



on the pulse

Volume XXI No 2
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Optimising the Risk / Benefit Ratio for New Technology

Editorial by Dr Michael Ward

With any new test or treatment that comes along we are confronted with a challenge to optimise the benefit to patients. Large studies can assess the potential benefit to patients but are often limited by restrictive entry criteria or alternately by the ability of medical statisticians to adjust for the inherent differences between human beings. Vendors of technology are always keen to make the most favourable 'evidence' available to time-poor physicians, while government regulatory bodies always need some form of evidence of improved outcome or economic efficiency to allow market access. Once the door is opened market forces will determine the penetration of the new technology. However, medicine is not a normal market place as the payer is usually not the consumer, and the choice of different options is usually made by neither the consumer (patient) nor the payer (government and health funds) but by the agent of the consumer

entrusted to make the choice in the patient's best interests (doctor).

So it is with great interest that CT coronary angiography will enter the market place. Medicare rebates are likely to soon be available for specific indications and it will be interesting to see whether these restrictions will be appropriately observed. Cardiac Society has in the past taken an appropriately conservative position on the role of coronary CT scanning when resolution was poor and anatomical information (apart from the Agatston calcium score) was too inaccurate to justify the radiation and cost involved. However, improved imaging has resulted in greater accuracy, particularly in negative predictive accuracy, and the added safety and reduced cost over invasive angiography means in patients who ordinarily would be subject to invasive angiography but in whom the pre-test likelihood of significant disease is low may be better off having CT angiography. Invasive angiography for patients with dilated cardiomyopathy or about to undergo valve replacement seems hard to justify unless other clinical features suggest high risk of coronary disease.

Many objections have been raised to the use of CT, usually regarding accuracy and radiation dose. For the indications which will attract a rebate accuracy is well established and allows avoidance

of catheter-related complications at lower cost. In most units radiation dose is roughly equivalent to that of invasive angiography and, as technology improves, is likely to become lower. When the ratio of nuclear stress testing : stress echo within an institution is high, clearly radiation dose is not perceived to be of critical importance. It is also hard to be precise about risk of radiation when the most compelling data comes from Hiroshima survivors who received up to 100mSv in one dose. Even the BEIR VII report (widely thought to be the definitive reference) acknowledges that it is possible that the 'no threshold, linear relationship' between radiation and cancer risk is incorrect. It is possible that extrapolating from Hiroshima survivors to medical radiation risk may be like comparing the health effects of taking a panadol a day versus a packet once a month. In the absence of better data we are left with the burden of proof directing us to adopt currently accepted risks.

Lastly, some will inevitably see rebates for CT as open season particularly when the images generated are so readily interpretable by the lay public. We must confine our scanning to patients who would otherwise have an angiogram and where the chance of subsequently needing invasive angiography is low. Responsibility for appropriate use of this technology should therefore lie with cardiologists.

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On the pulse

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More information

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Views expressed in “on the pulse” are not necessarily the views of the Cardiac Society or its Board.

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*Dr Michael Ward
Editor*

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13th-16th August

CSANZ  **09**

Sydney Convention and Exhibition Centre
SYDNEY AUSTRALIA



**Deadline for early bird
registration 26 June 2009**

www.csanz.edu.au

Named Lecturers



R T Hall Lecturer

Professor Robert Bonow

*Northwestern University, Northwestern Memorial Hospital and
Bluhm Cardiovascular Institute, Chicago, Illinois*



Kempson Maddox Lecturer

Professor Tony Dart

*The Alfred Hospital, Melbourne and Baker IDI Institute,
Melbourne*



Victor Chang Memorial Lecturer

Dr Hartzell Schaff

Mayo Clinic College of Medicine, Rochester, Minnesota



Basic Science Lecturer

Professor Michael Clark

*Menzies Research Institute and University of Tasmania,
Hobart*



Cardiovascular Nursing Lecturer

Dr Vicki Wade

*Area Director of Aboriginal Health for Sydney South West Area
Health Service, Sydney*



Gaston Bauer Lecturer

Professor Thomas Coffman

Duke University, School of Medicine, North Carolina



3rd Annual Australia & New Zealand Endovascular Therapies Meeting

12 - 13 August 2009
Sydney Convention Centre
www.csanz.edu.au

Invited Speakers

Martin Leon

Columbia University Medical Centre, New York, USA

Alaide Chieffo

San Raffaele Hospital
Milan, Italy

Eberhard Grube

Heart Centre
Sieburg, Germany

Barry Rutherford

St Luke's Hospital
Kansas City, USA

David Hildick-Smith

Brighton and Sussex University Hospitals NHS Trust in the UK

Masahiko Ochiai

Showa University, Northern
Yokohama Hospital.



CSANZ Inaugural Indigenous Cardiovascular Health Conference

Sydney Convention and Exhibition Centre,
Sydney, Australia
16th - 17th August 2009

www.csanz.edu.au

International and National Speakers



Richard Horton
*Editor,
The Lancet, UK*



James Galloway
*Assistant Surgeon General
US Public Health Service*



Jonathon Carapetis
*Director, Menzies School of
Health Research
Charles Darwin University*



Cairns Convention Centre, Cairns, Australia

21 - 26 June, 2009

Website: www.pccs2009.com



Professor Bob Anderson

Professor Anderson is an outstanding speaker with a long track record of giving stimulating and thought provoking talks. He is regarded internationally as one of the most prominent authorities on the pathology of the congenitally malformed heart.



Ms Kathy Mussatto

PhD, RN, Research Manager, Herma Heart Centre, Wisconsin
Kathy Mussatto is passionate about promoting interdisciplinary research to improve outcomes for children and families living with paediatric heart disease.



Professor Andrew Redington

Head of Cardiology, The Hospital for Sick Children, Toronto.
Professor Redington currently heads a Leducq Transatlantic Research Network of Excellence investigating the biology of remote ischemic preconditioning.



Professor Pascal R. Vouhe M.D.

Paediatric Cardiac Surgeon, Hospital Necker for Sick Children (Hôpital Necker Enfants-Malades), Paris. He is leading figure in Europe, in the field of surgery for congenital heart disease, and is a member of council of the European Association of Cardio-thoracic Surgeons and of the Francis Fontan Prize Committee.



Dr Gil Wernovsky

Director of Program Development, The Cardiac Centre at The Children's Hospital of Philadelphia, and the Medical Director of the Cardiac Intensive Care Unit. Dr Wernovsky's clinical interests are primarily in inpatient care; particularly of newborns and infants with critical congenital heart disease.

