NEW ZEALAND NURSES ORGANISATION | TŌPŪTANGA TAPUHI KAITIAKI O AOTEAROA

PERIOPERATIVE NURSES COLLEGE N.Z.N.O

The Dissector

Journal of the Perioperative Nurses College of the New Zealand Nurses Organisation

March 2018, Volume 45, Number 4

44TH CONFERENCE RETROSPECTIVE

PICTORIAL REVIEW

2017 PNC AWARD WINNERS

14 Awards presented at 2017 PNC AGM

MEDICAL IMAGING

Preventing Contrast-Induced Acute Kidney Injury

CT-guided Coeliac Plexus Procedures

CLINCAL

Detecting Hypothermia in PACU

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The Dissector

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Touching Base

AUTHOR GUIDELINES

for writing articles intended for publication in *The Dissector.* The Editorial Committee of *The Dissector* welcomes articles, reports, book reviews, letters to the editor, exemplars, case study experiences, research papers/projects, theatre or section news etc. Guidelines that are designed to help first-time authors as well as those who have published previously are available on request from members of the Editorial Committee.

Changes in our Editorial Team

Welcome to the first issue of *The Dissector* for the year. I hope you have all enjoyed some leisure time over the summer and returned to work revitalised.

The Dissector editorial team has bid farewell to Johanna McCamish and Jennifer Sexton who have been energetic members both sourcing and writing material. We welcome Devika Cook, Charge Nurse Manager in the Post Anaesthetic Care Unit (PACU) at Auckland City Hospital and Catherine Freebairn, a senior medical imaging staff nurse at Hawkes Bay Hospital, to the team. Our committee members bring a range of clinical expertise across the perioperative continuum, all have postgraduate qualifications and a passion for writing.

Annual Awards

In this issue we feature the award winners from the Perioperative Nurses College National Conference in Napier last year. We are very fortunate to have such a wide range of scholarships and awards available and extend our thanks to the medical companies who continue to support our academic and educational endeavours and acknowledge excellence. Do look at the award criteria and take advantage of the opportunities these awards offer to support on-going study or enable attendance at an international conference.

Research projects

Two articles in the issue explore the findings of members research projects.

Lauren Porten conducted a literature review to identify prognostic factors affecting mortality in high risk general surgical patients undergoing emergency laparotomy. Lauren highlighted the importance of prompt identification and treatment for the most vulnerable patients and prevention of institutional factors.

Charlotte Thorne used a combination of clinical audit and a quantitative non-experimental methodology to review the detection, incidence and management of hypothermia in the post anaesthetic care unit (PACU). Her research supports the need for the use of consistent guidelines, increased temperature monitoring and identification of the patients most at risk from hypothermia in the PACU environment.

Contrast media

Screening and identification of patients at risk of contrast media induced acute kidney injury is an important role of medical imaging nurses but complicated by a range of best practice guidelines and prophylactic management.

Fiona Unac conducted a small retrospective study at Hawkes Bay District Health Board to determine the effectiveness of current patient screening measures. Fiona recommends more selective outpatient screening targeted to patients with known renal disease and diabetes with more onus on the referrer to supply the necessary information. Further dialogue on this subject from other centres would be welcome.

Medical imaging nurse Trisha Russell describes the procedure and value of coeliac plexus block and neurolysis in patients with intractable cancer related pain. While the procedure may not completely relieve pain, it may at least lessen the need for such high doses of opioid medication and the subsequent side effects.

An additional piece from the editorial team (see page 38) discusses the value of writing for publication so please read this and send us your contributions.

Shona Matthews, Chief Editor

The Dissector
The official Journal of the Perioperative Nurses College of the New Zealand Nurses Organisation (PNC[NZNO]).

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Oppose the Anaesthetic Technician Scope of Practice review!

Tabletalk for this issue of The Dissector *focuses on providing an overview of standards and an update on the review of the Anaesthetic Technician Scope of Practice. Both BIG topics currently under discussion.*

Standards

Members frequently ask: "Why do we use the Association of peri-Operative Registered Nurses (AORN) recommended standards as rationale for best practice when writing local procedures, given they are American-based?"

The Mission of the Perioperative Nurses College (PNC) of the New Zealand Nurses Organisation (NZNO) is to support and promote the safe and optimal care of all patients undergoing surgery and other invasive procedures. This is achieved by promoting high standards of nursing practice through evidence-based education and research.

The Perioperative Nurses College describes a standard "as the quality measure used as a basis for perioperative practice and includes perioperative patient care, administration, documentation, professional development practice and quality improvement" (PNC of NZNO, 2014).

The Perioperative Nurses College, until a few years ago, had its own standards. These standards have been archived, as AORN was seen to cover these standards internationally, along with the Australian College of Operating Room Nurses (ACORN) standards. Both are in line with, and support, New Zealand Nursing Council (NZNC) competencies.

In place of New Zealand standards, additional individual position statements were created that are specific to New Zealand. Our standards include:

- Standard 1: Perioperative Nurses are responsible and accountable for their practice
- Standard 2: Perioperative Nurses practice evidence based nursing care supported by nursing knowledge and reasoned decision making
- Standard 3: Perioperative Nurses apply the principles of the Treaty of Waitangi within their practice
- Standard 4: Perioperative Nurses enter into and maintain therapeutic and effective communication with clients/patients, families/whanau, colleagues and peers
- Standard 5: Perioperative Nurses collaborate effectively within the Interprofessional team
- Standard 6: Perioperative Nurses practice meets the NCNZ competencies

A document library is also in place to support practices in the New Zealand workplace and these include documents supporting safe staffing, death in theatre and disaster planning and management.

As part of your Perioperative Nurses College membership, you have access to AORN's Perioperative Standards and Recommended Practices via eSubscription.

The standards can be accessed via the subscription link on the Perioperative Nurses College AORN web page. Please remember you need to log in to the NZNO site to access AORN standards.

At a local organisational level, the AORN guidelines are used to guide writing perioperative practices, policies and guidelines which are adapted to meet the New Zealand legislation as well as organisational requirements. All evidence is up to date and provides a comprehensive reference library.

Review of the Anaesthetic Technician Scope of Practice

PNC and NZNO provided submissions in reply to the Medical Sciences Council of New Zealand proposal for the review of the Anaesthetic Technicians scope of practice. An overview of the submission is provided below.

The Perioperative Nurses College of NZNO (PNC[NZNO]) strongly opposes the review of the Anaesthetic Technician Scope of Practice with the intention to create a Perioperative Practitioner (PP) scope of practice. There is no Health Workforce New Zealand (HWNZ) policy to underpin this scope of practice change. Furthermore, in the limited consultation survey, there is absence of any evidence to suggest such a workforce is required in Aotearoa New Zealand.

Our submission is underpinned by the New Zealand Nurses Organisation submission.

PNC[NZNO] strongly opposes the PP scope of practice for the following reasons:

a) there is a robust graduate pathway for Registered and Enrolled Nurses into the perioperative setting ensuring a sustainable health workforce in the perioperative continuum;
b) the inclusion of intra-operative roles such as scrub and circulating,;
c) the impact that the proposed degree programme will have on access to Registered and Enrolled Nursing student placements in Theatre, transport teams, PACU, ED, Radiology and ICU;
d) role confusion between the established title of Nurse Practitioner™ and the proposed perioperative practitioner. Nurse Practitioners™ have significant post graduate experience and qualifications and these roles exist within the perioperative continuum as well as intensive care, medical imaging / radiology and pain medicine;
e) absence of cultural safety underpinnings;
f) does not reflect the expectations of a graduate health professional: i.e. one who can analyse, think critically, and make decisions based on evidence-based practice. The wording of the proposed scoping document constantly refers to "demonstrate understanding" to specific areas of perioperative anaesthetic technology practice. There is a large gap between demonstrating an understanding of and applying critical thinking while performing a procedure/technique if required;
g) the proposed competencies over use the wording "apply knowledge" which makes this scope of practice read like an assessment criteria for a unit standard;
h) the proposed PP continues to work under the direction of the Anaesthetist, however this scope of practice change compromises patient safety in ICU, PACU, ED, Radiology, medical imaging and other areas without direct anaesthetist direction and supervision.

Nurses in New Zealand are well placed to meet health demands. PNC[NZNO] has advocated for a flexible nursing workforce to encompass all specialities within the perioperative continuum. This nursing workforce flexibility is underpinned by the nursing scopes of practice (NP, RN and EN) and is demonstrated within the knowledge and skills framework of PNC.

PNC[NZNO] strongly opposes the creation of the perioperative practitioner.

We oppose the Scope of Practice and the suggested competency framework (McCamish, 2017).

This edition of Tabletalk provides an insight into some of the work done behind the scenes by volunteers. Because we are passionate, knowledgeable and experienced within our speciality area of practice, we are able to support practice to a high standard. Thank you to members for their input and questions that prompt us to constantly look at best practices.

Johanna McCamish, PNC Chair

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Perioperative Nurses College of NZNO (PNC NZNO) (2014). Standards and documents. NZNO, Willis Street, Wellington. Retrieved from www.nzno.org.nz/groups/colleges_sections/colleges/perioperative_nurses_college/resources/standards_and_documents

McCamish, J., (2017). Review of the anaesthetic technician scope of practice.1215 PNCnzno submission to Medical Council of New Zealand.

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World Radiography Day

World Radiography Day is celebrated on November 8 each year. The date marks the anniversary of the discovery of x-radiation by Wilhelm Roentgen in 1895.

Radiographers worldwide use the day and the days around the date to promote radiography to celebrate the profession.

In New Zealand , Radiographers or Medical Radiation Technologists use the day to promote the profession as a career, celebrate the profession and its vital contribution to modern healthcare and as a chance to increase public awareness of diagnostic imaging and radiation therapy.

Medical imaging is one of the most exciting and progressive disciplines in healthcare and a field of great activity in terms of technological and biological research.

X-rays, MRI scans, CT scanning , Interventional Radiology, ultrasound and numerous other medical imaging technologies, as well as the eye-catching images associated with them, are known to many people.

Interventional Radiology is a sub-specialty of Radiology in which minimally invasive procedures are performed using image guidance. Some of these procedures are done for purely diagnostic purposes, e.g. angiogram, whilst others are done for treatment purposes e.g. angioplasty and stenting.

This year, at Auckland District Health Board (ADHB), a series of posters were on display illustrating the work undertaken within Radiology, not just by the Radiographers but by Radiologists and Radiology Nurses.

Radiology nursing services at ADHB are provided across two sites at three hospitals in four locations: Starship Child Health, Greenlane Clinical Centre and Auckland City Hospital Level 5 and Emergency Department on Level 2.

The Radiology nurses form an integral part of the Radiology team, working closely with Radiographers and Radiologists within all the radiology modalities.

The Radiology nurses role requires a high level of knowledge, expertise and independence as the departments provide services to a wide variety of patients with diverse needs and about whom information may be limited.

The primary focus of the nursing team in Radiology is the safe management of patients and families/whanau. Some of the responsibilities of Radiology nurses include:

- patient assessment and care;
- patient observations before, during and after diagnostic procedures;
- gaining informed consent from patients;
- venous access for the administration of medications;
- assisting with diagnostic and / or interventional procedures as scrub nurse and circulating nurse;
- giving and receiving patient handovers;
- completion of patient documentation and education for patients and other nurses.

– Gill Martin & Bronwyn Taylor

Radiographers, Radiologist and Radiology Nurse working in Interventional Operating room. (Image courtesy Photography Dept at Auckland Hospital)

Welcome to Perioperative 2018 45th annual PNC conference

Join us at the 45th annual PNC conference in Nelson! Mark the dates in your diary – now: October 11-13, 2018.

We hope to show you how vital good open productive communication is to all aspects of healthcare and for the best outcomes for our patients. Planning has progressed apace with speakers enthused about the topic and several already confirmed.

