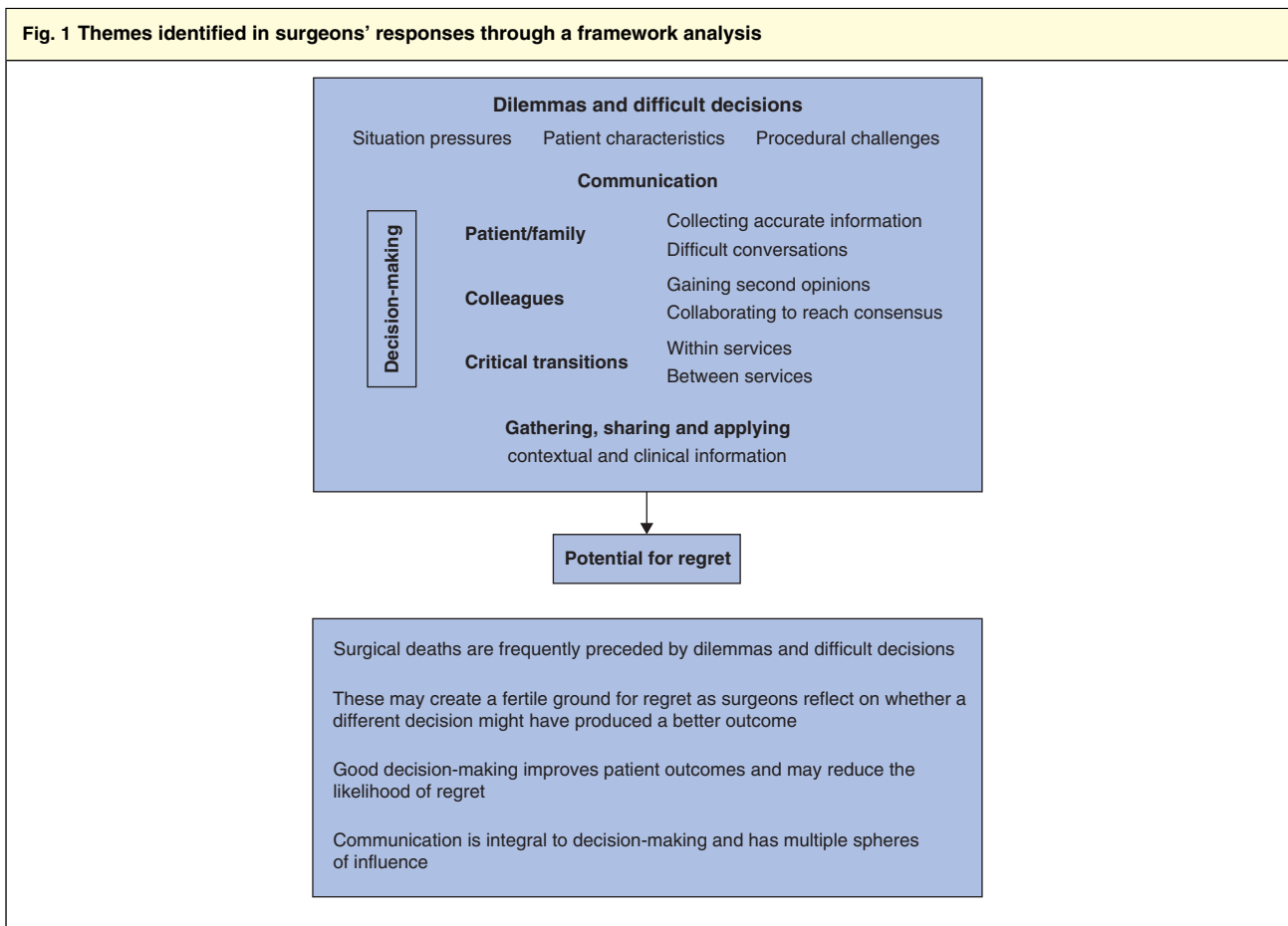
All open-ended responses were transferred to an Excel® (Microsoft, Redmond, Washington, USA) spreadsheet, identifiable only by a randomly generated unique numerical identification code. Labels were added as suffixes to the identification codes to differentiate deaths after elective and emergency surgery. To avoid selection and reporting bias, these were added after all the quotes had been selected. If a response included multiple issues, each relevant response was allocated an appropriate code. A provisional framework was used by two authors independently to code approximately 20 per cent of responses, with an agreement rate of greater than 90 per cent. After refinement of coding categories, the framework was applied to the full data set. Responses were examined according to whether regret was expressed, as defined previously<sup>11</sup>. The intention was to provide illustrative examples rather than to draw firm conclusions about the prevalence of regret, as it was often not possible to establish from the responses whether the preconditions for experiencing regret had been met.

