Saturday, 12 March 2016

School of Medicine
The University of Auckland
New Zealand

Programme and Abstracts


BATS on Ice
BETTER ANAESTHESIA
THROUGH SONOGRAPHY
A one-day ultrasound regional anaesthesia workshop
Thursday, 18 August 2016
Millennium Hotel, Queenstown, New Zealand
www.bats.ac.nz


AQUA
ANNUAL QUEENSTOWN
UPDATE IN ANAESTHESIA
Annual Queenstown Update in Anaesthesia
August 18-20, 2016
VENUE
Millennium Hotel
Queenstown, New Zealand
www.aqua.ac.nz
NZSA
SALUS PER SCIENTIAM

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Welcome

Dear Colleague,

Welcome to the Auckland City Symposium for 2016: Our theme this year is 'Doing things right and doing the right thing'. As anaesthetists we are involved on a daily basis in assessing risk and making difficult treatment decisions in conjunction with other specialists and our patients. In a time pressured environment with increasingly complex patients and procedures it can often be challenging to be truly patient centred and to be sure that the patient is making the right decision for them.

To help us consider these issues and advance our knowledge in this important subject, we have invited speakers from various areas of expertise. Professor Scott Beattie and Assistant Professor Tom Weiser will be supported by local speakers to complete a programme which will include up to date thinking on many of the clinical and non-clinical concepts involved in the risk assessment, communication and decision making process.

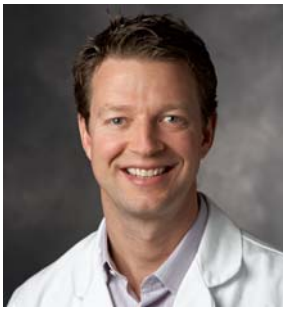
In keeping with the theme of doing the right thing, this year we have elected to make a donation to the UNICEF appeal for Cyclone Winston survivors in Fiji rather than providing a fancy delegate gift.

I am grateful to our industry partners for their generous support of this meeting. I also wish to thank the organising committee and Karen Patching for their time and meticulous attention to detail.

I hope you all enjoy the day.

Catherine Sayer
ACS Convenor

International Faculty



Thomas G Weiser MD MPH

Assistant Professor, Department of Surgery
Section of Trauma and Critical Care
Stanford University Medical Center
Stanford, California, USA

Thomas G Weiser is a trauma surgeon and surgical intensivist at the Stanford University Medical Center in Northern California. He completed his general surgical training at University of California Davis and Brigham and Women's Hospital in Boston, his trauma critical care fellowship at Harborview Medical Center in Seattle, Washington, and his Masters in Public Health at the Harvard School of Public Health in Boston. He has been involved in surgical program assessment projects in Cambodia, India, the UK, and the United States. From 2006-2009 he was part of the World Health Organization's Safe Surgery Saves Lives program where he helped quantify the global volume of surgery and create, implement, evaluate, and promote the WHO Surgical Safety Checklist. Most recently he was a contributor to the Disease Control Priorities Project evaluating the cost effectiveness of surgery and to the Lancet Commission on Global Surgery. His current research focuses on quality and cost effectiveness of care, and strategies for improving the safety and reliability of surgical delivery in resource poor settings.

W. Scott Beattie MD PhD FRCPC

R. Fraser Elliot Chair in Cardiac Anesthesia,
Department of Anesthesia and Pain Management,
University Health Network,
Toronto Professor Department of Anesthesia,
University of Toronto, Ontario, Canada

Dr. Beattie completed a B.Sc (Biology Major) from the University of Waterloo, Ontario (1974) a PhD from McMaster University, Hamilton Ontario (1981). He obtained his M.D. from McMaster University (1982) and obtained his Fellowship in Anesthesia form the Royal College of Physicians of Canada in 1987. Dr. Beattie held a staff anesthesiologist position in the Department of Anesthesia, McMaster University from 1988-2000. Dr. Beattie joined the Department of Anesthesia and Pain Management at the Toronto General Hospital, University Health Network (2000) where he holds the R. Fraser Elliott Chair in Cardiac Anesthesia and is also a Professor in the Department of Anesthesia, University of Toronto, Faculty of Medicine. Dr. Beattie is the Associate Editor in Chief (Cardiovascular) Anesthesia and Analgesia, as well as member of several international research committees. Dr. Beattie has authored or co-authored over 150 peer-reviewed publications and holds multiple peer reviewed grants. He is recognized as an expert in the area of perioperative outcomes research, cardio-vascular anesthesia, and research methodology. Dr. Beattie is married to Ann-Elizabeth, has 2 children and 5 grandchildren.

New Zealand Faculty

Dr Doug Campbell	Specialist Anaesthetist, Auckland City Hospital
Dr Liam O'Hara	Specialist Anaesthetist, Auckland City Hospital
Mr Andrew Hill	Vascular Surgeon, Auckland City Hospital
Dr Dick Ongley	Specialist Anaesthetist, Auckland City Hospital
Dr Ben Griffiths	Specialist Anaesthetist, Auckland City Hospital
Dr Ivan Bergman	Specialist Anaesthetist, Auckland City Hospital
Professor Chris Marshall	The Diana Unwin Chair in Restorative Justice Victoria University of Wellington

Programme

Saturday, 12 March 2016

0800	Welcome and introduction	Catherine Sayer

Doing the right thing

SESSION 1 - Chair: Alan Merry

0810	Managing Uncertainty in Perioperative Outcomes	Thomas Weiser
0840	Understanding and Communicating Perioperative Risk	Doug Campbell
0910	The Application of the Four Principles of Bioethics to the High Risk Patient	Liam O'Hara
0940	Morning Break	

SESSION 2 - Chair: Neil MacLennan

1010	The Cardiac Patient for Non-Cardiac Surgery: Where Are We Now, What's New and Where Next	W. Scott Beattie
1050	A Multidisciplinary Approach to the Co-morbid Vascular Patient	Andrew Hill
1120	Panel / Questions	Panel
1200	Lunch Break	

Doing things right

SESSION 3 - Chair: Jay van der Westhuizen

1300	The Frail Elderly	Dick Ongley
1330	Emergency Laparotomy	Ben Griffiths
1400	Optimising Anaesthesia for Obese Patients	Ivan Bergman
1430	Afternoon Break	