Call for Applications

CSANZ / 14th WCC Research Investigatorship

Applications are invited for a prestigious Research Career Development Award, sponsored by the 14th World Congress of Cardiology Education Trust of the Cardiac Society of Australia and New Zealand (CSANZ). The award is specifically designed to assist a young investigator (especially those seeking to return to Australia or New Zealand after completing a period of research training overseas) with a commitment to clinical or basic research in cardiology and cardiovascular disease to establish an independent research laboratory. It is expected that the successful applicant will be prepared to devote at least 80% of their time to research during the tenure of the investigatorship.

The successful applicant will have successfully obtained his/her Fellowship of the Royal Australasian College of Physicians in cardiology and have completed a relevant doctoral degree (either MD or PhD). The successful applicant will have completed at least one year of postdoctoral cardiovascular research experience in a major international academic centre, and should have demonstrated research achievements, including publications in peer-reviewed journals, and preferably the capacity to obtain peer-reviewed competitive grant funding.

The award is not designed to support investigators who already

hold an established hospital and/or university position, and/or who already run an established independent research operation.

The award will cover salary support of AUSS\$120,000 per annum for two years. In addition an initial project expenses payment of AUSS\$40,000 will also be available. The successful applicant will be required to acknowledge the investigatorship on all publications/communications and to present an update of their work at a CSANZ annual meeting.

Applicants should be citizens or permanent residents of Australia or New Zealand and should be eligible for medical registration in Australia or New Zealand.

Applicants should forward a letter of application which includes:

- Details of the project to be undertaken during the investigatorship in Australia or New Zealand (maximum 2 page summary);
- Written references from 3 independent referees (maximum 1 page each);
- Application font size 12 or greater;
- Application to be no more than six A4 pages;

Applicants should also include a letter of acceptance and academic

appointment by the host institution in Australia or New Zealand.

In addition applicants should provide:

- Copy of their CV;
- CV to include publications.

The head of the unit at which the applicant currently works, or will be appointed, must submit a letter directly to the CSANZ confirming the applicant's appointment, or the intention to provide such an appointment should the applicant be successful in securing this investigatorship. The letter should also confirm and detail the availability of suitable laboratory/office space and the requisite infrastructure to allow the applicant to perform his/her research work. In addition, this letter must confirm that the successful applicant will be able to devote at least 80% of their time to research.

Applications should be received at the office of the CSANZ at 145 Macquarie Street, Sydney NSW 2000, Australia no later than **Friday, 28 August, 2009.**

The Society reserves the right not to proceed with an appointment for any reason. Applicants requiring further information are requested to contact the CSANZ at info@csanz.edu.au



Friday 12th to Sunday 14th June, 2009

WELLINGTON CONVENTION CENTRE

www.sixhats.co.nz/csanz09

A H A Scientific Sessions 2009

Applications are called for the **CSANZ Travelling Fellowships** for travel grants to enable five investigators to attend the **Scientific Sessions 2009 of the American Heart Association** to be held in Orlando, Florida, November 14–18, 2009. The Fellowships are intended to provide an opportunity for investigators in the early stage of their research career, to present at a major international conference.

The conditions are:

1. The Fellowships are valued at AU\$3,000 each.
2. Applicants must be either FCSANZ, Associate Members or Affiliate Members of the Cardiac Society or researchers in cardiology or cardiac surgery and related disciplines with preference given to those attending their first meeting.
3. The work must have emanated from Australia or New Zealand.
4. Applicants must have an abstract accepted for presentation at the AHA meeting.
5. Applications must be accompanied by a letter from the supervisor or Director of the laboratory or service from which the work has emanated, clearly detailing the specific contribution made by the applicant towards the work being presented.
6. Preference will be given to those who have not previously been awarded CSANZ travelling scholarships.
7. Conditions apply to successful applicants **not domiciled in Australia or New Zealand.***
8. Late applications will NOT be considered.

Applications should be sent to the Honorary Secretary (CSANZ 145 Macquarie Street, Sydney NSW 2000 AUSTRALIA), together with -

- (1) copy of submitted abstract(s) and AHA notification of acceptance (should this arrive after you have forwarded your application, please fax to 61 (0)2 9247 7916)
- (2) brief curriculum vitae
- (3) supporting letter from the supervisor or Director

Closing Date:

**5 PM FRIDAY,
18th SEPTEMBER, 2009**

* Contact the Sydney Secretariat to obtain a copy of the conditions (info@csanz.edu.au)

CSANZ Research Scholarships for 2010

Guidelines for Applicants

The CSANZ Research Scholarship is intended to provide support for Members of the Cardiac Society of Australia and New Zealand who wish to pursue a career in cardiovascular research.

1. The Scholarship is open to **all Members of CSANZ.**
2. The value of the Scholarship will be equivalent to that of the Heart Foundation Postgraduate Medical or non-Medical Scholarship (depending on the candidate's academic qualifications) and will be payable for one year.
3. Research must be conducted in Australia or New Zealand.
4. Only those applicants who are enrolled as full time students (eg. for PhD or MD) will be eligible to receive the Scholarship as a tax-free stipend.
5. Deadline for the receipt of applications and referees' reports is 25th September, 2009.
6. Applications will be graded by a selection panel appointed by the Scientific Committee of the CSANZ. No interviews will be undertaken.
7. Successful applicants will be notified in December.



Note: Previous recipients of the CSANZ Research Scholarship are not eligible to apply for a second scholarship.

In addition to the above information, you will **also** require a copy of the Application Form and Application Instructions available from either the Society Secretariat or from the website at www.csanz.edu.au, Education, Scholarships/Fellowships.

Closing Date:

**5 PM FRIDAY,
25th SEPTEMBER, 2009**

Conjoint Committee - CSANZ, RANZCR & ANZAPNM

The Australian and New Zealand Association of Physicians in Nuclear Medicine (ANZAPNM), the Cardiac Society of Australia and New Zealand (CSANZ) and the Royal Australian and New Zealand College of Radiologists (RANZCR) have collaborated to establish a Conjoint Committee for the Recognition of Training in CT Coronary Angiography. While the idea for a conjoint arrangement initially arose out of discussions around Commonwealth funding for CTCA examinations in Australia, the Conjoint Committee model is designed to oversee training and support quality practice in CTCA, and to promote a collaborative and consistent model of CTCA training and service delivery in Australia and New Zealand.

Who?

The Committee is comprised of three members each from the ANZAPNM, CSANZ and RANZCR.

What?

The Committee and its business is governed through tripartite representation by the three craft groups; it will operate under legally binding regulations which ensure that decisions are made on a consensus basis across the three professional bodies.