All authors, together with a group of 12 surgeons external to the study, provided multidisciplinary and multi-specialty perspectives and insights at key points in the analysis to strengthen the credibility and validity of the findings<sup>22,23</sup>. To reach consensus, face-to-face meetings and online discussions were held.

The final framework (*Table S1*, supporting information) contained two main themes, each containing subthemes that captured surgeons' responses to the question of what might have been done differently: dilemmas and difficult decisions; and communication matters. The results are organized according to these themes and illustrated using verbatim responses (with numbered identifiers to differentiate respondents).

## Ethics approval

The audit operates as an Australian Government gazetted Quality Improvement Committee and has protection under the Commonwealth Qualified Privilege Scheme under Part VC of the Health Insurance Act 1973 (Cth; gazetted 25 July 2016). This permits auditing of surgical mortality, and as such individual hospital ethics approval



was not needed. Disclosure of information and provision of reports were subject to the restrictions and limitations arising under the legislation.

## Results

Australia's surgical mortality rate between 2009 and 2013 was low after both emergency (1 per cent) and elective (less than 1 per cent) surgery<sup>24</sup>. This is reflected in the QASM data set, which included 9705 patients between 2007 and 2017. The data set included both patients who had surgery and those who did not. A total of 399 surgeons stated that they would have done something differently for 1228 (12.7 per cent) of these patients and provided a response to the different action question for 1214 (98.9 per cent) of them. Most of these patients had an operation (1059 of 1228, 86.2 per cent). The subspecialty with the highest proportion of different actions was cardiothoracic surgery (25.3 per cent of their patients) and the one with lowest was orthopaedic surgery (8.1 per cent).

Overall the median age of the patients for whom surgeons would have done something differently was 75 (i.q.r. 65–83) years; the oldest was 101 years (*Table S2*, supporting information). Nearly all patients had co-morbidities present on admission (1142 of 1225, 93.2 per cent). ASA fitness grade IV was the most common (516 of 1175, 43.9 per cent). The risk of death was considerable for 45.0 per cent of patients (472 of 1048) and expected for 9.4 per cent (99 of 1048). Some 9.2 per cent of patients (113 of 1228) were admitted with trauma, and emergency admissions (952 of 1217, 78.2 per cent) were more common than elective ones. These findings were similar to those reported previously by QASM<sup>25</sup>; 88 per cent of patients admitted between 2007 and 2015 were admitted as an emergency.

Two main themes were identified (*Fig. 1*). The first, dilemmas and difficult decisions, confirmed the uncertainty, complexity and situational pressures that often precede a surgical death. Regret and empathy for patients clearly featured in some responses. In the second main theme, communication matters, surgeons commonly cited

better communication, with patients, families, colleagues and at handover, as a source of reflective change to improve decision-making and reduce postdecision regret.

### Theme 1: dilemmas and difficult decisions

The responses of many surgeons confirmed the extent to which uncertainty and complexity characterized decision-making, a key non-technical skill in surgery. Patient characteristics (age or co-morbidities), situational pressures (urgency, patient or family wishes, or lack of information) and procedural or technical issues frequently contributed either alone, or in combination, to decision difficulty:

This patient's general condition was quite poor with multiple comorbidities. At the time of urgent surgery this was not known (s0157 – emergency)

Ideally a procedure under local and sedation would have been lower risk; however due to patient confusion/dementia he was deemed to be inappropriate (s0086 – emergency)

The decision to operate on such patients ... is never easy ... maybe continue non-surgical treatment ... (s0761 – emergency).

#### *Postdecision regret*

In 205 of the 1214 responses (16.9 per cent), the surgeon either stated explicitly that, in retrospect, they would not have operated on the patient, or expressed a strong statement indicating that they were uncertain whether they would operate if again faced with the same set of circumstances. Applying the preconditions used by Zeelenberg and Pieters<sup>11</sup>, regret featured in many responses:

If I had a second chance I would not have operated (s0537 – emergency)

I should have stuck to my original decision not to operate (s0765 – elective)

I would have refused to operate (s0159 – elective).