SESSION 4 - Chair: Kerry Gunn

1500	Can the Anesthesiologist Make a Difference to Important Postoperative Outcomes?	W. Scott Beattie
1530	Doing the Right Thing When Things Go Wrong: Restorative Approaches to Complaints and Conflicts in the Health Sector	Chris Marshall
1600	Doing Things Right Globally (Lancet, Lifebox and beyond)	Thomas Weiser
1630	Future Meetings	
1640	Meeting concludes	
1640	Drinks and Canapes	

Managing Uncertainty in Perioperative Outcomes

A/Prof. Thomas Weiser

Assistant Professor of Surgery, Department of Surgery, Stanford University School of Medicine

Understanding patient risk is difficult, particularly in the acute setting and when deciding how to proceed with urgent operative intervention. Outcomes are typically uncertain, patient preferences unclear, and more than one reasonable option for treatment may exist. More troublesome, clinicians are typically not trained in communication techniques to understand and elicit the most important considerations of patients and their family members. Furthermore, frontline personnel are frequently not empowered to engage in such discussions with patients until very late in a patient's disease course.(1) These challenges are occurring at a time when high-intensity therapy is being increasingly offered to patients at the end of life.(2-4)

The barriers to communication include patient and surrogate factors: their understanding of their illness and its acuity, lack of decisional capacity, and their emotional state; perioperative clinician factors: prognostic uncertainty, lack of training in communicating serious illness, inexperience, and lack of a prior established physician-patient relationship; and systemic factors: fragmented information, time constraints, local practice patterns, default pathways to "do everything", and environmental contexts and limitations.(5)

Specific communication strategies can help guide discussions of such complex medical decisions. The goal of such discussions are to 1) place the patient's acute surgical condition in the context of the patient's underlying illness, 2) elicit the patient's goals, priorities, and what is acceptable to the patient regarding life prolonging and comfort focused care, 3) describe treatment options — including palliative approaches — in the context of the patient's goals and priorities, 4) direct treatment to achieve these outcomes and encourage the use of time-limited trials in circumstances of clinical uncertainty, and 5) affirm continued commitment to patient's care.(5)

In addition, the manner with which such communication occurs is important. Communications experts recommend that providers sit, make eye contact, provide some physical contact, allow for silent pauses, acknowledge emotions, and request patients to summarize their understanding of the discussion as they move through the interaction.

Finally, with the power of new statistical capabilities, we can now quantify risks more accurately. For example, the American College of Surgeons has a web-based Surgical Risk Calculator that provides information to providers and patients regarding the potential hazards of surgical intervention.(6) While not perfect, such tools can provide quantitative information when discussing the benefits and perils of surgical intervention.

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Understanding and Communicating Perioperative Risk

Dr Doug Campbell

Specialist Anaesthetist, Auckland City Hospital

In healthcare, risk is defined as the probability of quantifiable injury, loss or harm associated with medical interventions. We use the term in an epidemiological sense, as the cumulative incidence. We will mostly discuss perioperative risk of mortality as there is reasonable data and it is unclouded by issues of definition or diagnosis. This principle of cumulative incidence is obvious in the 5 or 10 year periods that cardiovascular risk calculators such as the New Zealand version of the Framingham risk tool use(1). There are two dimensions to risk, the absolute instantaneous risk and the time evolution and each contribute to the total cumulative incidence or risk.

Risk after surgery is most often described as a cumulative incidence by one month. Almost all current tools for risk stratification and calculation use a one month endpoint (2). There is a tacit assumption here that the majority of the accumulated risk has occurred at this point and if there is additional risk then it is only a slight underestimate. We will examine this assumption.

Some complications of surgery have a high early incidence that falls to zero over time eg surgical bleeding. This is not true for most complications and risks such as myocardial infarction (MI) and death where there is an ongoing baseline risk. We cannot understand risk after surgery without a better understanding of competing risks. Some risks are commoner after surgery than the baseline risk from patient comorbidities would confer e.g. MI. If an MI occurs in the postoperative period it is challenging to associate or attribute to surgery at an individual case level. We can use epidemiological methods to help us describe surgical risk separate from baseline risk in this situation. Current sources for providing risk information to not incorporate appropriate timings cumulative risk or discuss the issues of competing risk (2). This means that risk information is more inaccurate and often underestimates risk beyond the uncertainty introduced by calibration and discrimination issues with current tools.

Knowing this how are we to proceed? Firstly, improved understanding of the epidemiology of risk means we know the kind of data we need in the future and how to improve our interpretation. Communicating risk information should be delivered by standard methods eg positive and negative framing, place risk in context, deliver appropriate numerical and graphical data (3), and lastly we should be more circumspect about the accuracy of our risk information and communicate an appropriate degree of uncertainty (4).

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The Application of the Four Principles of Bioethics to the High Risk Patient

Dr Liam O'Hara

Specialist Anaesthetist, Auckland City Hospital

Knowing what the right thing to do for a patient can be especially hard when the risks are high and the outcomes uncertain. We want to do the right thing but knowing what this is can sometimes be very challenging in clinical medicine.

The Four Principles were developed as a theory and framework for addressing ethical problems in healthcare. Most clinicians are familiar with them.

I will give a brief over view of the history of bioethics and then an overview of the four principles as they are set out by Beauchamp and Childress.

Bioethics evolved when medicine increased in complexity and capability and caused us to question previously well held notions of life death and medical responsibility. As the import and uncertainty grew around these areas in health care so did the need to formalise some theories around it. Initially many were theologians, then philosophers became more interested and brought traditional philosophical theories like autonomy, utilitarianism and virtue to the problems. Beauchamp and Childress developed the Four Principles as a way of bringing common moral theories together and to provide a framework for approaching bioethical problems.

I will outline a few other important theories like care based ethics and virtue theory before looking at some cases and seeing how the four principles work.

