Victorian Perioperative Consultative Council

Improving perioperative care before, during and after surgery

Annual report 2020

Safer Care Victoria

Acronyms

ACSQHC	Australian Commission on Safety and Quality in Health Care
ANZCA	Australian and New Zealand College of Anaesthetists
ANZHFR	Australian and New Zealand Hip Fracture Registry
CLEG	Clinical Leadership Expert Group
CT	computed tomography
GP	general practitioner
HCW	healthcare worker
ICU	intensive care unit
NELA	National Emergency Laparotomy Audit
PACU	post-anaesthesia recovery unit
PEWG	Perioperative Expert Working Group
PPE	personal protective equipment
RACS	Royal Australasian College of Surgeons
SCV	Safer Care Victoria
UKNHFD	UK National Hip Fracture Database
URTT	unplanned return to theatre
VAED	Victorian Admitted Episodes Database
VAHI	Victorian Agency for Health Information
VASM	Victorian Audit of Surgical Mortality
VCCAMM	Victorian Consultative Council of Anaesthetic Mortality and Morbidity
VIFM	Victorian Institute of Forensic Medicine
VPCC	Victorian Perioperative Consultative Council
VSCC	Victorian Surgical Consultative Council

To receive this publication in an accessible format phone 03 9096 1384, using the National Relay Service 13 36 77 if required, or email vpcc@safercare.vic.gov.au

Authorised and published by the Victorian Government, 1 Treasury Place, Melbourne.

ISSN 978-1-76069-061-8 (online)

Available at www.safercare.vic.gov.au/vpcc

Contents

About the VPCC

The VPCC oversees, reviews and monitors perioperative care in Victoria to improve outcomes for patients before, during and after surgery.

Establishment

The council was established in 2019 as the result of a review of two previous councils – the Victorian Consultative Council of Anaesthetic Mortality and Morbidity (VCCAMM) and the Victorian Surgical Consultative Council (VSCC).

The review recommended forming a multidisciplinary council that brings together surgeons, anaesthetists, nurses and consumers to drive improvement in perioperative care while building on the functions of the former VCCAMM and VSCC.

Reporting

The council reports to the Minister for Health. It aims to improve perioperative care through engaging with clinicians, health services, SCV, the Department of Health and the Victorian Agency for Healthcare Information (VAHI).

Health services and clinicians can report perioperative morbidity and mortality to the VPCC online.

Perioperative mortality and morbidity includes adverse events (including death) that may occur prior to, during, or following surgery.

Governing legislation

The VPCC operates in accordance with Sections 33–43 of the *Public Health and Wellbeing Act 2008*. Any discussions involving the identity of patients, clinicians or health services are also protected under Victorian legislation.

- Under Section 39 of the Act, the Chairperson of a consultative council may request general or specific information from a Victorian health service provider or pathology service which the Chairperson considers is necessary to enable the council to perform its functions.
- Section 40 of the Act requires that the health service provider must provide such requested information.
- Section 41 of the Act outlines the circumstances in which information can be disclosed by the council.
- Sections 42 and 43 of the Act describe the confidentiality obligations that apply to the council.

Membership

Members of the VPCC are appointed by the Minister for Health. The VPCC may appoint subcommittees subject to the approval of the Minister. The membership of these subcommittees is determined by the council. Full details of the members of the VPCC and its subcommittees are included in **Appendix 1**.

Chair's report

The Victorian Perioperative Consultative Council (VPCC) has worked diligently in 2020 to promote high-quality, evidence-based care, while also responding to the two waves of coronavirus (COVID-19) faced by Victoria.[1] Opportunities to improve perioperative care occur throughout the patient journey. The VPCC has identified several focus areas for improvement before, during and after surgery. Throughout this report, we have highlighted how we plan to promote these improvement opportunities.

Patient care before an operation can be improved through shared decision-making when exploring treatment options. This includes considering what best care looks like for the individual patient and how to optimise care for their condition.

Opportunities to improve care during surgery include adequate preparation, using safety checklists and responding to unexpected events such as anaphylaxis, bleeding or cardiac arrhythmias. Postoperatively (after surgery), opportunities to improve care include recognising and responding to complications such as cardiovascular events, unplanned returns to theatre, or a need to transfer for escalation of care.

The VPCC aims to improve outcomes for all Victorians undergoing surgery through its multidisciplinary membership of surgeons, anaesthetists, perioperative nurses, and consumers. We plan to improve information flow between clinicians, health services, the Department of Health, Safer Care Victoria (SCV) and other consultative councils by representing, and engaging with the perioperative sector and promoting sound clinical governance.

We also support the work of existing clinical registries. We work closely with the Victorian Audit of Surgical Mortality (VASM) to share lessons from surgical mortality. The Director of VASM is an ex-officio member of the VPCC. In 2020, VASM and the VPCC applied to revise the Commonwealth Qualified Privilege under which VASM operates. The goal is to enable greater information sharing between VASM and the VPCC. This will be an important step in strengthening the council's ability to employ a multidisciplinary approach in reviewing and learning from perioperative mortality.

The council last met in person in early March. In response to the two COVID-19 waves in Victoria the rest of the meetings in 2020 were held virtually. Despite this interruption we have progressed a number of projects aligned to key focus areas while also responding to the pandemic.

Thank you to all who have contributed, together we can continue to improve the perioperative care of all Victorians.

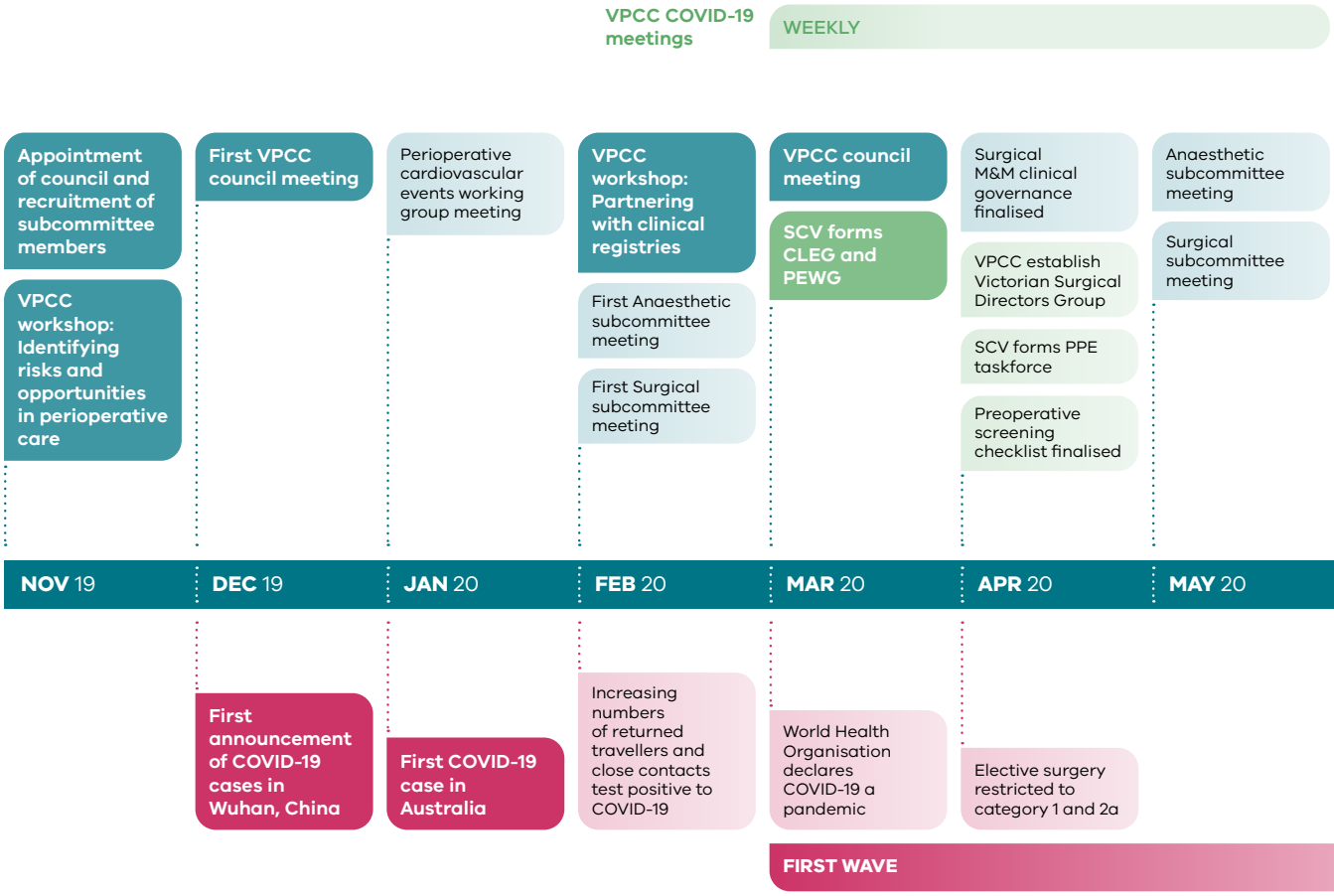
Professor David Watters AM OBE
Chair, Victorian Perioperative Consultative Council

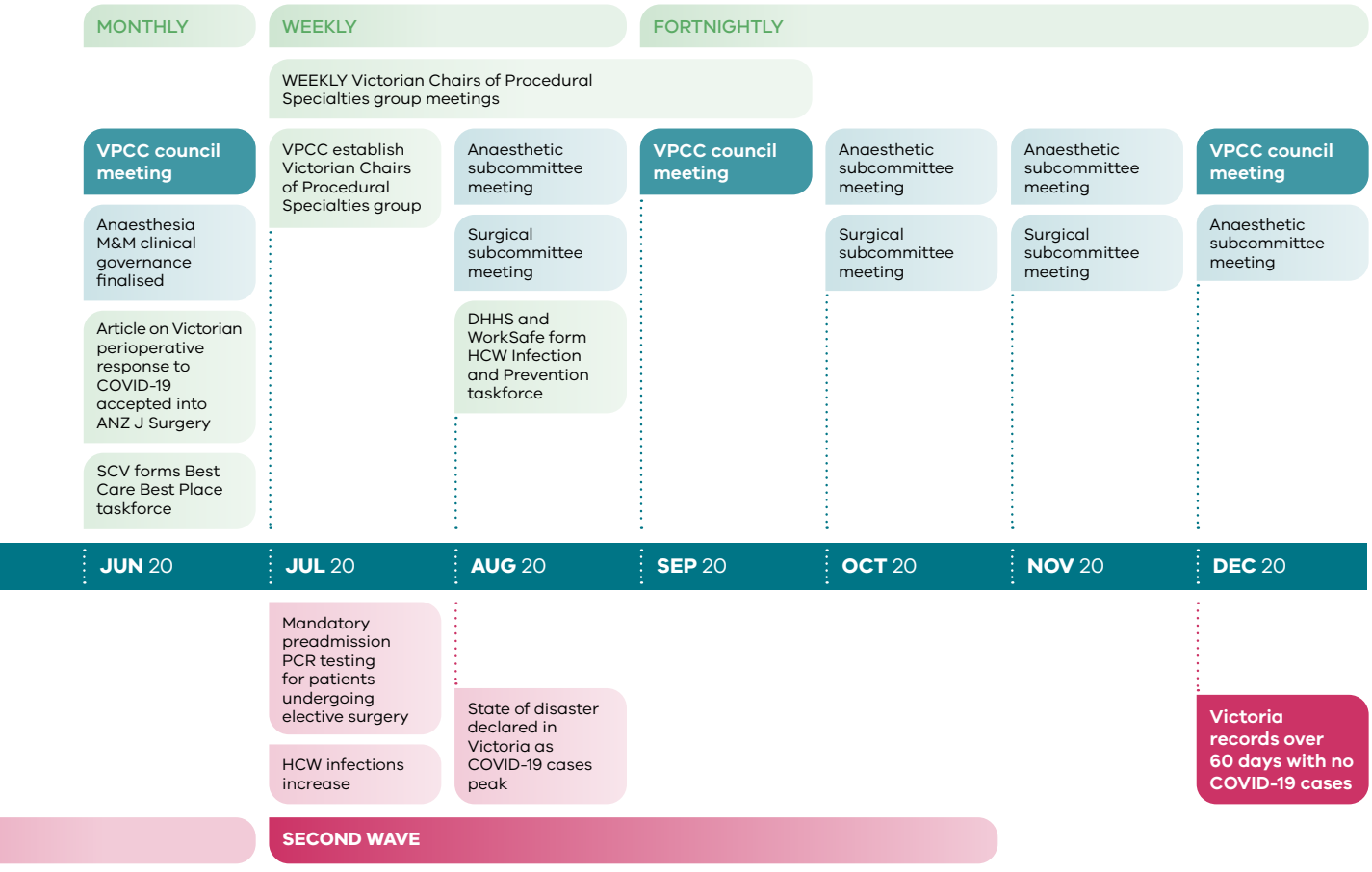
Activities and events

The first year of the VPCC was always going to be busy. The year began with the appointment and recruitment of council and subcommittee members respectively, followed closely by the first VPCC meeting in December 2019. The arrival of COVID-19 in Victoria and declaration of a pandemic early in 2020 greatly shifted the focus of the council and subcommittees.

An overview of VPCC and subcommittee activities is shown in **Figure 1**. A detailed timeline of VPCC and subcommittee activities is provided in **Appendix 2**.