Joining our line-up are:

Maryanne Coyle: Territory Manager for REM Systems, who runs a series of popular workshops, such as "NO Mystery Task" and "Personality Plus", bringing her own form of theatre to theatre staff, and providing a fresh and entertaining approach to understanding the principles of dealing with personality styles in the OR;

Monique Williams, Product Specialist, Joint Reconstruction and Trauma;

Vicki Smith DN, Clinical support Representative for ZimmerBiomet, who will provide a planning chart where essential information can be recorded, in the hope that attendees can encourage their hospitals to use it, lending to "less surprises" and "well planned" revision cases;

Peter Kara: Manager, Emergency Management and Business Continuity Planning, Nelson Marlborough District Health Board;

Claudia Teunissen: Project Manager National Bowel Screening Programme, Nelson Marlborough District Health Board.

The Conference theme is "Communication is the Key".

We will be setting up a MORSim scenario and looking forward to some wonderful interactive talks. Our organising team is highly motivated and enthusiastic and cannot wait to show you all our wonderful Nelson region.

With the event coinciding with the school holidays, it is a great opportunity to bring your families for a short holiday!

Looking forward to you and your colleagues joining us in paradise.

– Bronnie Ball, PNC Chairperson Nelson/Marlborough Region

Terumo acquires Medeon Biodesign

Terumo Corporation has entered into an agreement to acquire assets related to the large bore vascular closure device from Medeon Biodesign, Inc., a Taiwanese publicly traded medical device company.

Under the terms of the agreement, Terumo will initially pay US$20 million followed by additional payments based on the achievement of future specific development milestones.

In recent years, the number of percutaneous cardiac and peripheral catheterization procedures that use a large bore device, such as Transcatheter Aortic Valve Implementation (TAVI), Endovascular Aneurysm Repair (EVAR) and Thoracic Endovascular Aneurysm Repair

(TEVAR), has been increasing. Usage is projected to increase by over 20 per cent per year.

The acquired device, a suture-mediated closure device with two braids, targets percutaneous large bore procedures via the common femoral artery, is designed to achieve rapid and reliable hemostasis at the puncture sites with excellent clinical outcomes.

The device is undergoing evaluation for CE mark certification in Europe.

Terumo supplies a range of minimally invasive vascular access and closure devices and is continuing to expand its product portfolio in growing segments through both in-house development and external investment, such as the January 2017 acquisition of Angio-Seal™ and FemoSeal™ family of vascular closure devices from Abbott Laboratories.

About Terumo Corporation

Tokyo-based Terumo Corporation is one of the world's leading medical device manufacturers, with over $5 billion in sales and operations in more than 160 nations. Founded in 1921, the company develops, manufactures and distributes world-class medical devices, including products for use in cardiothoracic surgery, interventional procedures and transfusion medicine; the company also manufactures a broad array of syringe and hypodermic needle products for hospital and physician-office use.

About Medeon Biodesign

Medeon Biodesign is headquartered in Taipei, Taiwan and focuses on the development of medical devices for minimally invasive surgeries to treat diseases of sizable patient population, such as cardiovascular, peripheral vascular, orthopedic, neurosurgery, obesity, gastroenterology, hematology, nephrology, gynecology, urology, and plastic surgery.

New Surgical Site Infection Improvement Programme evaluation and quarterly reports

The Health Quality & Safety Commission contracted Sapere Research Ltd to undertake an evaluation of the Surgical Site Infection Improvement (SSII) programme. The interim evaluation report has now been published on the Commission website. It provides positive findings about the programme's implementation and the difference it is making, as well as useful recommendations for on-going improvements. The final evaluation report will be published in July 2018.

In addition, the latest national quarterly surgical site infection improvement reports have been published.

All three reports are now available on the Commission's website at the following links:

Formative report:
https://www.hqsc.govt.nz/blog/gauging-success-for-surgical-site-infection-improvement

National Orthopaedic Surgery Report (Hip & Knee Anthroplasties):
https://www.hqsc.govt.nz/our-programmes/infection-prevention-and-control/publications-and-resources/publication/3154/

National Cardiac Surgery Report :
https://www.hqsc.govt.nz/our-programmes/infection-prevention-and-control/publications-and-resources/publication/3155/

The Commission has also published the latest quality and safety marker (QSM) information for the July–September 2017 quarter at *https://www.hqsc.govt.nz/our-programmes/health-quality-evaluation/projects/quality-and-safety-markers/qsms-july-sept-2017*

Among the QSMs featured are the QSMs for surgical site infection improvement for both orthopaedic surgery and cardiac surgery.

– Katie Monteith

2017 PNC annual award winners

EACH year a range of awards sponsored by medical supply companies is presented at the Annual General Meeting of the Perioperative Nurses College of the New Zealand Nurses Organisation (PNC^{NZNO}).

At the 2017 AGM in Napier, the following awards were presented:

SURGICO FREE PAPER AWARD

An award of $1000 sponsored by Surgico and presented to the PNC member who clearly attains the goal of sharing information that has resulted in better patient care and improved the standard of outcomes of Perioperative Nursing.

The Free Paper session is an important part of the annual conference and is staged on the Thursday afternoon prior to the official opening of each PNC conference.

The 2017 Award went to Chantelle Tod and Sally North for their joint presentation, *"Improving patient discharge times from the Post Anaesthetic Unit at Middlemore Hospital, CMH."*

Surgico's Angela Robinson (left) with Surgico Free Paper Award winners Chantelle Tod (centre) and Sally North.

CHRISTINA ACKLAND AWARD

Inaugurated in 2012 in memory of Wellington Perioperative Nurses College stalwart Tina Ackland, the Christina (Tina) Ackland Memorial Education Award for Services to Perioperative Nursing award, sponsored by Downs Distributors, is to acknowledge individual Perioperative Nurses College (PNC) members for their outstanding service to the perioperative community. For 2017 the recipient was the outgoing College Treasurer Emma Brooks of Wellington.

Emma Brooks (right) is presented with the Christina Ackland Memorial Education Award by Jenny Bell from Downs Distributors.

DEBBIE BOOTH MEMORIAL TRAVEL AWARD

This is awarded after judging of the presentations made at the Medical Imaging Nurses concurrent sessions, which follow the Free Paper sessions at the PNC Conference. The winner receives a $1500 travel grant from Obex Medical Ltd., with the runner-up receiving a $500 award from Boston Scientific.

This award was inaugurated in 1987 following the donation of a silver rose bowl by Debbie Booth's parents to honour their daughter's memory. Debbie Booth undertook her radiographers training in Christchurch but instead of sitting her final exams she decided to go nursing at the Christchurch Technical Institute. Following an overseas trip, she went to work at Greenlane Hospital in Auckland and completed the Cardio-Thoracic Course after which she spent a few months working in C.I.R. In 1982 she was appointed Charge Nurse to the Radiology Department in Christchurch Hospital, the first Technical Institute trained Charge Nurse there.

With Linda Robert (Managing Director, Obex Medical), June Carpenter and Jenny Smith, Debbie was one of the founder members of the Cardiology and Radiology Interventional and Special Procedures (CRISP) Nurses NZ, which held its first annual meeting in 1985.

CRISP was a national body set up to help bring nurses working in the Cardiac Catheter Lab and Interventional Radiology field together and facilitate sharing of information and experience.

Debbie presented a paper on Stone Removal at the inaugural meeting but tragically, a month later, on October 27, 1985, she died.

Two years later the first Debbie Booth Memorial Travel Award was presented at the CRISP Conference and has continued to be presented annually. One of the provisions of the award is that there must be at least six presenters of papers which are of an acceptably high standard.

From the outset, the award has been sponsored by Obex Medical.

For 2017 the Debbie Booth Award was presented to Catherine Freebairn (Hawkes Bay Region) for her presentation: "*Casting the PICC line in the 'swell' of obesity.*"

The runner-up award went to Jenny Sexton (Hawkes Bay Region) for her presentation: "*Surfing the wave of opinion: Radiology procedures – are they painful, how do the patients feel.*"

Debbie Booth Memorial Travel Award winner Catherine Freebairn (left) receives her award from Amanda Hammond from the Napier PNC Conference organising committee.

Jenny Sexton (Hawkes Bay Region) won the Debbie Booth Memorial Travel Award runner-up prize from Boston Scientific for her presentation: "Surfing the wave of opinion: Radiology procedures – are they painful, how do the patients feel."

BEST ARTICLE IN THE DISSECTOR

A grant of $1000 is awarded each year to the PNC member who is the author of the best clinical practice article published in *The Dissector* in the preceding 12 months. For 2017, the award went to Feng Shih for her article "*Not Just a Matter of Saving Face*" published in the December 2016 issue (Vol. 44 No. 3)

Feng Shih (left) was delighted to receive the award for the Best Article in The Dissector *from Shona Matthews, the journal's Chief Editor.*

DALLAS JESSIMAN AWARD

Dallas Jessiman (February 25, 1941 – May 7, 1999) was one of the founding members of the Theatre Nurses Special Interest Section of the New Zealand Nurses Association, the forerunner to the present College. She began her nursing career in April 1959 and was the mentor to many of today's senior Perioperative Nurses and theatre managers. Each year the Perioperative Nurses College makes an award of $500 to a PNC member who attends the PNC National Conference and AGM for the first time. The 2017 award went to Aliti Tawake (Hawkes Bay Region), who wrote about her conference experience in the December 2017 issue of *The Dissector* (Vol. 45, No. 3).

Aliti Tawake (left) with Amanda Hammond of the PNC Conference organising committee after winning the Dallas Jessiman Award.

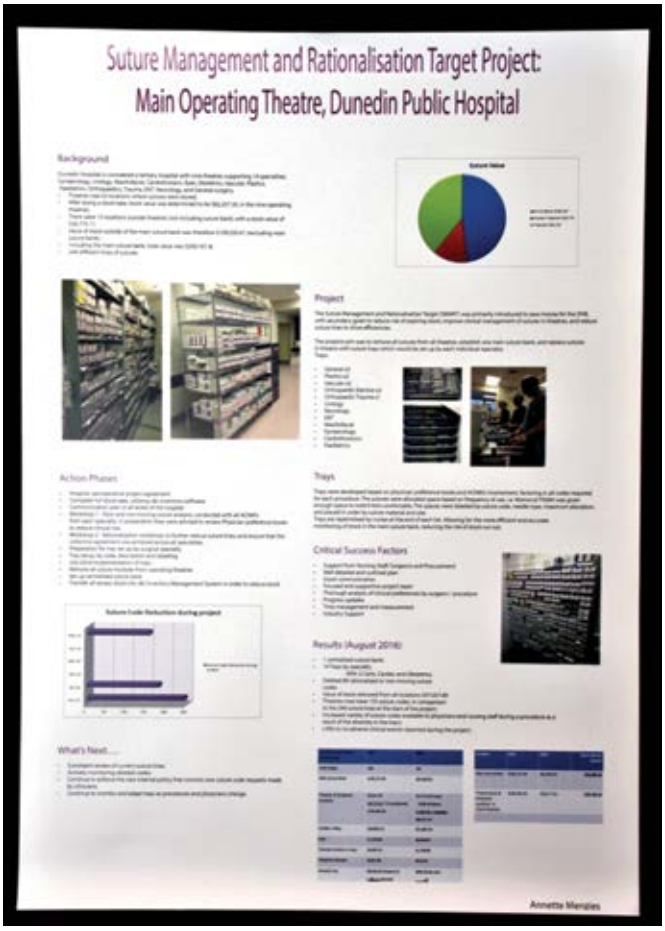
MEDSPEC

MEDSPEC POSTER COMPETITION

An award of **$500** sponsored by medical product directory MEDSPEC is presented to PNC members for presentation of a poster at the PNC Conference that has a focus on the Perioperative Nursing environment. For 2017 the MEDSPEC Best Poster Award went to Annette Menzies for *"Suture Management and Rationalisation Target Project: Main Operating Theatre, Dunedin Public Hospital."* This poster was reproduced on pages 20-21 of the December 2017 issue (Vol. 45, No. 3) of *The Dissector*.

MEDSPEC NOVICE WRITER

A grant of $500 sponsored by medical product directory MEDSPEC is awarded for the best article by a novice writer published in *The Dissector* in the previous 12 months. The 2017 MEDSPEC award went to Tim Hill for his article *"Multiple ligament reconstruction of the knee"* published in the June 2017 issue (Vol. 45, No. 1).



