

ANZCP ANNUAL SCIENTIFIC MEETING

**NOVEMBER
16TH - 18TH, 2023**

THE KIMPTON MARGOT HOTEL, SYDNEY



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CONFERENCE INFORMATION

WELCOME TO OUR 40TH ANNIVERSARY MEETING

It is with great pleasure that we welcome you to the 40th Annual Scientific Meeting (ASM) of The Australian and New Zealand College of Perfusionists, here in Sydney. We acknowledge the Gadigal people of the Eora Nation, who are the traditional custodians of the area in which we meet.

40 years of ANZCP history is an important milestone for us all to reflect upon and be proud of. We hope this meeting can be a befitting celebration.

This year's ASM is hosted in the opulent, heritage listed Kimpton Margot Hotel which has been renovated to showcase its Art Deco charm. We hope you enjoy the hospitality of this venue, and Sydney at large.

The scientific committee has put together a phenomenal program, with local, national and international speakers renowned in their field. In developing the program, there was a focus on seeking a variety of speaker backgrounds, presentation topics, and topics that directly link to improvements in clinical practice. We hope this shines through.

Many thanks to the ANZCP community for an exceptional number of submitted abstracts and 'fireside chats' presentations - far beyond what we've seen in recent years. We applaud your innovation and willingness to share.

Thanks must also go to our corporate sponsors, who are detailed in the upcoming pages. Without generous sponsorship and support, this meeting would not be possible and we sincerely value the industry partnerships we share.

On behalf of all those involved in planning, we wish you a fantastic time at the 2023 ANZCP Annual Scientific Meeting.



KULJEET FARRAR
CASEY EDWARDS
ANDREA HUNT

ORGANISING COMMITTEE



ANNETTE MAZZONE
STEVE HORTON
BRITTNEY WESTBROOK

SCIENTIFIC COMMITTEE

FEATURED SPEAKERS

OUR INVITED FACULTY INCLUDES



CYRIL SERRICK

With over 28 years in Perfusion, Cyril was until recently, the Manager of Perfusion Services and Exvivo Therapies at University Health Network, Toronto General Hospital in Toronto, Canada. This is Canada's busiest perfusion program performing over 2500 perfusion related cases per year. An early adopter of MiECT, Cyril has over 20 years experience in the field and is the current President of the Minimal Invasive Extracorporeal Technologies International Society (MiECTiS). Cyril is well published in the field of perfusion



BEN DAVIES

Dr Ben Davies is a consultant paediatric cardiac surgeon at the Royal Children's Hospital, Melbourne. He graduated from the University of Nottingham, completed general surgical training in Sheffield before undertaking a PhD at the Murdoch Children's Research Institute in Melbourne. Research interests include clinical outcomes research, optimising ventricular assist for children and cell-based therapy for nonischaemic myocardial disease.



SARAH SCHEUER

Dr Sarah Scheuer is currently a cardiothoracic surgery trainee at the Alfred Hospital in Melbourne. However, prior to commencing her formal training, she undertook a PhD at the Victor Chang Cardiac Research Institute and St Vincent's Hospital, Sydney. Her PhD focused on donor heart preservation, including prevention of myocardial ischaemic reperfusion injury and the ex-situ perfusion of donor organs.



KIM VAN LOON

Kim is an anaesthesiologist with a special interest and skills in paediatric cardiac anaesthesia, based in Utrecht, the Netherlands. She obtained a PhD in February 2017 on the subject of recognition of vital instability outside high care facilities. She has since been involved in designing studies including the NITRIC trial and building the FLOWER cohort, with flow velocity measurements of the ACM, NIRS, EEG and pre- and postoperative MRI in cardiac and non cardiac neonates after major surgery, to unravel causal factors of white matter injury.

FEATURED SPEAKERS

OUR INVITED FACULTY INCLUDES



SARA ALLEN

Dr Sara Allen works at Auckland City Hospital as an Intensivist and Cardiothoracic Anaesthetist. Dr Allen is the Service Clinical Director for the Department of Cardiothoracic and ORL Anaesthesia Operating Rooms and the Director of Perioperative Echocardiography. Sara is a founding member and currently co-chair of the College of Intensive Care Medicine Welfare Special Interest Group, and has completed a Masters of Medical Education at Cambridge University.



ARJUN IYER

Dr Iyer is a cardiothoracic and transplant surgeon at St Vincent's Hospital, Sydney. He has a PhD in cardiac transplantation and ex vivo organ perfusion. His PhD involved investigation of ex vivo organ perfusion systems in cardiac transplantation, which has had a significant impact on donor utilisation and transplant numbers. His areas of interest include transplantation and VAD implantation, minimal access cardiac surgery and off-pump CABG.



LACHLAN MILES

Associate Professor Lachlan Miles is a Staff Specialist and Deputy Head of Research in the Department of Anaesthesia at Austin Health, and an honorary Principal Fellow of the Department of Critical Care at the University of Melbourne. He has published >60 original manuscripts in high-impact journals in the last 10 years, and is a principal chief investigator of the IDOCS and NATO studies. He is a previous winner of the DOuglas Renton Medal for the Primary Fellowship Examination and the Gilbert Brown Prize for the best free paper at the ANZCA ASM 2020.



JAYME BENNETTS

Professor Jayme Bennetts is Director of Cardiothoracic Surgery at Flinders Medical Centre, Adelaide. Professor Bennetts has made significant contributions to the outcomes of cardiac surgery in Indigenous Australians. He is past president of ANZCTS and over the last 10 years has led significant reform on transcatheter heart valve therapies. He has participated in over 15 international aid missions, to populations unable to access heart surgery or to improve the quality of surgery in these communities.

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MEETING PROGRAM

Thursday 16th November

13:00 - 14:30 Conference registration

Session 1: Fireside Chats

Moderator: Dr Steve Horton

14:30	Carla Zazulak	Queensland Children's Hospital, Brisbane
Pre-AGM chat: NASRHP, ANZSCO and National Medicines – an update for the membership		
15:00	Jessica Cantrick	Prince of Wales Hospital, Sydney
An update on the Masters of Perfusion program under development at Western Sydney University. What work has been done, and what lies ahead?		
15:20	Annette Mazzone	Flinders Medical Centre, Adelaide
WCH ECMO – 2 years on - Case presentation: VV ECMO for Lemierre's syndrome		
15:40	Rosemarie Low	National Heart Centre, Singapore
Early experience with body perfusion in hemiarach replacement		
16:00	Jatz Suthumporn	The Royal Children's Hospital, Melbourne
Paediatric experience utilising the XVIVO heart box for hypothermic oxygenated perfusion		
16:20	Session Close	

Friday 17th November

07:30 to 08:25 - Registration and trade display

07:30	Chamila Gunadasa	National Clinical Manager, Haemonetics
HAEMONETICS®		
Sponsored breakfast session: Restraints of TEG interpretation		

08:15 ASM Chairperson's address, acknowledgement of country and ANZCP President's welcome



MEETING PROGRAM

Session 2: New frontiers for ECMO and VAD technology

Moderator: Simon Augustin

08:20	Dr Arjun Iyer	St Vincent's Hospital, Sydney
	Cardiac support strategies for COVID-19 myocarditis	
08:40	Dr Natalie Kruit & Alex Peters CCP	NSW Ambulance, Sydney
	Prehospital ECPR: experiences from a physician and paramedic	
09:10	Cyril Serrick	University Health Network, Toronto
	The Canadian experience of ECMO during COVID	
09:30	Prof. Jayme Bennetts	Flinders Medical Centre, Adelaide
	ECMO in the cardiac cath. lab	
09:50	Casey Edwards – submitted abstract	Australian Blood Management
	Live circulation for ECMO simulation - the porcine heart failure training model	
10:10	Dr Steve Waganivavalagi – submitted abstract	Auckland City Hospital, Auckland
	Cardiopulmonary resuscitation strategies: systematic review and meta-analysis, and the role of surgeons	
10:30	Panel Q&A	
10:40	Morning tea	