FIGURE 1: TIMELINE OF VPCC ACTIVITIES AND EVENTS




MONTHLY
WEEKLY
FORTNIGHTLY
WEEKLY Victorian Chairs of Procedural Specialties group meetings
VPCC council meeting
Anaesthesia M&M clinical governance finalised
Article on Victorian perioperative response to COVID-19 accepted into ANZ J Surgery
SCV forms Best Care Best Place taskforce
VPCC establish Victorian Chairs of Procedural Specialties group
Anaesthetic subcommittee meeting
Surgical subcommittee meeting
DHHS and WorkSafe form HCW Infection and Prevention taskforce
VPCC council meeting
Anaesthetic subcommittee meeting
Surgical subcommittee meeting
Anaesthetic subcommittee meeting
Surgical subcommittee meeting
VPCC council meeting
Anaesthetic subcommittee meeting
JUN 20
JUL 20
AUG 20
SEP 20
OCT 20
NOV 20
DEC 20
Mandatory preadmission PCR testing for patients undergoing elective surgery
HCW infections increase
State of disaster declared in Victoria as COVID-19 cases peak
Victoria records over 60 days with no COVID-19 cases
SECOND WAVE

How we responded to COVID-19

Regular meetings enabled us to provide updates and advice during the first and second waves of COVID-19 in Victoria.

The VPCC was represented on significant committees, working groups and taskforces and provided crucial advice and guidance throughout the year.

An account of Victoria's perioperative response to the first wave of COVID-19 was published in ANZ Journal of Surgery.[1]

A meta-analysis of outcomes from surgery in COVID-19 infected patients was published in the ANZ Journal of Surgery.[2]

During the COVID-19 pandemic, the VPCC was represented on the Perioperative Expert Working Group (PEWG), Clinical Leadership Expert Group (CLEG), Personal Protective Equipment (PPE) Taskforce, and Health Care Worker Infection Prevention and Wellbeing Taskforce.

Providing updates and advice to these committees required a great deal of time, energy and input from VPCC members. However, the clinical engagement, advice provided, and multidisciplinary membership of these expert working groups helped enable some of the outstanding achievements in the sector's response to COVID-19.

Through these committees, the VPCC and its expert groups provided advice and guidance on:

- preoperative screening and testing
- restriction and resumption of elective surgery
- indirect impacts of COVID-19
- PPE
- healthcare worker infections
- risk mitigation strategies for patients with COVID-19 undergoing surgical procedures.

At time of writing, Victoria has responded successfully to a second wave of COVID-19, with perhaps as much or more success than any other state or nation in the world. The incredible effort of all involved should be recognised and applauded.

Restrictions on movement and socialising during the Victorian waves of COVID-19 resulted in a reduction in major trauma. However, injuries at home, including burns, increased. Other surgical emergencies presented at similar rates to previous years. Hospital acquired infections have markedly declined as result of greater attention to hand hygiene, wearing of masks and physical distancing.

Restrictions on visitors in health services resulted in a considerable loss of connection and support between patients and their family members, carers and volunteers. This loss of connection has (anecdotally) adversely affected patient recovery time, mental health and nutrition. Visitor restrictions also increased the workload for health service staff as the incidental care provided by family members, carers and volunteers was no longer possible. Research on these topics will provide important insights into the true impact.

The disruption to elective surgery during the pandemic has resulted in a significant backlog of public and private elective surgeries. There has also been a decline in new cancer registrations indicating diagnosis, staging and treatment have been delayed.

It's clear that the perioperative sector will be very busy in 2021 and under great pressure to address this backlog while meeting ongoing demand. This needs to be managed safely and effectively. It will require the best perioperative decision making and management, particularly for any of the 20,000 Victorians who are suffering the after-effects of 'post acute COVID-19 infection' and require surgical care.[3]

Opportunities to improve perioperative surgical care

Consumers are vital to improving patient care.

Involving patients in shared decision making throughout the care pathway improves outcomes.

The VPCC is working closely with VAHI and SCV to use data to monitor and improve perioperative care.

The VPCC supports and promotes participating in clinical registries.

We will only improve perioperative care if clinicians are engaged.

The VPCC will promote clinical and consumer engagement.

Listening to consumers

The VPCC and SCV are determined to include community members, patient representatives and other consumers in their teams and working groups. Consumers bring a wealth of personal experience and skills to their roles. They understand and can give a voice to the general public in important conversations that contribute to the quality of patient care.

The VPCC has three consumer representatives across the council and subcommittees. Working with these consumer representatives has highlighted many areas throughout the care pathway where listening to consumers is crucial to achieving positive outcomes in perioperative care. An example of the perioperative care pathway is provided in **Figure 2**.

Involving patients, their families, carers and general practitioners (GPs) in decisions about care has many benefits. This support system for patients is sometimes referred to as the 'patient team'. The patient team can support the clinical perioperative team in making decisions about patient care, preparation and planning before a procedure.

Among the benefits of engaging patients and the patient team when planning for surgery or treatment are increased patient preparedness and improved perioperative outcomes. Patients can also be empowered to get involved in decision making about their recovery and rehabilitation postoperatively.

During 2020, perioperative care changed rapidly and constantly. Patients and clinicians worked together to navigate an increase in telehealth consultations, in-home healthcare and digital health records. All stakeholders had to adapt and learn to engage and interact with healthcare services differently, while still focusing on patient-centred care. The VPCC strongly believes community members and patient representatives should be engaged in decisions about healthcare, both at the individual and system level.

Data

We are working closely with the VAHI and SCV to ensure we have the right information to monitor and improve the safety and quality of perioperative care.

The Victorian Admitted Episodes Database (VAED) is a rich data source managed by VAHI. While it's not a safety and quality database, the VAED helps us identify which procedures are carried out for various conditions, patient length of stay, discharge outcomes, complications, transfers and readmissions.

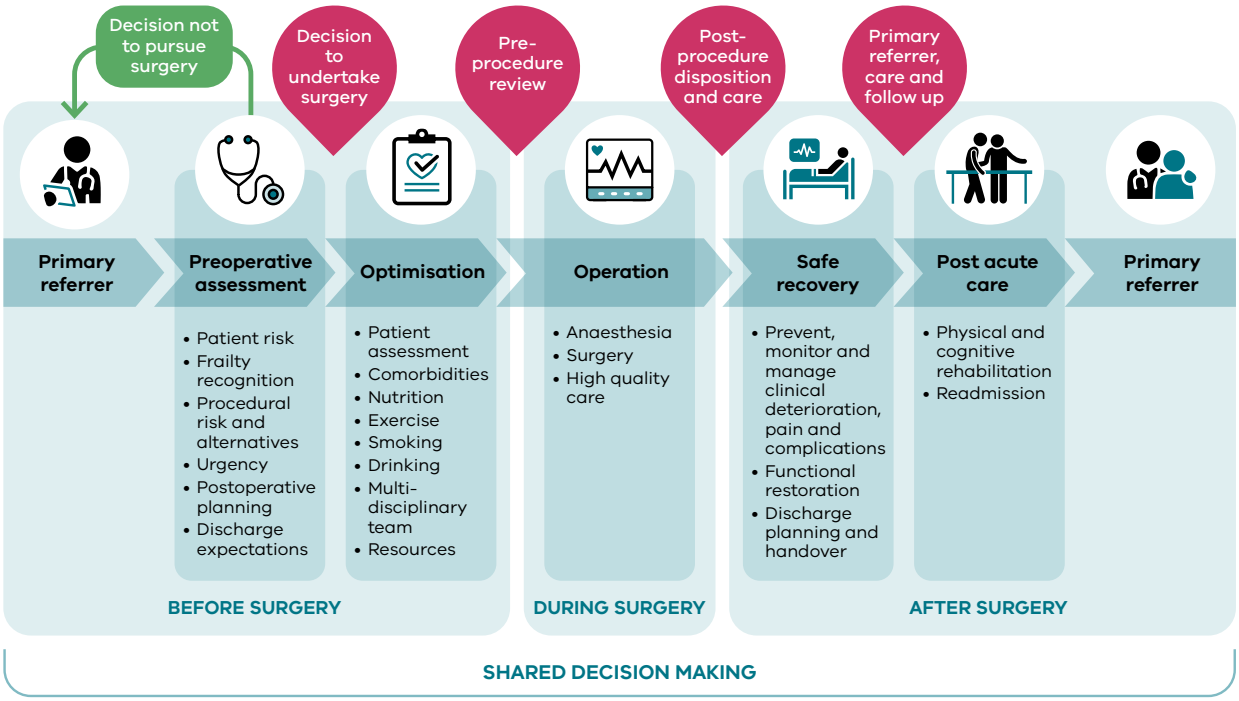
Within VAHI's hospital acquired complications suite many reports are generated on clinically relevant perioperative outcomes, including a new report on unplanned returns to theatre (URTT). The PRISM and Monitor reports include mortality following admission for a hip fracture. We are working with VAHI and SCV to develop a report addressing short- and long-term outcomes following emergency laparotomy.

Clinical registries are another rich source of data. They often contain information on patient demographics, comorbidities, stage of disease, procedures performed and outcomes (sometimes including patient-reported outcomes).

The VPCC plans to support and promote the use of clinical registries to improve the care patients receive on their journey before, during and after surgery. This report particularly focuses on emergency laparotomy and hip fracture registries. Other registries include national bariatric, cardiothoracic, renal and joint replacement.

When health services are aware of and achieving the key performance indicators adopted by these registries, they can be assured they are providing a high standard of care to the communities they serve.

FIGURE 2: EXAMPLE OF THE PERIOPERATIVE CARE PATHWAY



Adapted from the Australian and New Zealand College of Anaesthetists

Clinical engagement

Improving the perioperative care provided to patients is dependent on how actively engaged frontline care providers are. Frontline care providers should be involved in informing the safety, quality and improvement agenda and promoting effective clinical governance. Achieving timely access to care and the best outcomes for patients also depends on clinicians listening to and involving consumers in decision making.

The VPCC and its subcommittees draw on the insights of a multidisciplinary group of perioperative clinicians and consumers to inform the sector about current risks and opportunities for improvement in perioperative care.

The expert working groups established under the CLEG (in response to the two waves of COVID-19) achieved a level of clinical engagement never seen before in Victoria.

A newly formed Surgical Directors group enabled the Directors of Surgery to provide situational updates and share lessons learned from 'hot spots'. Similarly, the Victorian Chairs of Procedural Specialties group brought together the Victorian regional committees of different colleges as well as their subspecialty chairs during the second wave of COVID-19. This ensured clinicians of all perioperative specialties were regularly informed, updated and able to provide input into the current situation.

We can only improve perioperative care if clinicians are engaged. And we will only deliver high-value care if we involve consumers as part of the perioperative team.

The VPCC will work hard in 2021 to ensure this clinical engagement continues in a 'COVID-normal' world.


BODYWORX

Before surgery

The best option for treatment may vary according to the individual.

Recommendations for treatment and decision making must consider the patient's choices which are based on their values and preferences.

Informed consent should include a discussion of the risks and benefits of treatment options, including the option of doing nothing at all.

Informed consent includes discussing and documenting the level of care to be given in the event of complications.

Some patients will benefit from preoperative optimisation, where the care team 'optimises' the patient to be in the best health they can be before surgery.


SAMSUNG

Shared decision making

Patients seek surgery (often at the recommendation of clinicians) because they have a condition that is causing harm or soon will. The best option for treatment may vary according to the health of the individual, their desire to be treated close to home, and their values and preferences.

Some patients, particularly high-risk patients or patients with a poor quality of life, do not wish to be treated in an intensive care unit (ICU) or have their breathing supported by a ventilator. Many choose quality of life over longevity. It is important that recommendations for treatment and decision making involve the patient's choices as well as those of the perioperative team.

This effective coordination of perioperative care requires clear and timely communication between clinical care teams and the patient and their care team. This is underpinned by the concept of 'shared decision making'. Shared decision making has three core elements.[4]

1. Recognition by both the clinician and the patient that a decision is needed.
2. A shared understanding of the risks and benefits of the available treatment options.
3. A decision embodying both the clinicians' guidance and the patient's values, preferences and priorities.

For patients with complex comorbidities or multiple treatment options, a multidisciplinary team approach can inform the management plan.

Although shared decision making is now widely accepted as a positive way to improve patient-centred perioperative care, there are significant ongoing challenges to implementing it effectively. These include providing clinician training[4] on the range of specific interventions that are most effective for shared decision making[5] as well as documentation of informed consent.

Informed consent for the best care

Informed consent for a procedure must involve shared decision making and should include a discussion of the risks and benefits of treatment options, including the option of doing nothing at all. These discussions and decision-making processes should be documented in case notes and with consent forms.