Annette Menzies won the MEDSPEC Best Poster Award with her Suture Management and Rationalisation Target Project: Main Operating Theatre, Dunedin Public Hospital presentation.

DEVICE TECHNOLOGIES

CATHERINE LOGAN MEMORIAL FUND SPONSORED BY DEVICE TECHNOLOGIES

Catherine Margaret Logan RN, RM, MA, (1946-2006) dedicated her nursing career to the Perioperative Nursing speciality. Catherine was passionate about the quality of care for patients and had a life-long interest in standards, ethics, research and education. Each year a grant of $1000 sponsored by Device Technologies is available to a PNC[NZNO] member undertaking/completing post-graduate study with a perioperative focus. This year the award went to Annelies Lindsay.

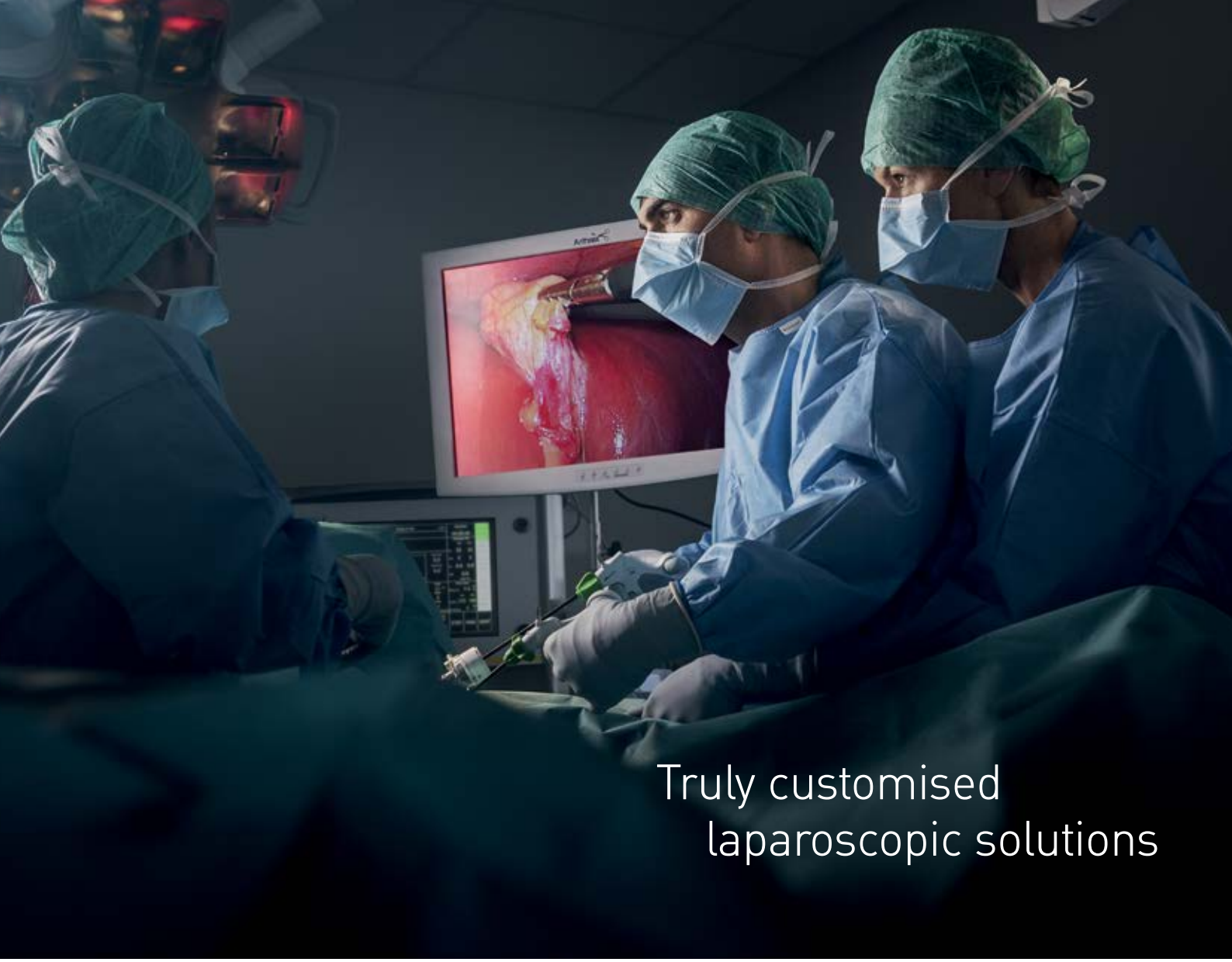
Mike Siddells from Device Technologies presents the Catherine Logan Memorial award to Kirstie Cooke, who received it on behalf of Annelies Lindsay.

Johnson & Johnson

JOHNSON & JOHNSON/DEPUY AWARD

The Johnson & Johnson Medical & Depuy Synthes Award of up to $4000 is an international educational grant to encourage and support the advancement of education and training for Perioperative Nurses. For 2017 this was awarded to Sandra Millis (Otago Region).

Sandra Millis (right) with Biddy Hoskin of Johnson & Johnson Medical after receiving the international educational grant.



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CULPAN PNC EDUCATION AWARD

The PNC Education Award of $1000 sponsored Culpan Medical is awarded to a PNC member for study on a subject relevant to Perioperative Nursing care, education, research or management. The 2017 prize went to Kirstie Cooke.

Lesley Michael (left) from Culpan Medical after presenting Kirstie Cooke the PNC Education Award for 2017.

SERVICE TO PNC AWARD

Dr. Isabel Jamieson (Canterbury-West Coast) was awarded Life Membership of the Perioperative Nurses College for her tireless work over many years, including the Editorial Committee of *The Dissector* and latterly her leadership of the Professional and Education Committee of the Perioperative Nurses College of NZNO (now known as the Professional Practice Committee).

Dr. Isabel Jamieson (left) receives her PNC Life Membership award from PNC Chair Johanna McCamish.

MÖLNLYCKE AWARD

Each year Mölnlycke presents an award of $1000 to the author of the Best Quality & Innovation Article published in *The Dissector.* For 2017 Gillian Martin won this award for her article "Two Wrongs Don't Make a Right or do they?" published in the March 2017 issue of *The Dissector* (Vol. 44, No. 4).

Robyn Campbell of Mölnlycke (left) presents Gillian Martin with the Best Quality & Innovation Article award.

THE PAUL DUKE TROPHY

At each year's annual PNC National Conference, a trophy in remembrance of medical company representative Paul Duke is presented to the company judged to have the best stand at the PNC National Conference. For 2017 the trophy went to the team at Device Technologies.

Mike Siddells of Device Technologies was delighted to receive the Paul Duke Award from Amanda Hammond.

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CLOG 03
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CLOG 05
White | Orange

CLOG 06
White | Green

CLOG 09
White | Fuchsia

CLOG 10
White | White

CLOG 11
Black | Black

CLOG 17
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Prevention of Contrast Induced A

By Fiona Unaç

ABSTRACT: Identifying patients at risk of contrast media induced acute kidney injury is typically the role of radiology nurses and medical radiation technologists. A small single centre retrospective study was conducted to determine the effectiveness of current patient screening measures. The management of patients with severe kidney disease undergoing CT scanning with contrast is discussed and recommendations made for more selective patient screening.

KEYWORDS: Contrast-induced acute kidney injury (CI-AKI), radiology nursing, contrast media, estimated glomerular filtration rate (eGFR), intravenous hydration

Introduction

With the growing use of radiographic contrast media in clinical practice and increasing incidence of chronic kidney disease, contrast-induced acute kidney injury (or CI-AKI) is widely acknowledged as a significant source of morbidity and mortality. It is defined as an increase in serum creatinine by more than 25 per cent or 0.5 mg/dL (44 µmol/l) from baseline in the absence of an alternative aetiology. While CI-AKI is the third most common cause of hospital-acquired renal failure and has significant implications for patient outcomes (Gupta & Bang, 2010), the relationship between CI-AKI, comorbidity and mortality is complicated and most patients who develop contrast induced nephrotoxity do not die from renal failure, but from either a pre-existing non-renal complication or a procedural complication (Basu, 2017).

The cornerstone of preventing CI-AKI is appropriate risk stratification, intravenous hydration, appropriate withholding of nephrotoxic medications, use of low or iso-osmolar contrast media and various intraprocedural methods for iodinated contrast dose reduction (Gupta & Bang, 2010).

This paper will examine a single centre approach to managing CI-AKI prevention in outpatients with severe kidney disease having a computed tomography (CT) scan with intravenous iodinated contrast media. A small study was undertaken from January 1, 2017 to December 31, 2017 to determine if the strategies undertaken were effective in preventing CI-AKI.

Categories of chronic kidney disease

Chronic kidney disease is categorised according to the presence or absence of kidney damage and level of kidney function irrespective of kidney disease diagnosis (Kidney Disease Improving Global Outcomes [KDIGO], 2017). Refer to *Table 1* for the categories of chronic kidney disease.

The risk of CI-AKI is likely to be non-existent for patients with an estimated glomerular filtration rate (eGFR) greater than 45 and very likely to be low or non-existent for patients with an eGFR 30-45. (eGFR is measured by mL/min/1.73m^2 - only the number value will be provided throughout the article).

Patients with severe renal function impairment or actively deteriorating renal function require careful weighing of the risk versus benefit of iodinated contrast media administration (Royal Australian and New Zealand College of Radiologists [RANZCR], 2016).

Management strategies for preventing CI-AKI

Risk stratification

An eGFR should be obtained in non-emergency patients with known kidney disease, including kidney transplant and or diabetes. Patients on metformin or metformin containing drug combinations should have renal function testing due to the risk of lactic acidosis, not CI-AKI (RANZCR, 2016).

During 2017, 2547 outpatient CT scans where performed with intravenous contrast media (CM) in our centre. It is difficult to risk stratify outpatient referrals if there is a lack of information of comorbidity diseases. Often there is no mention of known kidney disease or diabetes.

Severe renal function impairment is rare in patients who are unaware that they have either diabetes or kidney disease. Despite this, significant resourcing is directed into eGFR screening for outpatients by our centre. Age should not be considered as an independent risk factor for pre-screening eGFR (RANZCR, 2016). However, our centre currently undertakes routine eGFR testing for patients 60 years and over. During 2017, of the 2547 outpatient CT scan with IV CM, 1783 (70 per cent) were 60 years and over.

The RANZCR (2016) recommend the time elapsed between renal function testing and CM

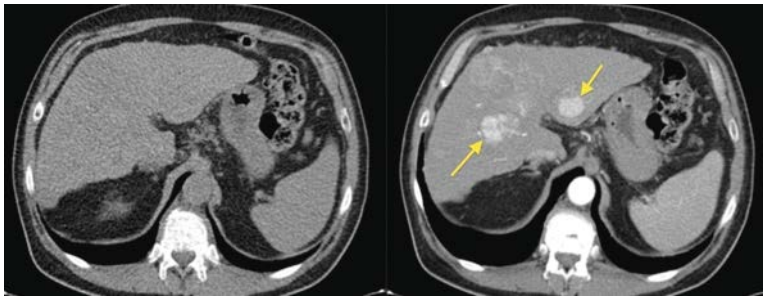

Figure 1: Image on the left without contrast media. Liver looks a little nodular but otherwise fine. Image on the right with contrast media shows multifocal hepatocellular carcinoma. (Radiology, St. Vincent's University Hospital www.svuhradiology.ie.)

cute Kidney Injury

in outpatients with severe renal disease

Table 1. Categories of Chronic Kidney Disease		
Category	Description	GFR mL/min/1.73m^2
CKD 1	Kidney damage with normal or high GFR	>90
CKD 2	Kidney damage with mildly decreased GFR	60-89
CKD 3A	Mild to moderately decreased GFR	45-59
CKD 3B	Moderate to severely decreased GFR	30-44
CKD 4	Severely decreased GFR	15-29
CKD 5	Kidney failure (including dialysis)	<15
Adapted from Kidney Disease Improving Global Outcomes (KDIGO), 2017		

administration should be governed by clinical judgment. CT bookers are not health professionals and are not responsible for clinical decision making. In our centre the CT booker follows a set formulary checking if an eGFR has been undertaken in the past three months for all patients 60 years and over or those who have diabetes or kidney disease mentioned on their referral form. If there is no recent eGFR, the CT booker organises this. The CT booker chased up around 470 outpatient blood tests during 2017. The radiology registered nurses are responsible for reviewing eGFR results for outpatients having a CT scan with CM whereas the medical imaging technologists check the inpatient group.