PROGRAM



MEETING PROGRAM

Session 3: Hot topics in perfusion

Moderator: Dr Annette Mazzone

11:10	Prof. Jayme Bennetts	Flinders Medical Centre, Adelaide
Low risk TAVI trials: is surgery fairly compared?		
11:30	Dr Cliff Reid	NSW Ambulance, Sydney
Healthcare sustainability		
11:50	Dr Kelly Bratkovic	Flinders Medical Centre, Adelaide
When obstetrics meets cardiac surgery		
12:20	Dr Ben Davies	The Royal Children's Hospital, Melbourne
ABO mismatched heart transplants in children using immunoabsorption rather than plasma exchange		
12:50	Panel Q&A	
13:00	Lunch	

Session 4: Minimising the physiological impact of bypass

Moderator: Dr Kelly Bratkovic

13:45	Dr Carlos Mestres	University Hospital Zurich, Zurich
The role of CytoSorb in complex cardiac surgeries		
14:15	Cyril Serrick	University Health Network, Toronto
Knowledge Gained After 20 Years Using Minimally Invasive Extracorporeal Circuits (MiECC)		
14:45	Dr Kim van Loon	University Medical Centre Utrecht, Utrecht
Cerebral perfusion: how low can you (safely) go?		
15:15	Afternoon tea	

PROGRAM



MEETING PROGRAM

Session 5: Intraoperative management of blood (IMOB)

Moderator: Monique Brouwer

15:30	Annette Mazzone	Flinders Medical Centre, Adelaide
Outcomes of the IMOB Current Practice Survey – evaluating our practice with the STS/SCA/AmSECT/SABM Patient Blood Management Clinical Practice Guidelines		
16:00	Dr Sara-Jane Allen	Auckland District Health Board, Auckland
Iron deficiency, anaemia and cardiac surgery		
16:30	Cyril Serrick	University Health Network, Toronto
Clinical outcomes comparing six different biocompatible packs used for cardiopulmonary bypass: a quality assurance initiative		
17:00	Panel Q&A	
17:10	Close	

Drinks & Cocktail Dinner
The Wilmot Bar
 The Kimpton Margot Hotel
 18:30 – 22:00



MEETING PROGRAM

Saturday 18th November

07:30 to 08:00 - Registration and trade displays, light breakfast

Session 6: Student presentations and submitted abstracts

Moderator: Carla Zazulak

08:00	Danielle Grobler - student	Australian Blood Management
Cardiotomy suction at half protamine: does blood entering the reservoir have an adequate ACT?		
08:15	Eloise Davies - student	Australian Blood Management
Comparison of patient haemodilution between cardioplegia solution 1 and del Nido cardioplegia during cardiopulmonary bypass		
08:30	James Morgan - student	Auckland City Hospital, Auckland
Survey of Burnout among ANZCP, AmSECT, and SCPS Perfusionists		
08:45	Dean Patrao - student	Cell Saving and Perfusion Resources, Melbourne
Post operative atrial fibrillation development in adult cardiac surgery using del nido vs cold blood cardioplegia: a literature review.		
09:00	Xin Ning Joline Teo - submitted abstract	National Heart Centre, Singapore
Circuit Miniaturization – An Effective Blood Conservation Strategy in Paediatric Cardiopulmonary Bypass		
09:20	Rona Steel - submitted abstract	Westmead Hospital, Sydney
Association between goal directed perfusion and days alive and at home 30 days after surgery at a single Australian centre		

PROGRAM



MEETING PROGRAM

09:40	Jessica Betts - student	Flinders Medical Centre, Adelaide
A pilot study to evaluate the clinical impact of preoperative dialysis in dialysis dependent patients undergoing cardiopulmonary bypass		
10:00	Morning tea	

Session 6: Myocardial protection, vasoplegia and anticoagulation

Moderator: Alex Peterson

10:30	A/Prof. Lachlan Miles	Austin Health, Melbourne
The Goldilocks Zone: Heparin/Protamine Interactions in Cardiac Surgery		
10:50	Dr Ben Davies	The Royal Children's Hospital, Melbourne
Vasoplegia in post-VAD patients		
11:20	Dr Sarah Scheuer	The Alfred Hospital, Melbourne
Myocardial ischaemia reperfusion injury and Myocardial protection – a PhD research presentation		
11:40	Cyril Serrick	University Health Network, Toronto
Heparin management: factors for the cardiac team to consider in the operating room		
12:00	Panel Q&A	
12:10	Lunch - Kindly sponsored by XVIVO	

Session 7: Organ procurement, transplantation and other

Moderator: Cyril Serrick

13:00	Dr Arjun Iyer	St Vincent's Hospital, Sydney
Heart transplantation: new frontiers		
13:20	Jonathan Cropper – submitted abstract	St Vincent's Hospital, Sydney
Impact of heart donor age on the outcomes of donation after circulatory death		

PROGRAM



MEETING PROGRAM

13:40	Dr Sarah Scheuer	The Alfred Hospital, Melbourne
DCD donor transplants – considerations from a surgeon's perspective		
14:10	A/Prof. Lachlan Miles	Austin Health, Melbourne
The Dark Side of the Moon: Precision Right Ventricular Monitoring in Cardiac Surgery		
14:40	Dr Emily Granger	St Vincent's Hospital, Sydney
TAVI disasters! Possibilities, realities and the truth		
15:00	Panel Q&A	
15:10	Afternoon tea	

Session 8: Perfusion the profession

Moderator: Britney Westbrook

15:30	Dr Sara-Jane Allen	Auckland District Health Board, Auckland
Diversity, Equity, Inclusion and Biases in the Operating Room		
15:50	Casey Edwards	Australian Blood Management
Results of the Australian and New Zealand Perfusion Workforce Survey: identifying problems to inspire solutions		
16:10	Ghaz Jabur – submitted abstract	Auckland District Health Board, Auckland
A Decade of Exploring the Mysteries of Bubbles in Cardiac Surgery on the Journey to a PhD		
16:30	Jessica Cantrick & Annette Mazzone	Prince of Wales Hospital, Sydney & Flinders Medical Centre, Adelaide
Career pathway options for perfusionists: how higher education (PhDs and MBAs) can be a valuable addition to the perfusionist's skillset		
16:45	Final address	
16:50	Meeting close	

40th Anniversary Gala Dinner
The State Library of NSW
18:30 – 22:00

WE'D LOVE YOU TO JOIN US



FRIDAY EVENING

Join us at the *Wilmot Bar*, in the exquisite foyer of the *Kimpton Margot Hotel* for a cocktail party. Enjoy the opportunity to catch up with familiar faces and introduce yourself to our esteemed visiting faculty.

Canapes and beverages will be circulated.

Time: 6:30pm

Dress code: Business or smart casual attire

SATURDAY EVENING

With much to celebrate, we invite you to one of Sydney's most iconic buildings for a truly memorable event. *The State Library of NSW* will host us for a formal 3-course meal, with a number of College presentations to take place. This will be an evening not to be missed.