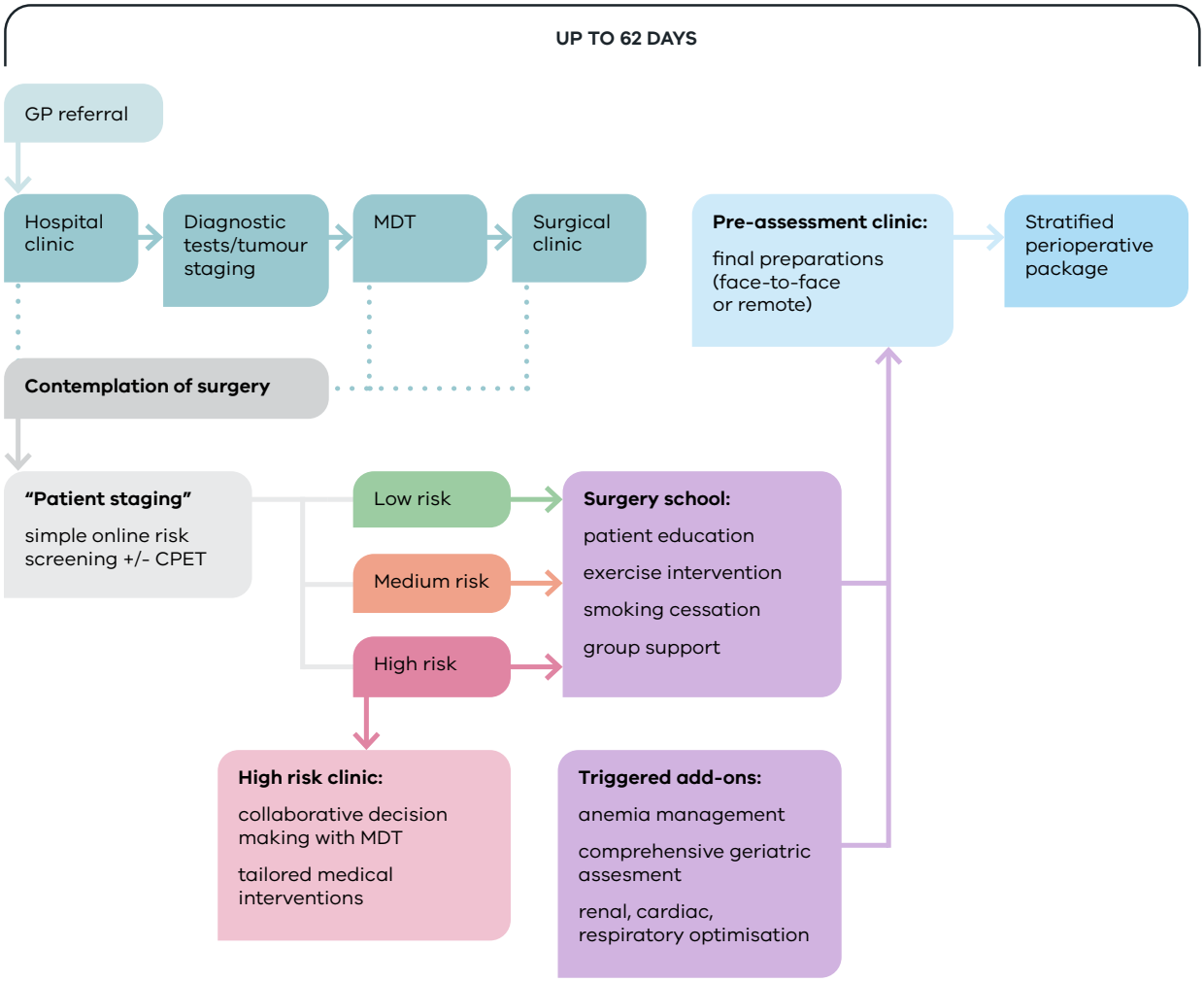
Consent is an ongoing process. Results of imaging or other investigations may impact and inform choices. Previously discussed recommendations and decisions may need to be adjusted as situations change and new information becomes available.

Consent can be given or withdrawn at any time. Consent involves not just agreeing to a procedure or treatment but also the level of care to be given in the event of complications or if an initial operation is not successful. All procedures carry risks, even if the likelihood of a complication is very low. Goals of care should be documented for all high-risk cases and for those undergoing major or complex surgery.

Some procedures are only beneficial for certain indications. Performing these procedures where these indications are not present may have no benefit or even cause harm (for example, performing an arthroscopy for uncomplicated knee osteoarthritis). These are called 'low-value' procedures, many of which have been identified through the Choosing Wisely movement.

The VPCC has worked with SCV, VAHI and the Department of Health in 2020 to provide 'best care' advice on a list of 27 potential low value procedures. Clinicians can access the Best Care advice on the SCV website. Patients and their carers can access a consumer version on the Better Health Channel.

FIGURE 3: THE PREOPERATIVE PATHWAY RE-ENGINEERED – A MODEL OF PROCESS EVOLUTION IN PERIOPERATIVE PATHWAYS



The preoperative pathway re-engineered to enable informed shared decision making based on multidisciplinary input and ensuring patients are in the best possible condition for their procedure.[11]

Optimisation

Patient factors (for example, comorbidity and frailty) play an important part in postoperative complications, disability, reduced quality of life, loss of independence and mortality. In addition to using risk calculators to aid goals of care discussions there is increasing research on programs to optimise patients before surgery.

Preoperative optimisation involves 'optimising' the patient to be in the best health they can be for surgery by identifying and mitigating risks such as poorly managed comorbidities. Some patients will benefit from preoperative optimisation of underlying conditions such as heart failure, poor lung function, anaemia, malnutrition or obesity. These conditions require multidisciplinary input to adequately assess the risk of surgery, inform shared decision making, and initiate treatments or lifestyle changes to achieve optimisation.

Prehabilitation

Patient optimisation before surgery includes making improvements to exercise and diet, as well as ceasing smoking. These initiatives may be more successful in the perioperative period when patients have greater motivation. These initiatives can improve comorbidities like hypertension or glycaemic control in diabetes.

Multidisciplinary exercise and education programs, often referred to as 'prehabilitation'[6], are evolving to not only optimise patients but to also engage them in their care and prepare them for the perioperative period. Prehabilitation may include education on postoperative breathing that decreases postoperative pulmonary complications[7], which can be fatal. Another evolving prehabilitation model is 'surgery school'[8-10]. Surgery school is an education program that provides patients (individually and in groups) with advice and tools to improve their health and fitness in preparation for surgery.

COVID-19 has advanced opportunities for home base telehealth supervised programs which can reduce barriers to participation and increase uptake.


04
05
06
07
select

During surgery

Safe perioperative care requires teamwork and effective communication.

Appropriate preparation before a procedure is important to ensure the best outcomes for patients.

Team briefs ensure all members are aware of their role, potential challenges, and other issues that may need consideration prior to a procedure.

The surgical safety checklist protects patients by minimising the risk of adverse events during surgery.

Responding appropriately to unexpected events during surgery requires collaboration between perioperative team members, shared knowledge and understanding the patient's goals of care.

Checklists, protocols and pre-prepared emergency resource kits support effective clinical management of unexpected events.

Teamwork and communication

Safe perioperative care requires teamwork. Highly skilled clinicians including anaesthetists, nursing staff, surgeons, theatre technicians and perfusionists must all work together to deliver the best outcomes for patients.

Teamwork is particularly important when unexpected events occur. Effective collaboration relies on communication, respect and understanding of each other's skills and responsibilities, and the ability to assume leadership at different stages. For example, ensuring the right equipment is available and that agreed checklists and protocols are followed is often the responsibility of the perioperative nursing team. Administration of anaesthesia requires the anaesthetic team to lead and during a procedure often the surgical team will lead. Collaboration, understanding the role of different team members, and effective communication are fundamental to safe perioperative care.

Preparing for a procedure

Appropriate preparation before procedures is important to ensure the best outcomes for patients. Preparation will be different for each member of the perioperative team depending on their role. Where possible, opportunities to optimise the patient's health should be taken prior to surgery (for example, cessation of smoking).

The impact and any potential challenges or risks of anaesthesia should be considered by the anaesthetist prior to surgery, with a focus on the patient's comorbidities and condition.

Everyone in the perioperative team should be aware of the patient's goals of care. This ensures any difficult decisions can be made in line with the patient's values and preferences.

The VPCC encourages nursing, anaesthetic, surgical and other teams involved in perioperative care to meet prior the procedure. A team brief ensures all members are aware of their role, any potential challenges, and other issues that may need consideration. Team briefs are often held in craft groups. Whole team briefs, connecting all perioperative staff prior to a procedure provide an opportunity to plan the session and how the anticipated workload will be managed, also to flag and plan for any potential challenges.

Checklists and protocols

The Surgical Safety Checklist[12], developed by the World Health Organization in 2009, is designed to protect the patient by minimising the risk of an adverse event during surgery. The checklist also promotes teamwork and communication. Completing the Surgical Safety Checklist is an important opportunity for teams to familiarise themselves with each other, the patient and the procedure.

The checklist specifies tasks that should be completed before induction of anaesthesia, before skin incision or insertion of an endoscope, and before the patient leaves the operating room. These ensure the right procedure is done on the right patient, at the right site, also that team members have been introduced, understand their roles and are aware of any known allergies or anticipated issues with the patient and procedure.

The sign-out stage of the checklist ensures all materials used during the surgery (including instruments, sponges and needles) are accounted for and that any specimens collected are correctly labelled.

Responding to unexpected events

Responding to unexpected events during surgery and other procedures that require anaesthesia is also known as crisis management. Crisis management requires efficient, effective and coordinated multidisciplinary teamwork and clinical management to ensure the best outcomes for patients.

This has been consistently demonstrated in cases referred to the VCCAMM and VPCC involving intraoperative anaphylaxis, difficult airway management, aspiration, major haemorrhage, and significant cardiovascular events (including myocardial ischaemia or infarction and arrhythmia).

Complications are often anticipated (and planned for) in high-risk, complex cases and in patients with significant comorbidities. Referred cases have emphasised the need to be ready to manage unexpected critical events.

While some of these events may be uncommon, they require complex crisis management. For example, malignant hyperthermia (MH) requires timely recognition and concurrent management of several critical tasks to prevent mortality, yet the event is so rare many anaesthetists will never experience a case during their clinical career.[13] Other critical events are more common, but a positive outcome still depends on rapid recognition and intervention; for example, anaphylaxis, aspiration of gastric contents, or difficult airway management in an otherwise healthy patient having an elective day procedure.

Whether anticipated or unexpected, intraoperative events requiring crisis management have highlighted the value of checklists and algorithms in driving timely, efficient, evidence-based clinical care. They have also demonstrated the role of pre-prepared emergency resource kits for complex treatment situations such as anaphylaxis[14] and malignant hyperthermia.[13]

While algorithms and protocols for managing cardiac arrest, anaphylaxis and malignant hyperthermia are well-entrenched, local protocols are increasingly shown to be of value in managing other complex, time critical tasks such as massive transfusion for major haemorrhage.

Adverse events in the post-anaesthesia recovery unit (PACU) have emphasised the importance of clear and agreed protocols for escalating clinical concerns that arise in the recovery phase. This is particularly important when anaesthetic staff are in the operating theatre and their earlier patient (now in the PACU) is experiencing issues with the exact nature of the clinical situation unclear. Such situations require efficient and effective routes for PACU nursing staff to escalate concerns and access timely patient medical review and treatment. This has been evident in referred cases where a patient has been unexpectedly slow to awaken in PACU with the cause subsequently demonstrated to be a neurological event or respiratory failure with carbon dioxide narcosis.

Shared knowledge and understanding of the patient's goals of care helps to ensure responses to unexpected events are appropriate. Decision making is more difficult in the intraoperative and early postoperative period when discussions about patient goals of care have not occurred, or have not been clearly documented, and a patient's condition rapidly deteriorates. This is particularly important in elderly patients with complex comorbidities.

Monitoring in PACU

Following presentations made to the VPCC by representatives of some clinical registries (such as the cardiac registry, bariatric registry, hip fracture registry), a subsequent paper was written on the advantages of ECG monitoring for all patients in PACU.[15]

Since this publication, one hospital that implemented this initiative has already reported a patient with new onset atrial fibrillation (AF) diagnosed in the PACU that did not present during surgery.

This patient was then provided with appropriate follow up care to reduce the increased risk of postoperative stroke in non-cardiac patients with new-onset AF during their perioperative journey.[16]

Care of the deteriorating patient in PACU

Whenever deterioration in a patient being monitored in the PACU is noted, there still needs to be an appropriate escalation of care process in response to that deterioration. The escalation of care process must be firmly documented and understood, not only for those making the call for clinical review (PACU nurses), but also those receiving the call (anaesthetists/visiting medical officers and members of the Rapid Response Review Team).[17]

The suggested remedy for this problem is for each individual healthcare service to construct its own 'fit for purpose' firm process of escalation plan, involving all stakeholders which can clearly document processes for both 'in-hours' operations and 'out of hours' operations, offering specific pathways for escalating care in a situation where concerns for a patient continue, and/or where appropriate care may not have been provided.

After surgery

All surgery carries some risk. Unexpected complications can occur and need to be recognised.

Unplanned return to theatre is a major event, but may be an appropriate response to deterioration in a patient's condition.

The VPCC has developed a tool to review perioperative cardiovascular events which are not well captured by health information systems.

Reviewing and learning from perioperative mortality and morbidity is an essential part of improving perioperative care.

Improving the safety and quality of perioperative care requires the cooperation of clinicians, health services, VASM, VPCC, SCV, and (when appropriate) the Coroner.

Monitoring, recognising and responding to deterioration

Unplanned return to theatre

When a patient is not improving as expected after surgery, there may be a complication developing that requires an unplanned return to the operating room (theatre) (URTT). Other returns to the operating theatre are planned and the patient will be made aware of this in advance either before or after their initial procedure.

Although URTT is a major event for the patient, it is often a life-saving and appropriate response to patient deterioration. It is important that the URTT occurs in a timely and safe manner to ensure the best outcome for the patient.

We have worked this year to design a taxonomy for health services to regularly report URTTs through their own clinical governance structures and to the VPCC. Through these reports we wish to understand not only the reason for the return to theatre, but also the timeliness and outcome of the URTT. The reports will enable health services to learn from the event, and help us to identify themes, clusters and trends in the sector.

VAHI will also begin reporting rates of URTT as a hospital acquired complication in 2021. It is important to remember that the rate of URTT should not be seen as a negative when it appears high. The rate is dependent on the type of surgery performed and more URTTs may result in less morbidity and mortality.

A copy of the URTT taxonomy and reporting tools are provided in **Appendix 3**.

Perioperative cardiovascular events

Perioperative cardiovascular events include heart attacks, strokes and pulmonary embolism. These represent a recurring, often multifactorial event that can occur at different times across a patient's perioperative journey.