Iodinated IV contrast media enhances the density of blood vessels and organs. There is a risk that significant pathologies are missed if CM is not used. (See *Figure 1).* Radiologists consider whether a non-contrast study can be performed, weighing up the risk benefit ratio of CI-AKI versus the likelihood of missed pathology. The number of high risk cases vetted during 2017 that resulted in a non-contrast study is not known.

Intravenous hydration

Intravenous hydration with normal saline is the mainstay of practice in the prevention of CI-AKI (Gupta & Bang, 2010). Universal use of peri-procedural hydration is not recommended in patients with an eGFR greater than 30, however it may be considered for patients with CKD 3B if their renal function is acutely deteriorating (RANZCR, 2016).

There is no evidence to support a specific duration or volume of pre and post procedural hydration. The European Society of Urogenital Radiology (2018) recommends 0.9% intravenous saline, 1.0-1.5mL/kg/hr for at least six hours before and after contrast media injection. Whilst this is feasible in an inpatient setting, we have found this impractical for outpatients. Of the 14 outpatients who had IV hydration, only one patient was under 75-years-old, with the median age of 82 years. Our centre hydrates outpatients with CKD 4, or eGFR 15-29, but not patients in kidney failure (CKD 5, eGFR <15). Patients with CKD 5 who are not dialysed require inpatient admission with input from nephrology.

Our protocol for outpatients with CKD 4, is four hours IV hydration before and after CM injections.

Patients present at the radiology department at 8.00am. They are clinically reviewed by either the radiology nurse practitioner or radiology to check for heart failure, before IV fluids are charted. An IV leur is inserted and a litre of normal saline is commenced at 125ml/hr. Once the fluids are started, the patient is transferred to the medical day unit for on-going monitoring. At midday the CT scan is performed and the patient is discharged at 4.00pm. Nurse-led discharge summaries are commenced by the radiology nurses and completed by the medical day unit nurses.

Appropriate withholding of nephrotoxic drugs

High risk patients should be advised to stop nephrotoxic medications for 24 hours prior to and for 48 hours following the CM procedure, pending a renal function test (Rear, Bell & Hausenloy, 2017).

In our setting it is the responsibility of the referring team to manage nephrotoxic medications for outpatients with CKD 4. At the time of scheduling the CT scan, the CT booker forwards the referring team the date of the CT scan and our workplace guideline on management of nephrotoxic medications. It is for the referring team to decide and organise for any nephrotoxic medication such as metformin, loop diuretics, angiotensin converting enzyme inhibitors and angiotensin II inhibitors to be stopped.

Of the 14 outpatient CT scans on patients with an eGFR 15–29 with IV CM, seven (50 per cent) were not taking nephrotoxic medications. Of the seven patients on nephrotoxic drugs, three (43 per cent) had their nephrotoxic medications withheld by the referring team.

Use of low or iso-osmolar contrast media

The ability of different classes of CM to cause CI-AKI is influenced by their osmolality, iconicity and molecular structure. Each of these characteristics influence their behaviour in body fluid and their potential to cause adverse effects. Although the literature is not conclusive, it suggests that the iso-osmolar contrast agent Visipaque may be associated with lower rates of CI-AKI when compared with omnipaque, especially in patients with CKD and in those with CKD and diabetes mellitus (Basu, 2017).

Omnipaque 350 is the CM of choice for the majority of patients having CT scans with IV CM in our setting. Visipaque 320 is more expensive than omnipaque and is reserved for patients with an eGFR <45. Of the 14 outpatient CT scans on patients with an eGFR 15–29 with IV CM, all were administered Visipaque 320.

Contrast dose reduction

In our centre, the CT medical imaging technician seeks advice from the consultant radiologist on contrast dosing in patients with severe kidney disease. Determining injection speed, time and CM dose requires expert clinical decision making based on what clinical question is being asked, what body structures are being evaluated, as well as the patient's age, weight, cardiac output and comorbidities. The aim is the use the lowest dose of CM consistent with a diagnostic result.

Findings

Of the 2547 outpatient CT scans with intravenous CM, only 14 (0.005%) had an eGFR 15–29. Of those 14 cases, seven referrals had sufficient information that would have prompted pre-scanning eGFR. The remaining seven referrals had no mention of diabetes or kidney disease on the referral form and were captured by screening patients over the age of 60 years. As part of this study, retrospective interrogation of the electronic health record revealed that all of these patients had kidney disease mentioned somewhere on their electronic file.

Of the 14 outpatients with an eGFR 15–29 having a CT scan with intravenous contrast media:

- All had 1 litre of normal saline at 125mL/hr 4 hours pre and post CT scan;
- All were administered Visipaque 320 with the volume determined by the radiologist;
- Half were not taking nephrotoxic medication. Of the seven taking nephrotoxic medication, three were advised to withhold this by the referring team.

All patients were given a laboratory form and instructed to have an eGFR and creatinine blood test 48 hours after their CT scan. Their general practitioner was instructed to chase the result and if applicable to advise the patient to restart nephrotoxic medications.

Using a Paired Sample T-Test comparison analysing pre-scan eGFR and post-scan eGFR, there was no statistically significant difference. p=0.628.

The greatest increase in serum creatinine was 17 per cent, which is below the 25 per cent threshold required to be diagnosed as CI-AKI. The mean differential was a three per cent increase in serum creatinine. Interestingly, of the 14 patients who received IV hydration, five (36 per cent) had improved renal function or an increase in eGFR and decrease in creatinine post CT scan. A limitation of this study is the lack of consistency in the time interval from the pre-CT renal blood test to the CT scan, ranging from one to 29 days. The eGFR just prior to the CT scan is not known, which affects the reliability of this finding.

Discussion

It is reassuring that no outpatients with severe kidney disease (eGFR 15-29) developed CI-AKI following a CT scan in this small study. Of the 2547 outpatient CT scans with intravenous CM, only 14 (0.005%) had an eGFR 15–29. All had known kidney disease. The number of patients with an eGFR 15–29 who were risk stratified into a non-contrast scan has not be quantified. The number is expected to be very low, possibly around a further 14 patients a year.

Many risk factors have been thought to be associated with CI-AKI but guidelines do not agree on which ones should result in pre-contrast media renal function testing, with the exception of known kidney disease and diabetes. It is very uncommon for patients to be unaware of severe renal impairment. The larger the number of screening questions and criteria, the greater the number of patients who will have renal function testing unnecessarily, placing burden on patients and adding to healthcare costs (RANZCR, 2016).

Recommendations:

Recommendation 1: Radiology requests requiring CM must include kidney disease and diabetes status.

In our work setting, there is a culture that the radiology department will arrange renal function testing, if required, prior to scanning. This has led to significant resourcing in organising, following up and reviewing blood results. If radiology requests included kidney disease and diabetes status this would significantly decrease the number of patients having pre-contrast media renal function testing. It may also prompt referrers to consider co-morbidities in their risk analysis before considering referring patients' for radiology services.

Recommendation 2: Clinical judgment should guide the interval between an eGFR result and contrast media administration.

The RANZCR (2016) recommend that the time elapsed between renal function testing and CM administration should be governed by clinical judgment. This is usually not an issue for inpatient radiology requests as inpatients typically have a range of current laboratory results, including renal function.

If recommendation 1 is implemented, the number of outpatients requiring renal blood testing prior to CT scanning will be significantly reduced. However instead of a CT booker following a set formula of checking if renal tests are less than three months old, the decision of whether a blood test is required should be a clinical decision made by a health professional.

Radiology nurses have critical thinking expertise to consider the likelihood of the patient being at risk of CN-AKI if they had a CT scan with CM. Only when the radiology nurse is unsure should a current renal function test be arranged.

Conclusion

Outpatients with severe kidney disease (eGFR 15–29) having a CT scan with IV CM can be safely managed as day cases with four hours pre and post IV hydration. IV hydration remains the mainstay strategy for preventing CI-AKI in patients with severe kidney disease. No conclusions could be made regarding nephrotoxic medications. Further research is recommended on reducing the burden of unnecessary serum renal testing prior to administering contrast media.

About the Author:

Fiona Unaç is a Nurse Practitioner across Radiology and vascular services at Hawke's Bay District Health Board. She is the immediate past chair of the Perioperative Nurses College[NZNO] and continues to participate in College activities at a regional level.

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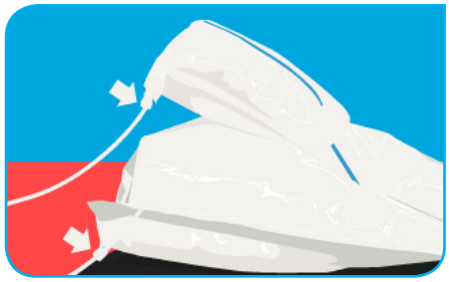

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2017 PNC conference Retrosp

Feng Shih chats with Jin Girvan (centre) and Cheryl Gush on the Stryker stand.

The 44th annual conference of the Perioperative Nurses College of the New Zealand Nurses Organisation was held at the Napier Conference Centre in October 2017 with a comprehensive report in the December 2017 issue of The Dissector. *Space did not allow us to publish as many images from the Conference as we would have liked, so here is a retrospective view.*

Images courtesy Michael Esdaile

Jan Robinson (left) fields an enquiry on the Intermed stand.

The team on the REM Systems stand was kept busy all conference.

The Global Medics team demonstrate the InControl Cuff First gloves.

The EBOS Healthcare team enjoy a bit of quiet time between sessions.

pective Advice from the Ocean

L to R: Device Technologies' Steris display saw steady interest.The cornerstone sponsors. Kevin Anckorn demonstrates Halyard Health's surgical solutions.

The team from 3M Medical, left to right: Nicola Lamb, Maria Ovalles and Dorothy Formby .

The Conference organising team (left to right): Rebecca Rawnsley, Alisha Bason, Amanda Hammond, Glaizza Payongayong and Anouk Doevendans-Lumb, with Rochelle Holder (seated).

Lohmann & Rauscher were welcome newcomers to the PNC Conference.

Lisa Rendell demonstrates Buffalo Filter's Plume Pen on Jackson Allison's stand.

Detecting hypothermia in the post anaesthetic care unit: A comparison of axilla and tympanic temperature recordings

By Charlotte Thorne

ABSTRACT: Temperature monitoring is a critically important aspect of patient care; however, hypothermia may not always be detected at initial onset due to a lack of temperature monitoring and implemented guidelines. The following study aimed to identify potential risk factors and patterns in the development of hyperthermia postoperatively and whether differences exist between the use of axilla and tympanic thermometers. Immediate recognition and intervention of hypothermia is critical in the Post Anaesthetic Care Unit (PACU) as it can lead to serious post-operative complications, a longer PACU stay and increased hospital costs (Connor & Wren, 2000).

KEYWORDS: Post-operative hypothermia, post anaesthetic care unit (PACU), temperature monitoring, Perioperative Nursing

Introduction

Post-operative hypothermia is defined as a core body temperature below 36 degrees Celsius (Hart, S., Bordes, Hart, J., Corsino, & Harmon, D. 2011) and is a common, significant problem in PACU. It has been found that up to 70 per cent of patients in a Post Anaesthetic Care Unit (PACU) present as hypothermic on admission (Connor & Wren, 2000). The consequences can range from adverse outcomes for the patient, to undue financial burden on the institution providing care (Davie & Amoore, 2010).