The cases will be:

1. 38yr old female with Middle Cerebral Artery Infarct, hemiparetic, receptive and expressive aphasia, husbands wants decompressive craniectomy to save her life.
2. 33yr old Jehovah's Witness with placenta increta, refusing blood products for her Caesarean Section.
3. 60yr old with Bronchiectasis and Long Term Oxygen Therapy who has ischaemic bowel who begs the surgeon to save his life by operating
4. 49yr old with terminal pancreatic cancer who is currently on a ventilator and unable to be wean who is able to communicate that he wants to stay on the ventilator.
5. 68yr old with dementia who is Jehovah's Witness but has granted EPOA to his brother who is not a Jehovah's Witness. He needs re-vascularisation surgery for an ischaemic leg and is anaemic. He had previously expressed an advance directive excluding blood products, but his brother has said that he should receive blood products if they are required but not to tell his brother because he'll only get upset but then forget about it.
6. 97yr old lady with severe arthritis of the hip, is wheelchair bound due to the Arthritis. Has incidental finding of Severe Pulmonary Hypertension. Needs surgery, to relieve pain, medication has been unsatisfactory.

The Cardiac Patient for Non-Cardiac Surgery: Where Are We Now, What's New and Where Next

Professor W. Scott Beattie

R. Fraser Elliot Chair in Cardiac Anesthesia, Toronto Professor Department of Anesthesia, University of Toronto

Major surgery imposes stresses that can cause significant perioperative morbidity and mortality occurring in a small subset of patients. In the UK, perioperative mortality is approximately 2%, but 80% of these deaths in a high risk subset of only 12% population. Identifying these individuals early through risk stratification has theoretic value at least.

Simple risk indices allow risk to be estimated with moderate accuracy using readily available preoperative clinical information. The American Society of Anesthesiologists Physical Status (ASA-PS) classification has moderately good performance in predicting death and some complications after surgery. The classification scheme also has limitations. Specifically, it has moderate interrater reliability, does not incorporate surgery-specific risks, and has diminished accuracy in settings with high overall mortality rates.

The RCRI is a simple and widely used index for predicting major cardiac complications after non-cardiac surgery. Despite being developed in 1999, it still discriminates moderately well between individuals with varying perioperative cardiac risk. RCRI also has important limitations, it does not accurately predict an individual patient's absolute risk of cardiac complications. Some components of the index may warrant elimination as they provide minimal associated prognostic information or the index may be re-formatted to include other prognostically important risks (age, PVD, anemia, and functional capacity) The great advantage of the RCRI was its relative simplicity. Simplicity, however, may not be as important in the internet age as online web-based risk calculators have facilitated implementation of more complex risk prediction tools.

The American College of Surgeons calculator (http://riskcalculator.facs.org) has moderate-to-good accuracy at predicting a range of postoperative events, such as death, cardiac complications, pneumonia, and acute kidney injury. It is however premature to fully endorse these tools since they have limitations. They have not been externally validated, especially in settings outside the United States. In addition, some prediction models are limited by the manner in which the NSQIP registry ascertains the outcome. For example, routine postoperative troponin surveillance was not implemented in all participating sites thereby leading to potentially significant underreporting of postoperative MI rates.

Specific specialized tests are widely performed before surgery to with the thought that they better inform perioperative risk estimation. Routine preoperative echocardiography has not been associated with improved survival after major elective non-cardiac surgery. The prognostic value of information and limitations from cardiac stress testing, focused on the provocation of ischemia, has been extensively studied. It is not widely appreciated however that the ability to reach seven or more METs is indicative of low perioperative cardiovascular risk suggesting that the ongoing CPET trials will yield highly valuable prognostic information. The failure to reach four METs predicts increased risk. Newer technologies, like CT angiography, are emerging and have shown potential to identify patients with extensive coronary artery disease (Left Main) who are otherwise deemed as low risk. Targeted use of CTCA may identify at risk populations.

Biomarkers are measurable markers of organ dysfunction that can independently predict postoperative complications or augment prognostic information from clinical risk indices. Two preoperative biomarkers cardiac troponins and natriuretic peptides show great promise in improving risk prediction. Both markers have been shown to improve the accuracy of the RCRI. BNP less than 100 ng/l, that are measured preoperatively have a negative predictive value of 97-99%.

Despite recognition of the intraoperative and immediate postoperative period as being associated with significant physiologic derangements from both surgery and anesthesia, relatively few studies have evaluated how information from this period can help better identify high-risk surgical patients. For example, poor postoperative outcomes are associated emergent procedures, more extensive tissue injury, and of longer surgical duration. The magnitude and duration of intraoperative hypotension is associated with

increased risks of myocardial injury and acute kidney injury and death. Although intraoperative and immediate postoperative characteristics have been shown to be associated with postoperative outcomes there is little research on incorporating these characteristics into clinical risk indices. Two examples of intra-operative risk indices that are available include the Portsmouth Physiological and Operative Severity Score for the enUmeration of Mortality and Morbidity (P-POSSUM) score and the surgical Apgar score.

Presently there is great interest in using early postoperative biomarkers to further improve identification of surgical patients at elevated risk. Early postoperative elevations in troponin concentrations are consistently and reproducibly associated with increased mortality in non-cardiac surgery. Importantly, this association is not just mediated by the occurrence of postoperative MI, but is also associated with increased mortality in the absence of a formal diagnosis of MI. Furthermore, troponin elevations also predict non-cardiac complications and death. Routine early postoperative monitoring for troponin elevations will undoubtedly lead to increased identification of patients at risk for postoperative mortality. The appropriate clinical management of individuals with postoperative biomarker detection has yet to be defined and is an area of intense ongoing research.

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A Multidisciplinary Approach to the Co-morbid Vascular Patient

Mr Andrew A Hill

Vascular Surgeon, Auckland City Hospital

The functions of multi-disciplinary clinic include sharing of information, consensus about the interventional plan, and access expertise in specific areas. There can be risks of delay, even just to discuss a patient, but usually this is due to further tests, e.g. the requirement for cardiac investigations and intervention. A balance or consensus will be required at the end of this process. The aim is to provide safe, timely and appropriate intervention.

In terms of information sharing, it is useful for the teams to know what actually is planned from the surgical perspective. Some of the procedure variables include;

- Standard stent graft
- Juxtarenal AAA
- Open thoraco-abdominal repair
- Complex stent graft with proximal (axillary) approach
- CSF with spinal catheter
- Neck de-branch
- Arm vein/contra-lateral leg vein harvest
- Naso-tracheal intubation.

There is usually a risk assessment which clearly depends on the procedure e.g.