Currently they are not systematically well-captured, often because the events occur after discharge from hospital and about half of such patients are readmitted to a different unit or hospital. The surgeon and/or anaesthetist may sometimes not be aware that a patient suffered a postoperative cardiac event, while severe associated morbidity without mortality is not reported to VASM.

We have developed an audit tool template to support a targeted review of perioperative cardiovascular events. This tool is being piloted on relevant cases referred to the VPCC and in some health services. The aim is for health services to use the tool to review their own events and report findings to the VPCC. This will improve our understanding of how to minimise the risk of these events occurring in the future.

A copy of the tool is provided in **Appendix 4**.

Transfers for escalation of care

Sometimes patients are transferred between hospitals after elective surgery due to complications or the need for a higher level of care including ICU or further surgery. Although the rate of transfer following surgery is low, more than 20 per cent of patients who are transferred require ICU and/or a further procedure. The VASM review process identifies the issues in the 5 per cent of cases who die. There are also lessons to be learned from the 19 out of 20 cases where patients survive. The VPCC plans to share these lessons in 2021.

Reviewing and learning from the outcomes of perioperative care

Historically review of perioperative mortality has been used to identify issues relating to the quality of surgical care. However, there is arguably as much, if not more to learn in situations where a patient suffered a complication and survived. By reviewing both mortality and morbidity, we can learn not only from the adverse outcome, but from the rescue.

Perioperative taxonomy

During 2020, a major piece of work for the VPCC has been to develop a new perioperative event classification model. Referrals to the VPCC have increasingly involved complex perioperative outcomes in patients with significant comorbidities, and often involve more than one procedure requiring anaesthesia during an episode of care.

A classification model with the ability to collate and group patient and event factors in these complex situations will help us provide more targeted safety messaging and recommendations. We are currently testing and refining a new classification approach.

This new approach has been informed by:

- the nature of incoming referrals
- subcommittee discussions
- previous case review experience
- an extensive literature review on existing classification approaches
- gaps and challenges[18-23]
- human factors in healthcare[24-27]
- the consumer perspective in quality of care[18]
- the impact of COVID-19 on delivering safe and effective care.[28-29]

We will continue to refine the approach as we continue testing. An update will be provided in our next report.

Mortality and morbidity review

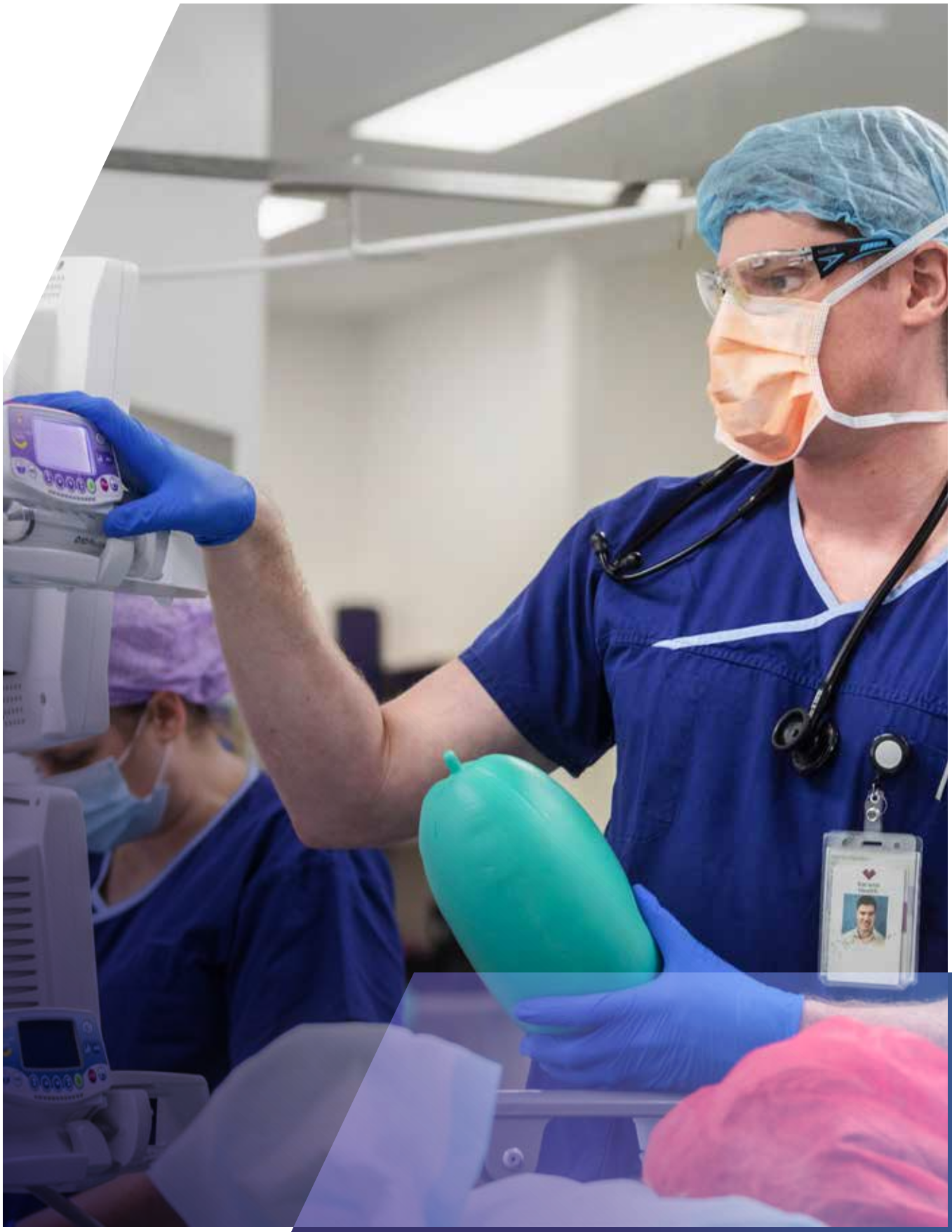
As part of the Victorian COVID-19 response, the VPCC was asked to develop guidance to support perioperative safety and quality monitoring in the COVID-19 context. After significant consideration and consultation, we made the decision to develop two guidance documents, one for reviewing anaesthesia-related events, and one for reviewing surgical-related events.

These documents provide a framework for clinicians and health services to comprehensively monitor and review perioperative morbidity, mortality and near-miss events across Victorian public and private settings, and to improve perioperative care for all patients. They also outline which events should be reported to health service clinical governance committees, as well as when to report to SCV and VPCC.

We recognise there are challenges to achieving consistent perioperative safety monitoring in different contexts and locations. For this reason, the guidance documents were developed to encourage discussion about these challenges and exploration of how a consistent approach could be achieved, while also providing a source of direction.

A copy of the anaesthesia M&M guidance document is provided in **Appendix 5**.

A copy of the surgical M&M guidance is provided in **Appendix 6**.



Victorian Audit of Surgical Mortality

The Victorian Audit of Surgical Mortality (VASM) is the Victorian arm of an Australia-wide surgical mortality audit and has been operating since 2007. All Victorian hospitals undertaking surgery contribute to the VASM. VASM is funded by Safer Care Victoria and managed by the Royal Australasian College of Surgeons (RACS).

Currently communication between VASM and the VPCC is limited by laws concerning qualified privilege. An application to revise this qualified privilege has been submitted to the Commonwealth. This revision will allow for easier sharing of data through a subcommittee that reports to both the VPCC and VASM. The change will streamline processes and reduce the duplication of reporting for surgeons, without any difference to their interaction with the audit. There will be no change in the protection of any information sent to the audit.

Learning from surgical deaths is important – the perioperative mortality rate is one of the six core indicators for monitoring universal access to safe, affordable surgical care.[30] Australia has been a world leader in collecting such data. The audit activity presented in the latest VASM annual report confirms that surgery in Victoria is safe, with less than three deaths for every thousand procedures.[31] This is comparable to the best data published in both Australasia and the developed world. Key findings from the latest VASM report are shown in **Figure 4**.

The majority of these surgical deaths occur in elderly patients with multiple comorbidities, often undergoing emergency surgery. A small number of cases (11.0%) were found to have preventable adverse events and areas for concern. These appear to be decreasing year on year however it is important that we continue to learn from each case where such issues occur.

The continuing success of the VASM is dependent upon participating surgeons and hospitals, and the highly efficient staff members at RACS. Previous silos preventing shared information and care are being broken down. We look forward to strengthening the VASM and VPCC relationship in 2021.

FIGURE 4: KEY FINDINGS FROM THE VASM 2019 ANNUAL REPORT[31]

Demographics

Population	6.7 million
Procedures	709,906
Mortality rate	0.2%
Males	57.8%
Females	42.2%
Median age	78 years

Admission status

Elective	16.6%
Emergency	83.4%

Transfer

Patient transfer	16.6%

Pre-operative risk of death

Expected	12.8%
Considerable	47.4%
Moderate	26.8%
Small	9.0%
Minimal	4.0%

Most common comorbidities

Cardiovascular	21.5%
Age	20.9%
Respiratory	11.1%
Renal	11.0%
Malignancy	7.5%

Most common causes of death

Multi-organ failure	14.6%
Septicaemia	11.7%
Respiratory failure	8.5%
Cardiac arrest	6.0%
Heart failure	4.9%

Peer review outcomes

No issues	73.3%
Area for consideration	11.9%
Area of concern	5.9%
Adverse event	8.9%

Coroners Court of Victoria and Victorian Institute of Forensic Medicine

Medical-procedure-related deaths (including perioperative deaths) are reported to the Coroner for investigation. A medical procedure is defined as a medical, surgical, dental or other health-related procedure (including the administration of an anaesthetic, sedative or other drug).

A medical-procedure-related death is reportable if it meets the following two criteria:

- The death occurs during a medical procedure, or following a medical procedure, where the death is or may be causally related to the medical procedure.
- A registered medical practitioner would not, immediately before the procedure was undertaken, have reasonably expected the death.

These deaths are independently investigated by the Forensic Pathologist and the Coroner.

The Coroners Court of Victoria and the Victorian Institute of Forensic Medicine (VIFM) are independent agencies that work interdependently, in close collaboration to investigate deaths reported to the Coroner.

At VIFM the Forensic Pathologist, a medical practitioner, undertakes a range of examinations of deceased persons. These may include:

- a visual examination, fingerprints
- review of personal and health information
- samples of body fluids (for example, blood, urine or saliva)
- imaging such as computed tomography (CT), x-ray and ultrasound.

These investigations aim to determine not only the cause of death, but critically, the person's identity, the external and internal factors (genetic or inherited conditions) contributing to the death and to reconstruct the circumstances (both physical and social) in which the death occurred.

The Forensic Pathologist provides the Coroner with a forensic investigation report and legal statements which form much of the medical component of the Coroner's investigation. The forensic investigation reports are also available to any interested party upon request and form an integral part of VPCC perioperative death review.

While most deaths are reported to the coronial system by police and medical personnel, anyone in the community can report a death to the Coroner, including family members. Today, the state of Victoria has a population of over 6 million with over 6000 deaths reported to the Coroners Court each year.

The VPCC work closely with the Coroners Court and VIFM to review perioperative mortality.

Sentinel events

Sentinel events are the most serious adverse patient safety events. Sentinel events result in the serious harm or death of a patient while in the care of a health service.

Sentinel events are defined as relatively infrequent, distinct events that:

- are wholly preventable
- occur independently of a patient's condition
- commonly reflect hospital (or agency) system and process deficiencies
- result in adverse outcomes for patients.[32]

In Victoria, public and private health services are required to report on 11 sentinel event categories, shown in Figure 5. This includes 10 national categories defined by the Australian Commission on Safety and Quality in Healthcare[33] (ACSQHC) and one Victorian-specific category (Category 11).

Sentinel events must be reported to SCV within three working days of becoming aware of the event. Health services are then required to analyse the event using root cause analysis (RCA) methodology.

The RCA can assist the health service to identify opportunities to improve care and prevent similar events in the future.

We have established a process with the SCV Sentinel Events program to share notifications of perioperative sentinel events and completed RCA reports. These RCAs can be used to strengthen the review function of the VPCC.

In 2019–20 the VPCC was asked to provide feedback on the Victoria Sentinel Events Guide. The feedback highlighted a need to clarify what constitutes a Category 11 sentinel event.

Currently, sub-categories of Category 11 include:

- clinical process or procedure
- falls
- deteriorating patients
- self-harm (behaviour)
- communication of clinical information
- medical device or equipment
- nutrition
- resource or organisational management
- healthcare associated infection
- patient accidents.

We anticipate that the Sentinel Event Program will be an important source of data for the VPCC.

FIGURE 5: SENTINEL EVENT CATEGORIES FROM 1 JULY 2019

1. Surgery or other invasive procedure performed on the wrong site resulting in serious harm or death
2. Surgery or other invasive procedure performed on the wrong patient resulting in serious harm or death
3. Wrong surgical or other procedure performed on a patient resulting in serious harm or death
4. Unintended retention of a foreign object in a patient after surgery or other invasive procedure resulting in serious harm or death
5. Haemolytic blood transfusion reaction resulting from ABO incompatibility resulting in serious harm or death
6. Suspected suicide of a patient in an acute psychiatric unit or acute psychiactric ward
7. Medication error resulting in serious harm or death
8. Use of physical or mechanical restraint resulting in serious harm or death
9. Discharge or release of an infant or child to an unauthorised person
10. Use of an incorrectly positioned oro- or naso-gastric tube resulting in serious harm or death
11. All other adverse patient safety events resulting in serious harm or death

Promoting standards and quality of care through registries

Australian and New Zealand Hip Fracture Registry (ANZHFR)

In 2007, The UK National Hip Fracture Database (UKNHFD) initiative was launched. Over the next four years, the UKNHFD reduced 30-day mortality from 10.9 per cent to 8.5 per cent with an increase in early surgical rates from 54.5 per cent to 71.3 per cent. Based on this initiative, Australia and New Zealand made a binational evidence-based agreement in 2014, resulting in an Australian and New Zealand Guideline for Hip Fracture Care.