Time: 6:30pm to 10:30pm

Dress code: Formal or black tie attire

Address: 1 Shakespeare Pl, Sydney (please make your own way to the venue)



2024 ASM ANNOUNCEMENT

SAVE THE DATE

The 2011 ASM was scheduled to be held in Christchurch but had to be postponed – now finally the time has come! Save the date – November 21 – 23, 2024

Christchurch is in the South Island of Aotearoa New Zealand – also known by its native Māori name Otautahi.

Christchurch is the gateway to the South Island and home to spectacular experiences. This is a city with a revitalized centre buzzing with energy, surrounded by the tranquillity of nature.

The 2024 ASM will be held at the very impressive Christchurch Convention Centre – known as Te Pae – it's the city's gathering place – an architectural and social landmark designed as a welcoming heart in the centre of the city.

The Gala dinner will be held in The Great Hall which is in the stunning Arts Centre – it's a UNESCO award-winning heritage building with proven acoustics and modern heating, lighting and sound. Built as a hall for Canterbury College (now the University of Canterbury), the Great Hall has been strengthened and restored post-earthquake. The large, north-facing stained glass Memorial Window was originally installed in 1938 and is comprised of 4,000 individual pieces of glass. The window is dedicated to the memory of all staff and students who served in WWI.

WE HOPE YOU CAN JOIN US!



AWARDS INFORMATION

ANZCP MEMBERS ARE ELIGIBLE FOR

TERUMO AWARD

The Terumo award is in recognition of the best scientific or clinical paper presented by an ANZCP member.



MEDTRONIC ENCOURAGEMENT AWARD

This award is made for an especially meritorious presentation by an ANZCP member.



SID YARROW AWARD - LIVANOVA

The Sid Yarrow award is in recognition of the best presentation by a student ANZCP member.



ANZCP MERITORIOUS AWARD

The purpose of the ANZCP sponsored meritorious award is to acknowledge presentations of excellence and which are considered to be particularly meritorious.

EDUCATION SCHOLARSHIP

The most outstanding result achieved by a student this year in the certification examination.

BEST TRADE DISPLAY

This award is to recognise the valuable contribution of sponsor companies towards the ANZCP annual meeting. It is presented to the company who puts on the 'best' display at the annual meeting.

GAZETTE AWARD

Two prizes are awarded for meritorious contribution to the ANZCP Gazette

ABSTRACTS & PRESENTATION SUMMARIES

Carla Zazulak

Pre-AGM chat: NASRHP, ANZSCO, HPI-I, National Medicines and WSU – an update for the membership

Jessica Cantrick

An update on the Masters of Perfusion program under development at Western Sydney University. What work has been done, and what lies ahead?

Annette Mazzone

WCH ECMO – 2 years on - Case presentation: VV ECMO for Lemierre’s syndrome

Lemierre’s syndrome is a clinical myriad of acute oropharyngeal infection, secondary local invasion and vein thrombosis often involving the internal jugular vein, along with evidence of systemic septic embolism. Lemierre’s syndrome characteristically affects healthy young adults causing persistent pyrexia and systemic sepsis presenting several days after an initial pharyngitis, with anaerobic *Fusobacterium* species often implicated. Prolonged antimicrobial therapy is required and admission to intensive care common. This presentation reports a case of Lemierre’s syndrome caused by *Fusobacterium Necrophorum* in a 15 year old patient. The case was complicated by acute respiratory distress syndrome, thrombosis and empyema with a degree of severity that required the use of veno-venous extracorporeal membrane oxygenation (ECMO) to support the patient.

The case study highlights that ECMO can be instrumental in ensuring patients with profound, life-threatening sepsis and associated multi-organ failure associated with Lemierre’s syndrome can be successfully managed, leading to total resolution of infection and complete patient recovery.

Rosemarie Low

Chan Tanee, Kim Chai Chua, May Lee Yap, Rosemarie Low Ying-Ling
Early experience with body perfusion in hemiarch replacement

Introduction: Body perfusion (BP) during hemiarch or total arch replacement has been described extensively elsewhere. Our first experience was in 2020, when a surgeon requested it during hemiarch replacement surgery. We describe a method utilizing existing consumables and equipment with slight modifications to achieve BP.

Methods: We made use of our current customized cardioplegia circuit, equipped with a reverse chamber, pressure monitoring and temperature port at the 3/16” delivery line for BP.

A bifurcation was made at the existing ¼” arterial recirculation line of the main perfusion circuit as blood inlet. The outlet was upsized to ¼” for BP via a 6.5 mm cuffed

endotracheal tube inserted at the descending thoracic aorta with an average flow of around 1.5 l/min.

An ultrasonic flow probe was placed at the arterial line, distal to the bifurcation to measure the unilateral antegrade cerebral perfusion (ACP) flow via the right axillary during simultaneous BP at a rectal temperature of 26°C.

Results: From 2020 to 2022, 5 patients underwent hemiarach replacement surgery with BP by a single surgeon. Except 1 with a chronic type A dissection, the rest presented with a dilated ascending aorta. Concomitant procedures include coronary artery bypass grafting, aortic valve replacement and Bentall procedure in 3 patients.

Average BSA was 1.72 m² (1.56 - 1.92), bypass time 244 minutes (166 - 342) and aortic cross clamp time 146 minutes (100 - 208). ACP and BP time were 36 minutes (29 - 48) and 25 minutes (9 - 40) respectively.

All 5 patients were extubated 12-24 hours post-operatively with an average 7 days of hospital stay (5 - 11).

Conclusion: While this method does not allow separate temperature regulation of the upper and lower body, and refinements are clearly needed, this represents a simple adaptation of available perfusion resources to achieve specific perfusion previously not performed.

Jatz Suthumporn

Amber Darwinkel-Wodson, Ben Davies, Jacob Mathew, David McGiffin, David Kaye, John Fraser, Christina Kure

Paediatric experience utilising the XVIVO heart box for hypothermic oxygenated perfusion

The Australia and New Zealand Hypothermic Oxygenated Perfusion (HOPE) Trial utilises the XVIVO Heart Box to protect and transport a donor heart for transplantation. The open labelled, single arm, multi-centre trial aims to investigate the effect of hypothermic oxygenated perfusion on donor hearts with extended ischaemic time (6-8 hours) with respect to immediate and long term post-transplant heart allograft function. The HOPE Trial included the first global use of the box in paediatric heart transplants. Early results are promising & will be described regarding post-transplant allograft function with the potential to allow for an increase in ischaemic time retrieval.

Dr Arjun Iyer

Cardiac support strategies for COVID-19 myocarditis

Dr Natalie Kruit & Alex Peters CCP

Prehospital ECPR: experiences from a physician and paramedic

The delivery of extracorporeal cardiopulmonary resuscitation (ECPR) to patients in refractory cardiac arrest is a complex, technically challenging and time pressured procedure. If performed incorrectly or with little training, institution of ECPR can result in inappropriate patient selection, vascular complications and poor patient outcomes. Owing to these challenges, ECPR has historically been limited to high volume hospitals within each geographical jurisdiction. In an effort to expand coverage and reduce low

flow times, ECPR is now being implemented in lower volume hospitals and the pre-hospital environment. In a unique model of care, we have trained clinicians working within the Ambulance service to provide ECPR at the scene of a cardiac arrest. Extensive efforts have been made to explore expertise, with the aim of translating understanding of expert performance into more effective expert development for novice ECPR providers as we try to improve outcomes from cardiac arrest with pre-hospital ECMO support. Critical Care Paramedic, Alex Peters and ECMO lead Dr Natalie Kruit will provide their unique perspectives on why pre-hospital ECPR is changing the landscape of cardiac arrest management and how they go about training, preparing and implementing this highly complex level of care.