The Committee's role is to:

- Formulate and review guidelines for training in CT Coronary Angiography
- Recognise training courses in CT Coronary Angiography;
- Provide certification of satisfactory completion of training in CT Coronary

Angiography (or the withdrawal of such certification);

- Maintain and publish a web-based register of recognised CTCA specialists; and
- Establish quality assurance benchmarks in relation to the performance of CT Coronary Angiography

In Australia, Medicare funding of CTCA services is expected to require the provider to be on the Conjoint Committee's register.

Training Requirements

The Conjoint Committee's training requirements will supersede those of both CSANZ and the RANZCR. While full details will be released in the next month or so, a preliminary checklist is provided below to provide some guidance to candidates.

Training Requirements Checklist

<i>Level A - Independent Provision of Service</i>	<i>Level B - Independent provision of service and provision of training</i>
<p>Course requirements: 40 hours of interactive 'hands on' training</p> <p style="text-align: center;">And</p> <p>Logbook requirements: 150 cases, 50 of which must be 'live'</p> <p>Maintenance of Competency: Level A Logbook of 100 cases per year CPD (details to be confirmed)</p>	<p>Course requirements: Level A course requirements to have been met</p> <p style="text-align: center;">And</p> <p>Logbook requirements: Level A with an additional 150 cases, 50 of which must be 'live'</p> <p>Maintenance of Competency: Level B Logbook of 200 cases per year CPD (details to be confirmed)</p>

At the conclusion of an initial grandfathering period, there will be a prospective requirement for a Level B specialist to sign off on a Level A or Level B candidate's logbook cases.

Candidates will need to recognise that most commercially run courses will contribute to rather than deliver the full case requirements. The candidate may attend a range of courses but may need

to align himself/herself with a mentor to complete the live case component.

A range of training options will become available as the Conjoint Committee commences its activity.

Existing SCCT Accreditation

Candidates who hold SCCT accreditation will need to have their training recognised by the Conjoint Committee. Further details will be provided on the

Conjoint Committee's website which will be accessible from each professional body's website.

Where?

The secretariat for the Conjoint Committee will be provided by the RANZCR which will appoint an Executive Officer to assist the Committee. In addition, a Conjoint Committee website will be created to

Conjoint Committee - CSANZ, RANZCR & ANZAPNM

provide full information and resources for training candidates and course providers, and publish the register of recognised CTCA specialists.

Why?

Founding members from each of the three professional bodies explain why a Conjoint Committee is being formed and what the benefits are.

“This collaboration between the 3 specialty groups is an accomplishment that many of our overseas colleagues have not yet been able to achieve” says Dr Mark Hansen (RANZCR).

“The provision of a robust CT Coronary Angiography service requires both clinical and technical expertise,” comments Dr Daniel Friedman (CSANZ). “CTCA runs the risk of being performed at very inconsistent standards and formalisation of acceptable

standards is therefore imperative”. Adds Prof Michael Feneley (CSANZ) “Together, these three craft groups are well positioned to ensure that the training and accreditation guidelines for CTCA are relevant to the clinical and regulatory context, and to ensure the delivery of CTCA scans of the highest quality.”

Dr Fraser Brown (RANZCR) observes that the Conjoint Committee “reflects a model that works well in other areas of medicine where different craft groups contribute to a conjoint committee which delivers training and support for innovative techniques. Training in CTCA is multifactorial and CTCA relies on good interaction with referrers and imaging specialists.”

“Each of the three craft groups offers a slightly different background and perspective toward

study performance and interpretation” sums up Dr Nathan Better (ANZAPNM). “This lends itself well to a conjoint committee supervising the utilisation of cardiac CT”.

For further information, please contact Lisa Penlington, Executive Officer of the Conjoint Committee at accred@ranzcr.edu.au or on 02 9268 9777.

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For further information, please contact Lisa Penlington, Executive Officer of the Conjoint Committee at accred@ranzcr.edu.au or on 02 9268 9777.

Membership Changes & Admissions

The following changes and new admissions to Membership occurred from August 2008 to the present time. The Society extends a warm welcome to all.

Affiliate Members:

Mr R P Appeldorff, Ms Z Y Aho, Ms B Armit, Ms L A Azadi, Miss J Bayliss, Ms M M Black, Mr J K Brown, Ms C D'Amici, Mr P De Sciscio, Dr R A Denver, Miss E Devlin, Mrs M A Dolman, Ms L J Everist, Mr M Fawcett, Ms B K Gale, Miss S L Harrup, Miss C Hancock, Miss R Henthorn, Miss K A Hines, Mr I R Jarvie, Mrs Y R Johansen, Mr M K Johnson, Mrs M P Kavanakudy, Ms L J Kuhn, Mr T M Le, Ms Ki Lim, Ms J Moody, Mr M Morrall, Ms D K Murphy, Ms A P Mutton, Ms V Nikolova-Krsteviski, Mrs K A O'Toole, Mrs A L Rafai, Dr J K Rajamani, Mr E P Raith, Mrs M E Rochford, Mr D Sarovic, Mrs J L Shanks, Ms M E

Simula, Mr H Slim, Ms D Spicer, Mr A G Stewart, Mr P Stockle, Mrs B Thompson, Mrs J A Thomson, Mrs M T Vorster, Miss B Vuljanic, Mr E T Watkins, Mrs J D Weir, Miss P J Williams, Mrs H M Winch, Mr C X J Wong, Ms D A Wright and Mrs B Zhang.

Associate Members:

Dr H Aikot, Dr A H Al-Fiadh, Dr K H Chan, Dr C Y Chao, Dr W W Chik, Dr R Cordina, Dr L J Eastaugh, Dr M Freeman, Dr R Gurvitch, Dr A Hunter, Dr J Kaplan, Dr L H Ling, Dr S Perera, Dr K Profitis, Dr J Sapontis, Dr M C Wong, Dr T Wong and Dr I Zakhem.

FCSANZ Members:

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James McVeigh (Chair) NSW

Cindy Hall QLD

Sue Matschoss SA

Ross Proctor NSW

Maria Sheehan WA

Bernadette Hoffman SA

Andrea Driscoll VIC

Yvonne Johansen NZ

Yvonna Zuydam TAS

Trish Davidson (Secretary) NSW

Carolyn Asltley SA

Andy McLaughlin NZ

Marcia George VIC

Deb Smith QLD

‘Open Heart Surgery in the Cath Lab’ - a recipe for success?