In 2016 the ACSQHC and the Health Quality and Safety Commission of New Zealand published the Hip Fracture Clinical Care Standard. Based on the Australian and New Zealand Guideline for Hip Fracture Care, the standard aims to support clinicians and healthcare networks to make informed, evidence-based treatment decisions in patients presenting with a fractured neck of femur. The standard includes a commitment to quality statements addressing care before, during and after surgery (see **Figure 6**).

Patients with a hip fracture are often vulnerable and comorbid. Their average age is 82 years, with three quarters living at home, and 37 per cent known to have impaired cognition or dementia at presentation. Around 45 per cent walk independently without any assistance or device prior to their fracture. Around 92 to 95 per cent of patients are alive at 30 days, which attests to the success of the perioperative care and rehabilitation.[34]

In 2020 ANZHFR provided its fifth patient level report and its eighth facility level report, against the Hip Fracture Care Clinical Care Standard.

We are pleased to see that during the ANZHFR's time the number of consultants attending surgery has increased, the mean and median time to surgery has decreased and the assessment and management of pain has improved. The ANZHFR has also started reporting case-mix adjusted 30-day and 1-year mortality by linking with the National Death Index. The 2021 report should provide useful insights into the effect of COVID-19 on the management of patients with hip fractures.

As a state, Victoria has been the last to come on board. Only 12 public hospitals in Victoria are currently participating in the registry (out of 23 identified). Victoria also has the greatest opportunities for improvement when comparing statewide performance against the ANZHFR key performance indicators (KPIs).

The ANZHFR annual report 2020 shows theatre availability is the main reason in Victoria for failing to offer surgery within 48 hours. This can and should be addressed given the cost of delay for the patient and the healthcare system.

The VPCC aims to promote appropriate care for hip fractures. This can only be done with the standardised, nation-wide reporting of quality indicators provided by the ANZHFR.

It is evident that all states have work to do and that Victoria can, and should, do better.

FIGURE 6: ANZHFR NATIONAL KPIS 2019[34]

	KPI	Description	2019 National result
BEFORE	1	**Care at presentation**	**61** per cent of patients had a **documented assessment of pain** within 30 minutes of arrival to the ED.
	2	**Pain management**	**71** per cent of **received analgesia** either in transit (by paramedics) or within 30 minutes of arrival to the ED. **76** per cent of patients had a **nerve block** prior to surgery.
	3	**Orthogeriatric model of care**	**81** per cent of patients had a **preoperative medical assessment** completed (by a geriatrician, specialist nurse, physician or GP). **63** per cent of patients had their **cognition assessed**. **26** per cent were found to have **cognitive impairment**.
DURING	4	**Timing of surgery**	Most patients with a **fractured hip** require surgery within **48 hours**. **Median** wait time for surgery of **30 hours**. **Average** wait time of **36 hours**. **Orthopaedic consultants** present for surgery in >**70** per cent of cases.
AFTER	5	**Mobilisation and weight-bearing**	**95** per cent of patients permitted to **weight bear** after surgery. **90** per cent of patients given the opportunity to **mobilise** the day after surgery.
	6	**Minimising risk of another fracture**	**72** per cent of patients underwent a **falls risk assessment** during their in-patient stay. **66** per cent of patients had an **assessment for delirium** (with **24** per cent identified as **experiencing delirium** during the acute hospital stay).
	7	**Transition from hospital care**	**Average length of stay** in acute ward of **7.6 days**. **49** per cent of patients are transferred to **rehabilitation**.

Australia and New Zealand Emergency Laparotomy Audit – Quality Improvement (ANZELA-QI)

Emergency laparotomy is the one of the highest risk conditions in perioperative medicine with a mortality rate in the range of five to 10 per cent. In Victoria an acute abdomen is the second most common cause of perioperative death, following fractured neck of femur.[31]

Recognising the potential to improve the care of patients with an acute abdomen, a National Emergency Laparotomy Audit (NELA) was introduced in England in 2013–14.[35] This reported a reduced 30-day mortality in the range of 10 to 11 per cent from a pre-existing 15 per cent. Inspired by NELA, the RACS and Australian and New Zealand College of Anaesthetists (ANZCA) established an audit in 2018. ANZELA-QI adopted similar standards and KPIs to those of NELA and has just published its first report.[36]

In Victoria there are around 200 emergency laparotomies performed each month. A risk adjustment model developed by VAHI compared outcomes for health service clusters using diagnostic/procedural codes[37] as well as age, comorbidity and whether a transfer occurred prior to emergency laparotomy. The statewide, risk-adjusted in-hospital mortality was 7.12 per cent ranging from four to eight per cent for those clusters that managed more than 100 emergency laparotomies in the 2018–19 year.

The ANZELA KPIs address the quality of care before, during and after surgery (see **Figure 7**).

The ANZELA target is above 80 per cent for each KPI, so there is considerable room for better care, not only in Victoria but also across Australia and New Zealand.

There are currently only seven Victorian health services participating in ANZELA-QI. The contributing health services are:

- Albury-Wodonga
- Alfred Health
- Ballarat
- Barwon Health
- Latrobe
- Western Health's Footscray and Sunshine hospitals.

Bendigo is also due to start.

We believe that reporting emergency laparotomy outcomes and promoting participation in ANZELA-QI will achieve a substantial improvement in care. Perhaps the greatest gains will be achieved by preoperative risk assessment, timely treatment of sepsis, a higher proportion of ICU admission, and multidisciplinary input to patient care. These are all achievable by 'sharing the helm' as demonstrated by Logan Hospital in Queensland.[38]

We recommend that in 2021 each major health service performing emergency laparotomies participates in ANZELA-QI. If the average mortality could be reduced to around five per cent, about 50 further Victorian patients might be saved each year. The majority of those who survive would also experience less morbidity and few complications after their surgery.

The VPCC strongly encourages all health services to participate in the ANZHFR and ANZELA-QI registries.

FIGURE 7: ANZELA NATIONAL KPIS 2018–2020[36]

	KPI	Description	National result 1 July 2018 – 30 June 2020
BEFORE	1	Proportion of all **emergency laparotomy** patients who received a **preoperative CT scan** by a consultant radiologist	**68** per cent
	2	Proportion of patients for whom a **risk assessment was documented** preoperatively	**45** per cent
	3	Proportion of patients arriving in theatre within a **time appropriate** for the **urgency of surgery**: • **Urgency <2 hours** • **Urgency 2–6 hours** • **Urgency <18 hours**	**24** percent **59** per cent **60** per cent
DURING	4	Proportion of patients with a **calculated preoperative risk of death ≥5%** for whom a **consultant surgeon** and **consultant anaesthetist** were present in theatre	**75** per cent
	5	Proportion of patients with a **calculated preoperative risk of death ≥5%** for whom a **consultant surgeon** was present in theatre	**84** per cent
	6	Proportion of patients with a **calculated preoperative risk of death ≥5%** for whom a **consultant anaesthetist** was present in theatre	**90** per cent
AFTER	7	Proportion of patients with a **preoperative risk of death ≥10%** who were directly admitted to **critical care postoperatively**	**70** per cent
	8	Proportion of patients age **65 years or over** who were assessed by a **specialist in gerontology**	**18** per cent

References

1. Watters DA, Brown W, Hardidge A (2020). 'Victoria's perioperative response to the COVID-19 pandemic'. *ANZ Journal of Surgery*, 90: 1238-1241. https://doi.org/10.1111/ans.16117

2. Brown WA, Moore EM, Watters DA (2021). 'Mortality of patients with COVID-19 who undergo an elective or emergency surgical procedure: a systematic review and meta-analysis'. *ANZ Journal of Surgery*, 91: 33-41. https://doi.org/10.1111/ans.16500

3. Mahase E (2020). 'Covid-19: What do we know about "long covid"?'. *BMJ*, 370 :m2815 doi: 10.1136/bmj.m2815

4. Légaré F, Witteman HO (2013). 'Shared decision making: examining key elements and barriers to adoption into routine clinical practice'. *Health Aff* (Millwood). 2013 Feb;32(2):276-84. doi: 10.1377/hlthaff.2012.1078. PMID: 23381520

5. Légaré F, Adekpedjou R, Stacey D, Turcotte S, Kryworuchko J, Graham ID, Lyddiatt A, Politi MC, Thomson R, Elwyn G, Donner-Banzhoff N (2018). 'Interventions for increasing the use of shared decision making by healthcare professionals'. *Cochrane Database Syst Rev*, 2018 Jul 19;7(7):CD006732. doi: 10.1002/14651858.CD006732.pub4. PMID: 30025154; PMCID: PMC6513543

6. Waterland JL, Ismail H, Amin B, Granger CL, Denehy L, Riedel B (2021). 'Patient acceptance of prehabilitation for major surgery: an exploratory survey'. *Support Care Cancer*, 2021 Feb;29(2):779-785. doi: 10.1007/s00520-020-05547-1. Epub 2020 May 28. PMID: 32462351.

7. Boden I, Skinner E H, Browning L, Reeve J, Anderson L, Hill C et al (2018). 'Preoperative physiotherapy for the prevention of respiratory complications after upper abdominal surgery: pragmatic, double blinded, multicentre randomised controlled trial'. *BMJ*, 2018; 360 :j5916 doi: 10.1136/bmj.j5916

8. Peter MacCallum Cancer Centre 2021, State Government of Victoria, Melbourne, viewed 12 March 2021, https://www.petermac.org/services/treatment/prehabilitation/surgery-school

9. NHS University Hospital Southampton 2014, University Hospital Southampton, Southampton, viewed 12 March 2021, https://www.uhs.nhs.uk/OurServices/Surgery/Preparing-for-major-surgery/Surgery-school.aspx

10. NHS Cambridge University Hospitals 2021, Cambridge University Hospitals, London, viewed 12 March 2021, https://www.cuh.nhs.uk/our-services/pre-assessment/fit-4-surgery/

11. Grocott MPW, Plumb JO, Edwards M, et al (2017). 'Re-designing the pathway to surgery: better care and added value'. *Perioper Med* 6, 9 (2017). https://doi.org/10.1186/s13741-017-0065-4

12. Watters DA (2017). 'The World Health Organization Surgical Safety Checklist'. *ANZ Journal of Surgery*, 87: 961-962. https://doi.org/10.1111/ans.14210

13. Malignant Hypothermia Australia and New Zealand 2018, *Malignant Hypothermia Resource Kit*, MHANZ. Available at: http://malignanthyperthermia.org.au/resource-kit/

14. Australian & New Zealand Anaesthetic Allergy Group 2021, ANZAAG, viewed 12 March 2021, http://www.anzaag.com/Default.aspx

15. Foran P (2020). 'ECG for all patients in the PACU: Some say, why? I say, why not?' Journal of Perioperative Nursing, Vol.33 : Iss.2 , Article 6. Available at: https://doi.org/10.26550/2209-1092.1087

16. Koshy AN, Hamilton G, Theuerle J, Thijs V, Farouque O (2019). 'Postoperative Atrial Fibrillation Following Noncardiac Surgery Increases Risk of Stroke'. The American Journal of Medicine, 2020;133(3):311-22. doi: https://doi.org/10.1016/j.amjmed.2019.07.057

17. State Coroner's Court of New South Wales 2019, *Inquest into the death of Pauline Lynn Kessell*, State Government of New South Wales, Sydney. Available at https://coroners.nsw.gov.au/documents/findings/2019/Findings%20Pauline%20Kessell%20July%202019%20(final).pdf

18. Vincent C, Taylor-Adams S, Stanhope N (1998). 'Framework for analysing risk and safety in clinical medicine'. BMJ, 1998 Apr 11;316(7138):1154-7. doi: 10.1136/bmj.316.7138.1154. PMID: 9552960; PMCID: PMC1112945

19. Vincent C, Burnett S, Carthey J (2014). 'Safety measurement and monitoring in healthcare: a framework to guide clinical teams and healthcare organisations in maintaining safety'. *BMJ Qual Saf*, 2014 Aug;23(8):670-7. doi: 10.1136/bmjqs-2013-002757. Epub 2014 Apr 24. PMID: 24764136; PMCID: PMC4112428

20. Taylor-Adams S, Vincent C 2004, Systems Analysis of Clinical Incidents: The London Protocol, Imperial College London, London. Available at: https://www.imperial.ac.uk/media/imperial-college/medicine/surgery-cancer/pstrc/londonprotocol_e.pdf

21. Carayon P, Schoofs Hundt A, Karsh BT, et al (2006). 'Work system design for patient safety: the SEIPS model'. *Qual Saf Health Care*, 2006;15 Suppl 1(Suppl 1):i50-i58. doi: 10.1136/qshc.2005.015842

22. Pronovost PJ, Nolan T, Zeger S, Miller M, Rubin H (2004). 'How can clinicians measure safety and quality in acute care?' *Lancet*, 2004 Mar 27;363(9414):1061-7. doi: 10.1016/S0140-6736(04)15843-1. PMID: 15051287

23. Pronovost PJ, Morlock LL, Sexton JB, et al (2008). 'Improving the Value of Patient Safety Reporting Systems'. In: Henriksen K, Battles JB, Keyes MA, et al., editors. *Advances in Patient Safety: New Directions and Alternative Approaches* (Vol. 1: Assessment). Rockville (MD): Agency for Healthcare Research and Quality; 2008 Aug. Available from: https://www.ncbi.nlm.nih.gov/books/NBK43621/

24. Flin R, Fioratou E, Frerk C, Trotter C, Cook TM (2013). 'Human factors in the development of complications of airway management: preliminary evaluation of an interview tool'. *Anaesthesia*, 2013 Aug;68(8):817-25. doi: 10.1111/anae.12253. Epub 2013 May 18. PMID: 23682749.

