



ISSN 1447-4999

Article 990297

Australian Prehospital Emergency Health Research Forum

Peer-Reviewed

ABSTRACTS

from

**The Australian College of Ambulance Professionals (ACAP)
2008 National Conference**

Melbourne, Australia
4-6 September 2008

The Journal of Emergency Primary Health Care Management Committee gratefully acknowledges the support of ACAP, and all authors who submitted scientific abstracts for peer review to the Australian Prehospital Emergency Health Research Forum (APEHRF) and presentation at the ACAP 2008 National Conference.

Additionally, the Management Committee sincerely thanks the following peer reviewers and adjudicators for providing their valuable time and expertise in the peer review of abstracts, evaluation of posters or adjudication of selected oral presentations at the Conference, from which their collective results determined the winners of the 2007 APEHRF Best Paper Award and Best Poster Award:

Abstract Peer Reviewers:

Mr. Malcolm Boyle, Prof. Gerry FitzGerald, Mr. Paul Jennings, Prof. Helen Snooks, A/Prof. Vivienne Tippett, Ms. Andrea Wyatt.

Poster Adjudicators:

Mr. Garrie Carman, Dr. Hugh Grantham, Mr. Peter Jurkovsky, Mr. Allen Marr.

Conference Adjudicators:

Jeff Allan, Alon Baker, Murray Black, Malcolm Boyle, Peter Calnan, Michael Cameron, Ben Ellis, John Hall, Grant Hocking, Chris Huggins, David Lighton, Paul Laing, Andrew McDonnell, Glenn Mitchell, Peter Morgan, Lionel Neal, Peter O'Meara, Alan Pegg, Con Venardos, Michael Williams.

INDEX OF AUTHORS AND ABSTRACT TITLES

Paul ARBON. FIRST AID AND HARM MINIMIZATION FOR VICTIMS OF ROAD TRAUMA.

Frank ARCHER, Erin SMITH, Ingrid BIELAJS, Caroline SPENCER. FROM NATURAL DISASTERS TO GLOBAL HEALTH SECURITY: THE CHANGING PARADIGM OF DISASTER HEALTH.

David ARNOLD. EDUCATING THE 21ST CENTURY AMBULANCE PROFESSIONAL.

Paul BAKER, Jane CONWAY, Chris COTTON, Dale ASHBY, James SMYTH, Richard WOODMAN, Hugh GRANTHAM. DEFIBRILLATION OR CARDIOPULMONARY RESUSCITATION FIRST IN PATIENTS WITH OUT-OF-HOSPITAL CARDIAC ARRESTS FOUND BY PARAMEDICS TO BE IN VENTRICULAR FIBRILLATION? A RANDOMISED CONTROL TRIAL.

Jason BENDALL, Andrew BOWER, Paul MIDDLETON, Siun GALLAGHER, Dave HODGE, The ECP Team. EXTENDED ROLES FOR PARAMEDICS: THE AMBULANCE SERVICE OF NSW EXTENDED CARE PARAMEDIC PROGRAM.

Natalie BLACKER, Lyn PEARSON, Grant LENNOX. WORKFORCE PLANNING – AN AUSTRALASIAN SNAPSHOT OF THE AMBULANCE WORKFORCE.

Malcolm BOYLE. HOW ACCURATE ARE VICTORIAN PREHOSPITAL TRAUMA TRIAGE CRITERIA?

Kate CANTWELL, Stephen BURGESS, Ian PATRICK, Col JONES, Peter CAMERON, Mark FITZGERALD, Louise NIGGEMEYER. PREHOSPITAL MANAGEMENT OF TENSION PNEUMOTHORAX- HAS IT IMPROVED?

Kate CANTWELL, Jeff KENNEALLY, Ian JARVIE, Terence MARSHALL, Stephen BERNARD. THE USE OF RSI BY INTENSIVE CARE PARAMEDICS FOR PATIENTS WITH CONDITIONS OTHER THAN TRAUMATIC HEAD INJURY.

Mark COOKE. DEVELOPMENTS IN PREHOSPITAL THROMBOLYSIS BY AMBULANCE PARAMEDICS - THE UK EXPERIENCE.

Julia CRILLY, James LIND, Vivienne TIPPETT, Marilla O'DWYER, Julia PETERS, John O'DWYER, Kerri MELKI, Nerolie BOST, Marianne WALLIS, Gerben KEIJZERS. WHAT HAPPENS TO PATIENT PRESENTATIONS AND AMBULANCE SERVICE DELIVERY WHEN ANOTHER EMERGENCY DEPARTMENT OPENS WITHIN THE SAME DISTRICT? A ONE MONTH BEFORE AND AFTER SNAPSHOT.

David DAWSON. UNIVERSITY EDUCATED AMBULANCE PARAMEDICS: JOB READY OR NOT?

Tracy EARL, Malcolm BOYLE, Brett WILLIAMS. CROSS SECTIONAL MEASUREMENT OF EMPATHY LEVELS IN UNDERGRADUATE PARAMEDIC STUDENTS.

Kathryn EASTWOOD, Malcolm BOYLE, Brett WILLIAMS. DRUG CALCULATION COMPETENCE OF PARAMEDIC AND NURSING STUDENTS.

Fin ENGLISH. IMPROVING CARDIAC SURVIVAL RATES IN RURAL COMMUNITIES BY OWNERSHIP OF HEALTH: WHAT THE EVIDENCE SHOWS.

Cindy HEIN, Harry OWEN John PLUMMER. A SHORT INTERVENTION IMPROVES LARYNGEAL MASK AIRWAY (LMA) INSERTION SKILL RETENTION AT 6 MONTHS: A RANDOMIZED CONTROLLED TRIAL OF TRAINEE PARAMEDICS.

Maree HITCHCOCK, Julia CRILLY, Brigid GILLESPIE, Vivienne TIPPETT, Wendy CHABOYER, James LIND. RAMPED VS NON-RAMPED PATIENT OUTCOMES: AN CASE-CONTROL STUDY INVESTIGATING PATIENT AND HEALTH SERVICE DELIVERY OUTCOMES.

Timothy HOWES, Murray BARDWELL. DUAL DEGREES IN PARAMEDICINE AND NURSING: IS EXPANSION IN SCOPES OF PRACTICE THE SOLUTION TO REGIONAL SHORTAGES IN HEALTH PROFESSIONALS?

Chris HUGGINS. EVIDENCE BASED PRACTICE AND CLINICAL JUDGMENT: THE CHALLENGE FOR HEALTHCARE PROFESSIONALS.

Dianne INGLIS, Jeff KENNEALLY, Terry MARSHALL. PREHOSPITAL CPAP – AN OCCUPATIONAL HEALTH AND SAFETY PERSPECTIVE.

Ian JARVIE, Edward WATKINS, Bill BARGER, Dan McGENNISKEN, Lindsay BENT. DOOR TO BALLOON TIME BENEFITS OF A PREHOSPITAL 12 LEAD ECG SYSTEM.

Paul JENNINGS, Julian STELLA, David FERRARI, Ralf HARRIES, Bruce BARTLEY. INTRODUCTION OF A PRE-HOSPITAL CRITICAL INCIDENT MONITORING SYSTEM – THE FIRST 20 MONTHS.

Steven N JOHNSTON, Garry J WILKES. SAFETY AND EFFICACY OF METHOXYFLURANE AND INTRANASAL FENTANYL FOR NON-TRAUMATIC PAIN.

Steven N JOHNSTON, Garry J WILKES, Ian G JACOBS. OUTCOME FROM OUT OF HOSPITAL CARDIAC ARREST: THE EFFECT OF ADVANCED AIRWAY MANAGEMENT.

Angela JURSEVICS, Paul SIMPSON, Siun GALLAGHER, Dave HODGE, Paul MIDDLETON, The Advanced Care Team - Ambulance Service NSW. CLINICAL DECISION MAKING IN PRE-HOSPITAL CARE FOR A CHANGING HEALTH ENVIRONMENT.

Debra KERR, Anne-Maree KELLY, Paul DIETZE, Damien JOLLEY, Bill BARGER, Kerry LEIGH. EFFECTIVENESS AND SAFETY OF INTRANASAL NALOXONE FOR THE TREATMENT OF HEROIN OVERDOSE BY PARAMEDICS. **(WINNER – 2008 Australian Prehospital Emergency Health Research Forum Best Paper Prize)**

Bill LORD. IS A “DIAGNOSIS” A LEGITIMATE COMPONENT OF THE PARAMEDIC CLINICAL DECISION MAKING PROCESS?

Bill LORD. PARAMEDIC ASSESSMENT OF PAIN IN THE COGNITIVELY IMPAIRED ADULT.

Christopher MACPHERSON. EDUCATING GENERATION Y PARAMEDICS.

Christopher MACPHERSON. GOOD BUDGET AND GREAT EDUCATION: THE ONE NIGHT SIMULATION CENTRE.

Christopher MACPHERSON. MY WAY, YOUR WAY, OUR WAY: A PARTNERSHIP IN WORK READINESS.

Christopher MACPHERSON. OPTIMISING GRADUATE PARAMEDIC LEARNING AND SATISFACTION.

Veronica MADIGAN. DO YOU REALLY SEE WHAT I SEE? VETERINARY STAFF TEACHING HEALTH CARE PROFESSIONALS ABOUT THE UNSPOKEN LANGUAGE OF MEDICINE – NON VERBAL COMMUNICATION.

Veronica MADIGAN, Brendan SMITH. SEVEN YEARS ON – ARE WE STILL SELECTING THE RIGHT, FIRST YEAR, PRE-HOSPITAL CARE STUDENTS?

David MELVILLE. THE QUEENSLAND AMBULANCE AUDIT – MANAGING AMBULANCE DEMAND INTO THE NEXT DECADE.

Rebecca MICHAU, Malcolm BOYLE, Brett WILLIAMS. A SYSTEMATIC REVIEW AND META-ANALYSIS OF PAIN ASSOCIATED WITH IMMOBILISATION ON A LONG RIDGED SPINEBOARD.

Rebecca MICHAU, Samantha ROBERTS, Malcolm BOYLE, Brett WILLIAMS. AN INVESTIGATION OF THEORY-PRACTICE GAP IN UNDERGRADUATE PARAMEDIC EDUCATION.

Paul MIDDLETON, Jason BENDALL, Paul SIMPSON, Gary SINCLAIR, Timothy DOBBINS. EFFICACY OF OUT-OF-HOSPITAL ADMINISTRATION OF MORPHINE, FENTANYL AND METHOXYFLURANE IN ADULTS: A SINGLE CENTRE OBSERVATIONAL COMPARATIVE STUDY OF OVER 38,000 PATIENTS.

Peter MORGAN. CAN AN AMBULANCE DINOSAUR ESCAPE FROM AMBULANCE?

Peter MORGAN. COULD THE AMBULANCE PARAMEDIC BE EXTINCT IN 30 YEARS?

Peter MORGAN, Christine STIRLING, Judith WALKER. IS AMBULANCE THE EMERGENCY ARM OF PRIMARY HEALTH?

Ian MOSLEY, Marcus NICOL, Geoffrey DONNAN, Ian PATRICK, Helen DEWEY. THE ROLE OF AUSTRALIAN AMBULANCE PARAMEDICS IN REDUCING DELAYS FOR ACUTE STROKE PATIENTS.

Sandy MUECKE, Andrew BERSTEN. PREHOSPITAL HYPOTENSION AND SEVERE TRAUMATIC BRAIN INJURY; HOW GOOD IS THE DATA?

Peter MULHOLLAND. DIFFERENCES IN RURAL AND URBAN PARAMEDICAL PRACTICE: INFORMING PARAMEDIC CURRICULA.

Graham MUNRO, Malcolm WOOLLARD, David LIGHTON, Pete GREGORY, Emma JENKINSON, Leanne HAMILTON, Robert NEWCOMBE, Peter O'MEARA. MALLEABLE STYLET

vs. RE-USEABLE AND DISPOSABLE BOUGIES IN A MODEL OF DIFFICULT INTUBATION: A RANDOMISED CROSS-OVER TRIAL.

Ziad NEHME, Daniel CUDINI. DEXTROSE 10%: THE SAFER OF THE TWO APPLES IN THE MANAGEMENT OF PREHOSPITAL HYPOGLYCAEMIA.

Ziad NEHME, Malcolm BOYLE. SUBOPTIMAL VENTILATION IN RESUSCITATION: A CURE FOR THE OVERZEALOUS.

Peter O'MEARA, Ann JENSEN. THE BIRTH OF A DISCIPLINE: CARVING OUT A PLACE IN THE UNIVERSITY FOR PARAMEDICS.

Peter O'MEARA, Vianne TOURLE, Veronica MADIGAN, David LIGHTON. GRADUATE PARAMEDIC CAREER INTENTIONS: ORGANISATIONAL AND PROFESSIONAL IMPLICATIONS.

Stephen RASHFORD, Brett ROGERS, Vivienne TIPPETT, Steven RAVEN. QUEENSLAND AMBULANCE SERVICE INTEGRATED CARDIAC REPERFUSION STRATEGY (INCARS).

Buck REED. EVENT MEDICAL SERVICES: IS THE TRADITIONAL MODEL SUSTAINABLE?

Louise ROBERTS. THE IDENTIFICATION, ASSESSMENT AND MANAGEMENT OF MENTAL HEALTH PATIENTS WITH COMORBID PRESENTATIONS BY PARAMEDICS WITHIN THE COMMUNITY: THE CHALLENGES AND GAPS WITHIN THE SYSTEM.

Stewart ROBERTSON, Steve KEOGH. "WHO IS AN ARMY MEDIC IN 2008?"

Brett ROGERS, Dr Stephen RASHFORD, Vivienne TIPPETT, Steven RAVEN. THE ABILITY OF INTENSIVE CARE PARAMEDICS TO ACCURATELY IDENTIFY AND TREAT STEMI PATIENTS.

Kerriane WATT, Vivienne TIPPETT. AMBULANCE SERVICE DEMAND RELATED TO ALCOHOL, DRUGS AND MENTAL HEALTH.

Sharon White, Roderick BRYANT-KING. PODCASTING IN AN EDUCATIONAL CONTEXT FOR AMBULANCE SERVICE NSW, AUSTRALIA.

Tony WALKER, Robyn BETTS, Geoff HARVEY. COMMUNITY EMERGENCY RESPONSE TEAMS – MORE THAN FIRST RESPONSE.

Brett WILLIAMS, Ted BROWN. UNDERGRADUATE PARAMEDIC STUDENTS ATTITUDES TOWARDS E-LEARNING.