Transcatheter Heart Valve Program at Austin Health

Carolyn Naismith, Nurse unit Manager, Cath lab

Take your sicker and frailer patient with severe aortic stenosis who is considered too high risk for conventional cardiac surgery due to multiple co-morbidities. Add a relatively new treatment alternative, the transcatheter heart valve. Bind with an enthusiastic and collaborative team of interventional cardiologists, cardiac surgeons and staff. Place in a Cardiac Cath lab for about 2 hours and Voilà..... a recipe for success?

In November 2008 a team from the Austin Hospital in Victoria travelled to St Paul’s Hospital in Vancouver, Canada to undergo the training program for the Edwards Sapien Transcatheter Heart Valve and to assess the logistics of implementing this program at the Austin. The team included 2 interventional cardiologists, Omar Farouque and Mark Horrigan, 2 cardiac surgeons, George Matalanis and Philip Hayward and myself.

St Paul’s Hospital has performed over 600 trans-catheter heart valve cases under the direction of Dr John Webb and Dr Ansen Cheung. The staff was very welcoming and willing to answer our many questions.

The Edwards Sapien Trans-catheter heart valve can be inserted via a transfemoral or transapical approach depending on the peripheral vasculature and aorta of the patient. While the trans femoral approach was not unfamiliar to the interventional cardiologists the size of the delivery system 22F or 24F sheath presented some issues. Similarly, opening the chest wall to expose the apex of the heart was routine for the cardiac

surgeons in a cardiac theatre but performing this in the Cath lab was a different story.

After 3 days of training and observing how the teams worked in live cases at St Paul’s we came up with a plan for implementing this program at the Austin. We had a 3 week time period to assemble our team, iron out logistics and finalise our risk management strategy for patient management. To perform a case requires 17 staff members in the Cath Lab including a cardiac anaesthetist, anaesthetic nurse, perfusionist, radiographer, cardiac theatre scout nurse, cardiac theatre scrub nurse, 2 cardiac surgeons, echo-cardiologist, 2 interventional cardiologists, Cath lab scrub nurse, Cath lab scout nurse, cardiac theatre technician, cardiac technologist, Cath lab nurse for the pacing role and a crimping technician from Edwards. It was vital that we communicated with all the members of this large team so that every one was clear about their role in the case. The cardiac surgery liaison nurses coordinated the patient’s journey in the pre and post hospital phase. In developing the risk management strategy we checked everything from the quality of the air flow to the Cath Lab (ensuring cardiac theatre standards) to the mock exercise of transferring a patient from the Cath Lab to the main cardiac theatre on an ECMO circuit if they required open surgery (2-4% of cases*). We also rolled out a comprehensive education program for staff in the recovery, cardiac and thoracic unit and Cath Lab.

Patient selection is an extremely important component of the program. Each patient undergoes a full evaluation by the team pre selection. The tests include a cognitive assessment, coronary and aortoiliac angiography, TOE, CT and their EURO and STS risk scores are calculated. Once determined that the patient is eligible for the procedure then they undergo a compre-

hensive consent process. Patients are admitted to the Cath Lab day procedure area on the day of admission. The anaesthetist put in the lines prior to entering the Cath Lab. Once in the Cath Lab the patient is intubated and prepped for the procedure. This includes a full cardiac surgical prep, application of radio lucent defib pads and insertion of an IDC. For a trans-femoral approach the cardiac surgeons perform a femoral cutdown to provide access for the delivery sheath (22-24F). For a trans-apical approach the cardiac surgeons perform a mini-anterior thoracotomy to provide access to the apex of the left ventricle. In both cases femoral arterial and venous sheath are inserted on the non-operative side for pacing wires and to perform aortograms during the case. Prior to the delivery of the transcatheter heart valve a valvuloplasty of the native valve is performed during rapid ventricular pacing. The delivery system is then inserted and the valve deployed with a balloon during rapid ventricular pacing. Echo imaging and fluoroscopy are used to determine correct positioning of the valve pre and post insertion. Once this is complete the access site is surgically repaired. The patient is extubated in the Cath Lab, recovered in the Cath Lab recovery area transferred to a HDU bed for 12-24 hours then to a ward bed for 3-5 days prior to discharge.

We performed the first Trans apical trans-catheter heart valve case in Australasia in the Austin Cath Lab on December 4, 2008. This case went very well and we were grateful to Dr John Webb and Dr Ansen Cheung for making the long journey to proctor our first cases. In total we have performed 9 cases (5 transfemoral and 4 trans-apical). Our first patient an 88 year old gentleman is even back enjoying ballroom dancing.

It has been very exciting to be a part of introducing this new technology

(Continued from page 10)

for aortic valve replacement to our hospital. Our initial experience demonstrates that overall we have had success. The key ingredient to this success is teamwork and an overwhelming desire to improve the outcome for this select group of patients.

Thanks to Beth Brown, CNL
Cardiac Surgery, St. Paul's Hospital,
Vancouver, B.C. Canada
Luanne Bailey & Janelle Johnson
Transcatheter Heart Valve Program
Edwards Lifesciences

* References

Thomas Walther et al. Transapical minimally invasive aortic valve implantation; the initial 50 patients. *European Journal of Cardio-thoracic Surgery* 2008 Volume 33, Issue 6, June 2008, Pages 983-988

Sandra Luack et al. A new option for the treatment of aortic stenosis: Percutaneous Aortic Valve Replacement. *Critical Care Nurse* Vol 28. No.3 June 2008 pages 40-51.

Research Update

Patients with end-stage cardiac disease with mechanical cardiac support or transplantation

Dr Judy Currey, Senior Research Fellow, Alfred / Deakin Nursing Research Centre

Dr Judy Currey currently coordinates a program of research investigating nursing aspects of managing patients with end-stage cardiac disease with mechanical cardiac support or transplantation. One of her studies explores the physical, psychosocial and practical aspects of living with, and caring for, someone with mechanical cardiac support or ventricular assist device (VAD). The study, funded by Deakin University aims to inform care delivery in the hospital and community settings. In particular, it aims to better inform health profes-

sionals about the management of patients and carers (professional and non-professional) following device implantation, and to provide a focus for interventions in hospital and community settings.

A second study funded by Deakin University is exploring the models of care delivery for patients with mechanical cardiac support in Australian, European and North American community-based settings. This project aims to develop a systematic understanding of the current models for supporting community-based patients in terms of the practical, educational, and infrastructure requirements to improve patient care. In keeping with this theme, a third study is exploring the educational needs of patients prior to ventricular device implantation and following up patient to ascertain their on-going educational requirements.