Primarily non-invasive axilla and tympanic thermometers are used routinely in the PACU environment. However, it has been noted in clinical practice that when these modes are used on the same patient, significant variations in readings are detected. There are considerable gaps in the literature defining how temperature should be monitored in PACU, with on-going debate between the relative accuracy of axilla verses tympanic thermometers (Corey, Fossum, Donaldson, Francis, & Davis, 1998).

Immediate recognition of hypothermia is critical in PACU and accuracy of readings is vital. However, there is currently uncertainty around temperature monitoring post-operatively and there are no supporting guidelines within Counties Manukau Health.

The present study aimed to identify potential risk factors for developing hypothermia post-operatively and explore temperature monitoring and temperature patterns in PACU. In addition, the study investigated whether there are patterns in PACU that should be considered in the development of temperature monitoring guidelines and if differences exist between the axilla and tympanic thermometers routinely used that impact upon patient outcomes.

Methods

This was a single site study at an elective surgical centre within Counties

Manukau District Health Board, South Auckland. The research was conducted in two phases; Phase One comprised a clinical audit and Phase Two used a non-experimental quantitative methodology design.

The target population for Phase One were patients with a temperature recorded below 36 degrees Celsius on arrival to PACU following general anaesthesia. Forty anaesthetic records from each of the four seasons were audited retrospectively at three monthly intervals from January to December 2015. This approach allowed for potential seasonal impacts. National Health Index (NHI) numbers were generated at random for each time period. If documentation was found to be incomplete, a new NHI number was generated for replacement. Inclusion criteria were legible, complete documentation and patients more than 16 years of age.

Data was collected on the following potential risk factors for post-operative hypothermia identified in the literature: temperature, age, gender, surgery type, surgery length, body mass index (BMI) and warming measures used intraoperatively.

The data collected was analysed using a logistic regression model with assistance from a University of Auckland statistician.

In Phase Two, patients who were over 16 years of age and underwent surgery by general anaesthesia were selected at random in PACU each day. Temperatures were taken from axilla and tympanic sites on arrival and at subsequent 15 minute intervals until discharge, without researcher manipulation. Data collected in Phase Two was entered into a spread sheet for analysis by statistical procedures of mean, standard deviation, frequency distribution and percentages to describe the population being investigated. Approval from the University of Auckland Ethics board was obtained prior to implementation of the study (reference number 016203).

Results

Phase One: Risk Factors for Post-Operative Hypothermia

Table 1 outlines the demographic profile of 160 anaesthetic records randomly selected for analysis in Phase One. Of the 160 patients, 31.25 per cent (n=50) were detected as hypothermic by either a tympanic or axilla thermometer on arrival to PACU. The logistic regression model did not identify any statistically significant risk factors for post-operative hypothermia. The independent variables of gender (p=0.7383), age (p=0.4935), surgery length (p=0.9258), BMI (p=0.7451), pre-op temperature (p=0.5882) or use of cocoon in theatre (p=0.2047) were not found to be predictors of post-operative hypothermia. Discharge temperature from surgery (p=0.0001) correlated with the temperature on arrival to PACU, which is statistically significant. However, because discharge temperature is not always recorded after surgery, it cannot be used as a reliable predictor for post-operative hypothermia.

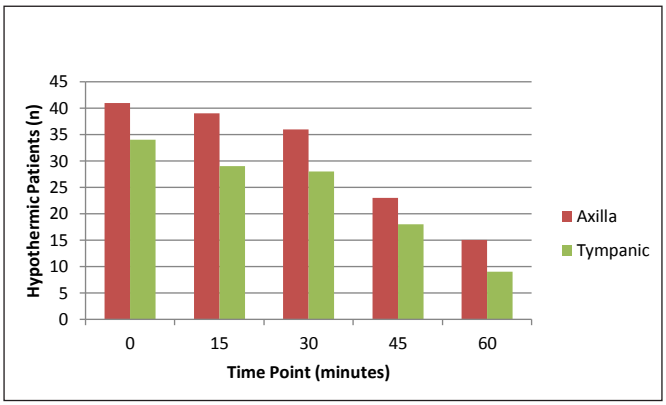

Figure 1: Number of Hypothermic Patients - All

Phase Two: Incidence of Hypothermia

In Phase Two of the study 59 patients were observed and population demographics were outlined as seen in Table 2. In this phase of the study, the axilla thermometer detected 41 patients as hypothermic (69.5%) and 34 by the tympanic thermometer (57%). There were a higher number of hypothermic patients detected by the axilla thermometer at all time points in comparison to the tympanic thermometer. The incidence of hypothermia detected by both thermometers declined throughout the PACU stay and is depicted in Figure 1.

The number of hypothermic patients detected at each time point were separated into age (above 60 years and below 60 years), gender, surgery type and surgery length.

On arrival to PACU, general surgical patients had the highest incidence of hypothermia detected by the axilla thermometer (18, 43.9%), followed by gynaecology (7, 17.1%) and ORL (7, 17.1%), plastics (5, 12.2%), orthopaedic (3, 7.3%) and urology (1, 2.4%). Similarly, general surgery patients had the highest number of hypothermic patients detected by the tympanic thermometer, (n=13, 38.2%) on arrival to PACU, followed by ORL (n=8, 23.5%), Plastics (n=6, 17.7%), gynaecology (n=4, 11.8%), orthopaedic (n=2, 5.9%) and urology (n=1, 2.9%). Surgery length, gender and age were not found to be predictors of post-operative hypothermia.

Table 1: Patient Demographics of Clinical Records Audited

		Jan - March (n=40)	**April - June** (n=40)	**July - Sept** (n=40)	**Oct - Dec** (n=40)	**Total** (n=160)
Gender (n,%)	Male	17, 42.5%	16, 40%	15, 37.5%	18, 45%	66, 41.25%
	Female	23, 57.5%	24, 60%	25, 62.5%	22, 55%	94, 58.75%
Age (mean, sd)		47.55, 15.1	51.85, 17.7	51.28, 18.19	51.68, 16.55	50.59, 16.89
Surgery Type (n,%)	General	8, 20%	9, 22.5%	7, 17.5%	7, 17.5%	31, 19.37%
	Gynaecology	9, 22.5%	7, 17.5%	8, 20%	8, 20%	32, 20%
	Hand	3, 7.5%	6, 15%	2, 5%	8, 20%	19, 11.88%
	Plastics	4, 10%	2, 5%	5, 12.5%	0, 0%	11, 6.88%
	ORL	8, 20%	8, 20%	9, 22.5%	8, 20%	33, 20.62%
	Ortho	8, 20%	8, 20%	9, 22.5%	9, 22.5%	34, 21.25%
Surgery Length (mean, sd)		74.98,31.61	91.05,53.75	77.63,61.84	77.3,74.9	80.24, 55.53
Pre-Op Temp (mean, sd)		36.63, 0.48	36.69, 0.49	36.55, 0.413	36.54, 0.429	36.6, 0.453
Admit Temp (mean, sd)		36.19, 0.634	36.38, 0.522	36.18, 0.576	36.24, 0.608	36.2, 0.585
Discharge Temp (mean, sd)		36.42, 0.515	36.39, 0.446	36.28, 0.424	36.38, 0.415	36.36, 0.45
BMI (mean, sd)		29.07, 7.286	30.72, 7.642	30.02, 6.339	29.84, 6.296	29.91, 6.89
Cocoon Used in OT (n, %)		36, 90%	37, 92.5%	34, 85%	36, 90%	143, 89.38%

Table 2: Population Demographics of Phase Two	
Gender (n, %)	
Male	22 (37.3%)
Female	37 (62.7%)
Age (mean, sd)	50.64 (17.65)
>60 (n,%)	19 (32.2%)
<60 (n, %)	40 (67.8%)
Surgery Type (n,%)	
Orthopaedic	3 (5.1%)
ORL	10 (16.9%)
General Surgery	25 (42.4%)
Plastics	6 (10.2%)
Urology	1 (1.7%)
Gynaecological	14 (23.7%)
Surgery Length (mean, sd)	60.72 (52.48)
>60 minutes (n, %)	25 (43.86%)
<60 minutes (n, %)	32 (56.14%)
PACU Length of Stay (mean, sd)	66.58 (33.56)

Post-Operative Temperature Patterns

All patients observed in Phase Two had a mean lower reading on the axilla thermometer in comparison to the tympanic thermometer at all stages, as shown in Figure 2. The mean lowest temperature recorded on arrival to PACU by the axilla thermometer was 35.62 and by the tympanic thermometer 35.95.

There was an upward trend of the mean temperature recording by both tympanic and axilla thermometers throughout the PACU stay. At 60 minutes the mean temperature recorded by the axilla thermometer was 35.88 and by the tympanic thermometer 36.27.

In patients who received a cocoon, the lowest mean temperature detected by the axilla thermometer on arrival was 35.27 and by the tympanic thermometer 35.55. However, at 60 minutes, the mean axilla temperature was still 35.83, indicating a lengthy re-warming process. Temperature fluctuations were noted in patients who did not require warming on arrival to PACU with all remaining patients normothermic at all time points.

Discussion

Risk Factors for Post-Operative Hypothermia

The incidence of post-operative hypothermia in Phase One (n=50, 31.25%) was significantly lower compared to Phase Two, where the incidence of hypothermia was 69.5% (n=41) detected by the axilla thermometer, and 57.6% (n=34) detected by the tympanic thermometer. The reason for the higher incidence in Phase Two is unclear.

No statistically significant risk factors were found in Phase One. In Phase Two of this study, surgery type was identified as a predictor. However, due to the small sample size there is a larger margin for error. There were higher incidences of hypothermia detected in specialties with lower numbers. Of the six plastics patients, six were hypothermic on arrival (100%) and the one urology patient was hypothermic (100%) on arrival. In comparison, of the 25 general surgical patients 52% were hypothermic, and of the 14 gynaecology patients only 29% were hypothermic.

Phase Two of this study did not identify age as a significant risk factor, with 74% of patients below 60 years hypothermic and 50% of above 60 years hypothermic on arrival. Identifying high risk patients in the pre-op setting would allow for appropriate measures to be undertaken with the aim of reducing the incidence of post-operative hypothermia.

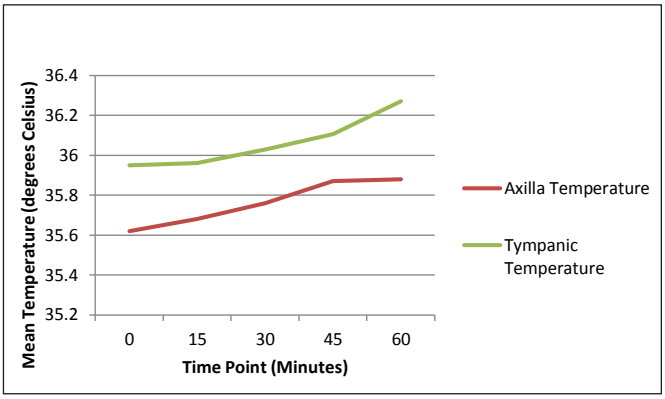

Figure 2: Temperature Patterns – All Patients

Development of Temperature Monitoring Guidelines

There were notable temperature fluctuations evident in Phase Two and patients who were normothermic on arrival became hypothermic at later time periods. T herefore, by increasing the frequency of temperature monitoring in Phase Two temperature fluctuations were detected, and interventions implemented earlier.

In Phase Two of this study it was noted that patients were discharged from PACU with temperatures below 36 degrees Celsius. The mean discharge temperature from PACU could not be calculated in Phase Two, as patients were only monitored for a maximum time of 60 minutes and patients were often discharged after this time point. These results highlight the need for consistent temperature monitoring within PACU to ensure timely and appropriate intervention and raises the question of implementing specific temperature monitoring guidelines, including some set criteria for discharge.

Axilla versus Tympanic Thermometers

In Phase Two, notably more patients were assessed as being hypothermic using the axilla thermometer in comparison to the tympanic thermometer. These differences highlight the need for future research with the aim of identifying the most accurate temperature monitoring device.

