A call for patient-centred textbook outcomes for emergency surgery and trauma

Naumann, David N; Bhangu, Aneel; Brooks, Adam; Martin, Matthew; Cotton, Bryan A; Khan, Mansoor; Midwinter, Mark J; Pearce, Lyndsay; Bowley, Douglas M; Holcomb, John B; Griffiths, Ewen A

DOI:
10.1093/bjs/znac271

OXFORD Short Report

BJS, 2022, 1–3
https://doi.org/10.1093/bjs/znac271
Short Report

A call for patient-centred textbook outcomes for emergency surgery and trauma

David N. Naumann[1,*], Aneel Bhangu[1,2], Adam Brooks[3], Matthew Martin[4], Bryan A. Cotton[5], Mansoor Khan[6], Mark J. Midwinter[7], Lyndsay Pearce[8], Douglas M. Bowley[1], John B. Holcomb[9] and Ewen A. Griffiths[1]

[1]Department of Surgery, University Hospitals Birmingham NHS Foundation Trust, Birmingham, UK
[2]NIHR Global Health Unit on Global Surgery, Institute of Translational Medicine, University of Birmingham, Birmingham, UK
[3]Department of Major Trauma, East Midlands Major Trauma Centre, Queen's Medical Centre, Nottingham, UK
[4]Department of Surgery, Division of Trauma and Acute Care Surgery, Los Angeles County & USC Medical Center, Los Angeles, California, USA
[5]The Center for Translational Injury Research, McGovern Medical School at The University of Texas Health Science Center at Houston, Houston, Texas, USA
[6]Department of Surgery, University Hospitals Sussex NHS Foundation Trust, Brighton, UK
[7]School of Biomedical Sciences, The University of Queensland, Brisbane, Australia
[8]Department of Surgery, Salford Royal NHS Foundation Trust, Salford, UK
[9]Department of Surgery, Division of Acute Care Surgery, University of Alabama at Birmingham, Birmingham, USA

*Correspondence to: David N. Naumann, University Hospitals Birmingham NHS Foundation Trust, Mindlesohn Way, Birmingham, B15 2TH, UK (e-mail: d.n.naumann@bham.ac.uk)

Textbook outcomes are gaining interest in the field of elective surgery, for example following oesophagogastric[1], pancreatic[2], liver[3], and transplant[4] surgery. Textbook outcomes are composite measures that incorporate multiple patient outcomes representing the 'ideal' or best possible outcome. Rather than an individual outcome such as 'survival' after cancer resection, an example of a textbook outcome may be 'returned home alive and without any surgical complications, with a R_0 resection and appropriately radical lymphadenectomy on histology'. Textbook outcomes may be more patient-centred and capture the whole patient experience. No textbook outcomes have yet been agreed for emergency surgery and trauma. We propose a global collaboration of healthcare professionals and patient groups to establish a panel of textbook outcomes for these patients, in order to improve the quality and relevance of future studies.

To illustrate how single primary outcome measures such as survival might be problematic, we can examine the recent PARAMEDIC-2 randomized clinical trial[5]. This trial compared adrenaline (epinephrine) with placebo for out-of-hospital cardiac arrest and reported a significantly improved 30-day survival rate in the treatment arm, but more of the survivors in the intervention arm left hospital with severe neurological impairment. The headline and main finding based on the primary outcome could appear to show that the trial intervention was superior, but a more nuanced look at the data may not support such a clear-cut conclusion. A problem with trials in the emergency setting is that mortality/survival may be the easiest to measure and the most widely used, but it is not always the most relevant choice. This has been an issue with emergency and trauma surgery, where there is no consensus on the 'ideal' outcome measures to use[6–8].

As textbook outcomes incorporate multiple components that are of interest to doctors and patients alike, they may help to mitigate the problematic interpretations of single outcome measures such as those of the PARAMEDIC-2 trial[5]. For example, if that trial used a textbook outcome such as 'returned home alive with good neurological function', the interpretation of the trial may have been more patient-centred and relevant to clinical practice. Textbook outcomes are appealing because they work on the premise that a patient's outcome is multidimensional, and that treatments are targeted at an overall improvement in the whole patient's life rather than just one aspect. It is a common reaction among surgical investigators to wonder why this was not done long ago.