In the context of a high number of medications administered in cardiac areas, a study funded by a Florence Nightingale Scholarship from the Royal College of Nursing is exploring the type of near miss medication events in cardiac and coronary care units. Results to date indicate that nurses, both experienced and inexperienced intervene numerous times a day to prevent and detect medication errors related to anticoagulation and cardiac failure therapies to protect patients.

Establishing the link between poor self-care and cognitive impairment in patients with chronic heart failure

Ms Jan Cameron, PhD student, ACU National, Melbourne
Jan Cameron is an experienced nurse clinician with post-graduate qualifications in cardiovascular nursing and health education and promotion. Her expert skills are in the management of patients with heart failure and supporting them to develop self-care skills. As a result of her clinical practice within a heart

failure management program at Box Hill Hospital, she became acutely aware of the many barriers faced by patients with CHF in trying to master self-care skills. With this in mind she began doctoral studies in 2004 to further investigate this area of nursing practice and has been supported by a scholarship from NHMRC/NHF that has enabled her to undertake the research full-time.

The aims of the research program are to analyze in a series of themed studies issues surrounding the acquisition of self-care skills and in particular to test a conceptual model of factors that include screening for cognitive impairment, in predicting CHF self-care. A literature review conducted demonstrated that patient education directed at patients with CHF improves a number of health outcomes, however there are many barriers faced by these patients in developing optimal self-care skills. It also established the method for measuring self-care within the research program.

Phase 1 of the research program tested a conceptual model of variables deemed to predict self-care. This descriptive study involved 50 patients hospitalised with CHF and measurement of self-care (Self-care Heart Failure index), Cognitive Function (MMSE), Depression (Cardiac Depression Scale). Other factors thought to influence self-care were tested in the model: age, gender, social isolation, self-care confidence and comorbid illnesses. Multiple regression was used to test the model and to identify significant individual determinates of self-care maintenance and management.

The model of seven variables explained 39% (p=0.003) of the variance in self-care maintenance and 38% (p=0.003) of the variance in self-care management. Cognitive function was not a significant variable in the models but did help to explain the variance in self-care maintenance and management. In Phase 2, the conceptual model was re-tested in a larger sample and the Montreal Cognitive Assessment

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(MoCA) was added as a screening measure of mild cognitive impairment. In this study involving 93 patients the MoCA identified 35 participants as having MCI not categorised by the MMSE. In total 72% of the group had some cognitive impairment that would not have been identified without screening for them. Significant differences in self-care management ($p < 0.01$) and self-confidence scores ($p = 0.04$) existed between patients with and without MCI. Furthermore, MCI made the largest contribution in explaining the variance in self-care management scores. Other variables that helped to predict self-care included: co-morbid index, NYHA class III or IV, >2months experience with CHF diagnosis, age and depression.

In summary, this program of research builds on and contributes to work in understanding barriers to achieving optimal self-care. The analytic focus on testing a conceptual model of barriers to CHF self-care enables another contribution to the body of knowledge. As such, this PhD provides insight into the clinical application of a conceptual model that in the future may be used in clinical practice to help tailor the application of patient education and support strategies to individual need.

The outcomes from this PhD include:

1. Measuring self-care in chronic heart failure: a review of the psychometric properties of clinical instruments – under review by Journal Cardiovascular Nursing
2. Self-care behaviours and heart failure: does experience with symptoms really make a difference? – under review by European Journal of Cardiovascular Nursing
3. Testing a Model of Patient Characteristics, Psychological Status & Cognitive Function as Predictors of Self-care in Persons with CHF – in Press Heart & Lung: Journal of Acute and Critical Care
4. Extent of Heart Failure Self-Care as an Endpoint to Patient Education: A Review of the Literature. *British Journal of Cardiac Nursing*, 2(4), 188-197.

Save the date 13 - 16th August 2009



The 57th Annual Scientific Meeting of the Cardiac Society of Australia and New Zealand which will be held at the Sydney Convention Centre, Darling Harbour 13-16 August 2009, in conjunction with the 33rd Annual Scientific Meeting of the International Society for Heart Research. The 2009 meeting will provide a fully integrated program that combines cutting edge science with the latest clinical developments in the diagnosis, treatment and prevention of cardiovascular disease. There will also be associated meetings of ANZET, the Australian Cardiovascular Health & Rehabilitation Association and for the first time a Conference devoted entirely to Indigenous Cardiovascular Health.



Royal Melbourne Hospital Coronary Care Unit

*By Kate Murphy, Nurse Unit
Manager, & Melita Clough
Associate Nurse Unit Manager,
RMH CCU*

The Royal Melbourne Hospital Coronary Care Unit is a Level 1, major tertiary referral centre. Patients are admitted directly through the emergency department, via other areas of the hospital, referred from regional and rural centres, and also interstate from as far as Darwin in the NT to South Australia and Tasmania. The area comprises six CCU beds, four Step Down beds and fifteen monitored cardiology beds.

The Coronary Care Unit itself has the ability to care for a wide variety of patients which may include complex therapies such as non invasive ventilation, temporary pacing, intra-aortic balloon pump

therapy, hemodynamic monitoring including PA catheters and inotrope support. The unit also cares for the majority of Victoria's electrophysiology services, adult congenital heart disease patients and device and lead extraction cases. The Cardiac Catheter Laboratories are situated adjacent to the CCU. The centre offers a 24 hour direct PCI service for all STEMI patients and allows these patients to be directly admitted to the CCU from the Cath lab. Patients admitted to CCU will usually stay for 24-48 hours before making the progression to the stepdown area, and then the cardiology ward situated within the unit. Keeping the patient in the one area allows for better continuity of care from the entire cardiology team. The cardiology ward also cares for the elective procedural patients such as PPM, PCI and EPS/RFA. These patients are not routinely admitted to CCU or step down. Part of our focus is not just on immediate treatment but on ongoing prevention especially in

relation to cardiac risk factor modification for ACS patients. On admission patients cardiac risk factors are identified and recorded on a specially designed form documenting recommended goals and current status. This form also helps maintain educational continuity throughout the ward to ensure all risk factors are addressed with the patient before discharge. On discharge a copy of this form is faxed to the GP and a copy given to the patient for ongoing reference.