Surgeons described instances where a poor outcome was inevitable regardless of the surgical decision made. As one surgeon put it,

the decision entailed the alternative of certain death *versus* probable death (s0700 – elective).

The response below indicates the surgeon's belief that a different decision would not have led to a better outcome for the patient:

... This elderly patient with severe comorbidities was high risk with or without treatment... (s0053 – elective).

Others reflected on whether a decision not to operate may have been better given that the benefit for the patient was equivocal:

Shouldn't have operated on a 91 year old after a severe trauma. This patient was going to die no matter what we did (s0384 – emergency)

Possibly not operate in the first place, but this was the patient's only chance for survival and was aware of the high mortality risk of surgery (s0745 – emergency).

Most responses referred to decisions where surgery had taken place. Less common were responses such as the following, where a surgeon had not operated but later reflected on whether advocating more strongly for surgery might have realized a benefit for the patient:

Possibly pushed a little bit harder on the option of surgery – family refused operation as I could not exclude a period of ventilation post-op in ITU [intensive treatment unit] (s0116-emergency).

As multidisciplinary team members, surgeons are not solely in charge of decision-making, and the potential for shared regret in relation to decisions that involved colleagues was evident in some responses:

In retrospect I wish we had lived with diagnostic uncertainty rather than embark on a diagnostic operation ... (s0145 – elective)

It would have been a better death for the patient if we made the decision not to operate at all (s0270 – emergency).

Similarly, the following excerpt from a response that outlined multiple and cascading system and medication issues pointed to a form of shared regret for the fate of the patient arising from system failures rather than individual decision-making. System level change had occurred, therefore:

... Everyone involved deeply regrets the outcome. I believe this won't happen again with the changes placed (s0596 – elective).

### Theme 2: communication matters

Communication is another key non-technical skill needed by surgeons. There were three main subthemes relating

to communications in the data. They were the nature and quality of communication with patients and their families; communication between surgeons and patients; and communications with other clinicians. Communication matters was a recurrent theme in surgeons' responses about what might have been done differently:

I believe I underestimated the risk of surgery and in retrospect in spite of pressure from the patient, the infectious disease physician and the cardiologist, should have pushed for a much longer period of conservative treatment before proceeding to operation (s0327 – emergency).

Communication is integral to decision-making and surgeons reflected on the information-poor environments in which decisions were often made. Missing or incomplete information could compromise decision-making and lead to a course of action that, in hindsight, the surgeon might not have taken. The importance of gathering as much contextual and clinical information as possible, whether directly from the patient, through family input, or other sources of collateral information was a recurrent theme. Communication barriers arose frequently:

If I had known the severity of (the patient's) myeloproliferative disease I would not have operated (s0423 – emergency)

If I knew the extent of his COAD [chronic obstructive airways disease] I would not have proceeded. The history given by his wife was inaccurate and he had no previous history available to me. He was taken on for salvage surgery for cardiogenic shock with the history of reasonable premorbid state (which was inaccurate) (s0514 – emergency).

#### *Managing patient and family expectations*

Pressure from the patient or family members influenced surgeons' decision-making. Some surgeons recounted frustration with patient or family perspectives, which in the surgeon's view may have compromised outcomes:

Given the patient's age it may have been more appropriate to avoid surgery and adopt a palliative treatment. The patient and family were adamant about proceeding to surgery and in retrospect this probably led to increased suffering in my opinion (s0744 – emergency)

This man had severe medical issues but tolerated the initial treatments quite well. He may have survived if the amputation had not been delayed due

to his refusal to undergo surgery ... This had been explained at great depth with patient and family. With the delay the final operation was too late to save his life (s0058 – emergency).

Comments showed the potential for tension when there was incongruence between patient and surgeon perspectives:

Insisted absolutely that he have a stoma prior to chemotherapy. Patient declined but next time I will insist rather than having to operate when the patient is sick and susceptible to complication (s0326 – emergency)

In retrospect it is clear to me that I acquiesced to the patient's pressure to be operated (s0393 – elective).