Femoral popliteal bypass	1.8% 30d 6.5% 1yr (ACH audit)
Open AAA repair	0-10%
EVAR	0-5%

Some information is sought about the natural history of disease. In the aneurysm area this is usually the risk of rupture. Care must be undertaken to remember that most AAA (and carotid) intervention is prophylactic treatment and that there are no physical symptoms. There may be significant anxiety to contend with. With leg revascularisation there are differences in expectations between claudication and critical limb ischaemia (rest pain, tissue loss = critical limb ischaemia (CLI)).
With claudication, there is an approximately 2% risk of amputation (this is higher in diabetics).

CLI 30-80% risk of amputation

AAA <5cm = <1% risk of rupture
5-6cm = 5-10% risk or rupture
>7cm = 20-50% risk of rupture
Higher in Women (and possibly in Maori)

The natural history of medical conditions should be sought, for example; malignancy, coronary artery disease, heart failure, or valvular heart disease. Other important comorbidities include severe respiratory disease, renal dysfunction/renal failure, frailty, poor mobility or poor functional status. Cognitive impairment is also important to consider when planning major surgery.

Patient factors should be sought. The can be desperation to get rid of pain (CLI or claudication). There may be an acceptance of death often more than disability, resulting in a willingness to accept a high procedural risk. The dread of amputation can be present also. Conversely in severe cases there can be a “wish to die”. This may be more prevalent in acute and in-hospital assessments of leg disease. In aneurysmal disease anxiety or the “time bomb” phenomenon can be significant. It remains the clinician’s responsibility to manage this and certainly not to feed this.

Consensus about plan is useful at each MDM with designated tasks and documentation of decisions. There should be an agreed workup. If intervention is planned then an agreed strategy can be designated for anti-coagulation/anti-platelet management, ICU acceptance and limitations and equipment requirements.

Outcomes of MDM

Intervention as planned	– go ahead
Clarification – more investigations	– on hold for tests
Improve medical health	– on hold for medical optimisation
Surveillance or medical therapy	– masterful inactivity
No treatment	– discharge

No treatment option discussion

Usually done by Vascular Surgeon in clinic setting
Documented
Agreement about what to do in ruptured AAA setting – usually no treatment

References

Leg revascularisation

Bypass for infrainguinal occlusive disease is associated with limb salvage rates > 80%(ref 1)and mortality rates of 0.9–2.0%(ref 2-4)

The Bypass versus Angioplasty in Severe Ischemia of the Leg (BASIL) trial remains the only prospective, randomized trial to compare outcome of a surgery-first with an angioplasty-first strategy in patients with severe limb ischemia due to infra-inguinal disease. Quality of life and amputation-free survival in the 2 years following revascularization were similar between groups. Beyond 2 years, post hoc analysis showed a survival advantage for patients who underwent surgery first.(ref 5)

The unfortunate reality is that many patients with CLI will spend a significant portion of their remaining life tending to the needs of their ischemic limb.(ref 6-8). A retrospective examination of 133 patients who underwent infrainguinal bypass for limb salvage showed that only 14% of patients had an ‘ideal’ surgical result, defined as an uncomplicated operation with long-term symptom relief, maintenance of functional status, uncomplicated wound healing, and no recurrence or repeat operations regardless of postoperative survival time.(ref 9)

The Basle and Framingham studies (ref 10,11), which are the two large-scale studies that have looked at unselected claudicant patients, found that less than 2% of PAD patients required major amputation.
It is no longer possible to describe the natural history of patients with CLI because the majority of these patients now receive some form of active treatment. Treatment very much depends on the center to which the patient is referred. Large surveys suggest that approximately half the patients with CLI will undergo some type of revascularisation, although in some, particularly active, interventional centers an attempt at reconstruction is reported in as many as 90% of CLI patients. (ref 12)

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Amputation

In BASIL, 16% of patients in both the surgery-first and angioplasty-first group underwent repeated procedures only to eventually die or lose their leg (or both) within the first 12 months. (ref 5)

The 30-day mortality for BKA is 5% and AKA 16%. Long-term survival is markedly reduced with a higher amputation level (1-year survival after AKA 50.6% vs BKA 74.5%), diabetes, end-stage renal disease, decreased serum albumin, advanced age, and no prior coronary artery bypass surgery. (ref 13,14)

A non-randomised, retrospective study in patients with limb-threatening ischemia suggested that compared with primary amputation, angioplasty was associated with a mortality hazard. (ref 15)

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AAA

DREAM, “A small but significant difference in 30-day operative mortality in favor of endovascular repair had previously been reported in the DREAM trial and in two large, randomized trials.” “…among patients with large abdominal aortic aneurysms, there was no significant difference between endovascular repair and open repair in the rate of overall survival at a median of 6.4 years.” (ref 16)

In a FEVAR review Cumulative mortality following f-EVR was 1.4%, and following open repair was 3.6%. 14.9% patients developed renal impairment following f-EVR, compared to 20% following open repair.(ref 17)

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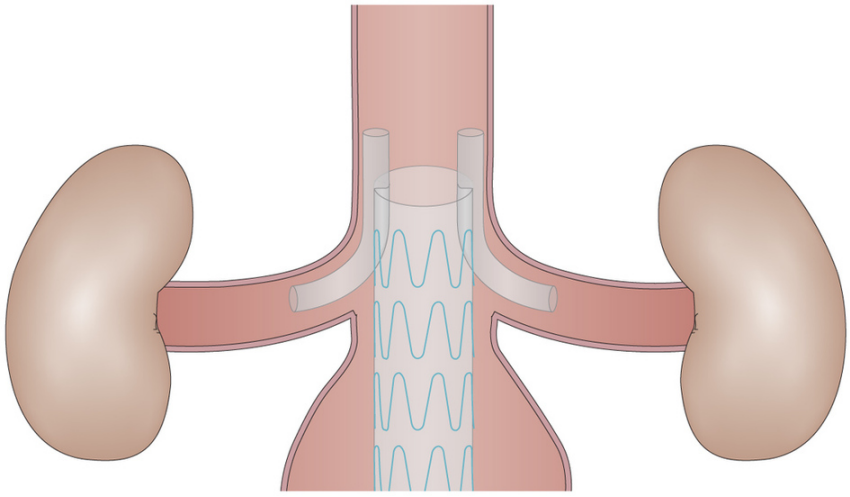
Fenestrated graft (2 renals and scallop for SMA)



Chimney Graft (2 renals)

The Frail Elderly

Dr Dick Ongley

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What is frailty?