Cyril Serrick

The Canadian experience of ECMO during COVID

The Toronto General Hospital ECLS program is the largest in Canada averaging over 85 ECMO patients per year. During the almost 2 year pandemic that caseload skyrocketed to 290 cases with 175 of those, ECLS cases for COVID-19. This presentation discusses patient selection during the various waves along with the demographics and outcomes of this interesting and challenging patient population.

Prof. Jayme Bennetts

ECMO in the cardiac cath. Lab

Casey Edwards

Hayden Dando, Natalie Kruit, Brian Burns, Mark Dennis

Live circulation for ECMO simulation - the porcine heart failure training model

Purpose

As the application of ECMO continues to expand, there is a concomitant need to efficiently train practitioners from diverse clinical backgrounds in the initiation and support of the therapy. Training using water filled circuits connected to an automatic or manually operated simulated circulation is the standard model. Moving from this to a live human circulation requires a skill set that can only be acquired from a true live circulation. This training gap, especially for ECMO naïve personnel, presents a challenge. To bridge this knowledge gap, the 'live circulation animal model ECMO laboratory' (LCAMEL) was developed, offering students a realistic simulation model to teach the management of ECMO physiology.

Methodology

LCAMEL participants were comprised of prehospital specialist physicians (anaesthetics and intensive care) and critical care paramedics. The training consisted of four high fidelity ECMO simulation scenarios over two days. Each simulation involved the priming of a CardioHelp circuit, the cannulation of a 60kg porcine model in induced heart failure, the initiation of ECMO and subsequent troubleshooting of common ECMO physiology. Deviations from normal physiology were induced or manipulated by a veterinary anaesthetic specialist. Following each scenario, skills teaching was led by faculty using live simulation. Finally, self-directed learning time managing the ECMO patient was facilitated for participants.

Results

100% of LCAMEL participants showed an improvement in ECMO physiology written exam results. Qualitatively, participants reported improved confidence in their ability to manage an ECMO patient and reported feeling significantly better prepared to manage ECMO as a direct result of the training.

Conclusion

The LCAMEL training program demonstrates a novel approach to providing high-fidelity ECMO training using live circulation. It is a feasible model bridging the gap between low-fidelity simulation and clinical practice. Participants displayed a significant improvement in both their examinable comprehension of ECMO and their self-reported confidence as a practitioner.

Dr Steve Waqanivalagi

Peter Jones, Michael Iwashita, Eunicia Tan, Tobias Merz

Cardiopulmonary resuscitation strategies: systematic review and meta-analysis, and the role of surgeons

Introduction

Development of an ECMO-assisted CPR (ECPR) program requires consideration of the evidence for both in and out of hospital arrests (IHCA and OHCA), and for all potentially eligible participants. Prior systematic reviews of ECPR compared to conventional CPR (CCPR) are at high risk of bias because they included studies with overlapping patient populations or were limited to certain subgroups of cardiac arrest patients. The aim was to determine neurologically intact survival (cerebral performance category 1-2) up to one year, including comparative studies controlling for CPR duration prior to the intervention.

Methods

Structured searches were conducted in Embase, the Cochrane Library, and Medline, from inception to 1/8/23. RCTs and observational studies that controlled for CPR duration were included. Two reviewers independently screened articles for inclusion, assessed risk of bias (ROB) using standard tools and extracted summary data from published and unpublished reports. Meta-analysis was conducted using RevMan5 and publication bias was assessed using Funnel plots. The certainty of evidence was assessed using the GRADE approach. The review was registered in PROSPERO CRD42022345115.

Results

We found 997 studies, with 52 full texts assessed for eligibility. Fourteen studies from Asia, Europe, and the USA were included in meta-analyses. Neurologically intact survival was higher for ECPR: 12 studies, n=3268; 2654 male/616 female, average age <60 years; AR 0.05, 95% CI (0.03, 0.07), p<0.001. I²=72%.

Conclusion

ECPR is likely associated with improved neurologically intact survival up to one year, although the effect size is lower than previously reported.

Prof. Jayme Bennetts

Low risk TAVI trials: is surgery fairly compared?

Dr Cliff ReidHealthcare sustainability

Those of us whose careers reside at the sharpest end of healthcare place the highest demands on ourselves, dedicating a disproportionate amount of our time and often physical and emotional resources to our work. This presentation encourages reflection on the wisdom of our current work practices in the light of what we know about risk of burnout and compassion fatigue, but with a focus on more recent work on human flourishing and the positive psychology literature. We should all take a personal inventory on the components of our life that contribute to a healthy balance while retaining our dedication to our craft.

Dr Kelly BratkovicWhen obstetrics meets cardiac surgery

This presentation will cover a brief overview of the physiological changes of pregnancy, cardiac conditions that present during pregnancy and how these women may find themselves in need of cardiac surgery / interventions. The talk will also include a discussion of some cases that the team at Flinders Medical Centre, South Australia have managed recently.

Dr Ben DaviesABO mismatched heart transplants in children using immunoadsorption rather than plasma exchange**Dr Carlos Mestres**The role of CytoSorb in complex cardiac surgeries

Cardiac surgery with cardiopulmonary bypass is known to be beneficial in the treatment of adult and congenital heart diseases of any kind, including but not limited to mitral and aortic valve disease, diseases of the aorta at any level, intrathoracic organ transplantation and coronary artery disease. This has been the regular and successful practice over the past six decades. However, there are some intrinsic associated problems such as the inflammatory response to cardiac surgery which is, in essence, the response of the human body to tissue injury and is a rapid and amplified humoral and cellular response.

Together with this exaggerated defense response to a noxious stressor, in this case cardiac surgery through the contact of blood to foreign surfaces, there are additional issues in current time therapies for a variety of conditions such as active infective endocarditis, surgery of the aorta, organ transplantation or acute coronary syndrome, that have an additional inflammatory component or entail potential harmful intra- and postoperative bleeding.

A number of therapeutic strategies have been devised and attempted in clinical practice to overcome the inflammatory component of surgery such as leukocyte-depleting filters, pharmacological therapy or improvement in tubing manufacturing under different indications and with diverse outcomes. Current trends indicate that a combination of anti-inflammatory strategies is effective in reducing postoperative complications.

Hemodasorption has recently emerged as an innovative option to intervene in the management of inflammation and drug removal in different cardiovascular and non-

cardiovascular conditions. If leukofiltration aims at decreasing endothelial activation and neutrophil transmigration, hemoadsorption with CytoSorb, a whole blood adsorber, aims at removing excessive levels of cytokines (IL-6, IL-8, IL-10) and other molecules during cardio-pulmonary bypass (P2Y12-Inhibitor ticagrelor and/or Factor Xa-Inhibitor rivaroxaban). Furthermore, other substances of medium molecular size, may be removed.

This polymer beads-based adsorption system, shown to be bio- and hemocompatible, has been used for a decade now in different indications such as surgery for acute Type A aortic dissection, infective endocarditis with persistent sepsis, drug removal and lung transplantation. Overall, the intended beneficial effects include hemodynamic stabilization with reduction of pharmacological support in unstable patients through reduction of inflammatory mediators and reduction of perioperative bleeding risk in patients loaded with specific antithrombotic drugs. Hemoadsorption with CytoSorb is the latest addition to the anti-inflammatory armamentarium and its prophylactic intraoperative use in cardiac surgery is considered a part of a combination of strategies

Dr Cyril Serrick

Knowledge Gained After 20 Years Using Minimally Invasive Extracorporeal Circuits (MiECC)

MiECC was first introduced in North America in the early 2000s and our first clinical cases at Trillium Health Center in Canada started in 2004. 10 years later the Minimal Invasive Extracorporeal Technologies International Society (MiECTiS) was formed. The goal of MiECC is to try and eliminate the detrimental affects of conventional cardiopulmonary bypass through reducing the inflammatory response on three fronts - hemodilution, contact surface area activation and the air blood interface. This talk will discuss the history, current studies, concepts and techniques employed by the perfusionist during MiECC to ensure safe perfusion.