Brett WILLIAMS, Teresa IACONO, Jane TRACY, Belinda LEWIS, Prue MORGAN, Ted BROWN, Sally HANSON. AN EVALUATION OF DEVELOPMENTAL DISABILITY DVD SIMULATIONS: CAN THIS IMPROVE CLINICAL PRACTICE?

Eileen WILLIS, Tim POINTON, Carmel MCCARTHY, Brett WILLIAMS, Richard BRIGHTWELL, Mary MORRIS, Tony WALKER. UNIVERSITY AND SERVICE PROVIDER MODELS OF COLLABORATION IN TERTIARY EDUCATION IN PARAMEDIC EDUCATION.

FIRST AID AND HARM MINIMIZATION FOR VICTIMS OF ROAD TRAUMA

Paul ARBON

Flinders University, Adelaide, Australia

Introduction

This project investigated the use of first aid by bystanders at road traffic crashes (RTC). The project was undertaken in recognition of the significant potential impact of early first aid interventions on mortality and morbidity associated with RTC. The aim of this project was to acquire knowledge about the prevalence of first aid training; the incidence of being a bystander and of providing first aid; the range of first aid skill being utilised; the motivation to intervene; and, the perceived impact of first aid training.

Method

An internet based survey was distributed to a potential population of 12,500 road users and a total of 773 responded. Descriptive statistical analysis of quantitative data and thematic analysis of qualitative data was completed.

Findings and Conclusions

77% of participants had first aid training at some stage. 28% held a current first aid qualification. 11% had provided first aid at RTC. 75.3% who had provided first aid were travelling in a vehicle. Having first aid training increased the likelihood of intervention, of owning a first aid kit or pocket mask. First aid training, even if it is not current, is an enabler for providing first aid at RTCs. First aid skills most commonly used were changing posture, opening an airway and providing comfort and reassurance. Key concerns for first aiders included feeling a lack of follow-up, or opportunity to debrief. Strategies to increase first aid training, to improve information and support, and to increase the knowledge of first aiders are discussed.

FROM NATURAL DISASTERS TO GLOBAL HEALTH SECURITY: THE CHANGING PARADIGM OF DISASTER HEALTH

Frank ARCHER, Erin SMITH, Ingrid BIELAJS, Caroline SPENCER

Department of Community Emergency Health and Paramedic Practice, Monash University, Melbourne, Australia

Abstract:

Background: There is an increasing interest in the health response to disasters, yet, as noted by the World Association for Disaster and Emergency Medicine, the domain lacks a contemporary framework to collate the science, research and education. The WHO post-Asian Tsunami Conference lamented “we fail to learn from the past”.

Objectives: To develop a contemporary framework of Disaster Health to inform graduate education programs in disaster health.

Methods: A review of: International epidemiological resources, e.g. Centre for Research in the Epidemiology of Disasters, World Disasters Reports, and, Health Action in Crises (WHO); and graduate education programs in disaster health. A framework for “Disaster Health” was developed.

Findings: Despite the lack of a consensus on a definition of “disasters”, there is a major paradigm shift in the approach to the health response to disasters which is becoming increasingly recognized as being “global” and “multidisciplinary”. Epidemiological modelling demonstrates a shift from an emphasis on “natural disasters” to “global health security”. A contemporary framework for “Disaster Health” is proposed, which encompasses the primary disciplines of: clinical and psycho-social; public health; and, emergency and risk management. Other key components include: support disciplines; the community; and the socio-political-cultural contexts of events. Each of these perspectives can be applied to the pre-event, event and post-event phases of disasters. Common threads identified from reports on graduate education programs in this field reinforced the core elements of the proposed framework.

Conclusions: A new framework has been developed to underpin education in “Disaster Health”, and provides the base for further development and evaluation.

EDUCATING THE 21ST CENTURY AMBULANCE PROFESSIONAL

David ARNOLD

DAACs International Consulting Group, Canberra, Australia & Prince George, Canada.

Abstract: The modern ambulance professional has more in common with a superhero than the historical stretcher-bearer. Superhero Uni. must find latent powers within the rookie and help him or her to harness these powers for the good of humankind. This presentation looks at ancient methods of superhero development along with the latest androgogical techniques to place and hone required skills.

Topics include:

- History of Ambulance Education
- The Art of Bow Bending and Stone Sharpening
- Paramedic's Kryptonite and how to shield against it.
- *Superheroing* in Today's Society

DEFIBRILLATION OR CARDIOPULMONARY RESUSCITATION FIRST IN PATIENTS WITH OUT-OF-HOSPITAL CARDIAC ARRESTS FOUND BY PARAMEDICS TO BE IN VENTRICULAR FIBRILLATION? A RANDOMISED CONTROL TRIAL

Paul BAKER¹, Jane CONWAY¹, Chris COTTON¹, Dale ASHBY², James SMYTH³, Richard WOODMAN⁴ and Hugh GRANTHAM¹

¹SA Ambulance Service, Adelaide, Australia, ²Royal Adelaide Hospital, Adelaide, Australia, ³Queen Elizabeth Hospital, Adelaide, Australia, ⁴Flinders Medical Centre, Adelaide, Australia

Objectives: To determine whether in patients in VF cardiac arrest with an ambulance response time of > 5 minutes, 3 minutes of CPR before the first defibrillation is more effective than immediate defibrillation in improving survival to hospital discharge.

Methods: This randomised control trial was run between July 1, 2005, and July 31, 2007. Patients in VF arrest were eligible. Exclusion criteria were; (i) < 18 years of age, (ii) traumatic arrest, (iii) paramedic witnessed arrest, (iv) advanced life support performed before arrival of paramedics and (v) not for resuscitation order or similar. The primary outcome was survival to hospital discharge with secondary outcomes being neurological status at discharge, the rate of return of spontaneous circulation (ROSC) or the time taken to achieve ROSC.

Findings: For all response times, no differences were observed between the immediate defibrillation group and the CPR first group in survival to hospital discharge (17.1% [18/105] vs. 10.3% [10/97]; P=0.16), the rate of ROSC (53.3% [56/105] vs. 50.5% [49/97]; P=0.69) or the time from the first defibrillation to ROSC (12:37 vs. 11:19; P=0.49). There were also no differences between the immediate defibrillation group and the CPR first group, for response times of ≤ or > 5 minutes: survival to hospital discharge (50.0% [7/14] vs. 25.0% [4/16]; P=0.16 or 12.1% [11/91] vs. 7.4% [6/81]; P=0.31, respectively) and the rate of ROSC (71.4% [10/14] vs. 75.0% [12/16]; P=0.83 or 50.5% [46/91] vs. 45.7% [37/81]; P=0.54 respectively). No differences were observed in the neurological status of those surviving to hospital discharge.

Conclusion: For patient in out-of-hospital VF cardiac arrest we found no evidence to support the use of 3 minutes of CPR before the first defibrillation over the accepted practice of immediate defibrillation.

M.A.N.E.R.S. - A MODEL OF PSYCHOLOGICAL FIRST AID FOR PARAMEDICS AND MANAGERS

Heather BANCROFT¹, David COOPER¹

Victorian Ambulance Counselling Unit, Melbourne, Australia

Psychological First Aid has been designed for delivery by people trained to assist those who have been involved in traumatic or crisis situations. As such, staff involved in the emergency services such as Police, Ambulance, Fire and other first responder teams, incident command centres, emergency health care providers, Community Emergency Response Teams (CERT), and disaster relief organisations are ideally situated to both deliver and benefit from it.

M.A.N.E.R.S. is an acronym for a model of Psychological First Aid utilised by both the Victorian Ambulance Peer Programs and the Counselling Unit and incorporates the following 6 stages.

- 1. Minimise exposure**
- 2. Acknowledge the response and/or the event**
- 3. Normalise the response or reaction**
- 4. Educate as required**
- 5. Restore or refer**
- 6. Self-care**

The aim of M.A.N.E.R.S. is to provide early and supportive interventions, which will assist people with the emotional distress that may result from their involvement in an accident, injury or sudden shocking event. It is intended that the interventions will support and enhance people's normal coping strategies and recovery processes.

The presentation incorporates:

- A brief background to Psychological First Aid and the development of M.A.N.E.R.S.
- A DVD (18mins) developed by the Victorian Ambulance Counselling Unit which explains the application of M.A.N.E.R.S. by paramedics
- *Examples of the model's application and usefulness by paramedics and managers.*

EXTENDED ROLES FOR PARAMEDICS: THE AMBULANCE SERVICE OF NSW EXTENDED CARE PARAMEDIC PROGRAM

Jason BENDALL¹, Andrew BOWER¹, Paul MIDDLETON¹, Siun GALLAGHER¹, Dave HODGE¹, and
the ECP Team¹

¹*Ambulance Service of NSW, Rozelle, Australia*

There is emerging evidence that extended roles for paramedics are feasible, safe, effective and acceptable to patients. The Ambulance Service of NSW commenced a proof-of-concept program of Extended Care Paramedic (ECP) practice, based (in large part) on the United Kingdom's Emergency Care Practitioner programs. The ECP program aims to evaluate the effectiveness of providing extended care to patients via triple zero, who have unplanned health care needs in both metropolitan and regional areas of NSW. Induction (basic) training consisted of a nine-week block attached to a tertiary teaching hospital clinical school with further ongoing education to meet program and professional needs. Current ECPs operate as single responders and are available between 0800 and 2200.

In the first 100 days of operations, 12 ECPs responded to 1330 cases, arriving on scene at 84.4% of those, 50% of which were emergency (hot) responses. The ECP scope of practice is supported by clinical pathways and includes several procedures and medications not part of contemporary ambulance practice. The evaluation of this program is comprehensive, multifaceted and ongoing, and whilst it is too early to determine the final value and appropriateness of this new model of care, the impact to date appears promising with a non-transport rate of 36% and no significant clinical adverse events detected through the program's clinical governance processes.

Expanded roles for paramedics appears feasible and practical within Australian ambulance jurisdictions and may provide an effective demand management strategy whilst simultaneously providing increased choices for consumers accessing unplanned health care via '000'.

WORKFORCE PLANNING – AN AUSTRALASIAN SNAPSHOT OF THE AMBULANCE WORKFORCE

Natalie BLACKER, Lyn PEARSON, Grant LENNOX

Council of Ambulance Authorities, Australia

The Council of Ambulance Authorities (CAA) is the peak body representing the principle statutory and other providers of ambulance services in Australia, New Zealand and Papua New Guinea.

The objective of the CAA's Australasian Ambulance Workforce Planning Project is to produce a single national snapshot of the ambulance workforce to identify and address a wide range of issues fundamental to the development and sustainability of the future workforce. The aims of the project are to ensure a sustainable ambulance workforce, guide future recruitment and retention strategies for both metropolitan and rural and remote areas, and guide education strategies whilst providing vital information for policy makers, researchers, and ambulance service providers. This project has been overseen by the CAA's Strategic Business Advisory Committee (SBAC).

A working group of Australian ambulance service representatives were consulted at various stages of the project including involvement at a workforce planning workshop held in April 2008. Research methods included a survey to investigate key workforce staffing issues and recruitment and retention strategies, and a literature review. Jurisdictions provided human resources data via their own databases to profile the ambulance workforce.

This presentation explores the key workforce issues and challenges facing Australasian ambulance services against a background of workforce needs to cope with increasing ambulance demand (driven largely by an ageing population), impending retirements of baby boomers and challenges ranging from rural recruitment and retention to delivery of clinical training to new workforce entrants. It also explores areas for future development including extended scope of practice developments.

HOW ACCURATE ARE VICTORIAN PREHOSPITAL TRAUMA TRIAGE CRITERIA?

Malcolm BOYLE

*Monash University Department of Community Emergency Health and Paramedic Practice,
Melbourne, Australia.*

Background: There has been no previous validation of Victorian prehospital trauma triage criteria and its ability to predict hospital defined major trauma.

Objectives: The objective of this study was to ascertain the predictability of the ROTES prehospital trauma triage criteria.

Methods: Ambulance data from the 2002 Victorian Prehospital Trauma Triage Study was used. Unique and manual data matching was used to link the ambulance trauma dataset to State Trauma Registry data. A 2 x 2 table was used to calculate the positive predictive value (PPV) which was used to determine how successful the prehospital trauma triage criteria was at predicting hospital defined major trauma.

Findings: BP < 90mmHg, GCS < 13, and Respiratory Distress individually produced a predictability of 22%, 30% and 21% respectively for hospital defined major trauma. Adult head injury (blunt and penetrating) was 30% but when BP <90mmHg was added the predictability of hospital defined major trauma increased to 38%. Adult blunt chest trauma was 8% but when BP <90mmHg was added the predictability of hospital defined major trauma increased to 40%. Adult penetrating chest trauma was 16% but when BP <90mmHg was added the predictability of hospital defined major trauma increased to 50%. Adult blunt abdominal trauma was 11% but when BP <90mmHg was added the predictability of hospital defined major trauma increased to 30%.

Conclusions: This study has demonstrated that individual physiological components are low in predictability for hospital defined major trauma, however, when adding a pattern of injury this increases the predictability.

PREHOSPITAL MANAGEMENT OF TENSION PNEUMOTHORAX- HAS IT IMPROVED?

Kate CANTWELL¹, Stephen BURGESS¹, Ian PATRICK¹, Col JONES¹, Peter CAMERON², Mark FITZGERALD³, Louise NIGGEMEYER³

¹*Ambulance Victoria*, ²*Department of Epidemiology and Preventative Medicine, Monash University, Melbourne, Australia*, ³*Emergency and Trauma Centre, The Alfred Hospital, Melbourne Australia.*

Background: Tension Pneumothorax is relatively uncommon, however it can lead to death if untreated and is responsible for a significant number of preventable deaths, especially in the setting of traumatic injury. A study at the Alfred Hospital in 2004 described a cohort of patients arriving at their Trauma centre by ambulance with unrecognized tension pneumothorax. Whilst acknowledging that pre-hospital diagnosis of pneumothorax on clinical signs alone is at times difficult, on the basis of this data, the pre-hospital guideline for the management of patients with chest injuries and suspected pneumothorax was changed to a more proactive approach. This study is a review undertaken to establish the current rate of unrecognized tension pneumothorax and any unintended consequences of the new guidelines.

Objectives: Assess the number of tension pneumothoraces currently decompressed in the prehospital setting compared with 3 years ago, before the guideline change.

- Evaluate the number of unrecognized pneumothoraces
- Evaluate the consequences of prehospital decompression of tension pneumothoraces and the impact of those consequences on patient outcome.

Methods: This is a retrospective case note review using data from Ambulance Victoria, the Alfred Trauma Registry and the National Coronial Information System.

Findings and conclusions: It is hoped that the number of untreated pre-hospital tension pneumothoraces has decreased since the change in the clinical guideline and that the rate of consequences has fallen since the change in guideline.