Phase Two depicted a lengthy re-warming time using the cocoon, with patients still detected as hypothermic after 60 minutes. There is an apparent need to review warming measures used in PACU and other designs or interventions may need to be investigated to improve the warming process and decrease PACU length of stay. All patients who did not receive warming measures maintained normothermia throughout the stay, reinforcing that maintaining intra-operative normothermia is important for prevention.

Strengths and Limitations

A key strength of this study is the combination of the clinical audit approach and a quantitative non-experimental methodology. Linking the findings from each phase allowed triangulation to provide information to address the complex issue of post-operative hypothermia in PACU. Phase Two had a smaller than anticipated sample size of 59 patients and therefore larger confidence intervals and margin of error must be expected.

The researcher recognises that the generalisation of results is limited due to the setting in which the study was conducted. The types of patients and surgery performed vary between hospitals and also

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CT GUIDED coeliac plexus procedures

By Tricia Russell RN, Dip Anthroposophical Nursing

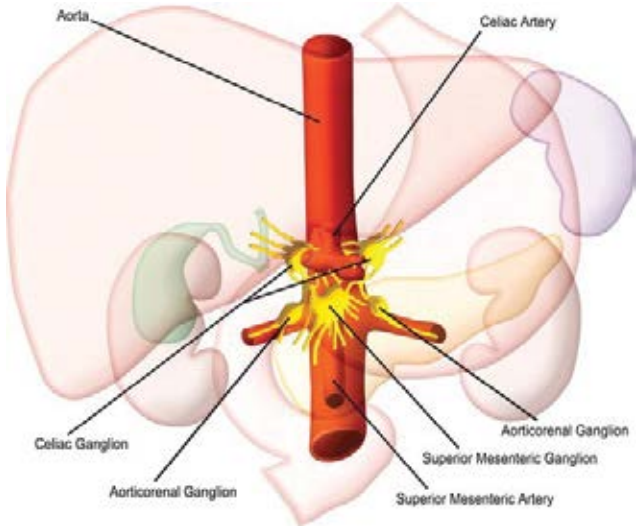
ABSTRACT: Computed Tomography (CT) Guided Coeliac Plexus Block or Neurolysis is an advanced pain management strategy for patients with tumours originating in the upper abdominal area. It is especially useful when a patient's pain remains unresponsive to conventional analgesic medications. While the procedure may not entirely relieve a patient's symptoms, it can provide significant pain relief allowing patients to engage in life activities again.

KEYWORDS: CT Guided, Coeliac Plexus Block, Coeliac Neurolysis, intractable pain.

Introduction

Chronic, intractable pain is life destroying. It impacts on every aspect of a person's health and wellbeing. For most people pain is a distressing and subjective phenomenon that is often difficult to define. In patients with tumours originating in the upper abdominal viscera, managing their pain successfully often proves complex; especially when conventional analgesic management results in inadequate pain relief or intolerable side effects.

A radiological procedure designed for easing incessant abdominal pain is a CT-guided coeliac plexus neurolysis, or block, to disrupt the sensory nerve impulses at the level of the coeliac plexus or splanchnic nerves (Kambadakone, Thabet, Gervais, Mueller, & Arellano, 2011). Successfully disrupting this pain stimuli pathway offers patients with severe cancer related pain, improved comfort and the ability to engage in life again (Seaman's, Wong & Wilson, 2000).

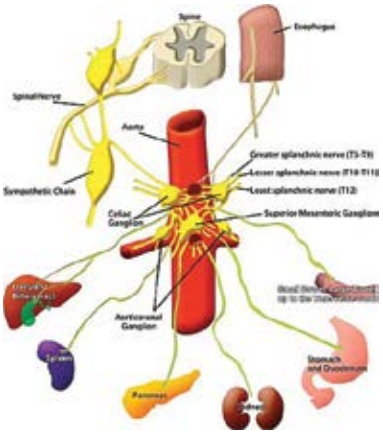


Anatomy

The coeliac plexus, also known as the solar plexus, consists of a group of ganglia and complex interconnecting nerve fibres. It lies in the abdominal cavity close to where the coeliac trunk, superior mesenteric artery and renal arteries arise from the abdominal aorta. It sits behind the stomach and the omental bursa and in front of the crura of the diaphragm at the level of the first lumbar vertebra. As sympathetic, parasympathetic and visceral sensory nerve fibres supply the upper abdominal organs, this plexus innervates the liver, gallbladder, biliary tract, pancreas, spleen, adrenal glands, kidneys mesentery and the small and large bowel proximal to the transverse colon. As the coeliac plexus is the main pathway for transmitting pain, in cases of chronic, intractable pain, coeliac plexus neurolysis or block may be an effective pain relief option for some patients (Kambadakone *et al.*, 2011).

Coeliac Plexus Procedure

Over the years, CT-guided imaging seems to have emerged as the preferred modality for the percutaneous coeliac plexus procedure (Kambadakone *et al.*, 2011). As an advanced radiological pain management strategy, it proves its worth for reducing intractable pain from malignancies such as pancreatic cancer (Argoff & McCleane, 2009). CT imaging shows the Radiologist the anatomical structures in question, including any variations in the coeliac trunk due to tumour spread. This allows



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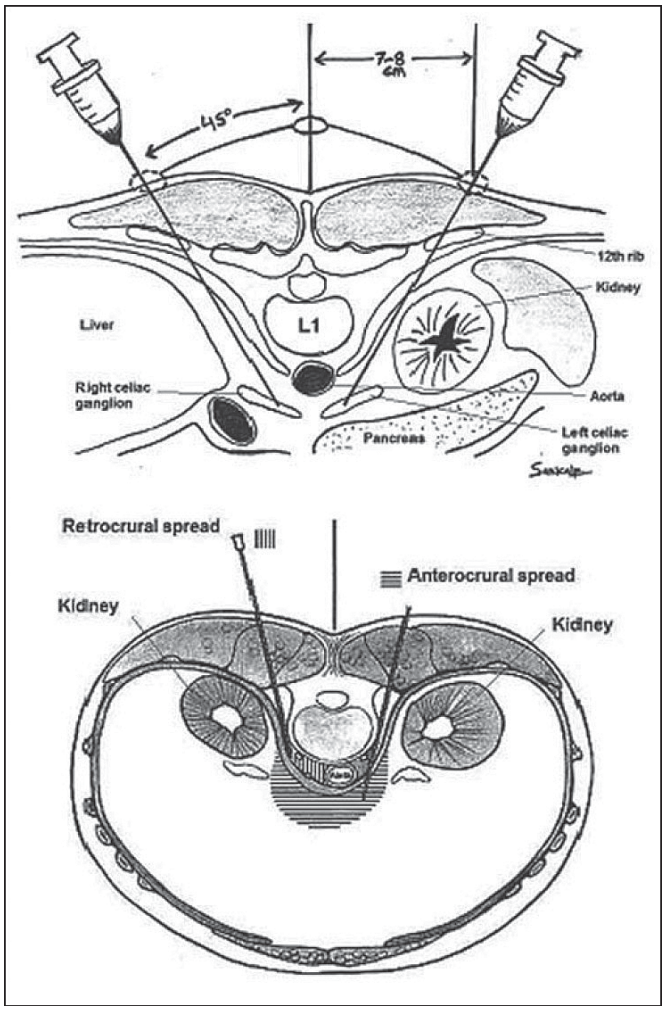
the Radiologist to plan the position, depth and angle of the needle before beginning the procedure. Kambadakone *et al.,* (2011) also point out that CT imaging shows the spread of the neurolytic agent within the antecrural space plus detecting any leakage into the peritoneal cavity.

Two radiological techniques that target the coeliac plexus are a coeliac plexus neurolysis, and a coeliac plexus block. The Radiologist performs both procedures under CT-guided imaging and the resulting effect lies in the medication administered.

In a coeliac plexus block, the Radiologist injects long acting local anaesthetic or corticosteroids to *temporarily* neutralise the coeliac plexus. Contrast medium confirms the needle position and the distribution of the injected agents. This procedure is often useful in seeking to relieve chronic benign pain, for example in chronic pancreatitis.

Coeliac plexus neurolysis

Coeliac plexus neurolysis is the therapeutic ablation of the coeliac plexus where the Radiologist uses CT-guided imaging to inject a neurolytic agent, such as ethanol, to *permanently* destroy the coeliac plexus. According to Kambadakone *et al*., (2011), the ethanol injection can cause severe, transient pain in some patients, so the Radiologist adds a long acting local anaesthetic to the ethanol. Again, the Radiologist uses contrast medium to confirm needle position and the distribution of the neurolytic agent. This is the preferred procedure for patients with intractable cancer-related abdominal pain.



Response to Chronic Intractable Pain

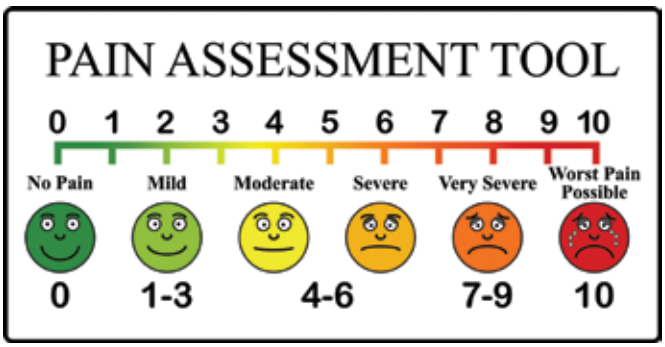
Pain causes stress. Incessant pain prevents a person enjoying life activities they would normally engage in. For some, endless pain has a negative impact on their relationships resulting in increased anxiety, a sense of hopelessness and at times depression. As well as the physiological impact, pain effects other major systems within the body. For example, according to Wells, Pasero & McCaffery (2008) chronic, intractable pain can be harmful for patients with metastatic cancers. It suppresses normal immune functions, including natural killer cells, that play a role in preventing tumour growth and controlling metastasis. Endless pain can impair the normal functioning of the gastrointestinal tract, induce inflammation and increase susceptibility to infection.

The endocrine system responds to pain by releasing excessive amounts of hormones that negatively affect the body's metabolic processing of fats, carbohydrates, proteins and glucose. And of course, chronic pain prolongs the body's response to stress and may therefore impact on a person's ability to respond positively to their cancer treatment, (Wells, Pasero & McCaffery, 2008). In such cases it is appropriate to consider a coeliac plexus neurolysis as an aspect of a multifactorial strategy for managing intractable cancer-related pain.

Patient Preparation

For the Radiologist, the shortest and least complicated route to the coeliac plexus usually determines the patient's position on the CT scanning table. Kambadakone *et al.,* (2011) cite prone, supine and lateral decubitus as the most common positions, depending on the patient's condition. As always, this radiological procedure is very process orientated, yet remains a very personal journey for the patient.

A medical imaging nurse becomes part of this journey during patient assessment and providing procedural education to the patient and family on their arrival to radiology. They can bring humanity and compassion to the patient experience and provide pivotal support. A medical imaging nurse can spend time with the patient and family members talking about the procedure and after care and listen to their concerns. It is vital the patient understands the procedure may not eliminate their pain totally but lessen it sufficiently to allow for a reduction in their current opioid requirement and the resultant side-effects (Kambadakone *et al*., 2011). Our medical imaging nursing team believe maintaining a strong nursing focus ensures patients have time to ask questions and discuss any fears or anxieties they hold regarding the procedure. For example, during the assessment, we encourage patients to tell us about their pain. This offers each person a safe space to tell their story and feel heard. It also allows the medical imaging nurse to accurately gauge a baseline pain score, (0–10) using the Wong-Baker FACES Pain Rating Scale which is vital for accurate pain management post care.



During the procedure the supporting nurse stays with the patient, monitoring vital signs and administering conscious sedation of intravenous (IV) Midazolam and Fentanyl if the pain becomes unmanageable for the patient.

According to our department policy, intravenous hydration of 500mls normal saline may be given prior to the procedure to counteract the common risk of hypotension associated with this procedure (Hawkes Bay District Health Board, 2017).