Most opinion articles, reviews, and explorations that attempt to identify ideal outcome measures tend to focus on individual measures and propose the inclusion of quality-of-life assessments for a more patient-centred approach. Patient-reported outcome measures (PROMS) have also been increasingly popular in better reflecting the patient experience[9,10]. Superficially, this appears to deal with the over-simplistic nature of the most common outcome measures. A large-scale effort to identify core outcomes for damage-control laparotomy is a recent example of such efforts[11]. But even this approach depends on a list of individual outcome

Table 1 Eligibility criteria for textbook outcomes in emergency surgery and trauma

Criterion	Domain	Statement
1	Non-intrusive	Measurable without undue distress or inconvenience to patients
2	Realistic	Achievable and realistic according to the initial patient presentation
3	Relevant	Relevant to patients, and updated/reviewed at regular intervals
4	Consensus	Agreed through consensus opinion and mutual agreement between healthcare providers, patients, and the public
5	Clarity	Easy to understand, without overly complicated or confusing components

Received: April 09, 2022. **Revised:** June 22, 2022. **Accepted:** July 15, 2022

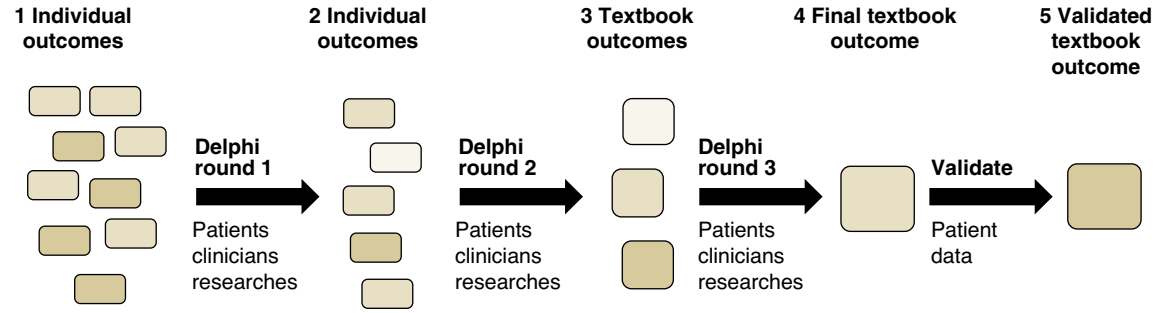

Fig. 1 Proposed timeline for the development of a validated textbook outcome

measures that may not adequately summarize the patient experience of the intervention of interest. Although clinicians may read the results of a trial and combine individual primary and secondary outcome measures to simulate a textbook outcome, the trial may not have been powered to justify such interpretations. It is timely therefore, to discuss the development of textbook outcomes in the fields of emergency and trauma surgery.

The establishment of textbook outcomes requires consensus opinion among clinicians and patients, and these have usually been established through broad Delphi-style exercises to gain international consensus. The establishment of a panel of patient-centred textbook outcomes for emergency surgery and trauma may be beneficial in research and quality improvement, and ultimately for better treatments for patients. We propose a series of consultations between healthcare professionals and patient groups to establish textbook outcomes that are clinically relevant, and patient centred, and then validated using data from high-quality studies. Ideally, such textbook outcomes would be composite measures of PROMs in addition to traditional objective outcome measures. There is some precedence for the use of PROMs in emergency care, and engagement with patient groups will be required to determine which may be most desirable to include within a textbook outcome[12]. It is also important to also remain pragmatic so that the recording of textbook outcomes is not overly laborious for patients or researchers alike.

We suggest five criteria for the 'ideal' textbook outcomes (*Table 1*). Textbook outcomes may represent the best primary outcomes to use during studies that seek to improve treatments for patients who require emergency surgery or management of trauma, but this is yet to be tested. Importantly, rather than being reported in isolation, textbook outcomes should be reported alongside their individual components for better scrutiny of all the available data.