THE USE OF RSI BY INTENSIVE CARE PARAMEDICS FOR PATIENTS WITH CONDITIONS OTHER THAN TRAUMATIC HEAD INJURY

Kate CANTWELL¹, Jeff KENNEALLY¹, Ian JARVIE¹, Terence MARSHALL¹, Stephen BERNARD²

¹*Ambulance Victoria,* ²*Intensive Care Unit, The Alfred Hospital, Melbourne Australia*

Background: There is a long history of prehospital endotracheal intubation with little investigation and analysis of the benefits and risks. What international research has been done is not generalisable to all ambulance services in Australia as paramedics here maintain a high level of education, training, medical oversight and have appropriate tools such as pulse oximetry and end-tidal CO₂ monitoring. Although there is a prospective, randomised trial currently underway in Ambulance Victoria examining the effects of Rapid Sequence Intubation (RSI) on head injured trauma patients, there is little published data on the effects of RSI on medical patients and those with non-traumatic head injury. This research will examine the short term effects of RSI on patients with conditions other than traumatic head injury

Objectives:

- To describe profiles of patients who undergo RSI for conditions other than traumatic head injury
- To describe the success rates of RSI on first attempt and the use of failed intubation drill
- To describe the short term patient outcomes in terms of physiological status

Methods:

This is a retrospective case note review using data from Ambulance Victoria.

Findings and conclusions: This presentation will discuss the findings of this research with regards to patient profiles, success at intubation on first attempt, successful navigation of the failed intubation drill and effect of RSI on physiological parameters.

DEVELOPMENTS IN PREHOSPITAL THROMBOLYSIS BY AMBULANCE PARAMEDICS - THE UK EXPERIENCE

Mark COOKE

Rural Ambulance Victoria, Australia

Background: Intravenous therapy with thrombolytic agents is an established treatment for AMI with about 50,000 uses each year in the UK.

The introduction of bolus thrombolytic agents has greatly simplified the practicalities of prehospital delivery, enabling patients to achieve the benefits associated with early thrombolysis.

The East Midlands Ambulance Service (EMAS) was the first to introduce the prehospital administration of thrombolysis (PHT) with paramedics using the double bolus agent reteplase. The majority (90%) of English ambulance services provide PHT, with two more referring to the Emergency Dept for in-hospital thrombolysis, and one service (London) referring all suitable patients directly for primary PCI.

By end December 2006, 7005 patients had received PHT (either tenecteplase or reteplase), of which 3035 were during 2006. All administrations were in accordance with the Joint Royal Ambulance Liaison Committee (JRCALC) clinical practice guidelines.

Findings: The median 'Call to Needle' time for this group of patients was 38 minutes, which demonstrates that paramedics are adequately equipped and educated to acquire and interpret 12-lead ECGs, accurately identify patients suitable for thrombolysis, and well placed to administer the therapy.

Although at present PHT accounts for less than 10% of all patients thrombolysed each year, much progress has been made, with the number of patients receiving PHT rising substantially each month.

Conclusion: The delivery of PHT can reduce 'call to needle' times substantially and should be supported.

WHAT HAPPENS TO PATIENT PRESENTATIONS AND AMBULANCE SERVICE DELIVERY WHEN ANOTHER EMERGENCY DEPARTMENT OPENS WITHIN THE SAME DISTRICT? A ONE MONTH BEFORE AND AFTER SNAPSHOT

Dr Julia CRILLY^{1,2}, Dr James LIND^{1,3}, Associate Professor Vivienne TIPPETT⁴, Marilla O'DWYER⁵, Dr Julia PETERS³, John O'Dwyer⁵, Kerri Melki⁵, Nerolie BOST³, Professor Marianne WALLIS^{2,6}, Dr Gerben KEIJZERS³

¹*Southern Area Health Service Emergency Department Clinical Network, Brisbane, Australia,* ²*Griffith University Research Centre for Clinical and Community Practice Innovation, Gold Coast, Australia,* ³*Emergency Department, Gold Coast Hospital, Southport, Australia,* ⁴*Queensland Ambulance Service/ Australian Centre for Prehospital Research, Queensland, Australia,* ⁵*Australian E-Health Research Centre, Brisbane, Australia* ⁶*Gold Coast Health Service District, Australia*

Background

Hospital and emergency department (ED) crowding is an increasingly common issue facing today's acute health care services and has been associated with negative patient and staff outcomes. Furthermore, the capacity to absorb overflow ambulance traffic has decreased. A new ED opening within the region may influence service delivery and patient outcomes however, very little research exists.

Objectives

This research project aims to investigate the impact of an additional ED (Robina) opening on the pre-existing, closest hospital and ambulance service in terms of patient and healthcare organisation outcomes, and ambulance service delivery.

Methods

This pilot study is a retrospective before and after design involving the collection and analysis of ambulance, emergency and hospital data for Southport ED only, for the time periods of 1 month prior and 1 month post Robina ED opening. This study is necessary to establish an initial database, identify data collection and data cleaning issues, as well as utilising the services of the Australian E-Health Research Centre in order to pilot the merging of three health information systems using Health Data Integration (HDI) software.

Findings

A total of 10,832 patient presentations were made to the ED during the two months of the study period and used for analytical purposes. Initial findings indicate that for the month post compared to the month before Robina ED opening, improved outcomes included ED and hospital length of stay (for admissions made via ED), ramping time (time from ambulance arrival to offload of patient onto hospital bed/chair), the proportion of ramped patients, in-hospital length of stay, in-hospital deaths (for patient presentations made via ambulance). Each of these outcomes decreased significantly. Further detailed analysis (involving adjustment for certain variables) will be presented at the conference.

Conclusion

Findings from this study will be able to directly inform the third, larger study where a 12 month before and after time series design will be used to again merge three HIS to identify patient, health service and ambulance service delivery outcomes.

UNIVERSITY EDUCATED AMBULANCE PARAMEDICS: JOB READY OR NOT?

David DAWSON

Victoria University, Melbourne, Australia

Background: This study assessed the 'job readiness' of students from the three-year, "Bachelor of Health Science (Paramedic)" (BHlthSci(P)) degree course at Victoria University. This course was structured so that students could apply for the position of ambulance paramedic after completing the first two years.

Objective: The aim of this study was to assess the 'job readiness' of students enrolled in the BHlthSci(P) program.

Methods: Data was obtained by interviewing students, interviewing students' supervisors and from regular assessments conducted post-employment. Open-ended questions were asked of students and students' supervisors to obtain their respective views on students' 'job-readiness.' Data from the regular post employment assessment was obtained for students from the previous ambulance paramedic education program and for students from the BHlthSci(P) program; data from the two groups was compared.

Findings: Student interviews indicated students believed the program prepared them well by providing a comprehensive theoretical background; the other themes to emerge focused on concerns about being adequately prepared in a practical sense. Student supervisor interviews indicated that they believed that students were well-prepared in a theoretical sense but not in a practical sense. However, student supervisors believed that students' practical skills developed so that they were the same as students from the previous program, after a period of time (less than one year). Insufficient data was obtained from the regular student post-employment assessments to enable conclusions to be drawn.

Conclusion: Students were theoretically well-prepared but lacked practical skills; their practical skills became fully developed after a period of time.

CROSS SECTIONAL MEASUREMENT OF EMPATHY LEVELS IN UNDERGRADUATE PARAMEDIC STUDENTS

Tracy EARL, Mal Boyle, Brett WILLIAMS

Department of Community Emergency Health & Paramedic Practice, Monash University, Melbourne, Australia

Background: Paramedics rely on establishing a health provider-patient relationship and building rapport with the patients they work with that promotes effective communication, patient satisfaction, and delivers appropriate patient assessment and treatment. Previous medical studies have shown that greater regard is given to medical conditions (e.g. pneumonia) compared with psychiatric disorders. Paramedics must have an ability to empathise with the patient and his/her family members to develop a more successful health provider-patient relationship.

Objectives: The specific aim of this study was to determine the levels of empathy of undergraduate paramedic students.

Methods: A cross-sectional study using a convenience sample of first, second and third year undergraduate paramedic students studying at Monash University. Student empathy levels were studied using two standardised self-reporting instruments: Jefferson Scale of Physician Empathy (JSPE), and the Medical Condition Regard Scale (MCRS). Ethical approval was granted prior to the start of the project.

Findings: A total of (N=94) students participated in the study. Sixty-four percent of these were female. The majority of students were less than 26 years of age (72%). Both scales produced important findings. The JSPE demonstrated neutral mean scores (3.54, SD=1.806) when assessing how understanding of patient and family feelings influence medical or surgical treatment from the student. The MCRS produced low mean scores in relation to compassion towards non-English speaking background (M=3.64, SD=1.294), substance abuse (M=3.06, SD= 1.208), and attempted suicide patients (M=3.87, SD= 1.37).

Conclusions: These results are significant in the emerging discipline of paramedic health care, and provide students, academics and other educators with important information regarding improving the health provider-patient relationship.

DRUG CALCULATION COMPETENCE OF PARAMEDIC AND NURSING STUDENTS

Kathryn EASTWOOD, Malcolm BOYLE, Brett WILLIAMS

*Department of Community Health & Paramedic Practice, Monash University,
Melbourne, Australia*

Background: The ability to perform drug calculations accurately is imperative to patient safety. Research involving the drug calculation abilities of qualified paramedics, nurses, and nursing students has highlighted poor mathematical standards. There have been no studies investigating the ability of undergraduate paramedic or paramedic/nursing students in performing drug calculations or basic mathematical equations.

Objectives: The aim of this study was to determine how accurate undergraduate paramedic students and paramedic/nursing students were at performing drug calculations and basic mathematical equations.

Methods: A descriptive survey was offered to undergraduate Bachelor of Emergency Health (BEH), and BEH/Nursing students involving a series of basic mathematical and drug calculation questions. A range of open-ended questions were also offered to participants. Ethics approval was granted.

Findings: A total of (N=103) second and third year BEH, and BEH/Nursing students participated. Just over 60% of participants were female (N=63). Total scores ranged from 0% to 100%. Only one student scored 100%, 16.5% of students (n=17) scored greater than 75% and 59.2% (n=61) scored 50% or less. Interestingly 64.1% (n=66) students said they 'did not have any drug calculations issues', whereas 31.3% (n=30) acknowledged that they 'may have some weaknesses with their drug calculation abilities'.

Conclusions: This study has highlighted paramedic and/or nursing students currently have deficiencies in performing accurate drug calculations and mathematical equations. Whilst these findings are reflective of the literature relating to qualified paramedic and nursing drug calculation competency, they demonstrate that alternative teaching and learning approaches should be considered in teaching mathematics and drug calculations in undergraduate paramedic curriculum.

IMPROVING CARDIAC SURVIVAL RATES IN RURAL COMMUNITIES BY OWNERSHIP OF HEALTH: WHAT THE EVIDENCE SHOWS

Fin ENGLISH

Student Paramedic, Victoria University, Melbourne, Australia

Cardiac arrest survival rates in rural communities have traditionally been poor, with large disparity between rural and urban outcomes.

The decrease in survival rates in rural communities have been cited as: poor education in health, poor development and initiation of the chain of survival, health equity, population density, lack of resources and response time of paramedical care.

Current initiatives in Victoria will be described that aim to improve cardiac survival rates in rural communities including the "4 Steps to Life Program", Community First Response Teams (CERT), and community defibrillation teams.

Furthermore, relevant models and research that exist in rural and urban communities around the world will be explored, focusing on the success these models have had in improving the survival rate of cardiac arrest.

A SHORT INTERVENTION IMPROVES LARYNGEAL MASK AIRWAY (LMA) INSERTION SKILL RETENTION AT 6 MONTHS: A RANDOMIZED CONTROLLED TRIAL OF TRAINEE PARAMEDICS

Cindy HEIN^{1,2}, Harry OWEN², John PLUMMER^{2,3}.

¹SA Ambulance Service, Adelaide, Australia, ² Flinders University, Adelaide, Australia, ³Flinders Medical Centre, Adelaide, Australia

Background: Major resuscitation councils endorse the use of the Laryngeal Mask Airway (LMA) by paramedics for life saving airway interventions. Learning and maintaining adequate skill level is important for patient safety.

Objectives: The aim of this project was to develop a training program that provides student paramedics with initial knowledge and experience in LMA insertion skills but equally important, to provide ongoing skill retention.

Methods: Following ethics approval and informed consent, 55 first year Paramedic degree students watched a manufacturer's LMA instruction video¹ and practiced insertion in 3 different part task trainers. Six months later, subjects were randomised to an intervention (re-viewing the video and 10 minutes unsupervised practice) or control group, before participating in a high-fidelity simulated clinical scenario. For equity of training, the control group received the intervention after the scenario.

Main outcomes measured were: time to insertion; success rate and; LMA skill performance (sum of; LMA orientation; cuff inflation; bite block; securing; patient positioning; and overall subject performance).

Findings: Fifty subjects completed the study. Those in the intervention group displayed significantly shorter insertion times ($p=0.029$), fewer attempts to achieve success ($p=0.033$) and had significantly higher LMA skill performance levels ($p=0.019$) at 6 months.

Conclusions: We devised a short intervention based on our training program utilising a video and practice in part task trainers. In an assessment using high-fidelity simulation, we demonstrated significant improvements in maintenance of LMA insertion skills in student paramedics at 6 months. Our model of just-in-time reinforcement of training has implications for health care skills training generally.

References:

1. LMA North America. <http://www.lmana.com/> Accessed 4th Feb 2007.

RAMPED VS NON-RAMPED PATIENT OUTCOMES: AN CASE-CONTROL STUDY INVESTIGATING PATIENT AND HEALTH SERVICE DELIVERY OUTCOMES

Maree HITCHCOCK¹, Dr Julia CRILLY^{1,2}, Dr Brigid GILLESPIE¹, Associate Professor Vivienne TIPPETT³, Professor Wendy CHABOYER¹, Dr James LIND⁵

¹Griffith University Research Centre for Clinical and Community Practice Innovation, Gold Coast, Australia, ²Southern Area Health Service Emergency Department Clinical Network, Brisbane, Australia, ³Queensland Ambulance Service/ Australian Centre for Prehospital Research, Queensland, Australia, ⁵Emergency Department, Gold Coast Hospital, Southport, Australia

Background: Ambulance ramping (refers to the occurrence where patients arriving by ambulance wait for more than 15 minutes from arrival at hospital to offload from ambulance stretcher onto an Emergency Department [ED] bed/chair) is a significant problem in many hospitals both internationally and in Australia. Previous research has been conducted dealing with many of the areas surrounding ambulance ramping such as access block, ED overcrowding and ambulance bypass. However, limited research has been completed on ambulance ramping and its effects on patients and the health service providers.