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Post procedure care is important, therefore the nursing team managing the patient must understand the procedure, possible complications and the pre-procedure pain score levels. In our District Health Board (DHB), patients go to a Medical Day Unit for nursing care to monitor for post procedure complications for four hours. This consists of bed rest and IV fluid management to prevent hypotension and half hourly observations to monitor sedation and for post procedure complications. Evaluation of post procedure pain scores helps to determine the patient response to treatment.

Post Procedure Complications

According to Kambadakone *et al.*, (2011) percutaneous guided coeliac procedure is a relatively safe procedure with major complications reported in less than two per cent of patients. Certainly, in the author's experience, patients undergoing this procedure are comfortable and complication free post procedure. Complications are usually transient and minor when the procedure is performed under CT guidance and with adequate local anaesthetic or IV conscious sedation *before* injecting the neurolytic agent. Back pain appears to be a common complication and is thought to stem from the sensory nerve fibres in the coeliac plexus. Some patients experience shoulder pain from diaphragmatic irritation that may last up to 72 hours post procedure.

Orthostatic hypotension is a common complication resulting from vasodilation, low blood volume and cardiac output. This response is thought to be due to decreased sympathetic tone because of the procedure (Kambadakone *et al.*, 2011).

Some patients experience temporary diarrhoea which is usually self-limiting in nature and resolves over approximately four hours. Pain, swelling, bruising or haematoma and muscle spasm around the injection site area may occur (HBDHB Radiology Department, Guideline: Coeliac Plexus Block, 2017). Other complications include pneumothorax, pain during the injection and failure of the procedure. According to Kambadakone *et al.*, (2011) neurological complications such as lower extremity paralysis with loss of bowel and bladder function are rare.

Conclusion

Coeliac plexus procedures, especially neurolysis, are worthwhile considering as an adjunct method for standard pain management for appropriate patients. As part of a multifactorial pain management approach, it appears to be an effective and safe procedure for managing intractable cancer related pain. While it may not entirely relieve a patient's symptoms, it can provide significant pain relief. Less opioid intake results in relief from the intolerable side-effects these analgesics can carry for patients.

For many people. feeling well and free from pain is a gift that allows them to engage in life activities again and look forward to spending the precious time they may have left with their family and friends.

About the Author: *Tricia Russell's nursing career has spanned 37 years. She has worked in Hawke's Bay District Health Board's radiology nursing team for the last 13 years. After completing her General Training in Sydney, Australia and Midwifery Training in England, Tricia has since completed Post Graduate Diploma's Anthroposophical Nursing, Management Psychology and Adult Teaching and Learning.*

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Continued from page 24

between acute and elective services, therefore findings may not apply to other settings.

Conclusion

The high incidence of post-operative hypothermia is a concerning trend in PACU, particularly noted in this study setting. With increasing numbers of elective patients seen through the centre and services expanding, there is a vital need to address the issue of post-operative hypothermia in PACU to decrease length of stay and associated costs, and to promote patient flow in the clinical setting.

It is necessary to understand and recognise the intrinsic risk factors associated with inadvertent post-operative hypothermia so that high risk patients are identified, and preventative measures undertaken.

Phase One and Two of the study found differences between predictors of post-operative hypothermia and further research is needed to expand on these findings with a larger population sample.

The results found in this study support the need to increase temperature monitoring in PACU to detect deterioration and improve timely intervention, as assessment and evaluation of body temperature has a vast impact on decisions made in PACU nursing care. Accurate core temperature measurement is vital in PACU to enable staff to address abnormal temperature, as inaccurate measurement provides false reassurance and prevents intervention.

About the Author:

Charlotte Thorne is a Registered Nurse who has worked in PACU at Manukau Surgery Centre for the past three years. She previously worked in a general surgical ward for two years. Charlotte graduated from the University of Auckland in 2012, and continued on to complete her Bachelor of Nursing (honours) in 2016. Her dissertation explored post-operative hypothermia and temperature monitoring within PACU.

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Prognostic factors affecting m surgical patients undergoing a

By Lauren Porten & Louise Carrucan-Wood

ABSTRACT: High risk general surgical patients are over-represented in mortality rates following an emergency laparotomy. Nine studies were identified in order to identify prognostic factors affecting mortality in these high-risk patients with the conclusion that these patients need early recognition and consultant-led care to reduce mortality rates.

KEYWORDS: emergency laparotomy, emergency laparostomy, general surgery, mortality, high risk.

Introduction

Adult high risk general surgical patients who have had an index emergency midline laparotomy have a higher mortality rate than their low risk and elective counterparts (Boyd & Jackson, 2005). These patients tend to be older, have two or more co-morbidities and need emergency surgery to prevent deterioration of health.

Pearse *et al.* (2006) identified that 13 per cent of high risk general surgical patient's account for more than 80 per cent of hospital deaths. The surviving patients face postoperative complications, prolonged hospital stays, reduced functional capabilities and life expectancy (Pearse *et al.,* 2014).

This review aims to identify prognostic factors that affect mortality of adult high risk general surgical patients.

Methods

A search of Medline Ovid SP, Cumulative Index of Nursing and Allied Health Literature (CINAHL) and ProQuest Nursing and Allied Health Source was conducted during April and May 2015. The search was limited to studies in the English language without limitation on time of publication. An age limit was used in Medline Ovid SP (all adult, 19 plus years), CINAHL (all adult) and ProQuest Nursing and Allied Health Source (adult 19-44 years; middle-aged 45-64 years; aged 65+ years and aged 80+ years).

The inclusion and exclusion criteria included are listed in **Table 1**.

A total of 236 records were identified. The process of study selection is highlighted in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) chart shown in Figure 1. Nine studies met the eligibility criteria and are shown in **Table 2.**

Results

The identified themes of statistical significance were divided into patient and institutional factors. Patient factors are present across the perioperative continuum and mirror the preoperative, intraoperative and postoperative aspects of the patients' journey. Patient factors are unchangeable factors and institutional factors are those factors relating to the institution and the provision of care provided. These statistically significant factors are depicted in **Table 3**.

Patient Factors

1.1 Increased risk prediction scores

High risk patients with an American Society of Anesthesiologists (ASA) score of III or more, or a Portsmouth-Physiological and Operative Severity Score for the Enumeration of Mortality and Morbidity (POSSUM/p-POSSUM) score greater than five per cent, have a higher mortality rate (Green Shaikh, Fernandes, & Wegstapel, 2013; Modini *et al.*, 2012; Rymaruk, 2012; Wilson ,Barrett, Sinha, & Chan, 2014; Zhang, Wang, W., Wang, G. & Li, 2010).

1.2 Co-morbidities

Concurrent diseases of the respiratory (chronic obstructive pulmonary disease), cardiovascular (atrial fibrillation and congestive heart failure) and neurological (stroke) systems increased mortality rates (McGillicuddy, Schuster, Davis & Longo, 2009; Modini *et al.,* 2012; Wilson *et al.*, 2014).

1.3 Aetiology of presenting complaint

Ischaemic and septic presentations were found to be independent factors but colonic obstruction and perforation causing peritonitis and sepsis are the leading indicators for an emergency laparotomy (Green *et al.*, 2013; McGuillicuddy *et al.*, 2009; Modini *et al.*, 2012; Runkel Schlag, Schwarz & Herfarth, 1991; Rymaruk, 2012; Torosian & Turnbull, 1998).

1.4 Type of surgery performed

Bowel resection with a stoma formation, either from aetiology or diversion from a suture line, was found to have a higher mortality rate (Cook & Day, 1998; Modini *et al.,* 2012; Torosian & Turnbull, 1988). Open abdomen was also found to have a significantly high mortality rate at 65 per cent, where 11 of 17 patients died (McGillicuddy *et al.,* 2009).

1.5 Length of operative procedure

An operative time of greater than three hours was found to be a prognostic factor affecting mortality and morbidity (Cook & Day, 1988; McGillicuddy *et al.*, 2009; Zhang *et al.*, 2010). Patients left with an open abdomen will have an initial shorter operative time (McGillicuddy *et al.*, 2009) but require subsequent surgeries to close the abdomen.

1.6 Estimated blood loss (EBL)

Table 1. Inclusion and exclusion criteria

Inclusion Criteria
Index emergency laparotomy for general surgery
Index emergency laparotomy that results in laparostomy
Adult patients with a high risk surgical profile
Exclusion Criteria
Non-general surgery laparotomies
General surgery procedures that traditionally do not require a laparotomy
Elective laparotomies
Laparoscopic surgery

ortality in high risk general n emergency laparotomy

Table 2 Individual evidence summary table

Author and Date	Evidence Type	Sample Size	Study Recommendations	Limitations	Rating Strength/ Quality
Rymaruk (2012)	Non-experimental. Descriptive. Time dimensional design	50	Early identification of high risk patients. Appropriate postoperative care. Consultant involvement	Small sample size. Limitations not identified. Basic statistical analysis	III / B
Torosian & Turnbull (1998)	Non-experimental. Descriptive. Time dimensional design	30	Early diagnosis and suitable treatment	Small sample size. Patient selection not stated. Limitations not identified	III / B
McGillicuddy, Schuster, Davis & Longo (2009)	Non-experimental. Descriptive. Time dimensional design	292	Improve surgical delay times. Colorectal cancer screening vital		III / A
Zhang, Wang, Wang, Li & Li (2010)	Non-experimental. Descriptive. Time dimensional design	26	Expedient treatment and appropriate postoperative care	Small sample size. Study limitations not discussed	III / A
Cook & Day (1998)	Non-experimental. Descriptive. Time dimensional design	107	Objective risk prediction tools needed	Small sample size. Study limitations not discussed	III / B
Modini *et al.* (2012)	Non-experimental. Descriptive. Time dimensional design	215	Expedient and appropriate treatment	Method inconsistency. Study limitations not discussed	III / B
Runkel, Schlag, Schwarz & Herfarth (1991)	Non-experimental. Descriptive. Time dimensional design	77	Early diagnosis and suitable treatment	Method inconsistency.	
Green, Shaikh, Fernandes & Wegstapel (2013)	Non-experimental. Descriptive. Time dimensional design	100	Early identification of high risk patients	Early treatment. Study limitations not discussed	III / A
Wilson *et al.* (2014)	Non-experimental. Descriptive. Time dimensional design	73	Early identification of high risk patients. Appropriate postoperative care	Small sample size. Study limitations not discussed	III / A

Note: Adapted Individual Evidence Summary Table (Newhouse, Dearholt, Poe, Pugh & White & Sigma Theta Tau International & The Institute for John Hopkins Nursing, 2007)

Mortality rates were found to be higher in patients with an EBL of greater than 1000ml (McGillicuddy *et al.*, 2009; Zhang *et al.*, 2010). The weight of bloody swabs used, fluid in the suction units and blood that may be on the floor provide the perioperative team an EBL.

1.7 Postoperative complications

Postoperative complications were found by seven studies to be the only postoperative prognostic factor affecting mortality (Green *et al.*, 2013; McGillicuddy *et al.*, 2009; Modini *et al.*, 2012; Runkel *et al.*, 1991; Torosian & Turnball, 1988; Wilson *et al.*, 2014; Zhang *et al.*, 2009). Organ failure and sepsis are the most common cause of postoperative complications.

Institutional Factors

1.8 Lack of consultant involvement

A lack of surgical and anaesthetic consultant involvement was found to increase mortality (Cook & Day, 1998; Rymaruk, 2012). Preoperative surgical review, use of risk prediction modelling tools and discussions by a consultant surgeon occurred more frequently than anaesthetic review and discussions (Cook & Day, 1998; Rymaruk, 2012).

1.9 Delay to the operating theatre

A delay to the operating theatre was considered statistically significant as a prognostic factor affecting mortality but the studies did not specify the time of delay (McGillicuddy *et al.*, 2009; Modini *et al.*, 2012).

The nine studies were unable to conclude if gender, postoperative higher levels of care, length of hospital stay, documentation of pre-and postoperative mortality risk and nutritional planning and admission from extended community care, affect mortality in high risk general surgical patients undergoing an emergency laparotomy.