Multiple definitions of frailty exist in the literature, but in general it can be thought of as a lack of physiological reserve to stressors. A human being represents a highly complex system. Aging, disease and injury reduce the adaptive response of this system to respond to stressors. The higher order functions are usually the first to be compromised, such as cognition/mentation and bi-pedalism. This is consistent with the clinical picture of frailty seen in practice.

Frailty may be the explanation for the observed discrepancy between chronological and biological age often noted in clinical practice. Frail individuals are vulnerable to external stressors (such as a medical procedure, admission to hospital, and medical complications), which would not normally result in harm to a healthy individual. Frailty is becoming increasingly recognized as an important clinical entity (or syndrome) when assessing patients for surgery.

The prevalence of frailty in the general population has been estimated at 10% and increases with age, female gender, and institutionalization.

What is the pathophysiology of frailty?

It is currently unclear what causes frailty, although there is a clinical overlap with sarcopenia, cachexia, disability and comorbidity. It does appear to be associated with inflammation and pro-coagulation, with changes noted in IL-6, TNF, TNF-alpha, CRP, Factor VIII, and d-dimer. Reduced vitamin D and testosterone have also been noted (Beggs et al.). And it shares some characteristics with critical care illness which results in a rapid onset frailty state.

Why assess frailty for surgery?

It is thought that frail patients are at increased perioperative risk of functional decline, postoperative complications, institutionalisation, and death.

Current preoperative assessment guidelines and thinking emphasizes cardiac and respiratory fitness/adequacy for the proposed surgery. This approach is likely to miss frail patients without disease in these organ systems, which in turn could lead to poor outcomes and increased hospital costs for this group.

Assessment of frailty preoperatively could allow better rationalization of who should undergo elective surgery and improve risk prediction for the patient. If frailty is identified and surgery is necessary it may allow for modification of the procedure and improved tailoring of preoperative and post-operative care to reduce harm.

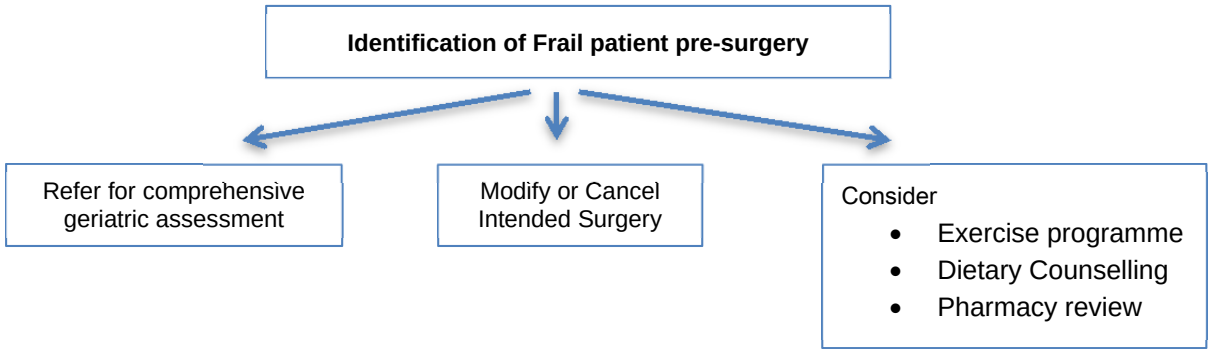

Figure 1 – adaption of algorithm from "Importance of frailty in patients with cardiovascular disease" by Singh et al.

How is frailty assessed?

Although most clinicians can identify a frail person by observation, few people use an objective method or measure to allow quantification. This makes it impossible to compare patients when discussing clinical risk. Ideally what is required is a time efficient and reproducible test for frailty, which allows clinicians to quantify frailty to assist in clinical decision making.

There are currently 2 main methods for frailty assessment:

a) Frailty phenotyping
b) Frailty indices or deficit accumulation models.

Frailty phenotyping is largely based around the clinical effects of sarcopenia which is the loss of skeletal muscle mass. Unfortunately, frailty phenotyping ignores deficits in cognition, mood, and functional independence.

The frailty phenotype was best defined by Fried et al.

Fried Criteria

A patient is frail if 3 out of 5 of the following criteria are met:

• Unintentional weight loss	>4.5kg in the past year
• Exhaustion	For at least 3 days in the week 'I felt that everything I did was an effort' or 'I could not get going'
• Weak grip Strength	Measured by dynamometer
• Slow walking speed	Time to walk 5 m >6 seconds
• Low physical activity	No physical activity, spend most of the time sitting or rarely a short walk during the last year

Of note is that these criteria are a mixture of objective and patient reported measures.

Slow gait speed is by far the most predictive variable for frailty (Hubbard et al.). Slow gait speed is a significant predictor of falls and the 5 metre walk test has been shown to be an independent predictor for mortality and morbidity in older patients for cardiac surgery. Assessment of gait speed may be impractical for many inpatients and may be a confounder for patient undergoing orthopaedic surgery.

Deficit accumulation (or the redundancy exhaustion hypothesis) utilizes the idea that the body is essentially failing thus the higher functions are impaired. Multiple deficits are examined for across multiple domains such as nutritional status, physical activity, mobility, energy, strength, cognition, mood and psychological support (Koller et al.).

The frailty index is a measure that uses the deficit accumulation concept. It is a numerical score generated by measuring the number of deficits out of those deficits considered. Identification of specific deficits opens the door for targeted treatment to reverse frailty (Singh et al.).

The most common tools/indices used for frailty assessment are:

- FRAIL scale
- Tilburg Frailty Indicator
- Clinical Frailty Scale
- Edmonton Frail Scale
- Rockwood Clinical Frailty Scale
- Comprehensive Geriatric Assessment

It is not currently clear which tool is the best clinically to guide decision making.

Can frailty be reversed?