#### *Communication gaps between surgeon and patient*

Surgeons also reflected on how a lack of information and inadequate communication with the patient or family had contributed to a surgical decision that they viewed as sub-optimal:

Wish I'd pushed the patient harder to have the NGT [nasogastric tube] earlier. Also wished patient had brought her family to the pre-operative consult to allow for collateral history. Family reported afterwards that patient was constantly denying her level of fitness and severity of comorbidities (s0442 – elective)

I would have been more active in dissuading the patient and myself from operating. However, he was unwilling to continue with his symptoms (s0541 – elective)

Due to lack of collateral information and uncertainty around the time frame of the dilated pupil an operation was performed. It subsequently became clear the patient had a significant history of alcohol abuse and alcohol related disease (s0347 – emergency).

Some surgeons reflected on how they may have taken greater individual responsibility for gathering additional relevant patient information:

Find out more about family situation and discuss further management prior to transfer (s0676 – emergency)

Obtained more detailed history about the patient's current health and functioning (s0873 – emergency)

More thorough initial investigation (s0596 – emergency).

*Difficult conversations with patients and families*

Many responses underlined the importance of communication skills, and having knowledge of all available information for navigating difficult conversations with patients and their families. Some surgeons reflected on how being able to engage in more open communication might have altered the decision made:

I would have liked to have been more open about my misgivings about the suitability for this patient to be on dialysis at all, let alone having an AVF [arteriovenous fistula] (s1129 – emergency)

There were difficult consultations with patient family members who would not accept that the patient is not suitable for ICU admission or surgery (s0862 – emergency)

Would have emphasized discussion of risks of death *versus* benefits of surgery (s1022 – elective).

Challenges existed for discussions about palliative care and surgeons reflected on how such discussions might have been approached more effectively:

Knowing the resultant outcome and the pre-existing end stage respiratory failure, palliation could have been more aggressively discussed rather than any surgical intervention (s0019 – emergency)

Advocated for withdrawal of care at an earlier stage (s0111 – elective)

Advise patient and family from initial consult in Accident & Emergency Department that surgery should not be done, and all management should be palliative from the outset (s0163 – emergency)

A more explicit conversation with the family about probable outcomes may have led to palliative care involvement early, saving the patient and the hospital a week of ‘humiliating’ (the son’s words) care (s0407 – emergency)

Document on advanced resuscitation plan/wishes of next of kin (is needed). On admission if possible (s0609 – emergency).

Some responses illustrated how the quality of the decision-making process may alleviate the likelihood of later regret, even when the surgeon was left questioning the decision made. Collecting the best available information and engaging in shared decision-making, where patient (or family member) preferences and values were established, and risks and benefits discussed, were important:

Family desperate for ‘a try (because) she’s always been a fighter’ ... I struggled pre-operatively with

the decision whether or not to offer an operation; but in the end my conscience would not rest with a decision NOT to offer an operation ... Next time I come across this situation I will probably still struggle with that decision and I have to say I would probably still end up offering an operation even knowing the outcome in this case (s0051 – emergency)

The best course in this patient would have been to not operate – all efforts were made to persuade the patient and family of this but the patient was well able to make decisions and was adamant that she wanted surgery (s0640 – emergency)

Decision to operate difficult but felt appropriate after extensive discussion with patient, family and relevant specialities ... (s0394 – emergency)

I would have operated on her if she had consented to surgery. She was fully *compos mentis* and aware of her problem and consequences thereof. She could make her own decisions. She decided to let nature take its course and her wish was respected (s0889 – emergency).

*Communication with clinical team*

Surgeons described examples of difficult communication with other members of the clinical team. This included being pressured to take a course of action that the surgeon later questioned:

One could argue that the prognosis was extremely poor and whether the baby should have had surgery at all but there was pressure from Neonatologist and parents to try anything as a last resort (s0658 – emergency)

(I should have) ... obtained second opinion from Gastroenterologist earlier when General Physician and Dietician were at odds with me over TPN [total parenteral nutrition] (s1211 – emergency).

Other responses referred to more general shortcomings in communication processes across team members:

More direct interaction with the medical and ICU teams to ensure consistency in plans of management (s0298 – emergency)

More adequate documentation of clinical plan and surgical decision-making process (s0823 – emergency).