Objectives: The research project aims to identify and investigate the effects of ambulance ramping, in terms of patient outcomes, ambulance service delivery and healthcare organization outcomes. Part of this involves determining the accuracy of documented times recorded by ambulance personnel that was used for this study.

Methods: A retrospective case-control (on a 1:2 basis) pilot study was completed that examined patient and ED outcomes of ramped vs non-ramped patients. Cases were identified as patients who had been ramped and matched with controls who were non-ramped. Cases and controls were matched on age (± 5 years) gender, reasons for transport and reason for ED presentation.

Findings: A total of 10,701 patient presentations were made via ambulance to the ED during the six months of the study period. This study involved 450 of the patients who comprised a portion of those presentations (150 cases and 300 controls). Outcomes currently being analyzed (that will be reported on at the conference) include ramping time, ED and in-hospital length of stay, admission requirement and in-hospital mortality.

Conclusion: This research study forms one part of a three phased research project. As such, finding from this pilot will inform the larger study utilizing similar outcomes, but over a longer timeframe and over numerous hospitals. The examination of outcomes concerning ambulance ramping can help guide practice and process improvement.

DUAL DEGREES IN PARAMEDICINE AND NURSING: IS EXPANSION IN SCOPES OF PRACTICE THE SOLUTION TO REGIONAL SHORTAGES IN HEALTH PROFESSIONALS?

Timothy HOWES, Murray BARDWELL

Australian Catholic University, Ballarat, Australia

Background and Context: Australia's rural and regional areas continue to face the challenge of attracting or retaining graduate health professionals. This holds true for both paramedics and nurses. The demand for health services is anticipated to increase as regional populations increase in size as well as average age.

To meet the challenges posed by skill shortage and demographic change, a new curriculum commenced in February 2008 that will result in graduates with both paramedic accreditation and nursing registration.

Aim: It is hoped that the initiative, between the state's rural ambulance service and the ACU will assist the development of multi-skilled, flexible health professionals capable of working across dual disciplinary areas. This may provide a solution to the crisis of small town skill shortage.

Outline: The course, over four years full time, leads to the dual degrees of Bachelor of Nursing and Bachelor of Paramedicine and was developed in consultation with the state's rural Ambulance service. It is the first of its type to be conducted in regional Victoria with students undertaking clinical practice in paramedic and nursing settings.

The inclusion of spirituality as a discrete subject is novel in a curriculum that aims to produce accredited paramedics for rural areas. It is hoped that this inclusion will contribute to the care of individuals in an often quoted but rarely achieved holistic manner. It is arguable that spiritual care is in great need in many, if not all emergency situations.

Implications: An anticipated challenge for graduates from this course will be the ease at which they can practice across two professional domains with two legal and professional scopes of practice. This issue is covered early in the course and the author awaits the findings in this area.

EVIDENCE BASED PRACTICE AND CLINICAL JUDGMENT: THE CHALLENGE FOR HEALTHCARE PROFESSIONALS

Chris HUGGINS

*Monash University Department of Community Emergency Health and Paramedic Practice,
Melbourne Australia*

Evidence-based practice has recently become the catch cry of health care practitioners in the-out-of-hospital setting. The ideology is strongly focussed on health care practice that is based on available evidence with the view of providing the best possible outcomes in patient care. However, this paper questions how well the ideology of evidence based practice integrates with clinical judgment, when clinical judgment is heavily based in experiential learning. It is our experience which adds to the power of our judgment and enables us to make well informed decisions, and it is only from our experiences that we are able to move from novice to expert.

Currently, evidence-based practice is constructed on the traditional scientific model, which, on the surface, looks like it should make the provision of education to healthcare professionals easier, as the evidence will dictate what the current practice should be, and how best to apply this knowledge to reduce the novice expert gap.

The traditional scientific model infers that the findings of the research are transferable and repeatable at other sites of practice. However, while this assertion may be true for a number of scientific endeavours, it also infers an acceptable failure rate. However, in health, these failures refer to people having poor outcomes. Also, as no two individuals are identical, treatment modalities need to be adjusted to suit the individual.

This paper will explore the notion of evidence-based practice and experience and their symbiotic relationship.

PREHOSPITAL CPAP – AN OCCUPATIONAL HEALTH AND SAFETY PERSPECTIVE

Dianne INGLIS¹, Jeff KENNEALLY², Terry MARSHALL³

¹Metropolitan Ambulance Service, Melbourne, Australia, ²Metropolitan Ambulance Service, Melbourne, Australia, ³Rural Ambulance Service, Geelong, Australia

Background: Continuous Positive Airway Pressure (CPAP) is arguably the least complex form of non-invasive ventilation (NIV) therapy. It has become a universal mainstay therapy in emergency departments, particularly in the management of Acute Pulmonary Oedema (APO), yet is only sporadically seen in the prehospital arena.

The provision of respiratory support in Victorian ambulance practice has historically used the oxysaver device. Though arguably effective it has never complied with supported methods of NIV pressure support. It has also presented a very real Occupational Health and Safety (OH&S) risk in its application resulting in several workplace and lost time injuries.

Objective: In 2008 the Metropolitan Ambulance Service (MAS) conducted a pilot study to evaluate the ability to deliver effective pre-hospital CPAP therapy. The Whisperflow™ device was trialed at two MICA units on over twenty patients presenting in suspected APO.

There are few devices available for provision of Pre-hospital CPAP. The main issues of concern are oxygen consumption, durability, minimal ongoing Paramedic intervention and portability. The Whisperflow was chosen as it was felt to best meet this desired criterion.

Findings: Overwhelmingly the clinical and survey data supported the device as being able to provide NIV at least as effective as that via the oxysaver. The standout advantage was in the removal of OH&S risk to paramedics. All patients clinically improved to some extent with demonstrable improvement evident in all vital signs areas. Most importantly the device was able to free support paramedics from risky, unrestrained patient care during patient transport.

DOOR TO BALLOON TIME BENEFITS OF A PREHOSPITAL 12 LEAD ECG SYSTEM

Ian JARVIE, Edward WATKINS, Bill BARGER, Dan McGENNISKEN, Lindsay BENT
Ambulance Victoria, Melbourne, Australia

Background: The 12 Lead Electrocardiogram (ECG) is the primary diagnostic tool used to identify acute ST Elevation Myocardial Infarction (STEMI).

Percutaneous Coronary Intervention (PCI) is the preferred reperfusion treatment for STEMI. The international benchmark for PCI treatment is a 'Door to Balloon' time (DTB) of <90 minutes.

This study assessed the efficacy of prehospital 12 lead ECG STEMI recognition with early activation of the PCI team and streamlined patient flow to the Catheterisation Lab, in reducing DTB times for PCI.

Methods: In collaboration between Metropolitan Ambulance Service and Monash Medical Centre, 12 Lead ECG modules were placed into four Mobile Intensive Care Ambulances (MICA). The process involved STEMI recognition by MICA Paramedics, with prehospital notification to the receiving facility. On receiving the transmitted ECG, an ED Physician would confirm diagnosis with the Interventional Cardiologist; leading to early activation of the PCI team and facilitated patient flow to the Catheterisation Lab.

A pilot study commenced in December 2007; running for 6 months. The pilot was conducted as a prospective observational study.

Additional evaluation measures included; ambulance scene and total case time, accuracy of paramedic ECG analysis, patient numbers and transmission efficiency.

Results: Sixty one STEMI patients received a PCI by MonashHEART, with a reduction in DTB from 106 minutes to 51 minutes (mean averages), as of 21 March 2008. No adverse findings were identified from the additional outcome measures.

Conclusions: Pre-hospital ECG is a viable addition to the management pathway for STEMI patients, with significant reductions shown in DTB times.

INTRODUCTION OF A PRE-HOSPITAL CRITICAL INCIDENT MONITORING SYSTEM – THE FIRST 20 MONTHS

Paul JENNINGS¹, Julian STELLA², David FERRARI¹, Ralf HARRIES¹, Bruce BARTLEY²

¹*Rural Ambulance Victoria, Australia*

²*Barwon Health – Geelong Hospital, Australia*

Objectives: To implement a critical incident monitoring process in a regional/rural pre-hospital setting and to describe the nature and incidence of incidents detected over the first 20 months.

Methods: A prospective descriptive study in a regional pre-hospital setting. The project has a primary focus on trauma care and reports 20 months of data collection. Paramedics and emergency department staff submitted anonymous paper and web based reports. A chart review was performed on all patients who met Victorian Department of Human Services pre-hospital major trauma criteria. Select trauma cases went on to further analysis employing a 'hot debrief' process.

Findings and Conclusions: 280 incidents were identified from 157 cases (mean 1.8/case) during the 20 month study period (January 1 2006 – August 31 2007). 77 (27.5%) of incidents were logged via the anonymous incident reporting system while 203 were identified through the major trauma debrief system. Management problems contributed the greatest number of incidents (182 / 280; 65.0%), followed by system problems (89 / 280; 31.8%), technique errors (5 / 280; 1.8%) and diagnosis errors (4 / 280; 1.4%). 92 of the 280 (33.0%) incidents had no impact on the patients' outcome and 67 of 280 (27.6%) incidents were considered mitigated by circumstance. Incident monitoring led to widespread feedback of trends in most cases (71.8%) while specific responses were required in 50 cases (17.8%). The remainder of feedback was provided to external agencies or higher bodies.

The pilot project demonstrates successful implementation of an incident monitoring system within the regional/rural pre-hospital environment. The combination of incident detection techniques has a high yield and has the potential to capture different error types. The detection of a large proportion of incidents in the 'near miss' category provides an excellent opportunity to analyse error without patient harm. Management related issues dominated the types of incidents and many were found to be mitigated by circumstance. This model is appropriate for ongoing incident monitoring in this setting.

SAFETY AND EFFICACY OF METHOXYFLURANE AND INTRANASAL FENTANYL FOR NON-TRAUMATIC PAIN

Steven N JOHNSTON^{1,2}, Garry J WILKES^{1,2,3}

¹ St John Ambulance, Western Australia Ambulance Service, ² Edith Cowan University, Perth, Western Australia. ³ University of Western Australia, Perth, Western Australia

Abstract:

Objective: To investigate the comparative safety and efficacy of inhaled Methoxyflurane and intranasal Fentanyl for the management of pain of cardiac or visceral aetiology and to assess the usefulness of an alternative pain assessment tool utilised by the WA Ambulance Service.

Methods: A retrospective study of Patient Care Records.

Results: 1009 Patient Care Record Records were examined for 27 data items including VAS pain score (0-10). 57.9% were male. Most (62.5%) were aged 50 years and over, 25% over 75 years. Methoxyflurane was administered in 46.1%, Fentanyl in 39.3% and 14.6% received both.

Median Methoxyflurane dose was 1 vial (3mls). Mean(\pm SD)_Fentanyl dose was 362(\pm 192) μ g, range 90-840 μ g, median 260 μ g. Cardiac pain was 48.1%, visceral 51.9% (renal 28.7%, abdominal 23.2%). No significant safety issue were noted for either agent. Mean pain score reduction after initial dose was 2.0 (median 2.0) for Methoxyflurane, 1.7 (median 2.0) after Fentanyl. However, patients administered Fentanyl demonstrated greater pain reduction scores after additional doses or longer transports, with mean pain reduction of 3.2 (median 3.0) at hospital.

Assessment of an alternate pain assessment tool utilised by the WA Ambulance Service demonstrated a correlation with the commonly utilised VAS pain assessment tool.

Conclusion: Inhaled Methoxyflurane and intranasal Fentanyl are extremely safe agents that provide effective pain reduction from visceral or cardiac pain in the pre hospital setting.

The alternate pain assessment tool utilised by the WA Ambulance Service was found to correlate with standard methods of pain assessment.

OUTCOME FROM OUT OF HOSPITAL CARDIAC ARREST: THE EFFECT OF ADVANCED AIRWAY MANAGEMENT

Steven N JOHNSTON ^{1,2}, Garry J WILKES ^{1,2,3}, Ian G JACOBS ³

¹*St John Ambulance, Western Australia Ambulance Service,* ²*Edith Cowan University, Perth, Western Australia,* ³*University of Western Australia, Perth, Western Australia*

Outcome from Out of Hospital (OOH) Cardiac Arrest is a Key Performance Indicator for Ambulance Services. However, numerous factors influence the final outcome of survival to leave hospital, the factors interact considerably and not all are within the influence of the Ambulance Service itself.

In Western Australia, a comprehensive Cardiac Arrest Registry has been maintained since 1996 including data linkage to hospital information systems and the WA mortality register, thereby enabling survival to leave hospital and neurological outcome to be accurately determined.

Survival from OOH Utstein Criteria Cardiac Arrest decreased dramatically with the introduction of Advanced Airway skills to Paramedic practice. Action taken included detailed analysis of all aspects of resuscitation. The importance of continuous cardiac compressions was reinforced at all levels, particularly in relationship to Advanced Airway Skills.

Following the Quality Improvement actions, survival from OOH has steadily improved from that time. Particular emphasis on Cardiac Arrest and Advanced Airway Skills in 2005 has been associated with a dramatic improvement in survival since that time.

Survival in 2007 was double that experienced previously. Notably, the influence of Advanced Airway Intervention has reversed, now trending to improved survival.

A detailed analysis of the influence of Advanced Airway interventions on the outcome of OOH Cardiac Arrest will be presented including the change over time and increased experience.

CLINICAL DECISION MAKING IN PRE-HOSPITAL CARE FOR A CHANGING HEALTH ENVIRONMENT

Angela JURSEVICS¹, Paul SIMPSON¹, Siun GALLAGHER¹, Dave HODGE¹, Paul MIDDLETON¹ and the Advanced Care Team¹

¹*Ambulance Service of NSW, Rozelle, Australia*

In 2006, the Ambulance Service of NSW experienced a number of events related to non-transport which indicated a need for improved patient assessment, clinical decision-making and provision of alternatives to emergency department (ED) care. The Ambulance Service of NSW Clinical Assessment and Referral (CARE) program provides a risk management strategy to address the changing role of ambulance in response to shifting health system demands and consumer expectations.

Paramedics involved in the CARE program undertake significant clinical risk management education to support CARE practice. Education is focused on the provision of skills in enhanced patient assessment and history taking, determination of patients' capacity and competency, and the application of evidence-based clinical pathways that support clinical decision making, enhance safety and provide a foundation for pathway-based non-ED management of low risk patients. Early evaluation strongly indicates improved paramedic confidence in service delivery, decision making, provision of advice and increased capacity to manage non-transport situations.