Dr Kim Van Loon

Cerebral perfusion: how low can you (safely) go?

Dr Annette Mazzone

Outcomes of the IMOB Current Practice Survey – evaluating our practice with the STS/SCA/AmSECT/SABM Patient Blood Management Clinical Practice Guidelines

Cardiac surgery is known to be associated with a high risk of perioperative blood loss and blood transfusion due to the invasiveness of the procedure, the need for high-dose anticoagulation and the exposure to cardiopulmonary bypass. Patient blood management in cardiac surgery involves optimisation of the patient preoperatively by managing anaemia and the maintenance of haemostasis and the minimisation of bleed during the perioperative period. In 2021 a multidisciplinary panel including the Society of Thoracic Surgeons (STS), Society of Cardiovascular Anaesthesiologists (SCA), the American Society of ExtraCorporeal Technology (AmSECT) and the Society for the Advancement of Blood management (SABM) published the Update to the Clinical Practice Guidelines on Patient Blood Management#, previously published in 2011.

This presentation will present the key current recommendations for patient blood management including the four major principles of blood management including

1. managing anaemia,
2. optimising coagulation,
3. inter-disciplinary blood conservation modalities and

4. patient-centred decision making to achieve improved patient outcomes

Results of the survey, Cardiac Surgery – Blood Management in Australia and New Zealand, completed by perfusionist from Australia and New Zealand will be also be presented, evaluating our practice with the clinical practice guidelines.

Tibi et al. (2021). STS/SCA/AmSECT/SABM Update to the Clinical Practice Guidelines on Patient Blood Management. J ExtraCorporeal Technology 53: 97-124.

Dr Sara-Jane Allen

Iron deficiency, anaemia and cardiac surgery

Iron has a critical role in normal cellular function and erythropoiesis, and iron homeostasis is closely regulated as both iron overload and iron deficiency are harmful. The role of iron and iron deficient states in cardiac surgical patients is significant, with particular importance in patients with heart failure, anaemia, and the critically ill. Therapeutic iron supplementation or replacement for such patients may be of benefit, and is the subject of ongoing clinical research, proving a growing evidence base for the appropriate use, timing, and risks of such therapy. This presentation will outline the role of iron in homeostasis, the importance of iron deficiency in cardiac disease, and current and potential management strategies relevant for clinicians caring for cardiac surgical patients.

Cyril Serrick

Clinical outcomes comparing six different biocompatible packs used for cardiopulmonary bypass: a quality assurance initiative

Cardiopulmonary bypass is associated with post operative coagulopathies manifesting itself with low platelet counts, low fibrinogen and elevated INR. All of this can be translated in increased blood product usage and higher transfusion rates. While there are a number of possibilities for the observed coagulopathy one possible culprit that is hard to prove is the disposables used to conduct CPB itself. With numerous advances in technology, namely bioactive coatings, a variety of circuits are available through the different manufacturers. All products used during CPB are Health Canada approved and assumed to be equivalent when it comes to patient safety however, there has been no published head to head data comparing the various manufacturer's circuits that specifically looks at patient outcomes. Before choosing the optimal circuit used on our patients requiring CPB we conducted a quality assurance project comparing the CPB circuit of 4 different Health Canada approved manufacturers (Medtronic, Terumo, LivaNova and Getinge) using 6 different circuits. Data was prospectively collected on 872 consecutive patients who required routine cardiac surgery using the circuits from each of the 4 different manufacturers. Coagulation tests using viscoelastic monitoring and platelet function were performed pre and postoperatively and total blood product utilization were also assessed. Preliminary findings will be discussed.

Danielle Grobler

Cardiotomy suction at half protamine: does blood entering the reservoir have an adequate ACT?

Objective: During cardiac surgery, it is common practice to continue aspiration of blood from the surgical field through the cardiotomy suction until the point of half protamine administration. This occurs despite current guidelines stating that cardiotomy

suction should be ceased at the onset of protamine administration to avoid potential clotting of the circuit in the situation that bypass must be reinitiated. This study investigated the Activated Clotting Time (ACT) values of blood immediately before the termination of bypass and blood entering the reservoir through the cardiomy suction at half protamine to determine if there was a significant decrease in ACT.

Methods: This study included 40 patients from a single cardiac unit who underwent cardiac surgery with cardiopulmonary bypass. Blood samples were collected immediately before the termination of bypass as well as at half protamine in the cardiomy suction line and ACT values were recorded. Statistical analysis was performed to determine if there was a significant decrease in ACTs between both samples.

Results: The results of this study indicated that blood entering the reservoir through the cardiomy suction at half protamine had significantly lower ACT values compared to ACTs taken before bypass was terminated; 537 +/- 27 seconds vs 430 +/- 24, $p < 0.05$. There was an average drop of 19% +/- 4% and 28% of samples entering the bypass circuit had an ACT below 400 seconds.

Discussion: The results of this study conclude that there is a significant decrease in the ACT of blood in the cardiomy suction at half protamine compared to blood in the circuit immediately before discontinuing bypass. According to these findings, the practice of continuing cardiomy suction until half protamine administration may lead to the aspiration of blood with inadequate ACTs for re-initiation of bypass.

Eloise Davies

Comparison of patient haemodilution between cardioplegia solution 1 and del Nido cardioplegia during cardiopulmonary bypass

Multiple dose hyperkalemic cardioplegia solution has a common dosing protocol of 4:1 blood to cardioplegia ratio with 1000mL total volume for initiation dose, then 500mL every 20-30 minutes subsequently for the duration of aortic cross-clamping (ACC). Del Nido is a hyperkalemic single dose cardioplegia, at 1:4 blood to cardioplegia ratio of 20mL/kg up to 1000mL providing up to 90 minutes of protection. This paper aims to determine if there is a significant difference in the haemodilution between multidose conventional 4:1 blood cardioplegia solution 1 (CS1) and single dose del Nido cardioplegia in a single-centre cohort.

Data from 191 adults who underwent cardiac surgery between September 2021 and March 2023 was collected and reviewed using Microsoft Excel. For both cardioplegia groups, the difference in haemoglobin (Hb) from preoperative Hb was compared to the intraoperative Hb from the arterial blood gas (ABG) taken shortly after the application of the ACC and the administration of induction cardioplegia dose. Intraoperative Hb was then compared to the last ABG Hb measured after rewarming but before ACC removal.

There was no statistically significant difference between del Nido (n=53) and CS1 (n=138) with the degree of patient haemodilution after the first dose of cardioplegia on cardiopulmonary bypass (CPB) ($p=0.78$) or after last dose of cardioplegia ($p=0.06$). Patients within each group were of similar body surface area ($p=0.32$), age ($p=0.05$) and sex ($p<0.05$). There was a significant difference in the total CPB and ACC times

($p < 0.05$). CS1 had longer average CPB times (123 ± 42 minutes), and ACC times (93 ± 28 minutes) versus del Nido (105 ± 32 minutes; 71 ± 25 minutes). Surgical procedures for CS1 were majority coronary artery bypass graft (88%) versus del Nido which were majority aortic valve replacement (38%).