Table 3 Themed findings

Main theme	Sub theme	Micro theme
Patient factors	Preoperative	Increased risk prediction scores
		Co-morbidity
		Aetiology of presenting complaints
	Intraoperative	Operative procedure
		Length of operative procedure
		Estimated blood loss
	Postoperative	Postoperative complications
		Length of hospital stay
Institutional factors	Consultant involvement	
	Delay to the operating theatre	

Discussion

Preoperative findings (1.1 – 1.3)

Risk prediction scores should be used in conjunction with clinical assessment to identify the patient's mortality risk (Rix & Bates, 2007). It documents the complexity of the patients' needs and allows cares to be expedited, rapid recognition of patient deterioration and can abolish institutional barriers (The Royal College of Surgeons of England and Department of Health, 2011). They can also be used to benchmark mortality rates between surgeons and institutions (Silber, Williams, Krakauer & Schwartz, 1992) but it is important they reflect the differences in patient populations and institutional factors (Boyd & Jackson, 2005).

The impact of chronic co-morbidity is important in mortality in both the short (during the hospital admission and 30 days after surgery) and long term (one year after surgery) (Librero, Peiró & Ordiñana, 1999). The short term determines the clinical course of perioperative recovery and the long term encapsulates a patient's ability to survive the long-lasting effects of the surgery. It can take a whole year for a patient's survival rate to equal those who haven't undergone surgery (Carlisle, 2014). This may be an important consideration for patients with a shortened life expectancy who prefer to focus on maintaining their independence and quality of life.

The stability of the patient can determine if aetiology can be confirmed through preoperative imaging or

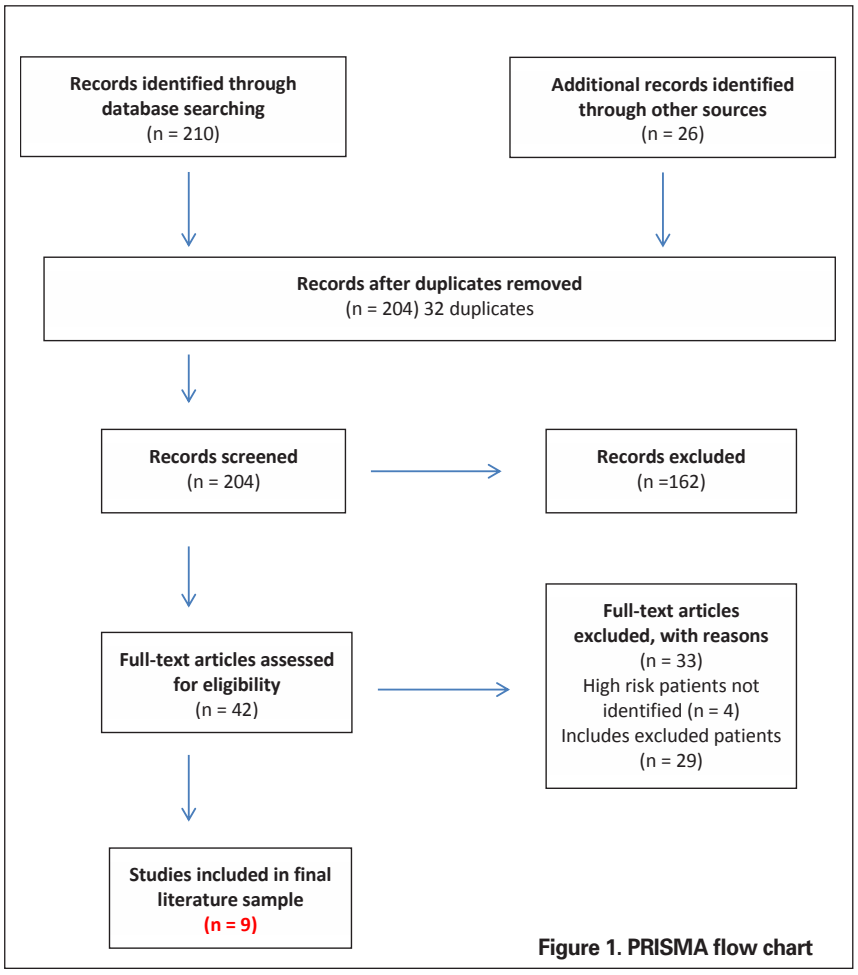

Figure 1. PRISMA flow chart

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diagnosed through intraoperative findings.

Preoperative imaging allows the perioperative team the ability to plan the procedure and provide the patient and their family with accurate information when discussing informed consent (Tsushima, Yamada, Aoki, Motojma & Endo, 2002; Weir-McCall, Shaw, Arya, Knight & Howlett, 2012).

Intraoperative findings (1.4 – 1.6)

Patients who have a stoma formed versus primary anastomosis tend to be higher risk patients because they are more co-morbid and have more advanced malignant disease (Harris *et al*, 2005). Critically ill general surgical patients require an OA because the definitive procedure may not be able to be completed at the index laparotomy (Leppäniemi, 2010; van Hensbroek, Wind, Dijkgraaf, Busch & Goslings, 2008). The patient may require high inotropic support, making an anastomosis dangerous because of the risk of ischaemia (Vargo *et al.*, 2009). There may also be concern about the viability of remaining bowel after ischaemic gut has been resected (Vargo *et al.*, 2009) or the patient may have severe sepsis causing bowel oedema and the abdomen is physically unable to be closed requiring delayed closure at a later date (van Hensbroek *et al.*, 2008; Vargo *et al.*, 2009).

A longer operative procedure is associated with more administration of anaesthetic agents, more postoperative complications (e.g. higher chance of nausea and vomiting), greater risk of hypothermia and increased chance of iatrogenic injuries (Meeker & Rothrock, 1999).

El-Haddawi, Abu-Zidan and Jones (2002) found that the length of the operative procedure was strongly associated with the postoperative complication severity.

Surgical intervention, co-morbidities, hypothermia and coagulopathy contribute to blood loss. Dildy, Paine, George and Velasco (2004) cite that the actual amount of blood loss is often inaccurate and under-estimated at

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low volumes and over-estimated at high volumes. Patient outcomes can be improved by using a cell-saver blood recovery system, electrocautery, prevention and treatment of hypothermia, patient positioning, choice of ventilation and choice of anaesthetic drugs (Network for the Advancement of Patient Blood Management, Haemostasis and Thrombosis, 2015).

Postoperative findings (1.7)

Silber *et al.*, (1992) found that failure to rescue or late identification of complications causing death, was associated with institutional factors; however, rates of adverse events were associated with patient factors. Postoperative complications can lengthen the hospital stay (Pearse *et al.*, 2014) incur higher hospital costs (Shapter, Paul & White, 2012) and affect patient-reported quality of life outcomes (Carlisle, 2014).

Institutional findings (1.8 – 1.9)

High risk patients require complex management and this should be surgical and anaesthetic consultant-led in all steps of the patient's perioperative journey (Barrow *et al.,* 2013; Mullen, Scollay, Hecht, McPhillips & Thompson, 2012; NCEPOD, 2011).

The delay may occur because the decision to operate is still being made by either the patient and family, or the surgeon, or both.

A delay in the initial assessment of the patient (Hsee, Devaud, & Civil, 2012), obtaining the CT scan or formal report (Hsee *et al.*, 2012; Tsushima Yamada, S., Aoki, J., Motojima, T., & Endo, *et al.*, 2002), a delay in the preparation of the patient for the operating theatre (Vinukondaiah, Ananthakrishnan & Ravishankar, 2000), or the transportation of the patient to the operating theatre (Vinukondaiah *et al.*, 2000) can cause delays to the operating theatre. A lack of availability of the operating theatre (Barlow Wilkinson, Wordsworth & Eyre-Brook, 1993; Wyatt *et al.*, 1990) and surgical beds (Hsee *et al.*, 2012) and hospital staff (Wyatt *et al.*, 1990) are also potential causes for delay to the operating theatre.

Delay to the operating theatre for any reason may cause deterioration in the acutely unwell high risk general surgical patient (Fakhry, Brownstein, Watts, Baker & Oller, 2000; Stoneham Murray & Foss, 2014; Wyatt, Houghton & Brodribb, 1990). The mortality rate increases five-fold in elderly patients if the delay for index emergency midline laparotomy is greater than 24 hours (Stoneham *et al.*, 2014).

Limitations

The number of studies that met the inclusion criteria was small and the findings may not be transferable to elective laparotomy patients who were excluded from the review. Trauma patients were excluded due to the complexity of their clinical needs. They have a different mechanism or injury versus illness and could have other confounding injuries affecting mortality such as neurological or orthopaedic injuries.

All the studies came from individual institutions, lowering the generalisability of the review. There were no New Zealand prospective or retrospective cohort studies included in this literature review because they did not meet the inclusion criteria. It can be difficult to compare studies when there is variability between individual institutions and countries.

Conclusion

All surgery carries a degree of risk. The identification of high risk patients, treatment of patient factors and prevention of institutional factors may reduce the rates of mortality in this patient cohort.

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Writing for publication in 'The Dissector'

By Shona Matthews (Chief Editor)

Writing for publication is essential in nursing. It enables the sharing of initiatives and innovations and the dissemination of evidence in order to keep colleagues up-to-date and improve nursing practice (Oermann & Hays, 2011).

Writing also enables us to communicate the findings of research studies and develop the evidence base across the perioperative continuum.

On a personal level it encourages research and reflection and an organising of ideas into a logical framework. There is considerable pleasure in seeing an article laid out in print with supporting images and tables along with the peer and professional recognition this brings.

There is considerable pleasure in seeing an article laid out in print with supporting images and tables along with the peer and professional recognition this brings.

Knowledge sharing

The Dissector provides an important platform for Perioperative Nurses to share their knowledge and experience. The Editorial Committee offers a supportive network and Committee members are always willing to discuss and review your work. We aim to publish a range of material from patient case studies of interesting or novel cases, articles reflecting clinical innovation and quality improvement along with literature reviews and research reports.

We would also like to hear about the patient events that did not go so well as often there is much to learn from these.

Author's role

While we are happy to review academic essays for wider interest and suitability, these will invariably need to be abridged and often reorganised to meet *The Dissector* Writing Guidelines (see PNC website) and more importantly, create a readable, concise article.

It is the author's role to write the article and ideally have someone else proof read it. The Committee will review it, correct minor errors, check the referencing and on occasions send it back to you for clarification. Please do not be offended. A high end academic journal would simply return it to you, often multiple times, for trivial corrections or reject it outright.

We try to achieve a balance recognising that our writers have varied nursing and academic backgrounds and confidence as writers. As a Committee we do have a responsibility to ensure that the material we present is accurate, well written and correctly referenced as the journal is licensed with Gale.

Peer-review

While *The Dissector* is not a peer-reviewed journal as such, the Editorial Committee members have a range of clinical expertise across the perioperative continuum as well as post graduate qualifications. Importantly, they are all passionate writers. The edited copy of your article will be emailed back to you to check that you are comfortable with any changes made.

As nurses we cannot afford to wait for others to make our work visible (Saver, 2011). Nurses have solutions for many of the problems in our healthcare system and a professional responsibility to ensure that policymakers, healthcare administrators, other healthcare professionals and the public know about innovative nursing interventions and the important contribution we make to healthcare in New Zealand. While writing is not easy for most of us, it is a skill that can be developed and a skill that brings huge satisfaction.

This year the Editorial Committee plans to present an issue with an otorhinolaryngology (ORL) focus and another with a paediatric theme maybe early next year. We are open to suggestions of other topics or themes you would like covered. A more comprehensive regional round-up is planned both to keep up with colleagues' activities and to share ideas for local education sessions.

It is also time to renew your Perioperative Nursing College (PNC) membership which includes your *Dissector* subscription. Membership of the College also offers access to a range of Scholarships and awards and reduced conference registration. As a member you are also entitled to the $200 Incentive to Publish payment for articles published in *The Dissector,* so please consider writing for us.

The Dissector Writing Guidelines can be accessed through the NZNO / PNC website or contact an Editorial Committee member. Read them carefuly.

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