EFFECTIVENESS AND SAFETY OF INTRANASAL NALOXONE FOR THE TREATMENT OF HEROIN OVERDOSE BY PARAMEDICS

Debra KERR^{1,2}, Anne-Maree KELLY^{1,3}, Paul DIETZE^{2,4}, Damien Jolley², Bill BARGER⁵, Kerry LEIGH⁵

¹*The Joseph Epstein Centre for Emergency Medicine Research, Western Health, Melbourne, Australia*

²*Monash Institute for Health Services Research, Monash University, Melbourne, Australia*

³*Faculty of Medicine, University of Melbourne, Melbourne, Australia*

⁴*Centre for Epidemiology and Population Health Research, Burnet Institute, Melbourne, Australia*

⁵*Metropolitan Ambulance Service*

Background: The intranasal (IN) route may be useful for naloxone administration as it reduces risk of needle-stick injury in a population at higher risk of blood-borne viruses.

Objectives: This study aimed to determine the effectiveness of concentrated IN naloxone compared to intramuscular (IM) naloxone for treatment of suspected opiate overdose by paramedics in the prehospital setting.

Methods: This was a prospective, randomised trial conducted in Melbourne, Australia. Participants were patients requiring treatment for suspected opiate overdose. Participants were randomised to either IM naloxone 2mg or IN naloxone 2mg via a mucosal atomisation device (concentration 2mg/ml) in addition to basic life support. The primary outcome was the proportion of patients who responded (GCS >13 and/or spontaneous respirations >10/minute) within 10 minutes after naloxone treatment. Multivariate logistic/linear regression was performed for key outcome variables.

Findings: 172 patients were enrolled in the study: median age 29 years, 74% male. 83 patients (48%) received IN Naloxone. Response rates within 10 minutes were similar: IN (60/83, 72%), IM (69/89, 78%), Difference -5.2% (95% CI -18.2 to 7.7%). Patients were more likely to receive secondary naloxone for inadequate response after IN naloxone (IN: 15/83, 18.1%; IM: 4/89, 4.5%, Difference 13.6% (95% CI: 4.2 to 22.9, p = 0.012). One patient assigned to IM injection had a grand-mal epileptic fit.

Conclusions: Concentrated IN naloxone successfully reversed heroin overdose for a high proportion of patients in the prehospital setting, with similar effectiveness to IM administration. These results support IN use as first line treatment for heroin overdose.

IS A “DIAGNOSIS” A LEGITIMATE COMPONENT OF THE PARAMEDIC CLINICAL DECISION MAKING PROCESS?

Bill LORD

Senior Lecturer, Department of Community Emergency Health and Paramedic Practice, Monash University, Melbourne, Australia

Background

Debate among health care providers regarding the use of the term “diagnosis” frequently results in professional boundaries being drawn around the medical profession’s right to inalienable ownership of the term. In many cases this results from confusion regarding the definition of the term. A review of definitions of the term “diagnosis” finds several variations of meaning, that include terms that may be used by allied health professions to denote a health problem that guides further clinical management of the patient. An example is the nursing diagnosis, which is a statement that describes the patient’s response to a health or illness problem.

This paper provides definitions of the term “diagnosis” and differentiates a medical diagnosis with a problem statement that arises from a paramedic’s assessment of relevant history and clinical cues. In the latter example, paramedics are expected to generate hypotheses to explain abnormal health findings in patients who seek ambulance care in the community setting. One view of the paramedic clinical decision making process is that appropriate care should be based on the chief complaint and that symptomatic treatment takes priority over the need to formulate a diagnosis. However, symptomatic treatment can be ineffective if the primary cause of the problem is not identified through a rigorous process of analysis and evaluation of the available evidence in order to guide the implementation of care. For example, a complaint of “shortness of breath” has several aetiologies, and the appropriate prehospital management and evaluation of care depends on the development of a hypothesis that seeks to identify possible causes for this presentation. This involves the active engagement of diagnostic reasoning skills. This process will be explained and the importance of a “diagnosis” in paramedic practice will be described.

PARAMEDIC ASSESSMENT OF PAIN IN THE COGNITIVELY IMPAIRED ADULT

Bill LORD

Senior Lecturer, Department of Community Emergency Health and Paramedic Practice, Monash University, Melbourne, Australia

Background

Pain is a commonly encountered complaint in the prehospital setting. The effective management of pain requires assessment of the presence of pain and its severity in order to guide treatment decisions.

Paramedics use pain severity scales such as the adjective rating scale and verbal numeric rating scale. However, these scales rely on the patient's ability to understand instructions in order to quantify their pain, which requires the use of higher mental functions and abstract reasoning. While many patients can use these scales, patients with cognitive impairment such as those with dementia pose special challenges for paramedics seeking to establish the nature and severity of the patient's distress.

Objectives

The purpose of this study was to identify reports of psychometric properties of pain measurement tools used to assess pain in cognitively impaired adults in order to inform the selection of appropriate tools for use by paramedics in the community setting.

Methods

Comprehensive review of literature describing tools for the assessment of pain in the nonverbal adult or those with cognitive impairment identified by a search of electronic databases, web sites and practice guidelines.

Findings

Recent reviews of pain assessment tools for this population have resulted in the publication of practice guidelines for the management of pain in aged care facilities. However, no evidence was found relating to the paramedic use of validated tools in the community setting. One behaviourally-based scale used by paramedics to assess pain in infants (FLACC) was found to have low validity when used to assess pain in non-verbal adults and was not recommended for use in this population. One pain severity scale (Abbey) may be a useful adjunct to the assessment of pain in cognitively impaired older adults. However, this tool needs to be validated in the paramedic practice setting before its use can be recommended.

Conclusions

Pain measurement tools that use complex multidimensional components are impractical for use by paramedics as they are time consuming and require repeated observation of the individual's daily activities. A trial of the Abbey scale is recommended to determine whether this tool helps to improve the identification and subsequent management of pain in this vulnerable population.

EDUCATING GENERATION Y PARAMEDICS

Christopher MACPHERSON

Ambulance Victoria, Melbourne, Australia

Background: Generation Y is real and becoming paramedics. They bring variation in experiences, perceptions, expectations and a university degree. All of which creates an exciting, yet challenging learning culture, which their educators must respond with change.

Objectives:

Educators need to:

- Identify the benefits and challenges of Generation Y paramedics
- Identify the support required for educators
- Establish strategies for quality education programs

Methods: Change ought not occur for the purpose of change sake. Change must have an end point to provide a optimal learning environment that meets the evolving learning styles of the new paramedics, whilst embracing the experiences and knowledge of their educators, fundamentally building upon the capacity of the Ambulance Service to meet the expectations of governing authorities, the community and patient care.

Rigidity of standards in the education process is evidential and often necessary, but there is significant capacity for educators to create change that provides an adaptable and flexible learning environment for new paramedics. The marriage of traditional and new initiatives in educational methodologies is essential for the optimal performance in educating Generation Y paramedics.

Findings

Anecdotal, written and verbal feedback in recent programs and forums indicates;

- Preference for practical workshops
- Preference for small group workshops
- Increased shift from information delivered at an implicit level to an explicit level

Conclusion: Educators and new paramedics have responsibility to increase capacity through change and this can only be with willingness to recognize to be a learner is to teach and to be a teacher is to learn.

GOOD BUDGET AND GREAT EDUCATION: THE ONE NIGHT SIMULATION CENTRE

Christopher MACPHERSON

Ambulance Victoria, Melbourne, Australia

Background: During the 2008 MAS Graduate Induction program, the value of a comprehensive simulation program was identified. Budget, time and large numbers of participants created challenges to be overcome in designing the program.

Objectives: The simulation program was designed to provide each participant with a complex patient management environment to grow practice methodologies without overwhelming the novice practitioners. The program also engaged the operational workforce in its delivery, exposing the graduates to various roles within the workforce and giving a broad base of observation of graduate performance.

Methods: An out of hours program was organized to maximize utility of physical space and resources in the simulation program combined with careful planning and execution. The program received voluntary unprecedented support from the operational workforce, demonstrating the passion that many paramedics have for life-long learning. Over time, external partners such as St John Ambulance have become involved, enriching the scenarios and building relationships.

Findings: The graduates gave strongly positive feedback on the scenario program both verbally and in written evaluations, indicating that the program not only increased experience but also supported learning themes from the Induction program as a whole.

The Simulation Centre incurred very low cost to the organization through efficient resource use and volunteer support.

Conclusions: This simulation initiative combines cost efficiencies with unique and stimulating learning opportunities. The graduates involved in the simulation programs run during the 2008 MAS Graduate Induction program rated the simulation evening as a highlight of their course.

MY WAY, YOUR WAY, OUR WAY: A PARTNERSHIP IN WORK READINESS

Christopher MACPHERSON

Ambulance Victoria, Melbourne, Australia

Background: Commencing in 2008, MAS implemented a new model for inducting graduate paramedics into the workforce. This is the largest annual intake of graduate paramedics that MAS has ever employed and provided opportunity to explore the evolving challenges in developing a work ready paramedic.

Objectives: To explore the concept of work readiness as it applies to the MAS work force.

To identify the stakeholders and examine their roles in the development of a work ready paramedic.

To develop strategies uniting individual stakeholders into a combined partnership.

Methods: Throughout the induction program, graduates were assessed in practical and theoretical settings and instructors observed their performance and interpersonal interactions. The graduates provided both verbal and written evaluations of the course and individual presentations. Based on information gathered, the course content and delivery methods were adjusted to optimize graduate performance outcomes.

Findings: At the conclusion of the induction program, three major stakeholders emerged as having integral roles for the work ready paramedic: the graduate paramedics, the University providers and the employer. Each hold views on the nature of their contribution to the work ready paramedic, however these views appear to have been derived separately, opening gaps in the model. Overt and subtle variations in the concept of the work ready paramedic emerge in each of the stakeholder populations, impacting on outcomes.

Conclusions: Of the three major stakeholders identified, each have significant influence in the delivery of the work ready paramedic and, as such, need to clarify and agree on the roles that each play in attaining the goal.

OPTIMISING GRADUATE PARAMEDIC LEARNING AND SATISFACTION

Christopher MACPHERSON

Ambulance Victoria, Melbourne, Australia

Background: Early in 2008, the Metropolitan Ambulance Service employed a large number of graduate paramedics, all of whom undertook a two-week clinical induction program as part of their workforce orientation. Early recognition of the evolving workforce resulted in the acknowledgement that change was needed in this program to best meet the needs of graduates, the instructors, the Service and the community.

Methods: Change resulted in significant inter-departmental collaboration, ensuring provision of a fertile and diverse program that is adaptable and flexible for learning needs, and a process abundant in purposeful, stimulating and challenging experiences. All achieved with a fiscally responsible approach. Professional development for instructors of this program was provided to ensure they are supported, and abreast of contemporary issues and methodologies surrounding the graduate paramedics. For example: 'best practice' in presentation and communication, information on Generation Y and variation in experiences, expectations and cultures. Graduates were afforded opportunity to receive and provide ongoing feedback, which facilitated both theirs and instructors learning and fundamentally strengthened the program.

Findings: Change implemented into the clinical induction program received significant support from both graduate and instructor paramedics with particular positive reference to small group sizes, interactive and simulation experiences. Evidence was also apparent of motivation, creativity and interaction between the instructors and graduates.

Conclusions: Appropriate, efficient and well collaborated planning results in improved instructor facilitation and education, whilst improving graduate learning, satisfaction and performance, all within a better timeframe. A program for educational and performance advancement with benefits for all stakeholders.

**DO YOU REALLY SEE WHAT I SEE?
VETERINARY STAFF TEACHING HEALTH CARE PROFESSIONALS ABOUT
THE UNSPOKEN LANGUAGE OF MEDICINE – NON VERBAL COMMUNICATION**

Veronica MADIGAN

*School of Biomedical Science
Charles Sturt University, Bathurst, NSW, Australia*

Background: A strong background in pre hospital care and veterinary practice made this PhD candidate aware that there are lessons to be learnt from veterinary medicine that could benefit human medicine.

Objective: To identify and explore the communication challenges faced by veterinary staff with regard to non verbal patient assessment and its potential use in human medicine.

Method: Qualitative methodology involving 15 semi structured interviews undertaken nationally and internationally. Participants were either veterinary staff who had links to human medicine or health care professionals who had links to veterinary medicine.

Preliminary Findings: Health care professionals believed that non-verbal patient assessment skills taught by their veterinary colleagues improved patient care. Non verbal patient assessment skills included several categories. One such category, visual clues, used direct observation of the patient's appearance, body language, mood, behaviour and relationship with others. Health care professionals reported that visual clues were particularly useful in accurately assessing the paediatric, non English speaking, anxious, semi conscious and autistic patient in the human environment.

Rational for attending this Presentation: This presentation **will** challenge your patient assessment skills. It will teach you to really LOOK at your patient, to find and read non verbal communication clues and assist in **validating** your findings. Further, this presentation will teach you that non verbal communication is not conducted in isolation – it is a **mirror**. What you project to your patient is just as important as what your patient is showing you. So are you ready to take the PHC challenge?

SEVEN YEARS ON – ARE WE STILL SELECTING THE RIGHT, FIRST YEAR, PRE-HOSPITAL CARE STUDENTS?

Veronica MADIGAN, Brendan SMITH

*School of Biomedical Science
Charles Sturt University, Bathurst, NSW, Australia*

Background: In 1998 problems of unsatisfactory student progression / retention led a rural university to embark on a study to identify predictors of academic performance for first year, on campus Pre-Hospital Care (PHC) students. The preliminary study (1998-2001) identified six potential indicators of academic performance (N=135). The study found that a UAI>50, previous health related experience, post secondary educational qualifications, background, student entry type and gender were all found to be significant predictors of academic performance in selective cohorts.

A follow up study (2002-2005) has now examined 351 first year PHC students using the same predictors. The study further investigated a new cohort (n=119) of first year, double degree students (Nursing / PHC).

Methods: A retrospective review of the academic performance of all first year, on-campus, PHC students enrolled in a vocational course from 2002-2005 was undertaken. Six predictors of academic performance (independent variables) were studied (see above). The independent variables were compared against five dependent variables; GPA in semester 1 & 2, GPA for year, students who completed at least one subject and students who completed all required subjects.

Findings: The follow up study largely confirmed the findings of the preliminary study. UAI, previous health related experience and post secondary educational qualifications were significant predictors of academic performance. Further, urban students outperformed rural students, mature entry students achieved higher GPAs than traditional entry students. Double degree students were more likely to pass all required subjects than single degree students. However, single and double degree students achieved similar Year GPA scores.