Del Nido demonstrated no significant difference in haemodilution compared to CS1. This could be attributed to confounding factors that are difficult to account for in a retrospective study.

James Morgan

Survey of Burnout among ANZCP, AmSECT, and SCPS Perfusionists

This research aims to develop a comprehensive understanding of burnout among Perfusionists. Preventing burnout among health care professionals and supporting their well-being is increasingly recognised as an important part of providing high-quality patient care. However, few researchers have investigated burnout among Perfusionists, and no relevant data is available post-COVID-19 pandemic. This study utilised an electronic survey, including an abbreviated, 20-item Maslach Burnout Inventory (MBI), the gold standard for assessing burnout. This survey was sent out to 2,272 potential participants: 133 members of ANZCP, 473 members of SCPS, and 1,672 members of AmSECT. 239 total responses were received (10.5%), of which 238 were included in the study. There were 62 responses from ANZCP (46.6%), 81 from SCPS (17.1%), and 96 from AmSECT (5.7%). Of the 238 included responses, 77 (32.4%) were classified as at high risk for burnout, 56 (23.5%) were classified as medium-risk, and 105 (44.1%) were classified as having a low risk. The overall prevalence of medium- or high-risk of burnout was 55%. Australia had the lowest prevalence of the regions, and New Zealand had the highest. Gender, age, on-call duties, and the Areas of Worklife items were shown to be among the most significant risk factors for burnout. This study is, to the best of our knowledge, the first to report that routinely visiting patients is associated with lower burnout scores among perfusionists. The aetiology of burnout was complex and individualised. However, there were greater levels of overextension in this study than predicted by previous research. Furthermore, short staffing, was found to be very common, with 47.5% of respondents reporting experiencing being understaffed at least once per week. Given the study methodology, selection bias was unavoidable. Those who feel more burnt out may be more likely to respond to a survey about burnout, leading to an overestimation of burnout prevalence. Future research should focus on a longitudinal design, investigating the development and presentation of burnout among perfusionists over time.

Dean Patrao

Post operative atrial fibrillation development in adult cardiac surgery using del Nido vs cold blood cardioplegia: a literature review

Background:

Post operative Atrial fibrillation (POAF) is a common arrhythmia that presents in the cardiac surgical patient cohort post-operatively. The choice of cardioplegia administered may be a contributing factor to this post-operative complication. Cold St Thomas blood cardioplegia (CBC) and Del-Nido cardioplegia (DNC) are two cardioplegic solutions commonly utilised in cardiac surgery to achieve myocardial

protection. While CBC was typically used in the adult cardiac setting, DNC has more recently been utilised despite it initially being formulated for paediatric surgery.

Objective:

This literature review aims to investigate if the development of POAF is affected by the choice of cardioplegia and the differences if any exist.

Method:

A literature search was conducted to assemble peer reviewed journal articles using Medline and Embase. The articles were limited to a 10 year timeframe from 2013 to 2023. The search terms were a combination of ‘del nido’ ‘POAF’ ‘atrial fibrillation’ ‘cardioplegia’ using Boolean operators. Prospective, retrospective and randomised control trials were included. Studies were selected for having a statistically significant outcome regarding POAF development and cardiopulmonary bypass parameters like aortic cross clamp, bypass time and cardioplegia volume.

Results:

From the studies selected in this review a majority found DNC to have lower rates of POAF compared CBC. The mechanism of action linking the type of cardioplegia and POAF outcomes could not be definitively explained.

Conclusion:

The increasing use of DNC in adult cardiac surgery shows promising results with shorter aortic cross clamp and bypass times, lower cardioplegia volumes and more spontaneous defibrillation. Its effects on POAF development while encouraging needs to be validated by larger, randomised multicentred studies.

Xin Ning Joline Teo

SY Teng, KK Ong

Circuit Miniaturization – An Effective Blood Conservation Strategy in Paediatric Cardiopulmonary Bypass

Background

In 2020, tubing length of bypass circuit utilized in patients 6 kg and below was reduced, including the 3/16”-1/4” arteriovenous loop along with the reduction of cardiotomy suctions to 3/16”. The use of this circuit was also expanded to patients up to 8 kg. We investigate several parameters to evaluate this blood conservation effort.

Methods

Patients weighing 10 kg or less from January 2014 to December 2018 (Group 1, n = 172) and January 2019 to August 2023 (Group 2, n = 165) were studied. The following data were extracted: body surface area (BSA, m²), bypass time (CPB, mins), hematocrit (%) – prebypass, first and last on bypass, use of modified ultrafiltration (MUF, %), MUF filtrate volume (ml) and total packed red blood cell volume (PRBC, ml) use during bypass.

Results

BSA was similar between the 2 group, 0.28 ± 0.08 vs 0.29 ± 0.08 , $p = 0.452$. The median CPB time was also similar 147.5 (IQR = $102.8, 201.8$) vs 160.0 (IQR = $113.5, 219.5$), $p = 0.123$. Prebypass and last hematocrit on bypass were similar, 31.6 ± 7.9 vs 32.0 ± 5.4 , $p = 0.058$ and 33.0 ± 4.2 vs 32.7 ± 3.5 , $p = 0.455$ respectively. First

hematocrit on bypass was significantly higher in Group 2, 26.4 ± 4.3 vs 27.4 ± 4.3 , $p = 0.021$. MUF was performed in 74.4% in Group 1 and 72.1% in Group 2, $p = 0.634$. MUF filtrate volume was similar 207.0 ± 75.6 vs 204.2 ± 76.3 , $p = 0.927$. Total PRBC volume utilized was significantly higher in Group 1, median 395 (IQR = 271, 487) vs 287 (IQR = 250,389), $p < 0.001$.

Conclusion

Miniaturization of bypass circuit and its expanded use attributed to the decrease in PRBC volume when other factors remained the same. Future attempt will be to further downsize the circuit.

Rona Steel

Jeremy Field, James Elhindi

Association between goal directed perfusion and days alive and at home 30 days after surgery at a single Australian centre

Ranucci's 2005 paper (1) describing the impact on kidney injury (AKI) due to low delivery of oxygen (DO_{2i}) during cardiopulmonary bypass (CPB), has revolutionized contemporary perfusion practices across the world. 'Low' DO_{2i} on bypass is well established to impact AKI (2), and likely other organs and morbidity and mortality as well (3).

DAH30 (post operative days alive and at home 30 days after surgery) is a patient-centred, validated outcome measure of quality that is sensitive to the impact of factors affecting patient recovery, postoperative complications and readmission (4).

The aim of this study was to investigate the association between GDP, in particular DO_{2i} and DAH30. Does maintaining 'adequate' DO_{2i} on bypass have an association with more post-op days at home? Or conversely, is a 'low' DO_{2i} on bypass associated with fewer days at home post cardiac surgery?

Routine ANZCPR data was collected prospectively for 1635 consecutive open-heart patients, all comers, at Westmead Public Hospital between September 2019 and December 2022 (HREC/15/SAC/341). This included patient body surface area, CPB flows, venous saturations, haemoglobin and haematocrit values which were linked with sourced DAH30 values. Patient data was collated in Microsoft Excel and statistically analyzed using Kruskal-Wallis rank tests, multivariate logistic regressions and a BEINF family of distributions.

The clinical significance of modifying DO_{2i} to improve patients DAH30 will be discussed as well as plans for further investigation across multiple Australian and NZ cardiac centres using the ANZCPR.