Gaining second opinions and further multidisciplinary team input was frequently identified as a way in which a better outcome may have been achieved:

Earlier involvement of the consultant surgeons from both General Surgery and Vascular Surgery (s0301 – emergency)

I probably would ask a colleague to review with respect to a second opinion about the risk *versus* benefit balance (s0310 – elective)

Probably contacted the treating team and have discussed it in more details with them and the Anaesthetist to better define what was the purpose to be achieved from this procedure; that would have been useful to the patient (s0336 – emergency)

Refer patient to expert Colonoscopist for a second opinion regarding colonoscopic polypectomy considering the patient's significant medical history (s1145 – elective).

Some surgeons reflected on how consultation and reaching consensus with colleagues had assisted their decision-making and had contributed to reducing the likelihood of negative postdecision reactions:

Probably would have proceeded directly to below knee amputation. The decision to perform a through ankle amputation first was however guided by pre-op discussions with General Surgical and Vascular Surgical consultant surgeons (s0302 – emergency)

In retrospect: I think that perhaps we could have convinced the family that an operation may prove to be futile in an elderly septic, acidotic patient with many co-morbidities. In conjunction with the ICU, Emergency Physicians and Anaesthetist we gave the patient a chance of survival however small it was (s0434 – emergency).

#### *Clinical handover processes*

Issues relating to clinical handover and transitions of care were common. These included transitions of care within the hospital as well as transfers between hospitals or other health services, where concerns were raised about whether such transfers had been in the patient's best interests:

Perhaps the patient should never have been transferred to Hospital (2) as his prognosis was always poor and unlikely to be suitable for surgery. However ongoing support of peripheral hospitals is required so, there is no perfect solution to this situation (s1052 – emergency)

The patient did not require transfer and could have been managed in the referring hospital (s0834 – emergency)

Overall very satisfied with management; was unnecessary to transfer patient who would have been nearer his family in his home town (s0890 – emergency).

Within the hospital, surgeons reflected on the consequences of some ward or unit transfers. Issues occurred at handover to the surgeon, where incomplete or inaccurate information had led to decisions that might not otherwise have been made:

This complex borderline PICU [paediatric ICU] patient should not have had an unplanned discharge to the ward in the middle of the night... no handover from PICU clinical staff to Cardiology/Cardiac Surgery occurred at the time of transfer (s0047 – emergency)

When informed of this admission 'which was booked for laparotomy the next day' I should have pressed for more information. I presumed that the patient was 'fine' because she was not booked that urgently. In actuality she was already in a bad state – but dementia, perhaps, hampered the assessment to some extent (s0238 – emergency).

Similarly, handover of care from the surgeon to other units was also identified as a critical transition point:

Having decided to operate I should have insisted that that be supported by admission to ICU/HDU [high-dependency unit] (s0103 – emergency)

The patient returned to a ward at night and deteriorated without the staff recognising the extent of the decline. The ward was the '23 hour' ward. I would not use this ward for anything but minor post-op patients (s0318 – elective)

Patient was previously progressing well with view to rehab. Acute deterioration occurred over the weekend and was not recognised as such – probably due to repeated reviews by ward call doctor over weekend and no escalation of care. Escalation of care was delayed until too late (s0518 – emergency).

## **Discussion**

Analysis of surgeons' reflections following the deaths of patients confirms that surgical decision-making is complex. It may be accompanied by uncertainty that can lead to feelings of regret. The concept of regret (as distinct from medical error) was used as a lens for exploring surgeons' reflections following a patient's death. This research suggests that regret is common among healthcare professionals,

with the potential for lasting consequences, both positive and negative<sup>4,7,8</sup>. This study showed that cardiothoracic surgeons had the highest proportion of possible different actions; this may reflect the complexity of cardiothoracic surgery compared with other surgical specialties.

Regret is uniquely tied to decision-making and can also be a powerful motivating force for future behaviour that may improve patient care<sup>11</sup>. Using the benefit of hindsight to understand what might have been done differently has provided insights into non-technical aspects of care that could be enhanced to improve decision-making. Findings in this study map closely to interpersonal and cognitive dimensions of non-technical skills that are widely regarded as critical to patient safety<sup>19</sup>, with communication and teamwork featuring prominently.

Surgical decision-making regarding these patients often took place in information-poor environments, and timelier clinical or psychosocial information about the patient may have led to different decisions. It is important to acknowledge the inevitability of incomplete information particularly in emergency situations, and to develop robust clinical decision-making skills that can be applied in the face of uncertainty<sup>1</sup>.