An example of a complex country referral was a patient that was admitted to hospital post collapse associated with VT storm. The patient's past history included ischaemic cardiomyopathy with EF 13%, type II diabetes on insulin, biventricular PPM and AICD was inserted after a previous collapse with documented VT and oral amiodarone was commenced. The patient's device on interrogation

(Continued on page 14)



Unit Profile

(Continued from page 13)

revealed recurrent episodes of VT/VF with appropriate discharge. The patient was initially treated with IV Lignocaine and transferred to RMH on IV Amiodarone. Episodes of VT continued with the patient receiving multiple shocks from his AICD. The defibrillator threshold was increased to 200bpm to prevent the patient receiving a conscious shock and the ATP was turned off after being observed to be proarrhythmic by increasing the VT rate. The patient became haemodynamically compromised with VT rates greater than 120bpm. The number of episodes requiring external defibrillation increased. IV Amiodarone was ceased and IV Procainamide commenced. IABP was inserted to assist hemodynamic stability as the patient was too unstable for a VT ablation. A previous coronary angiogram revealed chronic occlusion of LCx, RCA, OMI with 30% proximal LAD. A repeat angiogram showed the LAD lesion had increased to 60% and the patient went on to have a PCI as it was thought there was an ischaemic component to the arrhythmogenesis. The IABP remained in for another 24 hours with only one episode of VT requiring external defibrillation. IV Procainamide was weaned, oral Quinidine commenced and the VT subsequently settled.

RMH CCU is a busy unit and, like many, has to cope with a constant high demand for beds. One of the major successful coping strategies used within the unit is that the entire cardiology team work and support each other with a shared goal of efficient quality evidence based care. In the mornings both medical staff and the nurse in charge discuss the plan and requirements for each patient. They then meet again late afternoon to discuss results and update plans. At least one regular

discharge is planned from the Cardiology ward at 7 Am each day, and from CCU to the ward before 8 Am each day. Many technical procedures are performed within the unit including TTE, TOE, pacemaker checks, ICD interrogations and procedures such as Cardioversions. Good communication skills and mutual respect exists between medical, nursing, cardiac techs and allied health enabling the unit to co-ordinate all activities and achieve its goals.

Nurses working in the CCU area are coronary care or critically care educated or studying the post-graduate course which is run within the unit in conjunction with Australian Catholic University. The cardiac clinical nurse educators co-ordinate the post-graduate course onsite. Each CCU post-graduate student spends a month working in the cath lab gaining first hand procedural skills and knowledge. This also provides CCU staff with enough familiarity to set up and staff the cath lab for after hour emergency procedures such as insertion of temporary pacing wires. The nursing skill mix within our cardiology unit ranges from 25 years post-graduate experience to grade one graduate nurses. Having a combined unit of CCU beds and ward beds allows junior staff insight into the CCU environment whilst working in the ward area and is a major strategy used to attract new staff to the area.

The role of the CCU nurse expands beyond the walls of the unit. It is a position that offers a broad range of experiences from which varied opportunities of specialisation can extend. The RMH CCU nurse is a member of the MET/Code Blue team which attends all medical emergencies throughout the hospital except in ED, ICU and theatre. The

unit also has clinical nurse consultants on site in the areas of cardiac rehabilitation, heart failure and our newly created arrhythmia CNC role. The CNCs are involved with both in patients and out patients. They work closely with the members of the Cardiology team providing education and practical support thereby ensuring quality patient care. Another diverse nursing role within the unit is the cardiac liaison nurses who in conjunction with medical staff co-ordinate patient referrals. The CCU nursing staff also monitor patients admitted to the chest pain unit that is situated within the short stay unit on a different level of the hospital. These patients' vital signs and cardiac rhythm are relayed to CCU via telemetry.

In a new innovation the RMH CCU is to become the second hospital in the State to collaborate with the Melbourne Ambulance Service to directly admit STEMI patients to the Cath lab thereby reducing door to PCI time. The CCU nurse will meet the ambulance on arrival with a portable defib/monitor and emergency medications. Ambulance Officers and the CCU nurse will transport the patient to the cath lab and maintain hemodynamic stability until the patient's PCI is underway.

This is a brief insight into our unit that I hope gives some indication of the challenges and experiences of a coronary care nurse in a large tertiary hospital.

Paediatric Cardiology Standards of Practice Statement

Paediatric Cardiology involves the management of the fetus, neonates, infants, children and young adolescents with heart disease. Cardiac lesions and their implications differ considerably from those that are seen in adult cardiology. In the last decade the strategies and techniques for evaluation and care have expanded significantly. Practitioners who do not have specific training/expertise in this area and for whom the management of congenital heart disease is not their core work, would find it very difficult to maintain adequate skills to reliably assess and advise regarding the significance/management of heart problems in infancy and childhood.

Therefore it is recommended that:

- Where a cardiology opinion is requested, for infants and children in whom there is a strong suspicion of congenital or acquired heart disease, this should be provided by a paediatric cardiologist, in order to ensure that appropriate advice is provided to the patient's family and management is optimised.
- In regions where no Paediatric Cardiologist is available for consultation, or in emergency situations, an Adult Cardiologist or Paediatrician may review the patient. He/she should make a preliminary assessment and, if heart disease is not ruled out, the patient should be referred to a Paediatric Cardiologist in an appropriate time frame.
- Specialist investigations in paediatric cardiology including cardiac catheterisation and echocardiography require specialised training and ongoing experience. An appropriately trained paediatric cardiologist should ideally carry out these specialist investigations. In the case of paediatric and fetal echocardiography, practitioners who have not had such training and / or do not have regular contact with a Paediatric Cardiology referral centre should exercise caution in performing or reporting such studies. Where heart disease is suspected clinically or in situations where the echocardiogram may be abnormal a Paediatric Cardiology consultation must be organised. See published recommendations (Standards of Practice in Paediatric Echocardiography).

Updated Guidelines

The following guidelines, which have been developed by the New Zealand Branch of the CSANZ and are applicable in New Zealand **only**, have been reviewed and updated.

Clinical Practice Guidelines:

- *Non ST-elevation acute coronary syndromes: New Zealand management guidelines*
- *ST-elevation myocardial infarction: New Zealand management guidelines*

All of these can be accessed at <http://www.csanz.edu.au> under Education, Guidelines, Clinical Practice.

Guidelines for Paediatric Cardiac Catheterisation

Paediatric cardiac catheterisation has evolved from a purely diagnostic procedure to one which is increasingly therapeutic in intention. The ability for an operator to perform paediatric interventional cardiac catheterisation successfully and safely requires specific training. There is also the need for specialised equipment and trained catheterisation laboratory staff as well as ancillary paediatric support services to afford the optimal environment for paediatric cardiac catheterisation procedures.

Paediatric cardiac catheterisation may be categorised according to levels varying from simple to complex procedures similar to the classification of surgical procedures for congenital heart disease. It should be recognised that the level of classification not only reflects the expertise of the operator but relates to potential risks and complications arising from the procedure and the ability of the catheterisation laboratory team to manage a complication utilising interventional techniques.