Jessica Betts

A pilot study to evaluate the clinical impact of preoperative dialysis in dialysis dependent patients undergoing cardiopulmonary bypass

Background: Dialysis-dependent patients undergoing cardiac surgery requiring cardiopulmonary bypass (CPB) bestow a complex and multifactorial preoperative and intraoperative clinical decision process for patient optimization. This retrospective pilot

study compares the modality of preoperative dialysis on mortality and morbidity outcomes following cardiac surgery.

Methods: A retrospective pilot study of dialysis-dependent patients who underwent cardiac surgery requiring CPB from January 2022 to July 2023 at Flinders Medical Centre (Bedford Park, South Australia). Preoperative dialysis modality, demographics data, intraoperative management and postoperative outcomes were obtained from in-hospital medical records and the Australian & New Zealand Collaborative Perfusion Registry (ANZCPR).

Results: Analysis included 15 dialysis-dependent patients (On dialysis >3 months prior to hospital admission), of which, 80% of had travelled from the Northern Territory for their operation. Hemodialysis (HD) was the primary modality of preoperative dialysis (n=9), followed by Peritoneal Dialysis (PD, n=3) and PD prior to hospitalisation, changed to HD preoperatively (PD-HD n=3). The overall mortality rate was 33% (HD =2/9, PD-HD =2/3, PD =1/3). PD patients had longer bypass times (median (M)=220min, range (R)=51min), compared to PD-HD (M=120min, R=178min), and HD patients (M=76min, R=83min), and required larger volumes of intraoperative hemofiltration (PD M=-4800mL, R=-6300mL), compared to PD-HD (M=-2000mL, R=-1200mL), and HD patients (M=-1050mL, R=-1700mL). Postoperatively, PD patients had longer ICU length of stay (M=725hr, R=850hr), compared to PD-HD (M=146hr, R=135hr) and HD patients (M=56hr, R=122hr), and required longer intubation times (PD M=170hr, R=269hr, PD-HD M=38hr R=55hr, HD M=27hr, R=66hr).

Conclusions: Findings from this pilot study suggest that PD patients may require more complex care and place higher demands on hospital resources compared with HD, and PD-HD patients. Further research is needed to understand the larger clinical significance of preoperative dialysis modality on patient outcomes following cardiac surgery.

A/Prof. Lachlan Miles

The Goldilocks Zone: Heparin/Protamine Interactions in Cardiac Surgery

Unless forced to use bivalirudin, heparin and protamine are two drugs administered as part of every case that requires cardiopulmonary bypass. However, these drugs are certainly not benign, and protamine in particular has an unfavourable side-effect profile, elements of which are not widely appreciated, notably the anticoagulant effects of protamine excess. At the conclusion of this talk, delegates should understand:

- The pharmacological properties of both heparin and protamine.
- The nature of the physiochemical interaction by which heparin is inactivated by protamine.
- The side-effect profile of protamine (in particular its relatively poorly understood anticoagulant properties).
- Dosing strategies for protamine following cardiopulmonary bypass (including fixed dose ratios, mathematical algorithms and heparin concentration devices) and the benefits and drawbacks of these approaches.

Dr Ben Davies

Vasoplegia in post-VAD patients

Dr Sarah Scheuer

Myocardial ischaemia reperfusion injury and Myocardial protection – a PhD research presentation

Cyril Serrick

Heparin management: factors for the cardiac team to consider in the operating room

Anticoagulation management during cardiopulmonary bypass is a dual edge sword. Having a patient that is sub optimally anticoagulated can cause a depletion in coagulation factors leading to postoperative bleeding and the administration of a variety of blood products that have a negative impact on patient morbidity and mortality. Likewise, a patient who is overly anticoagulated can have the exact same effect. This presentation will provide some insight into the risks that the cardiac surgical team should be aware of during CPB when administering, monitoring and reversing anticoagulation.

Dr Arjun Iyer

Heart transplantation: new frontiers

Jonathan Cropper

Yashutosh Joshi, Paul Jansz

Impact of heart donor age on the outcomes of donation after circulatory death

Heart transplantation from donation after circulatory death (DCD) donors has allowed for the expansion of the donor pool and has become firmly established as an alternative source of donor hearts. In an effort to meet the still growing demand for donor hearts, the use of older DCD donors may yet further expand the donor pool. Current global experience with older DCD donor hearts is limited and the impact of warm ischemia is unknown. As our experience grew following the initiation of our DCD heart transplant program in 2014 (utilizing normothermic machine perfusion [NMP]), our unit increased the age limit for DCD donor hearts from 40yrs to 55yrs in January 2018. In this study, we examined the outcomes of DCD heart transplants (DCD HTs) from younger donors (age <40, a reflection of the initial age cut-off) in comparison to our experience with older DCD heart donors (age > 40yrs). Older DCD donors can be increasingly considered as a means to further expand the donor pool. Whilst 2 and 5yr survival indicate that long term survival is promising, 1yr survival is currently worse for recipients of DCD hearts from donors aged >50. More data will be needed to further inform this early trend. Whilst the length of exposure to warm ischemia during the WLS process is not significantly different between younger and older donor groups, the impact of warm ischemia on older donors may be more profound and the careful consideration of viability is necessary during NMP with ex-situ coronary angiography a safe adjunct to decision making in high risk donors.

Dr Sarah Scheuer

DCD donor transplants – considerations from a surgeon's perspective

A/Prof. Lachlan Miles

The Dark Side of the Moon: Precision Right Ventricular Monitoring in Cardiac Surgery

Chronically neglected in favour of its more physically appealing left-sided counterpart, right ventricular dysfunction and failure in the post-bypass period is associated with marked increases in postoperative morbidity and mortality. Assessment of the right

ventricle can be challenging: while systolic dysfunction is easily appreciated (at least when the chest is open), diastolic function is difficult to assess due to poor alignment between the tricuspid valve and the ultrasound beam when using transoesophageal echocardiography. Recently, new developments in pulmonary artery catheter technology promise the ability to safely and reliably assess right ventricular diastolic function, allowing early detection of visceral venous congestion and ventricular failure. By the end of this presentation, delegates should understand:

- The poor prognostic associations between right ventricular dysfunction and outcomes after cardiac surgery.
- The metrics which can be derived from a pulmonary artery catheter which can be used to assess right ventricular function.
- How to interpret the right ventricular pressure waveform as it pertains to diastolic function.
- How to interpret indirect metrics of right ventricular performance that can be derived from echocardiography, including hepatic and portal venous waveforms.
- A basic approach to right ventricular rescue, including inhaled pulmonary vasodilators.

Dr Emily Granger

TAVI disasters! Possibilities, realities and the truth?

As TAVI shifts further into the low risk patient cohort the role of the Cardiothoracic Surgeon in these procedures is being questioned. If the surgeon is not part of the implanting team at the cath lab table, should they be on immediate standby with an empty operating theatre fully staffed with a bypass circuit primed? Surely a “low risk TAVI” (low risk for complications due to favourable access, implant anatomy and valve calcification) does not need a surgeon in the adjacent corridor primed for action? Or does it? Would “low risk” patients demand this if they knew that annular rupture, tamponade or ventricular perforation had a survival of less than 50%?

In Australia only 13% of accredited TAVI implanters are cardiothoracic surgeons. Most teams consist of 2 cardiologists. Most TAVI accredited hospitals are private hospitals (62%). Whilst guidelines “recommend” surgical and perfusion standby, what does this mean, and does this consistently happen?

This presentation will seek answers to these questions and cover strategies for TAVI salvage surgery.