THE QUEENSLAND AMBULANCE AUDIT – MANAGING AMBULANCE DEMAND INTO THE NEXT DECADE

David MELVILLE

Commissioner Queensland Ambulance Service

Background: Ambulance Services throughout the country and internationally are confronting the organisational and operational challenges posed by increasing demand for health services. In September 2007 the Queensland government announced a treasury led audit of the Queensland Ambulance Service and an examination of the key drivers of demand. The final report and its recommendations were delivered in December 2007. In early 2008, in response to the audit recommendations, Queensland Ambulance Service established a multi-agency implementation team and has commenced development and delivery of key organisational and operational reform.

Objectives: This paper will describe the key findings of the audit and the specific strategies which are being put in place to respond to demand pressures. Key drivers for the increase in demand for ambulance services will be discussed. Insights into resource allocation and demand forecast modelling; workforce management; organisational structures to deliver maximum operational efficiency; and the importance of collaborative engagement with health systems more broadly will be offered.

Conclusion: Research and review of the experiences of ambulance services in Australia and elsewhere demonstrates the importance of efficient and effective emergency prehospital medical service provision to wider health system efficiency and patient outcomes. Queensland Ambulance Service is the fourth largest ambulance service in the world and provides statewide services to a dispersed and diverse population in excess of 4 million. Queensland Ambulance Service is embracing the opportunity to respond to these challenges and develop new models for doing business in an increasingly complex and challenging health and emergency services system.

A SYSTEMATIC REVIEW AND META-ANALYSIS OF PAIN ASSOCIATED WITH IMMOBILISATION ON A LONG RIDGED SPINEBOARD

Rebecca MICHAU, Malcolm BOYLE, Brett WILLIAMS

*Monash University Department of Community Emergency Health and Paramedic Practice,
Melbourne, Australia*

Background: Previously, a thorough evaluation of prehospital spinal injury immobilisation and associated patient pain has not been conducted using a rigorous scientific methodology.

Objectives: The objective of this study was to identify if full spinal immobilisation to a hard surface caused more pain for the patient compared to a soft surface.

Methods: A systematic review of the prehospital literature was conducted to identify randomised controlled trial articles investigating full spinal immobilisation to various surfaces and associated pain levels. Where data could be extracted it was included in the meta-analysis. Continuous data is reported as a mean difference, dichotomous data is reported as a risk ratio.

Findings: The search located 10 articles that met the inclusion criteria. Data for the meta-analysis was extractable from 5 articles. For continuous data, patients on a soft surface at 10, 20, 30 and 60 minutes had significantly less pain compared to a hard surface, MD -2.00 (95%CI -2.66 - -1.34, $p < 0.001$), MD -7.90 (95%CI -9.18 - -6.62, $p < 0.001$), MD -2.01 (95%CI -2.80 - -1.22, $p < 0.001$) and MD -4.38(95%CI -5.19 - -3.57, $p < 0.001$) respectively. For dichotomous data, patients on a soft surface at 30 minutes had significantly less pain compared to a hard surface, RR 0.46 (95%CI 0.28 – 0.75, $p=0.002$).

Conclusions: This study demonstrated that there is sufficient scientific evidence to confirm leaving a patient immobilised on a hard spineboard causes more pain than a soft surface. The hard spineboard should therefore be used as an extrication device and not for patient transport.

AN INVESTIGATION OF THEORY-PRACTICE GAP IN UNDERGRADUATE PARAMEDIC EDUCATION

Rebecca Michau, Samantha ROBERTS, Brett WILLIAMS, Mal BOYLE

Department of Community Emergency Health & Paramedic Practice, Monash University, Melbourne, Australia

Background: Bachelor of Emergency Health (Paramedic) (BEH) students at Monash University undertake clinical placements to assist with the transition from student to novice paramedic. Anecdotally, students report a lack of opportunity to practise their clinical skills whilst on placements. The barriers to participation and the theory-practice gap has not been previously documented in Australian paramedic literature.

Objectives: The objective of this study was to investigate student's exposure to specific cases, participation levels, and barriers to skills practise during clinical placements.

Methods: A cross-sectional study using a convenience sample of second and third year BEH undergraduate students. Ethics approval was granted.

Findings: Eighty four second and third year BEH students participated. 59.5% were female (n=50), 40.5% were male (n=34). Overall, students were satisfied with the number of cases encountered during placement. However, over half (n=46) reported being exposed to < 50% of cases they could manage. The most common barrier to participation (34.5%) was the opportunity to participate in patient care. 68% of student's were unsure if paramedics understood their role during clinical placements. Students reported an average of 4 hours 'down time' per RAV shift compared with 1 hour for MAS shifts. During 'down time' students primarily engaged in reading clinical practice guidelines and discussing cases with paramedic crews.

Conclusions: This study demonstrates that the majority of students were satisfied with their clinical placement experience; even though they were exposed to < 50% of cases they were capable of managing. Identifying these educational barriers will assist in improving the quality and theory-practice gap of paramedic clinical education.

EFFICACY OF OUT-OF-HOSPITAL ADMINISTRATION OF MORPHINE, FENTANYL AND METHOXYFLURANE IN ADULTS: A SINGLE CENTRE OBSERVATIONAL COMPARATIVE STUDY OF OVER 38,000 PATIENTS

Paul MIDDLETON¹, Jason BENDALL¹, Paul SIMPSON¹, Gary SINCLAIR¹, and Timothy DOBBINS²

¹*Ambulance Service of NSW, Rozelle, NSW, Australia*

²*School of Public Health, University of Sydney, NSW, Australia*

Background: Despite the widespread use of analgesic agents by paramedics little is known about the comparative effectiveness of commonly used analgesic agents in acute pain.

Objectives: The study aimed to determine the relative effectiveness of three analgesic agents.

Methods: We searched our database for cases where intravenous (i.v.) morphine [IVM], intranasal (i.n.) fentanyl [INF] or inhaled methoxyflurane [IME] was used as the sole agent by paramedics, in adults (16-100 years) with acute pain, between 1/1/04 and 30/11/06. A multivariate logistic regression was performed to evaluate the odds of a decrease in the initial pain score by $\geq 30\%$ with each analgesic agent.

Findings: Of 88,689 cases in our database, paired initial and final pain scores were available for 43.8%. Effective analgesia was achieved in 80.4% of patients who received IVM (n=14079), in 79.0% of patients who received INF (n=3993); and in 58.2% of patients who received IME. After controlling for confounders, when initial pain score >5 , INF is less effective than IVM (OR 0.89 95% CI 0.81-0.99 $p < 0.05$). When initial pain score ≤ 5 , there is no significant difference between IVM and INF ($p=0.26$). At all pain severities, IME is significantly inferior to both IVM and INF ($p < 0.0001$).

Conclusions: Morphine, fentanyl and methoxyflurane are effective pre-hospital analgesics; morphine and fentanyl are more effective than methoxyflurane. There appears a therapeutic advantage of i.v. morphine over i.n. fentanyl in more severe pain, although this is offset to some degree by the ability of paramedics without cannulation skills to give opioid analgesia.

CAN AN AMBULANCE DINOSAUR ESCAPE FROM AMBULANCE?

Peter MORGAN

*University of Tasmania
Tasmanian Ambulance Service*

Background: After 34 years as an ambo, one particular dinosaur escaped from the swamp commencing a research Masters degree and ending up running a country hospital for a while and relieving as a Primary Health coordinator, all the time running back to ambulance for a fix every so often.

Story: This light hearted personal story illustrates that the world is not necessarily at the end when you reach your fifties, have a stuffed back and have been in the job for far too long but don't want to leave the cut and thrust of ambulance.

Conclusions: It is easy to believe all the bull when you work in a job for a long time. You probably create a lot of it yourself. Never the less the skills developed by an Ambulance manager are very transferable within the health system as long as we believe it.

COULD THE AMBULANCE PARAMEDIC BE EXTINCT IN 30 YEARS?

Peter MORGAN

*University of Tasmania
Tasmanian Ambulance Service*

Background: Internationally governments and health services are being inundated by an explosion in the demand for health services, as they struggle to come to grips with ageing populations and an expectation of immediate medical care. Many western countries including Australia have been forced to creatively redesign their models of health service provision. Whilst medicine firmly acts to protect its traditional role, Ambulance Officers Nurses and other Health Professionals are being called upon to fill the void through expanding their scope of practice.

Findings: Based on a University of Tasmania study into expanded Scope of Practice for rural ambulance paramedics, the author argues that the role of the ambulance paramedic as we know it now, except for its health transport role, will disappear over the next 30 years and will be replaced by a totally new health professional who currently does not exist and is better qualified and served to meet the out of hospital needs of the community and whose skills will be adapted to meet the specific requirements of the society they serve.

Conclusions: The author argues that ambulance needs to step away from its traditional role, leaving health transport to a relatively lower trained group of practitioners, leading the evolution of this new health professional, totally discarding the role of the traditional ambulance paramedic.

IS AMBULANCE THE EMERGENCY ARM OF PRIMARY HEALTH?

Peter MORGAN, Christine STIRLING, Judith WALKER

*University of Tasmania
Tasmanian Ambulance Service*

Background: Many ambulance practitioners firmly and passionately describe their role as being one of acute care in the out of hospital environment. Many will argue to their patients and peers that their role is an extension of the hospital into the home. Few will accept or understand that their role is emerging as one of Emergency Primary Health.

Findings: A University of Tasmania study into expanded scope of practice for rural ambulance paramedics identified that the role of the rural paramedic was changing rapidly much in part due to the difficulties of recruiting rural doctors and other health care professionals in rural communities and a shift in the communities emphasis towards Ambulance being the publics preferred provider of emergency health care when doctors were unavailable. Some practitioners argued the view, that their emergency skills badly needed upgrading, yet others argued that they had a need for far more basic skills such as those held by nurses in order for them to better serve their community.

Conclusions: This paper explores the attitudes of rural Tasmanian Paramedics and expands the notion that, without conscious effort, yet recognizing a changed need, paramedics are moving away from the accepted view that they are the providers of acute care in the community to one of having a mixed role in Primary Health and Acute Care that leads to them being better described as providers of Emergency Primary health.

THE ROLE OF AUSTRALIAN AMBULANCE PARAMEDICS IN REDUCING DELAYS FOR ACUTE STROKE PATIENTS

Ian MOSLEY¹, Marcus NICOL¹, Geoffrey DONNAN², Ian PATRICK³, Helen DEWEY²

¹ *National Stroke Research Institute, Australia
University of Melbourne, Australia*

² *National Stroke Research Institute, Australia
Department of Medicine, University of Melbourne, Australia
Department of Neurology, Austin Health*

³ *Rural Ambulance Victoria, Australia*

BACKGROUND: Prolonged pre-hospital delays following the onset of stroke symptoms continue to restrict the delivery of alteplase to acute stroke patients. The aims of this study were to:

(1) determine the impact of paramedic practice on times from ambulance call to first medical assessment in the emergency department, and (2) identify factors associated with rapid first medical assessment in the emergency department after a call for ambulance assistance.

METHODS: For six months in 2004-5, all ambulance-transported stroke patients arriving from a geographically defined region (population 383,000) in Melbourne, Australia to one of 3 hospital emergency departments were assessed prospectively. Ambulance records including the tape recording of the call for ambulance assistance and hospital medical records, were analysed.

RESULTS: One hundred ninety-eight patients were included in the study. One hundred eighty-seven ambulance patient care records were complete and available for analysis. Paramedic stroke recognition and hospital prenotification were associated with shorter times from the ambulance call to first medical assessment ($P=0.001$ and $P<0.001$). Factors associated with first medical assessment in the emergency department <60 minutes from the ambulance call and <10 minutes from hospital arrival were: Glasgow Coma Scale <13 ($P<0.001$ and $P=0.021$) and hospital prenotification ($P=0.04$ and $P<0.001$).

CONCLUSIONS: Paramedic stroke recognition and hospital prenotification are associated with shorter prehospital times from the ambulance call to hospital arrival and in-hospital times from hospital arrival to first medical assessment. This highlights the importance of including paramedic practice in comprehensive care pathways to optimise the delivery of acute stroke treatment.

PREHOSPITAL HYPOTENSION AND SEVERE TRAUMATIC BRAIN INJURY; HOW GOOD IS THE DATA?

Sandy MUECKE, Andrew BERSTEN

Department of Critical Care Medicine, Flinders University, Adelaide, South Australia.

Background: Many studies have suggested that systemic hypotension may be the most devastating secondary insult following traumatic brain injury (TBI). Prehospital researchers must rely upon observations measured and documented by Prehospital Care Providers (PCPs) when investigating the effects of early hypotensive episodes upon outcome. Blood pressure (BP) data utilised in such studies needs to be accurate and plentiful. The notion that currently available prehospital BP data fulfils these criteria has been poorly evaluated, yet has formed the cornerstone of much of the evidence underpinning current understanding.

Objectives; This study aims to examine the quality and quantity of prehospital BP data recorded in the ambulance record or trauma database.

Methods: A questionnaire was distributed to PCPs (ACAP national conference 2006). One hundred Patient Care Records at the South Australian Ambulance Service (SAAS) were examined. Five years of data in the South Australian Trauma Registry (SATR) were reviewed.

Findings: Noise and vibrations in the ambulance and noise and poor lighting at an accident scene confounded PCP determined BPs. Fourteen percent of critically ill patients had no BPs recorded in SAAS patient records. Approximately one quarter of severe trauma and severe TBI patients had no prehospital BPs recorded in the SATR.

Conclusions: There may be missing or inaccurate BP data in prehospital records. Researchers, when relying upon manually derived BP data collected in the field from the shocked patient, should do so cautiously. A non-invasive BP measuring device that operates accurately in the shocked patient could solve many measurement problems in the field.

DIFFERENCES IN RURAL AND URBAN PARAMEDICAL PRACTICE: INFORMING PARAMEDIC CURRICULA

Peter MULHOLLAND

University of Tasmania, Launceston, Australia

Background: Despite the emergence of education programs for rural paramedics and specialties such as paramedic practitioner in rural areas, there remains little research comparing rural and urban paramedical practice. Training and education for both rural and urban paramedics needs to consider any differences.

Objectives: To determine the differences between rural paramedical practice and urban paramedical practice in Australia, in order to inform paramedical curricula.

Methods: This comparative case study uses multiple sources of data including semi-structured interviews with intensive care paramedics across two states in Australia, review of relevant documentation and literature, case dispatch data, and observation. Interviews focus on specific work carried out, current education and training, and pathways for the future.