Surgeons reflected on missed opportunities for direct and wide-ranging discussions with family members, while others noted the benefits of such discussions when they occurred. Frequent reference was made to the importance of having information about the patient's previous level of functioning, prognosis, expectations, and of patient and family wishes regarding ceilings of treatment. The difficult nature of these conversations was well highlighted. The American College of Surgeons' surgical risk tool has been used in discussions with patients regarding surgical outcomes and found to be useful in making difficult decisions<sup>5</sup>.

Shared decision-making, where best evidence is balanced with respect for patients' preferences, goals and values, has been shown to reduce decisional regret<sup>14</sup>. Surgeons expressed regret after operating, even on some patients undergoing elective procedures, despite shared decision-making. Shared decision-making may, however, help to minimize the likelihood of decisional regret<sup>26</sup>, but few surgeons are trained in the approach, and aspects of crisis situations raise unique challenges<sup>5</sup>.

Transfer of care and handover are well recognized as critical communication points<sup>27</sup>. These findings support the need to focus attention on times when communication of patient information is critical in supporting safe and high-quality decision-making, between one healthcare practitioner and another, one medical team and another, and between health services. A second opinion from a

trusted colleague is always a valuable addition in complex decision-making situations.

This large sample of opinions from nearly 400 surgeons from both public and private hospitals in Queensland (including the 9 surgical subspecialties), enabled a detailed exploration of non-technical factors related to patient deaths. The findings also offer a window into the experiences of regret and empathy for patients among surgeons. No attempt was made to assess the prevalence of regret or to examine variation according to patient or surgeon characteristics. The notion of regret was explored through secondary analysis of surgeons' reflections on what might have been done differently. However, consistent with other studies<sup>7,8,14</sup>, it appears that regret may be a relatively common response to adverse surgical events.

It is also important to note that this study has focused only on surgeons' personal reflections and not on communication with the patient's family members following their death, where an expression of regret may be conveyed as part of an open disclosure process<sup>28</sup>. Insights about improving communication are relevant across the full episode of care.

Limitations of the study include the self-reported nature of the data, and potential sample bias. Only the perspectives of surgeons who chose to reflect on different actions that might have been taken were considered. The question – in retrospect, would you have done anything differently? – was contained in a standard form used to collect mortality audit data. The question does not relate to medical error. Australian Federal Government legislation, Qualified Privilege, protects the audit data from being subpoenaed. The potential for bias owing to culpability is therefore non-existent. These findings are based on a sample of patients who died after emergency and elective surgery. A different picture may have emerged if the data set and analysis included more elective procedures. To minimize reporting bias, responses were chosen according to their thematic relevance and not by their emergency and elective classifications, which were added after the analysis. Indeed, deaths after elective procedures may have a greater impact on operating staff than those that occur during or after emergency surgery, where there may be some level of expectation of an adverse outcome<sup>29</sup>.

Free-text responses have limitations as, unlike qualitative methods such as interviews, clarification or elaboration is not possible. These findings are based on brief responses from surgeons who chose to provide comments that were open to interpretation. However, the analysis involved a rigorous process with two coders and multidisciplinary and multispecialty review to enhance the validity and critical review of the findings<sup>22,23</sup>.



The death of a patient often places a heavy psychological burden on surgeons<sup>2</sup>. Reducing the likelihood of regret is an important outcome of surgical decision-making and may help to alleviate the psychological impact. Clinical scoring tools may assist surgeons in making difficult decisions<sup>5</sup> and including these tools in surgical training may improve clinical decision-making. It is important to recognize that the intent of such tools is to complement, and not replace, effective communication<sup>30</sup>. Surgeons' reflections suggest that inadequate or absent communication may fuel later regret. Raising awareness of the importance of communication quality in comprehensive assessment of the surgical patient and supporting this with appropriate training may help to improve surgeon well-being and patient care.

These findings contribute to a growing body of evidence demonstrating the importance of non-technical skills to surgical practice. Non-technical skills training, including communication for enhanced decision-making, in challenging circumstances, is an essential part of the patient safety agenda.

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### Supporting information

Additional supporting information can be found online in the Supporting Information section at the end of the article.