Frailty is thought to be a dynamic process, although the question remains as to what degree it can be reversed? Exercise based rehabilitation has demonstrated a reduction in hospital and nursing home placement in frail patients post hip fracture (Singh et al.). Dietary counseling may also play a role as protein supplementation can increase muscle mass. Polypharmacy is well recognised as a contributor to adverse clinical outcomes, and pharmacy review is a standard part of our current clinic assessment.

References (with special thanks to Drs Ralph Stewart, Nicola Broadbent, and Julie Mundy)

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Emergency Laparotomy

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High-risk patients undergoing emergency surgery account for 12% of all in-patient surgical procedures but 80% of deaths[i]. Those that survive, but develop complications, require hospital care for prolonged periods, suffering significant reductions in functional independence and long-term survival. Data published shows that laparotomy surgery, particularly in the emergency context, is one of the strongest factors associated with poor outcome[ii,iii,iv].

Emergency laparotomy is a common procedure, with approximately 220 primary cases per year at Auckland City Hospital (ACH). All anaesthetists who participate in acute work will come across these cases frequently, yet with a 30 day all-cause mortality of approximately 15%[v] (increasing to over 25%[vi] at one year) it is one of the highest risk procedures we perform.

In stark comparison to other high-risk areas such as the cardiac patient for non-cardiac surgery there are few clear guidelines regarding management in this high-risk group. There has been a growing concern, supported by evidence in other parts of the world, that care for these patients is unacceptably poor[vii]. It must also be remembered that, as a patient group, they represent one of the greatest logistical challenges to any acute hospital. There have been a number of responses to this growing concern, including national audit projects[viii] and comprehensive integrated clinical pathways.

Doing the right thing for the right patient is particularly difficult for such a heterogenous patient group. Management of risk through effective communication and rapid decision making during the patient journey are cornerstones if success is to be achieved. However, as we will see, this appears to be a consistent failing.

What are the key components of clinical excellence in this patient group? To what extent are we falling short? And how might we move forward in a positive and effective manner?

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Optimising Anaesthesia for Obese Patients

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This abstract will briefly summarise the content of my talk to Auckland City Symposium. As the talk is 25 minutes, there may be some content not covered in the talk. Equally I have not put some of the interesting facts in the abstract, but references are provided.

1. Difference between the 'bariatric' patient and the obese patient.

Why are the bariatric patient population subjectively easier to manage than the unselected obese patient coming forward for surgery? The answer is possibly the VLCD (very low calorie diet) undertaken for 4-8 weeks prior to surgery. This results in a 6-15 kg weight loss, depending on compliance. This weight loss has some significant effects on the airway. In a study by Sutherland, 24 obese patents were put on a VLCD, and lost weight.[1] This resulted in increased space behind the tongue and an increase in airway calibre. Another group took 14 obese asthmatics and did a full spectrum of respiratory testing. [2] All indices were improved by weight loss to a statistically and probably clinically significant amount.

2. OSA and obesity

OSA is supposed to be "screened for and appropriately treated".[3] There is little guidance available for how to do this and little evidence for the effectiveness and necessity.

a. Prevalence
   OSA is common in obese patients. Several groups have looked at the prevalence, utilising an consecutive or screening approach.[4-9] This suggests 71-94% of obese patients screened before bariatric surgery has OSA which is at least mild. The higher the BMI, the more likely it is to be severe.
b. Prediction
   Can we predict who has OSA using clinical tools? Not really. Sareli's study of 342 consecutive patients with a BMI of 49 showed that many of this group were not very symptomatic. [9]This included those with severe OSA. They concluded there were no reliable predictors for presence or severity of OSA in the obese. The STOP-BANG screening tool is also not great; although very sensitive it is not specific.[10]
c. Polysomnography
   Why not PSG every one? Its expensive ($1350) and time-consuming. Compliance is very low if asymptomatic. [11] There is also little evidence of any benefit to asymptomatic people.[12]
d. Risk
   So are we sending a vast swathe of undiagnosed and undertreated patients to the wards to die of OSA related complications? Apparently not. Using the National inpatient sample of 1 million patients, there was decreased mortality. [13]This was repeated in the subset of bariatric patients.[14] Is this due to the obesity paradox? [15] Another study found the same thing.[16]
e. OHS
   This is a real problem. CO_2 sensitivity is reduced, rather than increased as in OSA. Is it possible that the worst morbidity of the OSA group is in this group? OR>10 for respiratory failure.[17]
f. CPAP
   Commonly recommended patients use their CPAP afterwards if they are on it at home. There is no evidence this is effective.[3, 18] The ASA taskforce "strongly agree that CPAP should used if feasible", but admit to no evidence. One study deliberately omitted it.[19]
g. Oxygen
   Again the ASA "The consultants agree and the ASA members strongly agree that supplemental oxygen should be administered continuously to all patients who are at increased perioperative risk from OSA until they are able to maintain their baseline oxygen saturation while breathing room air". Doesn't seem to make much of a difference though.

h. Management
   - So overall we don't have great tools for predicting OSA.
   - Use Epworth sleep scale as a sleepiness screen
   - If very high Epworth score then likely there is a benefit in sleep study. CPAP use is still common after bariatric surgery.[20]
   - Otherwise manage expectantly
   - Low threshold for Blood Gas a screen for OHS if
     - severe OSA and/or COPD
     - hypoxia on pulse oximeter in clinic
     - High bicarbonate
   - OSA is not a risk factor for PHT, OHS is. Send OHS to respiratory physicians and consider HDU care

3. Bariatric airway

Obese patients were overrepresented in NAP4 mortality and morbidity. Interestingly also junior staff over-represented. [21]

a. Ventilation
   More important than intubation if AFOI used appropriately. Many studies suggest ventilation not especially difficult if position correctly. Many studies have looked at the predictors of difficult BMV. [22-27] Predictors are a little variable, but the rate is low! Ranges from 1.4-7.8%. Impossible BMV 0.07%-0.15%. Most important factors than can be fixed are beard and also consider optifast.
b. Intubation
   Basically every study has its own set of significant variable in a multivariate analysis.[22, 28-31] Various airway predictive scores have been developed. Take home message from NAP4 was that AFOI was underused. Positioning is critical. Bariatric patients may be easier.[32-34]

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Can the Anesthesiologist Make a Difference to Important Postoperative Outcomes?