Dr Sara Allen

Diversity, Equity, Inclusion and Biases in the Operating Room

Diversity is defined by the Oxford English Dictionary as the quality, condition or fact of being diverse or different; difference, dissimilarity; divergence. In healthcare, diversity may be thought of as the presence of individual differences within a community – and may apply to our patients and whanau, as well as our workforce. Equity might be simply conceptualised as a state where outcomes are equal for allcomers, rather than resources being equal for allcomers. Equitable practices recognise that individual differences and inequalities exist, and strive to overcome these by allocating resources or introducing processes to allow equal opportunities and outcomes for all individuals.

Inclusion is of course the act of valuing and welcoming individuals within a community or setting, engendering a sense of belonging, haere mai, and creating meaningful engagement and empowerment for individuals, as well as equality of opportunity. It is meaningful to consider that diversity does not guarantee inclusion – the presence of diversity within a group does not mean that the group will be inclusive.

Cognitive and social biases can be described as “tricks of the mind”. Cognitive biases are shortcuts, or errors, in our decision making and assessment that arise from our normal (and normally advantageous) cognitive processes. Social biases are discriminations or preferences for, or against, ideas or persons, and may be conscious or unconscious. We are all susceptible to cognitive and social biases, and they may affect our assessments, our decision making and our relationships.

Why and how is this relevant to us in the cardiac operating room?

In the perioperative environment, where clinical decision making is often by necessity rapid, and in a dynamic context, sometimes lacking data or details, cognitive biases may affect clinical decision making, costs, and patient outcomes. Biases can also be present and affect the way that we interact with our theatre teams, our colleagues, and our trainees, and the way that we build our teams and departments.

Over the past 100 years, clinical performance and safety in the operating room environment has rapidly improved. Unfortunately, we have not seen a similar pace or progress with improvements in equity of care for patients, nor equity for healthcare personnel in training and progression, academic opportunities and appointments, leadership and management, or pay. Diversity and inclusion within teams are associated with innovative thinking and problem solving, with better quality of care for patients, better access to care for marginalised populations, better efficiency, more inclusive solutions to problems, and learning environments that promote creativity and innovation. In short, diverse and inclusive teams and workforces are more satisfied, more productive, promote equity, and provide better care for patients.

How do we improve?

Aiming for durable change and improvement, focussing our thinking and conversations around equity, diversity, and inclusion on the concepts of justice (the right thing to do) and excellence (the smart thing to do) rather than benevolence (the nice thing to do when convenient) and compliance (the thing we must do to avoid punishment) is likely to be helpful.

In contrast to cognitive biases, social biases may occur at individual or systems level. When individual clinicians interact with patients, social biases may affect the clinician-patient relationship, the quality of care provided, and the effectiveness of the care provided.^{4, 5} Importantly, social biases can be “retrained”, even those that are implicit. Education and policy change have proven effective in reducing explicit bias in healthcare practitioners and systems. Implicit bias may be countered by conscious practice but this needs to be supported at an institutional level, with leadership and policies. Conscious practices may include individuals intentionally seeking diverse experiences and exposures, engaging with persons in a deliberately open, curious, and humble manner and allowing patients (and whanau, if important to the patient) to partner in decision making. Durable and effective improvements will require focus on organisational biases and change – strategies, protocols and policies that promote

equity, diversity and inclusion at every level with evaluation and iteration over time. Systems policies may include diversity of recruitment, promotion and retention, and diversity in decision making processes.

We will explore biases and the potential each of us have to reflect, understand, and change our implicit and explicit social biases, in the context of equity, diversity and inclusion in the operating room.

Casey Edwards

Results of the Australian and New Zealand Perfusion Workforce Survey: identifying problems to inspire solutions

Maintaining a robust perfusion workforce in Australia and New Zealand is an ongoing challenge confronting the entire local perfusion community. Managing the balance of training perfusionists and retiring perfusionists is delicate. However, without accurate data to evaluate the robustness of perfusion workforce, it is impossible to accurately predict the challenges that will present in years to come. In response to this, a 'Workforce Survey' was generated in April 2023 to gather data on the current employment landscape in Australia and New Zealand. The primary aim of this survey was to outline challenges the local perfusion community is already facing. The secondary aim was to highlight where the ANZCP Executive and Board could direct their efforts and undertake strategic planning, to best serve the membership in years to come.

The survey was generated on the 'Qualtrics' platform and distributed via email to 137 perfusionists, all members of the ANZCP. There was a 46% response rate (67 completed surveys). There were respondents from all states and territories in Australia (excluding the Northern Territory, no clinical perfusionist employed). There were also responses from both the North and South Island of New Zealand.

51% of respondents structure their full-time hours into 4 days of 10-hour shifts. The mean number of overtime hours per month was 16 (median 12, range 0-100). The majority of respondents report being on call 10-15 days per month. 53% were aged 50 or older, with 63 being the average expected age of retirement. When asked if they felt their unit had the required FTE for safe operation of service, 38% responded 'no'. This presentation will expand upon common themes from free-text submissions, explaining barriers to employment or training, and proposing some solutions to commonly expressed workforce issues.

Ghaz Jabur

A Decade of Exploring the Mysteries of Bubbles in Cardiac Surgery on the Journey to a PhD

This presentation explores my career journey: spanning over a decade, from modest beginnings, to the pursuit of a PhD in the captivating world of cardiac surgery and perfusion. My journey began when I commenced the role of a clinical cardiac physiologist. A couple of years later, a pivotal opportunity subsequently presented itself—a position as a trainee cardiac perfusionist. This transition marked a critical juncture in my career, ultimately leading me to pursue a Master's degree in perfusion through Swinburne University. It was during this phase that my passion for research ignited, fuelled by the prospect of exploring uncharted territories within the realm of

cardiac surgery. As an integral component of my perfusion Master's program, I embarked on a mini-thesis project—an initial foray into the world of research. This endeavour materialised into two pivotal clinical trials, sharing the common goal of assessing various arterial line filters with the aim of reducing embolic events from the bypass circuits during cardiac surgery. The first clinical study compared the efficiency of 20-micron and 40-micron standalone arterial line filters. This exploration yielded compelling results, highlighting the remarkable capabilities of the 20- micron filter in effectively eliminating bubbles from the circuit. Building upon the success of the initial trial, the second study embarked on a comparative analysis of the emboli filtration capacities of the 20-micron arterial line filter in conjunction with the latest generation of integrated filtration oxygenators. Once again, the 20-micron filter emerged as a standout performer, showcasing its superior emboli filtration capabilities.

Simultaneously, the trial unveiled a series of integrated filtration oxygenators closely following the performance of standalone filters, signalling promising advancements in the field. These early research experiences acted as a catalyst for my curious and enthusiastic desire to contribute to the perfusion scientific community. My interest ultimately led me to aspire to formalise my research training by pursuing a PhD. The focus of my doctoral research was to assess the effect of emboli on cerebral autoregulation during cardiac surgery requiring cardiopulmonary bypass.

Simultaneously, I embarked on a Master of Business Administration journey, expanding my horizons and broadening my skill set. This multifaceted journey has not only led me to the threshold of a PhD but has also opened doors to myriad opportunities within the field of perfusion. The experiences and knowledge acquired during these formative years have positioned me as an individual driven by an unwavering pursuit of excellence, innovation, and commitment to inquiry within the intricate domain of cardiac surgery. This presentation explores into the transformative experiences that have shaped my perfusion research journey, with a vision for advancing knowledge, improving patient care, and sharing insights for aspiring academics in perfusion.

Jessica Cantrick & Annette Mazzone

Career pathway options for perfusionists: how higher education (PhDs and MBAs) can be a valuable addition to the perfusionist's skillset

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