25. Flin R, Patey R (2011). 'Non-technical skills for anaesthetists: developing and applying ANTS'. *Best Pract Res Clin Anaesthesiol*, 2011 Jun;25(2):215-27. doi: 10.1016/j.bpa.2011.02.005. PMID: 21550546.

26. Carayon P, Xie A, Kianfar S (2014). 'Human factors and ergonomics as a patient safety practice'. *BMJ Qual Saf*. 2014 Mar;23(3):196-205. doi: 10.1136/bmjqs-2013-001812. Epub 2013 Jun 28. PMID: 23813211; PMCID: PMC3932984.

27. Jones CPL, Fawker-Corbett J, Groom P, Morton B, Lister C, Mercer SJ (2018). 'Human factors in preventing complications in anaesthesia: a systematic review'. *Anaesthesia*, 2018 Jan;73 Suppl 1:12-24. doi: 10.1111/anae.14136. PMID: 29313908

28. Staines A, Amalberti R, Berwick DM, Braithwaite J, Lachman P, Vincent CA (2021). 'COVID-19: patient safety and quality improvement skills to deploy during the surge'. *Int J Qual Health Care*, 2021 Mar 5;33(1):mzaa050. doi: 10.1093/intqhc/mzaa050. PMID: 32400870; PMCID: PMC7239133

29. Gurses AP, Tschudy MM, McGrath-Morrow S, Husain A, Solomon BS, Gerohristodoulos KA, et al (2020). 'Overcoming COVID-19: What can human factors and ergonomics offer?' *Journal of Patient Safety and Risk Management*, 2020;25(2):49-54. https://doi.org/10.1177/2516043520917764

30. Meara JG, Leather AJ, Hagander L, Alkire BC, Alonso N, Ameh EA, et al (2015). 'Global Surgery 2030: evidence and solutions for achieving health, welfare, and economic development'. *Int J Obstet Anesth*, 2016 Feb;25:75-8. doi: 10.1016/j.ijoa.2015.09.006. Epub 2015 Sep 30. PMID: 26597405.

31. Royal Australasian College of Surgeons Victorian Audit of Surgical Mortality Management Committee 2020, *Victorian Audit of Surgical Mortality (VASM) 2019 Annual Report*, RACS, Melbourne. Available at: https://www.surgeons.org/-/media/Project/RACS/surgeons-org/files/surgical-mortality-audits/vasm/2020-10-14-VASM-REPORT-FINAL.d?rev=adad8f959a004c4b9a411714bdb7356c&hash=434765A8505D609B9A7047D01E02077F

32. Safer Care Victoria 2019, *Victorian sentinel event guide: Essential information for health services about managing sentinel events in Victoria*, State Government of Victoria, Melbourne. Available at: https://www.bettersafercare.vic.gov.au/sites/default/files/2019-06/Victorian%20sentinel%20events%20guide_0.pdf

33. Australian Commission on Safety and Quality in Health Care 2020. *Australian Sentinel Events List (version 2): Specifications*, ACSQHC, Sydney. Available at: https://www.safetyandquality.gov.au/sites/default/files/2020-05/australian_sentinel_events_list_version_2_specifications_april_2020.pdf

34. Australian and New Zealand Hip Fracture Registry 2020, *Annual Report 2020*, ANZHPR, Sydney. Available at: https://anzhfr.org/wp-content/uploads/2020/09/ANZHFR-2020-Annual-Report-FULL.pdf

35. National Emergency Laparotomy Audit (NELA) Project Team 2017, *The Third Patient Report of the National Emergency Laparotomy Audit (NELA) December 2015 to November 2016*, RCoA London, 2017. Available at: https://www.nela.org.uk/downloads/The%20Third%20Patient%20Report%20of%20the%20National%20Emergency%20Laparotomy%20Audit%202017%20-%20Executive%20Summary.pdf

36. Royal Australasian College of Surgeons and Australian and New Zealand College of Anaesthetists 2020, *Australian and New Zealand Laparotomy Audit – Quality Improvement (ANZELA-QI): First ANZELA-QI program summary report 1 June 2018 to 3 June 2020*, RACS, Melbourne. Available at: https://www.surgeons.org/-/media/Project/RACS/surgeons-org/files/morbidity-audits/ANZELA-QI-2020-Report.d?rev=3e444531bc894ae2945a3682982ab778&hash=1ED5EE581C5F364CFDC29DE36C663842

37. Stevens CL, Brown C, Watters DAK (2018). 'Measuring Outcomes of Clinical Care: Victorian Emergency Laparotomy Audit Using Quality Investigator'. *World J Surg*, 2018 Jul;42(7):1981-1987. doi: 10.1007/s00268-017-4418-4. PMID: 29282514.

38. Fleury AM, McGowan B, Burstow MJ, Mudge AM (2020). 'Sharing the helm: medical co-management for the older surgical patient'. *ANZ J Surg*, 2020 Sep 30. doi: 10.1111/ans.16347. Epub ahead of print. PMID: 33000541

APPENDIX 1:

VPCC and subcommittee members

VPCC Members

- David Watters (Chairperson)
- Andrea Kattula (Deputy Chairperson)
- Philip McCahy (ex officio – VASM)
- Allison Evans
- Denice Spence
- Graeme Campbell
- Liat Watson
- Marinis Pirpiris
- Paula Foran
- Phillipa Hore
- Andrew Jeffreys
- David Story
- Heinrich Bouwer
- Jo Bourke
- Rebecca Donald
- Wendy Brown

Anaesthetic subcommittee members

- Andrea Kattula (Chairperson)
- Nam Le (ex officio – ANZCA VRC)
- David Watters
- Anna MacLeod
- Annie McPherson
- Graeme Campbell
- Justin Nazareth
- Paula Foran
- Philip McCahy
- Sharryn McKinley
- Tim Coulson
- Andrew Jeffreys
- Ben Slater
- David Beilby
- Heinrich Bouwer
- Gaylene Heard

Surgical subcommittee members

- Wendy Brown (Chairperson)
- Matthew Hadfield (ex officio - VSC RACS)
- Claudia Retegan
- Denice Spence
- Julian Smith
- Liat Watson
- Marinis Pirpiris
- Michael Homewood
- Patrick Lo
- Phillipa Hore
- Tony Gray
- David Watters
- Rebecca Donald
- Wanda Stelmach

SCV support

- Taliesin Ryan-Atwood
- Anita Panayiotou

APPENDIX 2:

Timeline of activities and events

MONTH AND YEAR	VPCC ACTIVITIES
November 2019	Appointment of council members Recruitment of subcommittee members VPCC workshop: Identifying risks and opportunities in perioperative care
December 2019	First VPCC council meeting
January 2020	Perioperative cardiovascular events working group meeting
February 2020	First Anaesthetic subcommittee meeting First Surgical subcommittee meeting VASM seminar: Advancement in the surgical safety frontier VPCC Workshop: Partnering with clinical registries
March 2020	COVID-19 first wave begins Weekly VPCC COVID-19 meetings established VPCC council meeting SCV forms Clinical Leadership Expert Group (CLEG) and Perioperative Expert Working Group (PEWG)
April 2020	Weekly VPCC COVID-19 meetings continue VPCC establish Victorian Surgical Directors Group Surgical M&M clinical governance finalised SCV forms PPE Taskforce VPCC preoperative screening checklist finalised
May 2020	Weekly VPCC COVID-19 meetings continue Anaesthetic subcommittee meeting Surgical subcommittee meeting Best Care Best Place advice

MONTH AND YEAR	VPCC ACTIVITIES
June 2020	COVID-19 first wave ends VPCC COVID-19 meetings reduced to monthly VPCC council meeting SCV forms Best Care Best Place taskforce Anaesthesia M&M clinical governance finalised Writing, submission and acceptance of Victorian perioperative response to COVID in ANZ J Surgery
July 2020	COVID-19 second wave begins Weekly VPCC COVID-19 meetings resume VPCC establish Victorian Chairs of Procedural Specialties group and begin weekly meetings HCW infections increase. By November over 3500 HCWs will test positive for COVID-19.
August 2020	Weekly VPCC COVID-19 meetings continue Anaesthetic subcommittee meeting Surgical subcommittee meeting DHHS and WorkSafe form HCW Infection and Prevention taskforce
September 2020	VPCC council meeting VPCC COVID-19 meetings reduced to fortnightly
October 2020	End of COVID-19 second wave Anaesthetic subcommittee meeting Surgical subcommittee meeting
November 2020	Anaesthetic subcommittee meeting Surgical subcommittee meeting
December 2020	VPCC council meeting Anaesthetic subcommittee meeting

APPENDIX 3:

URTT report and documentation

UNPLANNED RETURN TO THEATRE WITHIN 30 DAYS FOR A COMPLICATION OF SURGERY

UR NO[1]	AGE	SEX	PRIMARY DIAGNOSIS	PRIMARY PROCEDURE	REASON FOR URTT (CLASSIFICATION)	URTT PROCEDURE

[1] *Not for reporting to external health service*

[2] *M&M review should state date and meeting (e.g. surgical M&M, anaesthesia M&M)*

[3] *If reported to health service/program clinical governance. NB there is no expectation that all URTTs would be reported to health service clinical governance committee but only selected cases where there are multidisciplinary*

	WAS THERE DELAY?	HOSPITAL OUTCOME	M&M REVIEW (DATE)[2]	CLINICAL GOVERNANCE REVIEW OF CASE (YES/NO)[3]	ISSUES/LESSONS ACTION

APPENDIX 4:

Perioperative cardiovascular events

Admission details

UR: DOB:

Name: Sex:

Initial surgery location (hospital):

Initial surgery admitting unit:

Readmission (if occurred) location:

Readmission unit:

Date of admission: Date of discharge:

Procedure and event details

Surgical procedure description and speciality:

Timing of MI relative to index procedure (days and hours after): Days Hours

ASA classification: Duration of procedure (mins):

Preoperative risk and management

Cardiac risk (as per revised cardiac risk index, tick all that apply):

- O High risk surgery (major intracavity, suprainguinal vascular)
- O History of ischaemic heart disease (previous MI, nitrate use, Q waves on ECG, chest pain to be consider ischaemic, positive exercise test)
- O History of CCF (pulmonary oedema, CXR showing pulmonary vascular redistribution, PND)
- O History of cerebrovascular disease
- O Preoperative treatment with insulin
- O Preoperative creatinine >2mg/dL/176.8umol/L

Known Previous stent:

Type: Drug-eluting: (circle) Y / N

Timing (approx. years/days prior to surgery):

Days Hours

Antiplatelet/anticoagulant medications
(tick if normal medication and give timing of last dose prior to surgery):

- O Clopidogrel: last dose timing (days/hrs prior to surgery) _____ Days _____ Hours _____
- O Aspirin: last dose timing (days/hrs prior to surgery) _____ Days _____ Hours _____
- O Any other antiplatelet/anticoagulant: type and last dose timing (days/hrs prior to surgery): _____ (type) _____ Days _____ Hours _____

Other preoperative CVS medications
(tick if taking and give timing of last dose prior to surgery):

- O ACE-i/ARB _____ Days _____ Hours _____
- O Beta blocker _____ Days _____ Hours _____
- O Statin _____ Days _____ Hours _____

Preoperative plans and instructions regarding cardiovascular medications/antiplatelet agents/anticoagulants documented: Y / N

If yes, were the preoperative instructions followed: Y / N / unknown

Reviewed by cardiologist prior to procedure within 3 months of surgery: Y / N

Reviewed by/discussed with cardiologist specifically in relation to planned surgery: Y / N / unknown

Most recent HbA1c: _____

Presenting signs and symptoms of mi:

Symptoms/signs (tick all that apply):

- O Chest pain
- O Syncope/collapse
- O Dyspnoea
- O Hypotension
- O Cardiac arrest
- O Other/Non-specific (describe): _____

ECG changes (tick all that apply):

- O ST depression
- O ST elevation
- O Dysrhythmia
- O T wave changes
- O Other (describe): _____

Investigations and management:

O Troponin - type and peak level (ng/L): _____

O Review by cardiologist: Y / N

O Echo: Y / N

O If echo, new regional wall motion abnormalities: Y / N

O Angiogram during admission: Y / N

O Cardiovascular medications changed: Y / N

O If new cardiovascular medications started please list below:

_____

_____

O Required ICU/coronary care unit admission: Y / N (If yes, number of days): _____ Days