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During the last decades, the risks associated with anesthetic care have been substantially reduced; it is now estimated to be 1/100,000 cases. While anesthesia services are central to acute healthcare services, anesthesia-specific risks cannot nor should not be isolated from interventional risks. Both surgery and anesthesia contribute to patient harm and are a shared responsibility.

Slogoff and Keats demonstrated the link between individual anesthesia provider and patients' outcomes in their seminal 1985 article. This study examined the association between myocardial ischemia and myocardial infarction during CABG surgery. Specifically, rates of tachycardia, ischemia, and infarction were significantly higher among patients managed by one specific anesthesiologist, infamously designated as anesthesiologist 7. Anesthesiologists acknowledge, amongst themselves, some are considered more skilled and adept than others. These are the same individuals typically are asked to provide anesthetic care to a loved one undergoing major surgery, assist in difficult technical procedures, or advise during emergencies. It was therefore a little surprising that Glance and colleagues created such controversy by suggesting that patients managed by high-performance anesthesiologists experienced lower postoperative complications or death than patients managed by low-performance anesthesiologists. After much debate this article was withdrawn citing due analytic errors. Importantly, it was withdrawn because the variability between anesthesia providers that they demonstrated did not achieve statistical significance on re-analysis. But variability exists and we are charged with reducing this spectrum.

Complications increase mortality. EuSOS documented a surgical mortality of 4% at 90 days with striking variability between the 28 participating countries. Large national US databases identify increasing trends of major in-hospital complications, with adverse surgical events representing over 40 % of these events. Most events are thought to be preventable. Hospital-acquired infections represented 47% of the surgical adverse events. Postoperative pneumonia, catheter-associated urinary tract infections, ventilator-associated pneumonia, bloodstream infections and surgical site infection are thought to be increasing. Perioperative adverse events contribute to 19 –52 % of unplanned ICU admissions. Effective strategies to reduce SSI include timely administration of the correct prophylactic antibiotic, maintenance of perioperative normo-thermia, appropriate transfusion strategies, hand hygiene, as well as bundles to prevent central venous access infections. However, there is little evidence that these strategies have been employed effectively. These patients care bundles need to be assessed as carefully as any other healthcare intervention regarding their effectiveness, potential direct and indirect undesired effects and cost-effectiveness.

Pulmonary complications appear to be increasing. Respiratory Risk indices have been proposed but have not been widely employed since there is a perception that there are no effective risk reduction agents. Residual Neuromuscular Paralysis occurs in about 30% of patients, may be clinically silent and has been associated with postoperative pulmonary complications. The detrimental effects of neuromuscular blocking agents were described more than 60 years ago. Anesthesiologists however, appear to be unaware of these potential adverse effects since the incidence is basically unchanged in the last 30 years. We submit that many of these complications could be easily prevented using a perioperative care bundle. At risk patients may benefit from preoperative chlorhexidine mouthwash. The use of an appropriate neuromuscular blocking agent, careful neuromuscular monitoring, and judicious use of reversal agents should be employed in all cases. Post-operative surveillance for residual effects in PACU as well as judicious adverse events reporting is required to fully appreciate the magnitude of this problem.

The findings of Surgical Safety Checklist elicited a plethora of individual studies and systematic reviews, which have raised concerns about the validity of the original findings. However, with the publication last year of a stepped wedge cluster randomized controlled trial, which has reproduced the findings of the original Checklist study, there are now 2 very high quality studies, that shows irrefutably, perioperative checklists are safe and efficient patient safety tools. Surgical checklists apparently improve surgical mortality and morbidity by facilitating teamwork, communication, and importantly compliance with safety measures.

Adverse events in the perioperative period continue to be frequent but largely preventable. Strategies to improve patient safety should target administrative, nursing, medical, (surgical, medical, anesthesia) and technical support services (lab, respiratory technology, blood bank). Team training, postoperative surveillance strategies, mandatory error reporting, root cause analysis and feedback are imperative. Important practical targets include perioperative infections, and respiratory management and cardio-vascular events. Future research should provide more high-quality evidence about the effectiveness of patient safety practices and surveillance to provide deeper insights into common patterns of preventable postoperative events.

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Doing the Right Thing When Things Go Wrong: Restorative Approaches to Complaints and Conflicts in the Health Sector

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Conflicts and complaints are a constant in every human society, organisation and employment setting; they are endemic to interpersonal relationships in general. As Charlie Chaplin once quipped, “I am at peace with God; my conflict is with man”. The ubiquity of interpersonal conflict means that learning how to deal with hurts, harms and hostilities in a positive, constructive and non-violent way is one of the most important life-skills anyone can acquire – and, it must be said, one of the rarest in existence. Most people “do” conflict badly. Most organisations and professional bodies also handle conflict poorly, whether by ignoring it or indulging it or trying to punish it out of existence through disciplinary processes.

For professional bodies and human services organisations, grievances and complaints come from two main sources – from colleagues or employees within the organisation (“workplace complaints”) and from customers or clients or stakeholders outside the organisation (“consumer complaints”). The grievances themselves fall into three main categories – complaints about personal (mis)conduct, complaints about professional (mis)conduct, and complaints about the quality of service delivery.

A variety of mechanisms, both formal and informal, have been developed to handle these complaints, though the steady growth in the volume and variety of complaints is placing enormous strain on existing resolution processes, as well as on all the parties involved.

The health sector is a particularly fertile source of both consumer complaints and workplace conflicts. Recent research has highlighted the disturbing prevalence of bullying and sexual harassment in hospitals and there is a direct link between dysfunctional workplace culture and adverse outcomes for patients. As well as improving the way complaints and conflicts are handled, there is an ongoing need to address the causes that give rise to complaints, grievances and interpersonal conflicts in the healthcare environment.

It is here that the principles and practices of restorative justice have something valuable to offer, at three levels. First restorative practices can enhance collaboration and communication within medical teams, overcoming the “silent disengagement” that characterizes toxic teams and is positively dangerous for patients. Second, restorative processes provide a helpful way of dealing with workplace conflicts and disputes before they escalate into full-blown grievances. Third, restorative processes can be used as part of formal complaints or disciplinary regimes, sometimes as an early resolution procedure and sometimes, where complaints are upheld, as a way of addressing the relational, emotional and moral needs of complainants. In every case, restorative engagements are characterized by such key restorative principles as democratic participation, respectful dialogue, accountability, storytelling and a concern to make things right and prevent repetition.