It is likely that establishing textbook outcomes for emergency surgery and trauma may be more challenging than for elective surgery, as patients are likely to be more unwell, physiologically unstable, and more likely to have poorer outcomes from the outset. Nevertheless, such a challenge should be met with rigorous scientific endeavour and a desire to improve care for these patients. We intend to bring together stakeholders to facilitate this process for specific interventions. These will include clinicians who look after the patients that each textbook outcomes applies to, as well as researchers and specific patient groups. There will not be a one-size-fits-all textbook outcome for emergency surgery and trauma. We propose that bespoke textbook outcomes should be agreed according to specific scenarios. These may include 'emergency laparotomy', 'trauma laparotomy', 'emergency thoracotomy', and 'emergency craniotomy for haemorrhage'. Furthermore, once a textbook outcome has been agreed during the Delphi process, it should be validated using data. An example may be using the National Emergency Laparotomy Audit (NELA) data to validate the textbook outcomes for 'emergency laparotomy'. *Figure 1* summarizes the proposed timeline for the development of a validated textbook outcome.

A recent investigation of patient outcomes following emergent trauma laparotomy called for an open and honest evaluation of outcomes so that the public is fully informed[13]. We propose that it is timely and important to launch a global collaboration of healthcare professionals and patients to establish a panel of textbook outcomes for patients who need emergency surgery or management of trauma.

Funding

This work is supported by a Pump-priming grant from the Royal College of Surgeons of England. Open access is funded by the University of Birmingham.

Disclosure

The authors declare no conflict of interest.

References

1. Kalff MC, van Berge Henegouwen MI, Gisbertz SS. Textbook outcome for esophageal cancer surgery: an international consensus-based update of a quality measure. *Dis Esophagus* 2021;**34**:doab011
2. van Roessel S, Mackay TM, van Dieren S, van der Schelling GP, Nieuwenhuijs VB, Bosscha K *et al.* Textbook outcome: nationwide analysis of a novel quality measure in pancreatic surgery. *Ann Surg* 2020;**271**:155–162
3. Görgec B, Benedetti Cacciaguerra A, Lanari J, Russolillo N, Cipriani F, Aghayan D *et al.* Assessment of textbook outcome in laparoscopic and open liver surgery. *JAMA Surg* 2021;**156**:e212064
4. Moris D, Shaw BI, Gloria J, Kesseli SJ, Samoylova ML, Schmitz R *et al.* Textbook outcomes in liver transplantation. *World J Surg* 2020;**44**:3470–3477
5. Perkins GD, Ji C, Deakin CD, Quinn T, Nolan JP, Scomparin C *et al.* A randomized trial of epinephrine in out-of-hospital cardiac arrest. *N Engl J Med* 2018;**379**:711–721
6. Sleat GK, Ardolino AM, Willett KM. Outcome measures in major trauma care: a review of current international trauma registry practice. *Emerg Med J* 2011;**28**:1008–1012
7. Hoffman K, Cole E, Playford ED, Grill E, Soberg HL, Brohi K. Health outcome after major trauma: what are we measuring? *PLoS One* 2014;**9**:e103082
8. Wisborg T, Manskow US, Jeppesen E. Trauma outcome research —more is needed. *Acta Anaesthesiol Scand* 2017;**61**:362–364
9. Churruca K, Pomare C, Ellis LA, Long JC, Henderson SB, Murphy LED *et al.* Patient-reported outcome measures (PROMs): a review

of generic and condition-specific measures and a discussion of trends and issues. *Health Expect* 2021;**24**:1015–1024
10. Ahern S, Ruseckaite R, Ackerman IN. Collecting patient-reported outcome measures. *Intern Med J* 2017;**47**:1454–1457
11. Byerly S, Nahmias J, Stein DM, Haut ER, Smith JW, Gelbard R *et al.* A core outcome set for damage control laparotomy via modified delphi method. *Trauma Surg Acute Care Open* 2022;**7**: e000821
12. Kim HS, Courtney DM, McCarthy DM, Cella D. Patient-reported outcome measures in emergency care research: a primer for researchers, peer reviewers, and readers. *Acad Emerg Med* 2020; **27**:403–418
13. Hu P, Jansen JO, Uhlich R, Hashmi ZG, Gelbard RB, Kerby J *et al.* It's time to Look in the mirror: individual surgeon outcomes after emergent trauma laparotomy. *J Trauma Acute Care Surg* 2022;**92**:769–780