Outcomes

Died during admission: Y / N

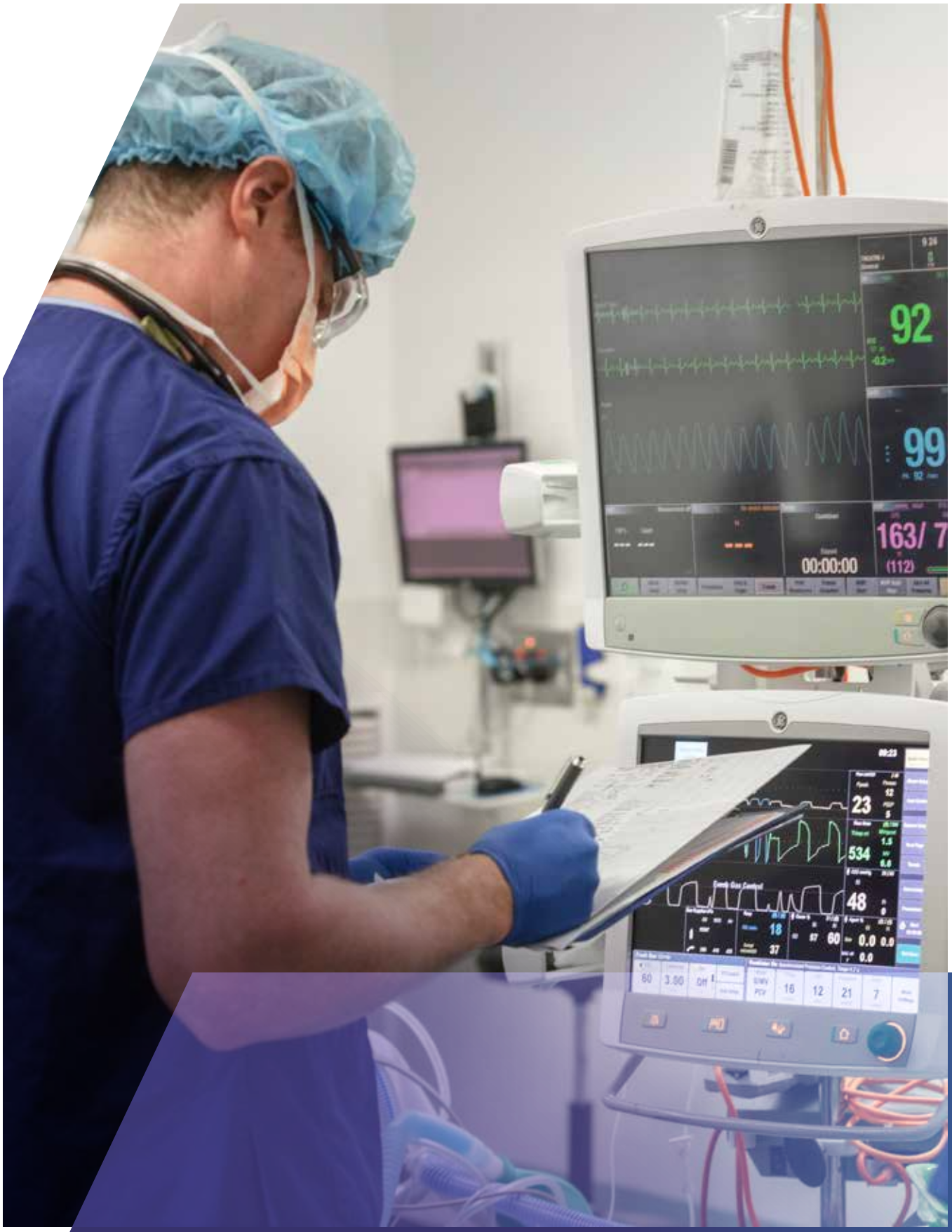
If discharged – cardiovascular follow-up plan documented: Y / N

Discussed in M&M: Y / N
If yes, which M&M (eg. surgical, anaesthesia...): _____

Potentially modifiable factors: Y / N
If yes, please describe factors: _____

Other comments: _____

_____


92
99
163/ 7
(112)
00:00:00
23
534
48
0.0
0.0
60
3.00
16
12
21
7

APPENDIX 5:

Anaesthesia-related morbidity, mortality and near-miss events

Perioperative quality and safety monitoring in a covid-19 context – a consultation document

Key points

The COVID-19 pandemic has resulted in many changes to usual perioperative processes of care.

These changes highlight the importance of having in place comprehensive, coordinated, efficient systems and processes to monitor and address the safety and quality of perioperative care, including the capacity to identify unintended consequences of changes to care processes.

This document will assist clinicians and health services to develop frameworks to comprehensively monitor and review anaesthesia-related morbidity, mortality and near-miss events.

Its goal is to enable a consistent approach to monitoring perioperative safety and quality across public/private, and rural/regional/metropolitan settings, improving perioperative care for all surgical patients.

There will be a range of challenges and barriers to achieving consistent perioperative safety monitoring in different contexts and locations. We hope this document will encourage discussion about these challenges to explore how a more consistent approach can be effectively achieved.

Clinician-led reporting and review of safety incidents is fundamental to an effective process.

Background

Measures of quality in healthcare tend to focus on reliability and efficiency of routine care, and identification of variance from expected (evidence-based) care.[1] That is, ensuring we routinely and consistently do things well.

Measures of safety (absence of avoidable harm) in healthcare are more complex.[1] A comprehensive understanding of issues affecting patient safety depends on integrating and analysing data from multiple sources, including clinical audits, incident reporting systems and administrative data sets. As each data source has particular strengths, challenges and limitations[2], a multi-faceted approach is important.

The role of incident reporting

Learning from adverse events and near-miss events is particularly relevant with a new or rapidly changing context, such as that presented by COVID-19. Significant events may be infrequent at individual department or health service level (particularly in small organisations). However, when individual events or issues are aggregated at a state level, emerging risks may become apparent and can be communicated in a timely way to clinicians, other health services and the broader community. These types of issues may not yet be apparent from other data sources.

Importance of near-miss reporting

Near-misses involve events that had potential to cause significant harm but did not result in harm (outcome is the only difference from an adverse event)[3]. Near-miss reporting is particularly important in anaesthesia, as it offers a unique opportunity to identify and analyse 'recovery strategies' (how an error was recognised before harm occurred)[3] in a highly complex environment where human factors engineering design is central to improving safety (for example, reducing the risk of drug administration errors).

A base framework for monitoring and reviewing anaesthesia-related adverse events and near-misses

Table 1 outlines a base framework for monitoring and reviewing perioperative anaesthesia-related adverse events and near-misses based on existing structures and processes:

Column 2 outlines suggested major categories of events to include in monitoring and review:

- Anaesthesia-related deaths
- Other significant anaesthesia-related events or complications* (examples provided in **Table 2**)
- Near-miss events
- Unplanned escalation of care (including unplanned returns to theatre for anaesthesia-related problems)

Column 2 outlines these events in more detail to assist local department and clinician level reporting and review.

Column 3 highlights the role of hospital level clinical governance processes for different events.

Column 4 summarises some key roles of state-level bodies in understanding perioperative safety and quality issues.

The **VPCC**[4] oversees, reviews and monitors perioperative care in Victoria to improve outcomes for patients before, during and after surgery. It reviews perioperative outcomes (morbidity and mortality) from a quality improvement perspective, collating lessons from individually reported events and administrative datasets that could help improve the system of care. It also provides Victorian anaesthesia-related mortality data for ANZCA's triennial Safety of Anaesthesia reports. The VPCC and its subcommittees operate under the Public Health and Wellbeing Act 2008 (Part 4 – Consultative Councils).[5]

The **VASM**[6] is a peer review process that seeks to review all deaths associated with surgical care. It is a collaboration between the Victorian Department of Health, SCV and the RACS. VASM receives notifications of all deaths under the care of a surgeon.

SCV[7] is the state's peak body for leading quality and safety improvement in healthcare. Its core functions include clinical excellence, patient safety, system and safety assurance, and improvement. Part of its patient safety role includes overseeing the Victorian Sentinel Events program[8] which receives and reviews submitted RCA reports.

VAHI[9] monitors, analyses and shares (through regular reports) safety and performance information across Victoria's health system. This includes a quarterly *Inspire* report designed to 'support clinicians to understand the performance of their health service against key measures that impact safety, quality and performance'. Key performance measures include Hospital Acquired Complications (HACs)[10] which are described in more detail below.

Challenges

While this framework outlines a structure for anaesthesia-related perioperative outcome review, we recognise that many challenges exist in terms of achieving this across the state.

TABLE 1: A BASE FRAMEWORK FOR MONITORING AND REVIEW OF ANAESTHESIA-RELATED ADVERSE EVENTS AND NEAR-MISSES

EVENT	DEPARTMENTAL/ CLINICIAN LEVEL REVIEW ACTIVITIES	HOSPITAL LEVEL CLINICAL GOVERNANCE ACTIVITIES	STATEWIDE HEALTH SYSTEM LEVEL ACTIVITIES (VPCC/ VASM/SCV/VAHI)
Anaesthesia-related deaths* (Ensure reportable deaths have been referred to the Coroner) Anaesthesia-related deaths referred to and classified by the VPCC[11] contribute to Victorian data for the ANZCA triennial Safety of Anaesthesia report.	Deaths where anaesthesia (local/ regional/general) or sedation for a procedure has been thought to contribute to the death* (see **Table 2**). The death may have occurred intra-operatively or in the post-operative period.	Multidisciplinary review of each death, with focused discussion on avoidable deaths and cases where care could be improved. RCAs for sentinel events** that result in death.	VASM peer review of all surgical deaths. VPCC anaesthesia subcommittee review of referred deaths. SCV review of sentinel event RCAs.
Other significant anaesthesia-related events or complications*	Any event related to an anaesthetic procedure that causes a life-threatening incident, temporary or permanent disability, or significant distress* (see **Table 2**).	Case reviews for significant events/ issues. Morbidity aggregate reports for common events and Hospital-Acquired Complications.*** RCAs for sentinel events.**	VPCC anaesthesia subcommittee review of referred events. VAHI reporting on HACs. SCV review of sentinel event RCAs.
Near-miss events (Near misses can inform the health system of significant risks and identify important opportunities to improve safety)	Significant near miss events (events with potential to cause significant harm, that did not lead to harm).	Significant near miss events reported and reviewed.	VPCC anaesthesia subcommittee review of referred events.

EVENT	DEPARTMENTAL/ CLINICIAN LEVEL REVIEW ACTIVITIES	HOSPITAL LEVEL CLINICAL GOVERNANCE ACTIVITIES	STATEWIDE HEALTH SYSTEM LEVEL ACTIVITIES (VPCC/ VASM/SCV/VAHI)
Unplanned escalation of care	• Unplanned ICU admission • Unplanned HDU/ Coronary Care Unit admission • Unplanned transfer to another facility • URTT for an anaesthesia-related problem (inclusive of interventional procedures in other locations). (E.g. re-intubation; surgical airway; retained procedural material)	• Case reviews for significant issues. • URTT for surgical complications and unplanned ICU admissions are aggregated in health service HAC reports. • RCAs for sentinel events.**	• VPCC anaesthesia subcommittee review of referred events. • VAHI reporting on HACs. • SCV review of sentinel event RCAs

** Table 2 provides examples of significant anaesthesia-related events/complications, some of which may result in death.*

*** Table 3 provides the list of sentinel events in Victoria (as at May 2020).*

**** Table 4 provides a description of HACs.*

TABLE 2: EXAMPLES OF SIGNIFICANT ANAESTHESIA-RELATED EVENTS/COMPLICATIONS

*EXAMPLES OF SIGNIFICANT ANAESTHESIA-RELATED EVENTS/COMPLICATIONS#
This list is based on the previous VCCAMM reporting list, broader literature review and multidisciplinary VPCC discussion. Some events may also fit the current list of sentinel events in Victoria. #Human factors may play a role in many of these events, so are not mentioned separately
Mortality/morbidity/significant near misses associated with preoperative assessment and/or management issues
Procedural errors/complications
Problems with management of the airway or ventilation
Unexpected cardiac arrest or other circulatory problems in the perioperative period
Crisis management or resuscitation
Monitoring issues (provision/complications)
Drug-related problems (adverse reactions, interactions, preparation and/or administration errors)
Blood product/fluid administration
Anaesthesia/sedation for investigational procedures or resuscitation
Perioperative pain management
Organisational issues
Work environment issues
Equipment-related problems
Anaphylaxis
Awareness during general anaesthesia
Neurological complications (e.g. procedure-related central and peripheral nerve injury, hypoxic brain injury, stroke)
Multifactorial perioperative major complications (perioperative significant organ injury e.g. MI, severe Acute Kidney Injury (AKI) requiring renal replacement therapy, pulmonary embolism)

TABLE 3: SENTINEL EVENTS LIST IN VICTORIA

**SENTINEL EVENTS LIST IN VICTORIA[12] – VERSION 2 (FROM JULY 2019)
1. Surgery or other invasive procedure performed on the wrong site resulting in serious harm or death
2. Surgery or other invasive procedure performed on the wrong patient resulting in serious harm or death
3. Wrong surgical or other invasive procedure performed on a patient resulting in serious harm or death
4. Unintended retention of a foreign object in a patient after surgery or other invasive procedure resulting in serious harm or death
5. Haemolytic blood transfusion reaction resulting from ABO incompatibility resulting in serious harm or death
6. Suspected suicide of a patient in an acute psychiatric unit or acute psychiatric ward
7. Medication error resulting in serious harm or death
8. Use of physical or mechanical restraint resulting in serious harm or death
9. Discharge or release of an infant or child to an unauthorised person
10. Use of an incorrectly positioned oro- or naso-gastric tube resulting in serious harm or death
11. All other adverse patient safety events resulting in serious harm or death

TABLE 4: HOSPITAL ACQUIRED COMPLICATIONS

*** HOSPITAL ACQUIRED COMPLICATIONS (HACS)
More information is available from the ACSQHC HAC website
Hospital-acquired complications (HACs) refer to a nationally agreed list of 16 'high-priority complications' for which 'clinical risk mitigation strategies may reduce (but not necessarily eliminate) the risk of that complication occurring'.10 HACs are identified from coded admitted patient care data and in Victoria, are reported by VAHI in statewide quarterly Inspire reports.

References and resources

1. Weinger MC, Gaba DM. Human Factors Engineering in Patient Safety. Anesthesiology. 2014;120(4):801-806. Doi: 10.1097/ALN.0000000000000144.

2. Thomas MJ, Schultz TJ, Hannaford N, Runciman WB. Mapping the limits of safety reporting systems in healthcare - what lessons can we actually learn? Med J Aust. 2011;194(12):635-639. Doi: 10.5694/j.1326-5377.2011.tb03146.x.