Doing Things Right Globally (Lancet, Lifebox and beyond)

A/Prof. Thomas Weiser

Assistant Professor of Surgery, Department of Surgery, Stanford University School of Medicine

2015 was an exceptional year for Global Surgery. First, the Disease Control Priorities Project released the first of a series of volumes evaluating the economic impact and cost effectiveness of health interventions.(1) Essential surgery was its first topic, and its adequate provision would avert 1.5 million deaths a year, which equates to 7% of all avertable deaths worldwide. Second, the Lancet Commission on Global Surgery released its key messages: 5 billion people lack access to safe, affordable surgical and anesthesia care when needed; 143 million additional surgical procedures are needed each year to save lives and prevent disability; 33 million individuals face catastrophic health expenditure due to payment for surgery and anesthesia each year; investment in surgical and anesthesia services is affordable, saves lives, and promotes economic growth; and that surgery is an indivisible, indispensable part of health care.(2) And finally, the World Health Assembly passed a resolution strengthening emergency and essential surgical and anesthesia as a component of universal health coverage.(3)

Surgical intervention is increasing, particularly in countries with very low levels of health expenditure.(4) However, the challenges to improving access to and the safety of surgery remain enormous. Mortality following surgery is incredibly variable, with up to 20-fold differences between countries falling in the Low and Middle Income economic spectrum.(5) But a number of strategies can improve care regardless of resources.

The main tenets of improvement focus on ensuring adherence to care standards through uses of checklists and the strengthening of care protocols, ensuring safe delivery and monitoring of patients under anesthesia and during perioperative recovery, improving management practices particularly as they relate to perioperative care delivery, and ensuring the consistent measurement of clinical outcomes.(6)

Lifebox is a not-for-profit organization that is leading efforts to improve perioperative safety in two ways.(7) First, we procure and distribute low-cost, high-fidelity pulse oximeters for use during anesthesia along with a structured training program aimed at anesthesia providers in poorly-resourced environments. Second, we are introducing a checklist-based intervention to reduce surgical site infections by ensuring adherence to perioperative infection prevention and control practices that include skin preparation, sterility of instruments, swab counts, antibiotic stewardship, and the integrity of gowns, gloves, and drapes.

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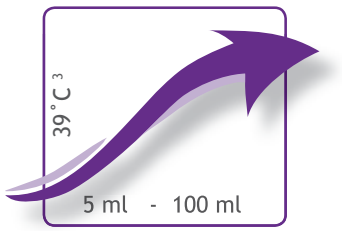

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Classification (IEC 60601-1)	Class II, BF
Classification (MDD 93/42/EEC)	Class IIb

Fluido®*Compact* Warming Module

Dimensions and weight	165 x 75 x 50 mm, 450 g
Temperature range	39°C ± 2°C
Classification (IEC 60529)	IPX4
Classification (IEC 60601-1)	Class II, BF
Classification (MDD 93/42/EEC)	Class IIb

Fluido®*Compact* Standard Set | Article number 672000

Priming volume	3 ml
Length patient line	400 mm
Flow range	5 - 100 ml/min[3] (300 - 6000 ml/h)
Maximum flow	≥ 400 ml/min[4]
Maximum pressure	300 mmHg
Heat exchanger	Parylene coated aluminum plate
Box quantity	120 (4 x 30 pieces)

The sets are DEHP free and do not contain latex components

DEHP LATEX

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[1] *Evans J.W., Singer M., Coppinger S.W. et al., Cardiovascular performance and core temperature during transurethral prostatectomy. J. Urol 1994;152:2025-9*

[2] *ECRI Report, Warming Units, Blood/Solution, December 2002*

[3] *Validated tests with IV fluids at ambient temperature*

[4] *Free flow with 300 mmHg*

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Partial residual block after conventional reversal

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Neostigmine or a neostigmine/ anticholinergic combination is contraindicated e.g. IHD, morbid obesity, COPD

Severe neuromuscular degenerative disease where Neuromuscular Block is required

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BRIDION® (sugammadex) is a Prescription Medicine, fully funded under Section H of the Pharmaceutical Schedule from 1 June 2013. Indications: Reversal of neuromuscular blockade induced by rocuronium or vecuronium. **Dosage & Administration:** Immediate reversal of intense block. 16.0 mg/kg IV, three minutes following administration of rocuronium (1.2 mg/kg) in adults, (including: elderly, obese patients, patients with mild and moderate renal impairment and patients with hepatic impairment). Routine reversal of profound block. 4.0 mg/kg IV following rocuronium- or vecuronium induced block when recovery has reached 1-2 post-tetanic counts; in adults. Routine reversal of shallow block. 2.0 mg/kg IV following rocuronium- or vecuronium-induced block when recovery has occurred up to reappearance of T2; in adults; 2.0 mg/kg IV following rocuronium in children and adolescents (2-17 years). **Contraindications:** Hypersensitivity to sugammadex or to any of the excipients. **Precautions:** Repeated exposure in patients; respiratory function monitoring during recovery; use for reversal of neuromuscular blocking agents other than rocuronium or vecuronium; coagulopathy; severe renal impairment; severe hepatic impairment; marked bradycardia, use in ICU; hypersensitivity reactions (including anaphylactic reactions); pregnancy (Category B2); lactation; infants less than 2 years of age including neonates; prolonged neuromuscular blockade (sub-optimal doses) and delayed recovery. Interactions: Potential identified with toremifene, hormonal contraception. Could interfere with progesterone assay and some coagulation parameters. **Adverse Reactions:** Dysgeusia, prolonged neuromuscular blockade, anaesthetic complication (restoration of neuromuscular function), hypersensitivity reactions varying from isolated skin reactions to serious systemic reactions (i.e anaphylaxis), bronchospasm and pulmonary obstructive events. Severe hypersensitivity reactions can be fatal. Events associated with surgical procedures under general anaesthesia. Isolated cases of marked bradycardia and bradycardia with cardiac arrest. **Marketed by:** Merck Sharp & Dohme (NZ) Ltd., Newmarket, Auckland. Based on Medsafe-approved Data Sheet, prepared 14 February 2014, available on **www.medsafe.govt.nz**
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