These guidelines have been developed after review of the published data and the recommendations of the directors of all the major paediatric cardiac catheterisation laboratories in Australia and New Zealand. These guidelines are informed by international standards with local geographical and clinical considerations.

Level 1 Procedures

- Diagnostic cardiac catheterisation
- Balloon atrial septostomy in the newborn
- Temporary transvenous pacemaker implantation

Level 2 Procedures

- Pulmonary balloon valvuloplasty beyond neonate
- Closure of uncomplicated patent ductus arteriosus in patients \geq 10kg where PDA is the principal diagnosis and there is no additional significant haemodynamic lesion i.e. pulmonary hypertension
- Coil embolisation of aortopulmonary collaterals
- Endomyocardial biopsy beyond infancy
- Retrieval of embolised foreign bodies

Level 3 Procedures

- Transeptal atrial needle puncture
- Closure of patent ductus arteriosus in patients $<$ 10kg or the presence of additional significant haemodynamic lesions
- Closure of vascular anomalies other than aortopulmonary collaterals
- Neonatal balloon pulmonary valvuloplasty
- Aortic balloon valvuloplasty beyond neonate
- Percutaneous balloon angioplasty

Level 4 Procedures

- Blade atrial septostomy
- Endomyocardial biopsy in infancy
- Neonatal aortic balloon valvuloplasty
- Mitral balloon valvuloplasty
- Endovascular stent implantation

- Device closure of atrial or ventricular septal defects
- Perforation of atretic valve, atrial septum or other occluded vascular structure with radio frequency catheter technique

Recommendations

1. **Location:** Paediatric cardiac catheterisation should only be undertaken in centres which have appropriate cardiac catheterisation laboratories and personnel for the paediatric age group. These centres should have access to paediatric intensive care and paediatric anaesthesia. The exception for this is balloon atrial septostomy which can be undertaken in neonatal intensive care units with echocardiographic guidance. Whilst on-site paediatric cardiac surgical and perfusion services are not essential for Level 1 and 2 complexity cases, this ideally should be available for Level 3 and essential for Level 4 complexity cases. The paediatric cardiac catheterisation laboratory should perform a minimum of 60 cases a year to maintain proficiency.
2. **Credentialing & Supervision:** The performance of cardiac catheterisation is a necessary component of basic and advanced training in Paediatric Cardiology. This should be undertaken in paediatric cardiac centres that perform at least 150 cases per year and have at least one experienced interventional cardiologist. The trainee must participate in a minimum of 100 cases with at least 50 of these as a primary operator of Level 1 or 2 complexity. Ideally all trainees should have experience with other levels of paediatric cardiac catheterisation.

Guidelines for Paediatric Cardiac Catheterisation (contd..)

(Continued from page 16)

It is preferable that specialised training in interventional catheterisation be completed before paediatric cardiologists are credentialed for Level 2, 3 and 4 procedures. However the credentialing for all procedures regardless of complexity needs to be assessed individually by the director of the catheterisation laboratory in each institution. It is the ideal that Level 2 procedures would be performed under supervision of a specialist paediatric interventional cardiologist, whilst Level 3 and 4 procedures would be best performed by a specialist paediatric interventional cardiologist.

3. **Audit:** All centres performing paediatric cardiac catheterisation should regularly perform audits of all procedures performed, the outcome of the procedures and the occurrence of any adverse outcomes. All cases should be presented at regular institutional meetings and be open to peer review.
4. **Maintenance of Competence:** To maintain competency in Level 1 paediatric cardiac catheterisations, a cardiologist should perform at least 25 cases per year. The exception for this is bedside balloon atrial septostomy in the newborn with echocardiographic guidance which may be performed by a cardiologist experienced in this procedure but does not perform other cardiac catheterisation procedures, subject to the approval of the Head of the Department in each institution. However, these procedures should be audited as outlined in recommendation 3. Competency in more complex

procedures (Level 2, 3 & 4) should be assessed by the director of the cardiac catheterisation laboratory taking into consideration results of departmental audits and the experience of the operator.

Invasive electrophysiological studies performed by paediatric cardiologists, including catheter ablation therapy for arrhythmias in children, involve cardiac catheterisation and transeptal atrial needle puncture.

Therefore, these procedures can be accepted as accreditation for competency of Level 1 paediatric cardiac catheterisation and transeptal atrial puncture. However, this document is not intended to cover paediatric electrophysiological training or accreditation.

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Guidelines on the Performance of and Support Facilities For a Primary Coronary Intervention (PCI) Service

Primary PCI is indicated in patients with STEMI or MI with new LBBB presenting < 12 hours from symptom onset. The benefits are dependent upon the delivery of prompt and expert therapy by an established and effective primary PCI program. These guidelines outline the requirements to develop a dedicated acute infarct angioplasty service capable of delivering every day, 24 hour therapy.

For the purpose of this document, primary PCI for STEMI incorporates patients undergoing rescue intervention for failed reperfusion after thrombolysis with evidence of either haemodynamic or electrical instability or ongoing ischaemia.

Elective PCI and primary PCI for STEMI are different although obviously related disciplines. Experience in elective PCI only partially translates to experience with primary PCI for STEMI. The volume-outcome relationship exists for both elective procedures and primary PCI but has important differences. Available data indicate that the best results are obtained by operators who are highly experienced both in elective PCI and in primary PCI who work in institutions that have established an active program for primary PCI. Operator experience in elective PCI is not sufficient to confer expertise in primary PCI as there are aspects and conduct unique to the urgent procedure.

It is recommended that primary PCI for STEMI be performed by appropriately trained higher volume operators experienced in both elective and primary PCI. All operators and centres should meet the minimum requirements set in the Cardiac Society's "Guidelines for

Competency in Percutaneous Coronary Intervention." Ongoing activity levels expected for maintenance of competence:

Individual

75+ elective PCI procedures per year
11+ primary PCI cases per year

Centre

36+ primary PCI procedures for STEMI per year
200+ overall PCI cases per year

- Personnel and facility requirements for an effective primary PCI program (irrespective of whether cardiac surgery is available onsite) -
- Full support and commitment from hospital administration, fulfilling institutional requirements including support services.
- Comprehensive program planning including an established system facilitating early recognition in the Emergency Department and prompt contact with the Cardiology team and catheterisation laboratory activation to minimize treatment delays. Pathways of communication and a clearly defined mechanism of PCI activation need to be implemented prospectively. Real-time data feedback with Emergency Department and catheterisation laboratory staff should be undertaken.
- Experienced nursing and technical catheterisation staff with training in interventional laboratories. Personnel must be experienced in managing acutely unwell patients with haemodynamic and electrical instability.
- Laboratory staff must be skilled in all aspects of interventional equipment and must participate in an on call schedule permitting laboratory operation 24 hours-per-day, 365-days-per-year.
- A well equipped and maintained catheterisation laboratory with high-resolution digital imaging capacity and an appropriately diverse inventory of interventional equipment including intra-aortic balloon pump capability and resuscitative equipment.
- Coronary care unit staff must be adept in haemodynamic monitoring, temporary pacemaker operation and IABP management.
- Primary PCI must be performed routinely as the treatment of first choice for STEMI around the clock to ensure streamlined care paths and increased case volumes. Door to balloon times should not exceed 90 minutes.
- Primary PCI may be reasonably considered by a high volume operator (experience > 1000 PCI cases) in an established unit with experience in elective PCI although without a dedicated 24 hours-per-day, 365-days-per-year program. This is particularly relevant to a non-metropolitan centre with adequate facilities and infrastructure and when the operator felt primary PCI was the preferred treatment strategy. Audit of clinical outcomes in these patients would need to be closely monitored.
- On-site rigorous data collection, ongoing program of outcomes

Guidelines on the Performance of and Support Facilities For a Primary Coronary Intervention (PCI) Service (contd)

(Continued from page 18)

review, benchmarking, quality improvement and formalized periodic case analysis. Door to balloon times should be frequently reviewed as a component of quality assessment with a view to implementing strategies permitting optimal reperfusion within 90 minutes of presentation.

The Society believes that a policy of routine primary PCI should only be performed after an elective PCI program has been established and shown to perform with acceptable morbidity and mortality. Hospital administration must fully support the program and enable provision of institutional requirements.

Institutions should participate in 3-6 month period of implementation, during which time development of a formalized primary PCI program is instituted that includes establishment of standards, training of staff, logistic development and creation of a quality-assessment and error management system.

A policy of 24/7 primary PCI however should not be offered until in view of the laboratory director, there is:

- Sufficient infrastructure (workforce and clinical services) to ensure that procedures can be performed safely outside routine working hours
- Appropriately trained interventional cardiologists willing to participate in such a program

Primary PCI service without surgical back-up -

- Operator and institutional experience as defined above
- Proven plan for rapid transport to a cardiac surgical centre
- Performed in a timely fashion (< 90 mins)
- Case selection must be rigorous

Caution: Discretion should be exercised when assessing

haemodynamically stable patients with complex infarct related lesions that have TIMI 3 flow. Interventions to non-culprit lesions should be avoided (with the possible exception of cardiogenic shock).

Urgent transfer to institution with cardiac surgery of patients with:

High-grade residual left main or multi-vessel disease and clinical or haemodynamic instability after culprit vessel primary PCI, preferably with IABP support

The Society believes that careful and complete record keeping and peer-review auditing of individual and procedural results is mandatory and an intrinsic part of quality assurance related to primary PCI procedures (whether undertaken with or without surgical backup). The lack of prompt availability of these details would constitute a major breach of this policy.

Safety and Performance Guidelines for Pharmacologic Stress Testing in Conjunction with Clinical Cardiac Imaging Procedures

Background

This document has been prepared conjointly by a committee representing both the Cardiac Society of Australia and New Zealand (CSANZ) and the Australia and New Zealand Association of Physicians in Nuclear Medicine (ANZAPNM). It complements the previously published "Safety and Performance Guidelines for Clinical Exercise Stress Testing."

Committee Members

Kevin Allman (ANZAPNM/CSANZ/) (chair), Nathan Better (ANZAPNM/ CSANZ), John O'Shea (CSANZ), and Henry Krum (CSANZ)

The full guidelines can be viewed and are available to download from the Society's website at www.csanz.edu.au, Education, Guidelines, Performance of Investigations and Procedures

Congratulations

The Society would like to extend its congratulations to **Miss Michelle Knight**, who was recently awarded the **CSANZ Postgraduate Student Award for Excellence**. This prize is awarded to the highest achieving student in the Graduate Certificate or Graduate Diploma in Nursing (Cardiovascular Nursing) programs. Michelle, who was already working in this area, completed her Graduate Certificate (Cardiovascular Nursing) at the University of South Australia. Upon receiving the award, Michelle stated that her studies were invaluable in improving her knowledge base and that winning this award has inspired her to consider doing the Graduate Diploma (Critical Care Nursing).



Victor Chang Cardiac Research Institute

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Do you have any patients that are twins?

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For more information please call

Clinical Research Coordinator

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Interested in Rheumatic Heart Disease?

The World Heart Federation continues to develop its web based one-stop shop for everyone interested in rheumatic heart disease. It now has a discussion forum, which provides practitioners a chance to discuss practical aspects of the prevention, control and management of rheumatic fever and rheumatic heart disease. This currently features a case study presented by Dr. Andrew Steer focusing on the presentation of RHD in the Pacific Islands (<http://www.world-heart-federation.org/publications/heart-beat-e-newsletter/heart-beat-december-2008january-2009/in-this-issue/rhdnet-discussion-forum-update/>). The site is managed by the staff of the World Heart Federation Rheumatic Heart Disease Programme in the Pacific.

To find out more please visit RHDnet at www.worldheart.org/rhd.



Friday

12 June 2009

For more information visit
www.goredforwomen.org.au

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Web:

<http://scientificsessions.americanheart.org/portal/scientificsessions/ss/seeyounextyear2009>

EUROPE

ESC Congress 2009

29 August—2 September, 2009

Barcelona, Spain

Email: congress@escardio.org

Web: www.escardio.org

ASIA PACIFIC

CSANZ NZ Regional ASM 2009

June 12-14, 2009

Wellington, New Zealand

Secretariat: Six Hats

Web: www.sixhats.co.nz/csanz09

5th World Congress of Paediatric Cardiology and Cardiac Surgery

June 21-26, 2009

Cairns, QLD

Web: www.pccs2009.com

ANZET09

August 12-13, 2009

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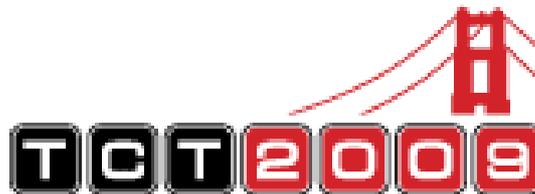
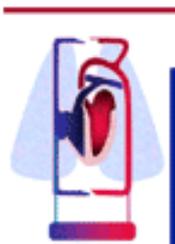
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