3. Barach P, Small SD. Reporting and preventing medical mishaps: lessons from non-medical near miss reporting systems. BMJ. 2000;320(7237):759-763. Doi: 10.1136/bmj.320.7237.759.

4. Safer Care Victoria. Victorian Perioperative Consultative Council [internet]. Melbourne VIC: Victoria State Government; 2020 [cited 2020 May 13]. Available from: https://www.bettersafercare.vic.gov.au/about-us/about-scv/councils/vpcc.

5. Victoria State Government. Public Health and Wellbeing Act 2008 [internet]. Melbourne VIC: Victoria State Government; 2008 [updated 2020 May 1, cited 2020 May 13]. Available from: https://content.legislation.vic.gov.au/sites/default/files/2020-04/08-46aa042%20authorised_0.pdf.

6. Royal Australasian College of Surgeons. Victorian Audit of Surgical Mortality (VASM) [internet]. Melbourne VIC: Royal Australasian College of Surgeons; 2020 [cited 2020 May 13]. Available from: https://www.surgeons.org/research-audit/surgical-mortality-audits/regional-audits/vasm.

7. Safer Care Victoria. Better Safer Care [internet]. Melbourne VIC: Victoria State Government; 2020 [cited 2020 May 13]. Available from: https://www.bettersafercare.vic.gov.au/.

8. Safer Care Victoria. Sentinel Events Program [internet]. Melbourne VIC: Victoria State Government; 2020 [cited 2020 May 13]. Available from: https://www.bettersafercare.vic.gov.au/our-work/incident-response/sentinel-events.

9. Safer Care Victoria. About VAHI [internet]. Melbourne VIC: Victoria State Government; 2020 [cited 2020 May 13]. Available from: https://www.bettersafercare.vic.gov.au/about-us/about-vahi.

10. Australian Commission on Safety and Quality in Health Care (ACSQHC). Hospital-acquired complications (HACs) [internet]. Sydney NSW: Australian Commission on Safety and Quality in Health Care; 2019 [cited 2020 May 13]. Available from: https://www.safetyandquality.gov.au/our-work/indicators/hospital-acquired-complications.

11. Safer Care Victoria. Reporting Anaesthesia-Related Death and Illness [internet]. Melbourne VIC: Victorian State Government; 2020 [cited 2020 May 13]. Available from: https://www.bettersafercare.vic.gov.au/about-us/about-scv/councils/vpcc/reporting/anaesthesia.

12. Safer Care Victoria. What do I need to report? New sentinel event categories from 1 July 2019 [internet]. Melbourne VIC: Safer Care Victoria; 2019 [cited 2020 May 13]. Available from: https://www.bettersafercare.vic.gov.au/sites/default/files/2019-06/Sentinel%20events%20categories%20poster.pdf.

Supplementary – hospital acquired complications list

HOSPITAL ACQUIRED COMPLICATIONS LIST FROM THE ACSQH WEBSITE[10] ^	
Complication	**Diagnosis**
Pressure injury	Stage III ulcer
	Stage IV ulcer
	Unspecified decubitus ulcer and pressure area
	Unstageable pressure injury
	Suspected deep tissue injury
Falls resulting in fracture or intracranial injury	Intracranial injury
	Fractured neck of femur
	Other fractures
Healthcare-associated infection	Urinary tract infection
	Surgical site infection
	Pneumonia
	Blood stream infection
	Infections or inflammatory complications associated with peripheral/central venous catheters
	Multi-resistant organism
	Infection associated with prosthetics/implantable devices
	Gastrointestinal infections
	Other high impact infections
Surgical complications requiring unplanned return to theatre	Post-operative haemorrhage/haematoma requiring transfusion and/or return to theatre
	Surgical wound dehiscence
	Anastomotic leak
	Vascular graft failure
	Other surgical complications requiring unplanned return to theatre
Unplanned intensive care unit admission	Unplanned admission to intensive care unit
Respiratory complications	Respiratory failure including acute respiratory distress syndrome requiring ventilation
	Aspiration pneumonia
	Pulmonary oedema

HOSPITAL ACQUIRED COMPLICATIONS LIST FROM THE ACSQH WEBSITE[10] ^	
Complication	**Diagnosis**
Venous thromboembolism	Pulmonary embolism Deep vein thrombosis
Renal failure	Renal failure requiring haemodialysis or continuous veno-venous haemodialysis
Gastrointestinal bleeding	Gastrointestinal bleeding
Medication complications	Drug related respiratory complications/depression Haemorrhagic disorder due to circulating anticoagulants Movement disorders due to psychotropic medication Serious alteration to conscious state due to psychotropic medication
Delirium	Delirium
Incontinence	Urinary incontinence Faecal incontinence
Endocrine complications	Malnutrition Hypoglycaemia
Cardiac complications	Heart failure and pulmonary oedema Arrhythmias Cardiac arrest Acute coronary syndrome including unstable angina, STEMI and NSTEMI Infective endocarditis
Third and fourth degree perineal laceration during delivery	Third and fourth degree perineal laceration during delivery
Neonatal birth trauma	Neonatal birth trauma Hypoxic ischaemic encephalopathy

^ Reproduced with permission from the ACSQHC website: https://www.safetyandquality.gov.au/our-work/indicators/hospital-acquired-complications, developed by the Australian Commission on Safety and Quality in Health Care (ACSQHC). ACSQHC: Sydney (Accessed 13 May 2020).

APPENDIX 6:

Surgical mortality and morbidity clinical governance

Perioperative morbidity and mortality

This document describes what perioperative outcomes and events that are significant for surgical audit/peer review, anaesthesia mortality and morbidity (M&M) and what information should be shared for clinical governance at the health service or state level.

The table is designed to show the types of events that should be discussed at surgical M&M (Columns 1 and 2). Significant events – and those that require multidisciplinary review and offer opportunities to improve the system – should also be reported to health service/ hospital clinical governance (Column 3). Column 4 summarises how statewide clinical governance addresses the event, what needs to be reported and to which body. For example, VASM receives all notifications of mortality under the bed card of a surgeon, sentinel events and the ensuing RCA are reported to SCV, and reviewed by the VPCC from a quality improvement perspective. This process of collating lessons from significant events can help improve the system of care.

VAHI monitors health service KPIs such as mortality rates for fractured neck of femur, unplanned readmission rates (joint replacements and tonsillectomy) and hospital acquired complications (unplanned return to theatre is ACSQHC HAC no 4).

Protection and confidentiality of reports

The VASM process is protected by Commonwealth QP; VPCC and its subcommittees operate under the *Public Health and Wellbeing Act 2008* (Part 4 – Consultative Councils). Case reviews undertaken by VPCC and assessments under VASM are protected. The VPCC will also continue to provide Victorian anaesthesia-related mortality data for ANZCA's triennial Safety of Anaesthesia reports. In addition, the VPCC greatly appreciates reports regarding anaesthesia-related morbidity to enhance its ability to identify emerging perioperative safety issues.

Principles of mortality and morbidity conduct

- Clinician engagement for the unit/service being audited or subject of M&M.
- Peer review by colleagues not involved in the care of the patient or managing the event.
- Report other craft group/specialty/ procedural outcomes for particular procedures (e.g. visual acuity after cataract surgery) in addition to the major M&M or near miss events listed.
- Meeting minutes that include attendance and de-identified summary of peer review discussion.
- List of issues arising from audit/M&M reported to hospital/health service clinical governance.
- Documentation of actions/recommendations by whom and when.
- Follow-up plan for how any changes are to be implemented, and monitoring for effectiveness.
- Reporting and two-way Information flow between health service clinical governance and M&M (avoid one way reporting as lack of feedback is unhelpful and disengaging)
- Encourage notification of significant issues/ cases/events to VPCC/SCV/VASM that are relevant to those bodies, e.g. individual mortalities to VASM, summary reports of perioperative cardiovascular events and unplanned returns to theatre to VPCC, and anaesthesia-related morbidity and mortality reports to the VPCC for review by the anaesthesia subcommittee.

References

1. Beiles CB, Retegan C, Maddern GJ. VASM is associated with improved clinical outcomes. ANZ J Surg 2014; 84:803-7. <https://www.ncbi.nlm.nih.gov/pubmed/25039277>
2. Clavien PA, Barkun J, de Oliveira ML, Vauthey JN, Dindo D, Schulick RD, et al. The Clavien-Dindo classification of surgical complications: five-year experience. Ann Surg. 2009;250(2):187–96. 10.1097/SLA.0b013e3181b13ca2.
3. Guidelines for conducting effective M&M that describes the processes required and the engagement (2017) – describes gold, silver and bronze standards <https://umbraco.surgeons.org/media/2708/2017-04-12_gdl_conducting_effective_morbidity_and_mortality_meetings_for_improved_patient_care.pdf>
4. Guide to surgical audit and peer review (2013) <https://umbraco.surgeons.org/media/1350/surgical_audit_and_peer_review_guide_2014.pdf>
5. Public Health and Wellbeing Act 2008 <https://www2.health.vic.gov.au/about/legislation/public-health-and-wellbeing-act>
6. Reporting surgical mortality or anaesthesia-related death or illness <https://www.bettersafercare.vic.gov.au/about-us/about-scv/councils/vpcc/reporting>
7. Reporting surgical mortality <https://www.bettersafercare.vic.gov.au/about-us/about-scv/councils/vpcc/reporting/surgical>
8. Safer Care Victoria Sentinel events website <https://www.bettersafercare.vic.gov.au/our-work/incident-response/sentinel-events>
9. Victorian Sentinel Events list (July 2019) https://www.bettersafercare.vic.gov.au/sites/default/files/2019- 06/Sentinel%20events%20categories%20poster.pdf
10. Victorian Audit of Surgical Mortality (VASM) website <https://www.surgeons.org/research-audit/surgical-mortality-audits/regional-audits/vasm>

EXAMPLES OF SIGNIFICANT EVENTS, THEIR INCLUSION IN SURGICAL OR ANAESTHESIA M&M, AND WHAT SHOULD BE REPORTED FOR CLINICAL GOVERNANCE INFORMATION OR REVIEW AT HEALTH SERVICE AND STATE LEVEL

EVENT	SURGICAL AUDIT/ PEER REVIEW/ M&M MEETINGS	CLINICAL GOVERNANCE IN HOSPITALS	VPCC/VASM/ SCV/VAHI STATEWIDE HEALTH SYSTEM
Deaths	Deaths following surgery or under bedcard of a surgeon during hospital admission or within 30 days	Multidisciplinary mortality case review of each death, with focused discussion on avoidable deaths and cases where care could be improved	All deaths peer reviewed by VASM, Anaesthesia related deaths reviewed by VPCC anaesthesia subcommittee; VPCC review of any cases with multidisciplinary issues
Unplanned return to theatre	Unplanned return to theatre within 30 days (whether before or after discharge and regardless of whether same hospital or not)	Aggregate report Individual review of issues raised by surgical peer review Correlated with failure to rescue rate	Aggregate report from health services of HAC no 4 following VPCC classification
Unplanned ICU stay	Unplanned ICU/ HDU admission/ readmission	Aggregate report, case reviews for issues	Awareness of process of review within health services
Significant near misses	Significant near misses	Significant near misses reported where multidisciplinary issues	Near misses can inform health system of opportunities to improve
Unplanned readmissions	Unplanned readmissions/ admissions to other health services within 30 days of discharge	Aggregate rates with interval review of causes and opportunities to reduce/correlated with LOS data	Unplanned readmission rates for specific conditions (VAHI)

EVENT	SURGICAL AUDIT/ PEER REVIEW/ M&M MEETINGS	CLINICAL GOVERNANCE IN HOSPITALS	VPCC/VASM/ SCV/VAHI STATEWIDE HEALTH SYSTEM
Interhospital transfers for increased care	Transfers out and in requiring higher level management	Case review of transfers where events occur	VPCC will review transfers from private to public requiring surgery or ICU VASM reviews transfer as a potential issue
Other significant complications	Other significant surgical complications (Clavien-Dindo[3,4])	Morbidity reporting, including Aggregate tables for common events and specific case reviews where there are improvement opportunities to identified within recommendations	Notification of significant events to VPCC
Perioperative cardiovascular events	Perioperative cardiovascular events (MI, CVA, PE)	Aggregate annual rates, learning from individual events through case reviews/reports	VPCC developing health service reports for local review
Surgical site infection	Surgical site infection	Aggregate reports of infection rates for monitored procedures	VICNISS review
Neurological complication	Neurological complications related to procedure or positioning	Detailed case review of event	Notification to VPCC
Extended length of stay	Patients staying more than twice expected length of stay for procedure	Health service oversight of long-staying patients and rehabilitation/HITH support	Awareness of local process taking place
Sentinel events	Wrong patient, site, side Retained materials, others Other adverse events (Cat 11)	RCA	Report to SCV and VPCC will be notified

APPENDIX 7:

Acknowledgements

The VPCC proudly acknowledges Australia's Aboriginal and Torres Strait Islander peoples as the Traditional Owners and custodians of the land on which we work and live. We acknowledge and pay respect to their history, culture and Elders past and present.

The work of the VPCC would not be possible without the generous assistance of many individuals and organisations. Vital information relating to perioperative care is received from:

- health services
- individual practitioners
- VASM
- the Coroner's Court of Victoria
- VIFM
- SCV
- VAHI
- the Department of Health.

We thank them for their continued support and diligence in providing us with information to improve perioperative care for all Victorians.

This report was developed by the VPCC with support from the following staff from SCV:

- Taliesin Ryan-Atwood
- Anita Panayiotou
- Sarah Kenny

Victorian Perioperative Consultative Council

Safer Care Victoria