Findings: Paramedics in both rural and urban areas attend common emergency cases such as breathing problems, cardiac problems, falls, abdominal conditions, unconscious patients, and road accidents. Differences appear with urban paramedics having noticeably higher attendances at mental health, social, and chronic care cases. Whilst rural paramedics also attend such cases, strong community involvement and multidisciplinary practice in a rural area may offer a mechanism of support. Concerns unique to a rural area include; accommodation, orientation, information dissemination, rural doctors, and isolation. Relevant training in mental health, social and chronic care, is important for the urban paramedic whilst rural paramedics are concerned with acute critical care training. For both rural and urban paramedics effective continuing education is a concern.

Conclusions: Differences between rural and urban paramedic practice in Australia indicate the importance of specific rural components in future education and particularly continuing education programs.

MALLEABLE STYLET vs. RE-USEABLE AND DISPOSABLE BOUGIES IN A MODEL OF DIFFICULT INTUBATION: A RANDOMISED CROSS-OVER TRIAL

Graham MUNRO¹, Malcolm WOOLLARD², David LIGHTON¹, Pete GREGORY²,
Emma JENKINSON², Leanne HAMILTON¹, Robert NEWCOMBE², Peter O'MEARA¹

¹Charles Sturt University, Bathurst, Australia, ²Coventry University, Coventry, United Kingdom

Purpose: Paramedics' intubation success rates with Cormack & Lehane grade III/IV [1] views have been reported as 0%.[2] Misplaced tracheal tubes occur in 5.8-25% [3,4] of all intubations: 67-75% may be in the oesophagus.[4,5] This trial compared outcomes for pre-hospital laryngoscopists managing a difficult intubation model with four aids.

Materials and methods: Pre-hospital laryngoscopists attending the 2007 ACAP conference attempted to intubate a manikin model of a grade III/IV view using three different tracheal tube introducers (bougies) and a stylet according to a prospectively randomised sequence. Successful intubation = 'correct placement within 30 seconds'.

Results: 19/65 (29%) participants claimed previous experience with a bougie and 46/65 (71%) with a stylet. Intubation success rates were 37/65 (57%) for the stylet and for the bougies 22/65 (34%, Portex single-use), 17/65 (26%, Fova) and 6/65 (9%, Portex re-usable), $p < 0.0001$. There was no correlation between intubation success and experience. Oesophageal intubation rates = 19/65 (29%, stylet); 29/65 (45%, Portex single-use); 21/65 (32%, Fova); and 27/65 (42%, Portex re-usable), $p = 0.026$. Median intubation times = 20s (stylet); 30s (Portex single-use); 42s (Fova); and 49s (Portex re-usable), $p < 0.001$. Median difficulty-of-use scores (100 = 'very difficult') were 30, 28, 40, and 80 for stylet, Portex single-use, Fova, and Portex re-usable respectively, $p < 0.001$.

Conclusions: In pre-hospital laryngoscopists attending the ACAP 2007 conference, a stylet facilitated the highest intubation success rate within the shortest interval in a manikin model of a grade III/IV view. There were significant between-device differences in oesophageal intubation rates and user-rated difficulty-of-use scores.

References

1. Cormack RS, Lehane J. Difficult tracheal intubation in obstetrics. *Anaesthesia*, 1984;39:1105-11.
2. Deakin CD, Peters R, Tomlinson P, Cassidy M. Securing the prehospital airway: a comparison of laryngeal mask insertion and endotracheal intubation by UK paramedics. *Emerg Med J* 2005;22(1):64-7.
3. Jones JH, Murphy MP, Dickson RL, Somerville GG, Brizendine EJ: Emergency physician-verified out-of-hospital intubation: miss rates by paramedics. *Acad Emerg Med*, 2004;11:707-9.
4. Katz S H, Falk JL. Misplaced endotracheal tubes by paramedics in an urban emergency medical services system. *Ann Emerg Med* 2001;37(1):32-7.
5. Jemmett ME, Kendal KM, Fourre MW, Burton JH. Unrecognized misplacement of endotracheal tubes in a mixed urban to rural emergency medical services setting. *Acad Emerg Med* 2003;10(9): 961-5.

*Australian Prehospital Emergency Health Research Forum Peer-Reviewed Abstracts from
The ACAP 2008 National Conference, Melbourne, Australia, 4 to 6 September, 2008.*

DEXTROSE 10%: THE SAFER OF THE TWO APPLES IN THE MANAGEMENT OF PREHOSPITAL HYPOGLYCAEMIA

Ziad NEHME, Daniel CUDINI

Monash University, Melbourne, Australia

Background: Dextrose 50% is commonly accepted as the primary management of severe hypoglycaemia, however its position seems to be by default rather than clinical or research significance. The use of 10% dextrose by some prehospital care providers has demonstrated greater practical and physiological advantages, with less clinical implications than higher volatile concentrations.

Objectives: To review the literature on the efficacy of intravenous 10% dextrose in the prehospital management of severe hypoglycaemia.

Methods: A review of select electronic databases was conducted from their commencement to the end of March 2008. Inclusion criteria was any article which evaluated the administration of intravenous glucose within any setting/discipline, or when compared to any alternative intervention. Exclusion criteria were articles pertaining to the administration of glucose other than in the emergency management of hypoglycaemia.

Findings: The search yielded 3,651 potential articles, with 24 meeting the inclusion/exclusion criteria. Dextrose 10% has demonstrated equal time to restoration of conscious state at smaller doses, with reductions in post-treatment blood sugar levels than the higher 50% concentration. The risk of extravasation injuries and potential clinical ramifications in paediatrics are some compelling reasons to consider a shift away from the unstable 50% dextrose. The titration of 10% dextrose to patient conscious state has been increasingly utilised by other prehospital care providers over bolus doses of 50% preparations.

Conclusion: Scientific evidence suggests that the titration of 10% dextrose in severe hypoglycaemia is as efficacious as the administration of 50% dextrose, while reducing associated risks and producing better post-treatment outcomes.

SUBOPTIMAL VENTILATION IN RESUSCITATION: A CURE FOR THE OVERZEALOUS

Ziad NEHME, Malcolm BOYLE

*Department of Community Emergency Health and Paramedic Practice,
Monash University, Melbourne, Australia*

Background: Suboptimal bag ventilation in CPR has demonstrated detrimental physiological outcomes for cardiac arrest patients. In light of recent guideline changes for resuscitation, there is a need to identify the efficacy of bag ventilation by prehospital care providers.

Objectives: The objective of this study was to evaluate bag ventilation in relation to operator delivery of ventilation rate, tidal volume and minute volume using two different capacity self-inflating bags.

Methods: An observational single blinded clinical trial involving a mechanical lung model was developed to represent a simulated adult cardiac arrest scenario for thirty undergraduate paramedic students. Participants were instructed to ventilate using 1600ml and 1000ml bags for a length of two minutes at the correct rate and tidal volume for a patient undergoing CPR with an advanced airway. Ventilation rate and tidal volume were recorded using an analogue scale and results underwent univariate data analyses.

Findings: Mean tidal volumes were significantly higher for the 1600ml bag: 528.4 (95% CI 491.3 to 565.5) vs. 648.7ml (95% CI 603.7 to 693.7) ($p < 0.0001$), while no statistically significant differences were found in mean ventilation rates and minute volumes between the two bags. Reduced levels of suboptimal ventilation arose from the use of the smaller bag with a 27% reduction in suboptimal tidal volumes ($p = 0.015$) and 23% reduction in suboptimal minute volumes ($p = 0.045$).

Conclusion: Smaller self-inflating bags reduce the incidence of overzealous tidal volumes and produce greater guideline consistent results for cardiac arrest patients.

THE BIRTH OF A DISCIPLINE: CARVING OUT A PLACE IN THE UNIVERSITY FOR PARAMEDICS

Peter O'MEARA, Ann JENSEN

Charles Sturt University, Bathurst, Australia.

Background: The Carrick Institute funded research project into paramedic education and industry partnerships was a unique opportunity to rise above the white waters of change and scan the horizon, through qualitative research and literature scoping. The literature search into teaching innovation revealed little and raised questions for those who will shape the future of the discipline.

Objective: The literature search asked how higher education for paramedics was moving beyond competency-based training to prepare the profession to respond to social change in health care servicing.

Findings: Paramedic academics are still developing research-informed connections between teaching and work readiness. Paramedics are keen to write about clinical issues but slow to confront questions about the scholarship of teaching that will give the discipline a distinctive and pragmatic profile. The need for a shared research agenda into the scholarship of teaching the paramedic discipline becomes apparent.

Conclusion: In order to sustain and stretch the profession into the future, universities must go beyond industry needs and develop paramedic academics who will become field leaders and ground breaking researchers and lecturers. Paramedic academics face the challenge of producing the focused research and quality literature that will become both the foundational discourse of the profession, and its "*signature pedagogy*".

GRADUATE PARAMEDIC CAREER INTENTIONS: ORGANISATIONAL AND PROFESSIONAL IMPLICATIONS

Peter O'MEARA¹, Vianne TOURLE¹, Veronica MADIGAN¹, David LIGHTON¹

¹*Charles Sturt University, Bathurst, Australia*

Background: This study arose from anecdotal evidence that students at Charles Sturt University were reluctant to seek employment with the ambulance authorities that failed to specifically cater for their needs.

Objectives: To identify the key factors that influence student and graduate career choices and consider the implications of these findings and recommend policy changes.

Methods: Full-time paramedic students and graduates were surveyed over three years to ascertain the factors that shape their preferences for employment with ambulance authorities. A group of final year students participated in a focus group to gain a richer understanding of their future career choices. The findings were analyzed using a research framework consisting of four themes: students own personal situation, community expectations, professional reasons, and organisational issues.

Findings: Amongst 69 graduates the main factors determining their career choices were personal (55%), professional (23%) and organisational (12%). Surprisingly more than half reported that they were not working in their home state. In 509 returned questionnaires undergraduate students reported similar factors – personal (53%), professional (20%) and organisational (8%). A larger number reported multiple factors as influences. A large number of undergraduates indicated that hoped to work in states other than their home state.

Conclusions: Personal and professional factors are very strong drivers of choice amongst graduates and students who show more career mobility than previously thought. Ambulance authorities need to consider these factors when marketing themselves to potential employees. Professional bodies also have a role to play through lobbying for registration and other strategies to support professional mobility.

QUEENSLAND AMBULANCE SERVICE INTEGRATED CARDIAC REPERFUSION STRATEGY (INCARS)

Stephen RASHFORD¹, Brett ROGERS¹, Vivienne TIPPETT², Steven RAVEN²

¹*Queensland Ambulance Service, Queensland, Australia*

²*Australian centre for Prehospital Research, QAS*

Background: On 18th February 2008, the Queensland Ambulance Service (QAS) initiated a program to optimise coronary reperfusion in patients with ST elevation myocardial infarction (STEMI).

Through the rapid acquisition and interpretation of 12-lead ECGs, Intensive Care Paramedics (ICPs) can identify STEMI earlier, and make better decisions aimed at the most rapid and appropriate means to achieve cardiac reperfusion. This program is differentiated from others as it is conducted without the aid of telemetry of ECGs for physician interpretation.

QAS is the first ambulance service in Australia to implement a statewide integrated strategy to facilitate early myocardial reperfusion for patients experiencing STEMI. This strategy has the potential to improve outcomes for patients sustaining an ST elevation myocardial infarction.

Objectives: The purpose of this program is to identify individuals who are candidates for paramedic initiated fibrinolysis, or, timely transport to the closest facility able to provide an appropriate reperfusion therapy. Both of these strategies have the potential to significantly reduce the time to cardiac reperfusion for patients within Queensland.

Method: This prospective study is being led by the QAS Medical Director (Dr Steve Rashford), in consultation with the Chair of the Statewide Clinical Cardiac Network (Dr Kenneth Hossack). Other Cardiologists and Specialists in the field have been integral to the implementation and direct supervision of the reperfusion strategy.

Findings & Conclusion: This paper will discuss some of the challenges faced in the implementation and administration of INCARS, describe the process which led to the development of this strategy, and present findings from the first six months of the program. Drug therapy protocols (DTPs), clinical governance and audit, data capture and cross agency organisational issues will also be discussed.

EVENT MEDICAL SERVICES: IS THE TRADITIONAL MODEL SUSTAINABLE?

Buck REED

UniMed First Aid

Abstract: Event medical services are the oldest component of prehospital care in Australia. The traditional model for the provision of services has been through the use of non-profit organisations using voluntary workforces. Overall, this sector involves around 12500 personnel, around 85-90% of which are volunteers. As with many areas of health, this area has undergone substantial changes in client expectations, workforce demand and caseload. This sector is poorly regulated and its clients are poorly educated in obtaining and using services appropriately. Likewise, substantial increases in the number, size and complexity of events challenges a workforce which is in net decline. Meanwhile the expectations of clients and medico-legal factor create increased burden the sector in terms of training, qualifications, competency and systems compliance. As a result substantially greater administrative and operational infrastructure is required to meet client expectations and ensure patient safety.

The large component of volunteers from non-profit and charitable service provider has significant impact on service pricing. It could be argued that this provides an anti-competitive environment which creates disincentive for new participants to the sector which would increase overall capacity and workforce numbers. Likewise there is also risk in swamping the industry with low price commercial providers operating in an unregulated environment which may create issues in quality, patient safety and sector stability. Ultimately, little is known about the composition, workload and needs of the sector which makes analysis difficult and prevents initiatives which will bolster sector workforce and capacity and more effectively help manage service demand.

THE IDENTIFICATION, ASSESSMENT AND MANAGEMENT OF MENTAL HEALTH PATIENTS WITH COMORBID PRESENTATIONS BY PARAMEDICS WITHIN THE COMMUNITY: THE CHALLENGES AND GAPS WITHIN THE SYSTEM.

Louise ROBERTS

Flinders University, Adelaide, Australia

Background: This paper aims to outline the current literature surrounding the issue of comorbidity and mental health in the context of the challenges faced by paramedics when attending people with comorbid presentations. A framework and rationale for research into the management of comorbid patients by paramedics will also be presented.

Research has found that the presentation of mental disorders and other significant co-existing disorders, particularly substances use disorders, is increasingly becoming a major issue within the health field and the community (Department of Health and Ageing, 2003). Deinstitutionalisation and the uncoordinated development of community support services have resulted in a lack of treatment and service provision for this group. The need for coordinated national health and welfare services for people with mental health and substance misuse problems has been widely recognised by Australian Federal and State Governments (Hickie, I & McDorry, P, 2007). Comorbidity is often associated with poor treatment outcomes, severe illness and high service utilisation (Department of Health and Ageing, 2003).

It is well documented that patients presenting with comorbid disorders, particularly when mental illness is involved, pose a significant challenge for health professionals. The challenges lie within the areas of identification, assessment, management and prevention strategies. There is a lack of literature and research within this specific area of paramedic practice and the increasing involvement of paramedics with complex comorbid presentations highlights a need for research in this area.

“WHO IS AN ARMY MEDIC IN 2008?”

Stewart ROBERTSON, Steve KEOGH

Army Logistics Training Centre, Bonegilla, Australia

Background: Recently, the Board has endorsed membership of The Australian College of Ambulance Professionals for Australian Defence Force Medics. We would like to take the opportunity to outline “Who is an Army Medic in 2008?”

Objectives: Role – The role of the Soldier Medic in The Royal Australian Army Medical Corp is to operate in Aid Posts, Evac Teams, Medical Centers and Hospitals. But the overwhelming primary role has and always will be Tactical Combat Casualty Care or treatment of battle injuries.

Initial Employment Training - They undertake 40 weeks of intensive training that covers theory and practical instruction in anatomy/physiology, nursing skills, advanced first aid and includes clinical placements in military and civilian workplace environments.

Advanced Training – After 12 months of post-course skill consolidation under supervision, they complete the Advanced Medical Assistant Course to be employed as an Army Medical Technician. In addition to the Basic Course skill competencies, members are further trained in Advanced Pre-Hospital Trauma Life Support, how to operate independently and remotely from higher level care and support, develop and implement health planning, conduct health training instruction and the supervision/professional development of sub-ordinates.

Specialists Training – Members can then specialize in Underwater/Hyperbaric Medicine, Aviation/Altitude Medicine, Chemical, Biological, Radiation and Nuclear Medicine, Rotary/Fixed Wing Medical Evacuation and Disaster Scene Management.

Conclusion: They must be able to cope with conventional/unconventional injuries and illnesses in a variety of situations and environments and work independently and effectively under front line defence emergency conditions for extended periods.

THE ABILITY OF INTENSIVE CARE PARAMEDICS TO ACCURATELY IDENTIFY AND TREAT STEMI PATIENTS

Brett ROGERS¹, Dr Stephen RASHFORD², Assoc Prof Vivienne TIPPETT³, Steven RAVEN⁴

¹ Senior Clinical Educator (ICP), Queensland Ambulance Service, Brisbane, Australia, ² Medical Director, Queensland Ambulance Service, Brisbane, Australia, ³ Director, Australian Centre for Prehospital Research, Brisbane, Australia, ⁴ Manager, Cardiac Outcomes, Australian Centre for Prehospital Research, Brisbane, Australia.

Background: Paramedics are the first point of contact for the majority of patients suffering out-of-hospital acute myocardial infarction. In February 2008, the Queensland Ambulance Service (QAS) introduced a statewide “*Integrated Cardiac Reperfusion Strategy*” (*InCaRS*). QAS paramedics are now strategically placed within the health system to facilitate early myocardial reperfusion therapies.

Intensive Care Paramedics (ICPs) now have three options for responding to a diagnosis of acute ST Elevation Myocardial Infarction (STEMI) using 12-lead ECGs. They are:

1. direct triage to percutaneous coronary intervention;
2. paramedic initiated fibrinolysis;
3. timely transport to the closest facility able to provide reperfusion.

The accurate interpretation of 12-lead ECGs is fundamental to reperfusion decision making. This study follows on from an earlier observational study funded by ACAP (Qld).

Objectives: To evaluate the ability of ICPs to accurately diagnose STEMI and appropriately treat and triage patients in accordance with reperfusion protocols.

Methods: This study involves a prospective analysis of all cases of suspected AMI attended by ICPs where a 12-lead ECG is acquired. Each case (including the ambulance report form, 12-lead ECG and dedicated Data Capture Form) is reviewed by a cardiologist and an emergency physician who are blinded to the paramedics’ decisions. Treatment and triage decisions of ICPs are compared with the opinion of the expert panel. The time interval from “onset of symptom” to ICP reperfusion treatment is also determined.

Findings and Conclusions: This study indicates the high degree of accuracy of ICPs in identifying and treating STEMI patients. It is concluded that ICPs have an important role in an integrated cardiac reperfusion strategy by ensuring timely reperfusion treatment for patients with STEMI.

AMBULANCE SERVICE DEMAND RELATED TO ALCOHOL, DRUGS AND MENTAL HEALTH

Kerrienne WATT, Vivienne Tippet

Australian Centre for Prehospital Research, Brisbane, Australia

Background: Transportation of patients affected by alcohol and/or drugs, or with mental health complaints, is associated with significant diagnostic, treatment, management and service planning issues. While there are some estimates available on the impact of alcohol/drug use on patients presenting to Emergency Departments (ED), the impact of alcohol, drug and mental health conditions on Ambulance Service demand is not well documented.

Objectives: The purpose of this paper is to determine the proportion of the emergency prehospital caseload due to alcohol/substance use and mental health conditions, and to describe the impact on Ambulance Services.

Methods: Data were collected on consecutive patients (16-79yrs) presenting for treatment over a 14 day period at the Gold Coast ED (N=1,926) in October 2005 (n=612 transported via ambulance). Data sources included: AIMS (Ambulance Information Management System); EDIS (Emergency Department Information System); and survey data (for 1202 of these patients).

Findings and Conclusions: In 2005, 9.3% of patients transported to the ED on the Gold Coast via QAS attended for direct alcohol-related issues. This extrapolates to 31, 380 patients across the state per annum. One in 20 patients were transported to hospital because of drug use (18, 220 per annum statewide), and 7.7% were transported due to mental health conditions (25, 981 per annum, statewide). Even when the overlap between alcohol/drug use and mental health conditions is taken into account, this is equivalent to approximately 61, 748 patients statewide in 2005 transported to hospital in QLD via ambulance (one fifth of the emergency prehospital case-load). The additional impact on caseload from alcohol/drug use and mental health as indicated by self-report data was equivalent to 76, 257, 598 patients in 2005.

Types of patient presentations and outcomes will be described in more detail during the presentation, and types of response calls will be discussed. Additional factors that impact on demand will also be presented.

These data indicate that alcohol, drug use, and mental health conditions place a significant burden on Ambulance Services. The implications for patient care, service planning, and paramedic education/training will be discussed.

PODCASTING IN AN EDUCATIONAL CONTEXT FOR AMBULANCE SERVICE NSW, AUSTRALIA

Sharon White¹, Roderick Bryant-King²

Elearning Team Ambulance Education¹, Ambulance Service NSW², Rozelle, Sydney, Australia.

The Ambulance Service NSW Elearning Team has been developing podcasting as an educational tool. This tool is portable, light weight (as much as an MP3 player) convenient can be used in variety of places, many times. Podcasts are downloaded from the ASNSW intranet and can saved into the hard drive of the computer or MP3 player. Pod casting is being used to create instant educational mobile learning objects that are stimulating and provides the learner with a challenge in the technical aspect of acquisition of the information by using the intranet/internet to access the learning object.

The educational methodology suits the learning styles of auditory learners and can be useful adjunct tool in educational support for a variety of other learning styles. The podcast is supported by the educational material that highlights certain aspects of the information that the learner needs to engage with. This information is presented in an information sheet or quiz format. At the completion of the quiz the educator can allocate points for Certificate to Practice.

It is timely to consider this educational adjunct to current educational methodologies, as Y generation paramedics begin their careers with ambulance services throughout Australia. This may influence retainment of y generation paramedics as the use of technology will provide them with options regarding when they chose to listen to their podcasts.

Importantly ambulance educational infrastructure needs to develop guidelines, workshops and short training sessions for educators and generation x employees. This will further support their learning and indirectly provide them with certificate to practice points.

COMMUNITY EMERGENCY RESPONSE TEAMS – MORE THAN FIRST RESPONSE

Tony WALKER¹, Robyn BETTS², Geoff HARVEY³

¹*Rural Ambulance Victoria, Ballarat, Australia,* ²*Office of the Emergency Service Commissioner, Melbourne, Australia,* ³*Rural Ambulance Victoria, Ballarat, Australia.*

Background: Rural Ambulance Victoria (RAV) has established a Community Emergency Response Team (CERT) program comprising 500 volunteers operating out of 28 communities across rural Victoria to provide initial clinical care until arrival of an ambulance. Anecdotal feedback suggested that the program was a success and that CERTs are playing a vital role in meeting the needs of their respective communities in the areas of pre-hospital health, social capital building and providing a sense of security for the community, especially the elderly.

Objectives: RAV commissioned the Office of the Emergency Services Commissioner (OESC) Research Projects Unit to undertake a formal evaluation of the CERT program to determine its effectiveness and impact on service delivery and community safety and development.

Methods: A Participative Action Research approach was adopted for the evaluation. The methodology included evaluation research methods and processes, including logic modelling. Quantitative research methods included questionnaires targeted to CERT volunteers and RAV paramedics, and analysis of response and incident data provided by RAV. Qualitative research methods involved semi-structured group interviews and an evaluation newsletter which provided the opportunity for volunteers to provide their experiences through a story template.

Findings and Conclusions: The evaluation identified that the CERT program has provided community members with opportunities to contribute to the health and wellbeing of their local community. In particular the program has reduced response times, is providing clinically appropriate care to rural communities prior to ambulance arrival, and has impacted positively on community wellbeing and cohesiveness and social capital.

UNDERGRADUATE PARAMEDIC STUDENTS' ATTITUDES TOWARDS E-LEARNING

Brett WILLIAMS¹, Ted BROWN²

¹*Department of Community Emergency Health and Paramedic Practice, Monash University, Melbourne, Australia.*

²*Department of Occupational Therapy, Monash University, Melbourne, Australia.*

Background: There are now ten universities in Australia that offer paramedic-orientated undergraduate education programs. Each of these programs offer varying levels of e-learning and face-to-face teaching integration. Currently there is a paucity of literature in the paramedic field regarding e-learning; this study provides a contribution to our emerging discipline in this knowledge area.

Objectives: The study aim was to determine the perceptions and attitudes of undergraduate paramedic students towards e-learning.

Methods: A non-experimental design involving a convenience sample of first, second and third year undergraduate paramedic students (N=62) studying at Monash University was used. Student attitudes to e-learning were elicited using two standardised instruments: "Computer Attitude Survey" (CAS) (1 to 5 Likert-based scale) and "Online Learning Environment Survey" (OLES) (1 to 5 Likert-based scale). Ethical approval from Monash University was granted prior to the start of the project.

Findings: The CAS 'attitudes toward computer in education' mean subscale score was 3.73 (SD=.47) versus the CAS 'attitudes toward computer in general' mean subscale score was 2.62 (SD=.327). The OLES produced high mean scores in relation to Computer Equity (preferred vs. actual; M=4.71, SD=.44 vs. M=4.39, SD=.56) and Teaching Support (preferred vs. actual; M=4.70, SD=.37 vs. M=3.67, SD=.61).

Conclusions: This study has provided significant foundational data for the Australian paramedic discipline, particularly as the body of knowledge in e-learning pedagogy is limited. As paramedic-orientated degree programs continue to emerge and develop, careful consideration should be given to the usability and utility of e-learning approaches with students and qualified paramedic personnel.

AN EVALUATION OF DEVELOPMENTAL DISABILITY DVD SIMULATIONS: CAN THIS IMPROVE CLINICAL PRACTICE?

Brett WILLIAMS¹, Teresa IACONO², Jane TRACY², Belinda LEWIS³, Prue MORGAN⁴, Ted BROWN⁵, Sally HANSON².

¹ *Department of Community Emergency Health & Paramedic Practice, Monash University, Victoria, Australia*

² *Centre for Developmental Disability Health Victoria, Monash University, Victoria, Australia*

³ *Department of Health Sciences, Monash University, Victoria, Australia*

⁴ *Department of Physiotherapy, Monash University, Victoria, Australia*

⁵ *Department of Occupational Therapy, Monash University, Victoria, Australia*

Background: Negative attitudes of health professionals towards developmental disabilities contribute to inequalities in health service provision. In an attempt to overcome these inequities, developmental disability syllabus has recently been incorporated in undergraduate health care curriculum at Monash University.

Objectives: The aim of this study was to determine how observing and discussing scenarios of people with developmental disabilities impacts the attitudes and perceptions of first year undergraduate health care students.

Methods: First year undergraduate health care students (paramedics, nursing, health science/social work, physiotherapy and occupational therapy) completed a standardised attitude scale. The following week, they observed a DVD of an adult with cerebral palsy in a health care scenario. Students completed the same attitude scale and an evaluation questionnaire of the scenario either before or after participating in a guided discussion.

Findings: Quantitative analysis indicated no interaction or main effects for the attitude scale, however differences across student cohorts were found. Analysis of the evaluation questionnaire indicated that the students rated the DVD simulation highly. Differences were found across the student groups for only one item about the usefulness of the DVD in learning about students' own professions ($df = 4$, $F = 11.8$, $p < .001$). Focus group qualitative data provided insights into how each DVD caused students to question their underlying assumptions, and how they informed them about their own and other professions.

Conclusions: The results provide an evaluation of the DVDs as a method of engaging students in developmental disability. Their responses are being used to inform the development and pedagogical integration of developmental disability DVD simulations in undergraduate health care curriculum.

UNIVERSITY AND SERVICE PROVIDER MODELS OF COLLABORATION IN TERTIARY EDUCATION IN PARAMEDIC EDUCATION

Eileen WILLIS¹, Tim POINTON¹, Carmel MCCARTHY¹, Brett WILLIAMS², Richard BRIGHTWELL³,
Mary MORRIS³, Tony WALKER⁴

¹*Flinders University*, ²*Monash University*, ³*Edith Cowan University*, ⁴*Charles Darwin University* and ⁵*Australian College of Ambulance Professionals*

Background: The move to university education for paramedics in Australia where the industry is a monopoly employer has challenged universities to find contemporary and effective models of collaboration that maintain quality and integrity of both organisations.

Objectives: This paper reports on findings of a university-wide Carrick Institute funded research project that scoped best practice models of university-industry collaborations in paramedic education.

Methods: Research methods included undertaking a literature search, conducting semi structured interviews with a small number of university and industry participants in the United Kingdom and Canada, focus groups in South Australia, Western Australia, Victoria, Tasmania and Queensland with industry stakeholders, industrial personnel and paramedics..

Findings: The findings indicate that the course structure drives the relationship between universities and industry. Programs that are structured to allow students to enter into an employment relationship with industry prior to graduation or as part of the initial processes have a closer working relationship than those that follow traditional pre-employment models of education and also appear to deal with issues of job readiness more effectively.

Conclusions: Opportunity exists for both types of University programs to enter into a more robust educational relationship with ambulance services through adapting the Teaching Hospital model used in Medicine. We will report on the features of the Teaching Pre-hospital Service model highlighting strengths, weaknesses and the required mind changes needed for success, as one possible model of the way forward.