

Abstracts of
The ANZICS NZ 2010 Conference
“Why ICU’s different”
Hawke’s Bay Opera House
Hastings, New Zealand
3-5 March 2010

NFP1

Why ICU differently: Ethnography at home- The methodological concerns of observing colleagues in practice.

Caz Hales-Victoria

University of Wellington

AIM: This paper explores the research and ethical dilemmas that occur from using critical ethnography as a methodological approach to observing nurses within the researcher's own clinical practice area. The paper uses the ethnographic study which examined the culture of care of morbidly obese patients in the intensive care unit (ICU) as its focus for discussion.

DESIGN: For three months nurses working at a tertiary ICU in New Zealand were observed caring for morbidly obese patients during their ICU admission. The method of data collection involved participant observation where the author observed this care provision for entire clinical shifts. Other methods included interviews with nurse participants and other key informants, and review of patient notes, policies and other documentation directly relating to patient care.

METHODOLOGICAL CONCERNS: This paper considers two methodological concerns of: Researcher-participant influence and the 'insider-outsider' position of the nurse researcher in relation to the study site.

CONCLUSION: The use of critical ethnography facilitated valuable insights into the relationships between nurses and morbidly obese patients in ICU. There was evidence of some researcher-participant influence. However, this was minimised in the analysis by the researcher's substantial prior knowledge of the study site meaning that occasional incidences of influencing the participants were clearly evident in the observations. As such, the study affirmed the validity of using an insider to explore the culture of a group in which they hold membership and owe allegiance.

NFP2

The Bridge to Competence "Linking theory and practice in critical care"

Claire Lawrence, Liz Dalby

North Shore Hospital, Auckland

It has long been recognised within critical care that a comprehensive orientation programme is required to produce a safe and competent critical care nurse. Orientation programmes are essential in supporting the learning and development of critical care knowledge for both novice and competent registered nurses. Orientation programmes vary in length and content but have a common objective to provide sufficient baseline knowledge supported by clinical exposure in the critical care environment. This presentation will describe a qualitative study performed at the North Shore Hospital in Auckland to ascertain the effectiveness of orientation practices within the unit. Feedback was obtained from all levels of the nursing team and their views in combination with a thorough literature review guided recommendations for development. Changes made to the orientation programme in light of this work included the integration of case studies, reflection, clinical conversations and preceptor training to encourage critical thinking and address the theory to practice knowledge gap. This presentation will also discuss the contextual influences from a local and national level including the lack of national guidelines in the role development area and the impact upon recruitment and retention of critical care nurses.

References:

- Boyle, M et al (1998) 'Study to Validate the Outcome Goal, Competencies and Educational Objectives for Use in Intensive Care Orientation Programs.' Australian Critical Care Mar. 11 (1): 20-4.
- Dean, L. (2001) 'A Structured Learning Program in the Critical Care Environment.' LAMP Feb. 58 91): 18.

- Dunn, S.V. (1993) 'Clinical Decision Making, a Primer for Preceptors.' *Australian Critical Care* Jun 6 (2) 20-3.
- Dunn, S.V. and Fought, S.G. (1994) 'Novice Critical Care Nurses' Affective Responses to Orientation.' *Journal Nursing Staff Development* Sept – Oct. 10 (5): 257-61.
- Jeffrey, Y. (2000) 'Using Competencies to Promote a Learning Environment in Intensive Care.' *Nursing in Critical Care* Jul-Aug. 5 (4): 194-8.
- Mckane, C.L. (1997) 'Professional Advancement Model for Critical Care Orientation.' *Journal Nursing Staff Development* Mar. – Apr. 13 (2): 88-91.
- Morris, LL (2007) 'Designing a Comprehensive Model for Critical Care Orientation.' *Critical Care Nurse* Dec. 27 (6) 37-40.
- Nickle, P. (2007) 'Cognitive Apprenticeship: Laying the groundwork for mentoring registered nurses in the Intensive Care Unit' *Dynamics* Winter, 18 (4): 19-27.
- Nolan, S. and Murphy, j. (2006) 'The Tried, True and New: A traditional Approach to Critical Care Education with a New Twist'. *Critical Care Nurse* Jul-Sept. (3): 199-206.
- Thomason, T.R. (2006) 'ICU Nursing Orientation and Post Orientation Practices: A national Survey' *Critical Care Nurse* Jul 29 (3) 237-45.
-

NFP3

Discourses of deficiency: an analysis of the critical care outreach literature.

Rachel Atkin

Waikato Institute of Technology (WINTEC), Tauranga.

Background: Critical care outreach is part of a new approach to manage all critically ill patients, regardless of where they are located in the hospital. It is the complete process of care that focuses on individual patients needs rather than on beds and buildings. There has been a proliferation of research literature since critical care outreach teams were introduced and subsequently outreach teams have been required to provide robust evidence in the form of research to prove the effectiveness of their service. The research conducted by nurses has largely focused on phenomenological inquiry and has utilised methodologies such as questionnaires and interviews.

Aim: To identify the dominant discourses that have emerged from the critical care outreach literature

Method: Discourse analysis is a methodology that has received little or no attention in the critical care outreach literature. This study is a critical analysis that draws on theoretical techniques from discourse analysis to explore the emerging discourses from the critical care outreach literature written specifically by nurses from the year 2000 to 2006. It draws on the work of Powers and Cheek, nurses who have used Foucault's theoretical tools.

Conclusion: A discourse analysis of the critical care outreach literature has illustrated how nurses have inadvertently adopted discourses that exist within a medical model that operates with a medical gaze.

Keywords: Critical care outreach, intensive care liaison nurse, suboptimal care, deficiencies, Foucault, postmodern, discourse analysis.

NFP4

From The Ground Up – ICU in Private Health Care.

Lucy-Jane Adamson

Southern Cross Hospital, Wellington

In April 2009, I began the task of developing Intensive Care Services for Southern Cross Hospital in Wellington. I was shown some draft plans, given an office two days a week, a cell phone and the support of a great team.

Our aim was to build and develop Level 2 Intensive Care Services ready for commissioning in January 2010.

Over 9 months, following JFICM Standards, (and with a little imagination and lots of research), a 6

bed unit has been built, fitted out with equipment, staffing established and is ready for the first patients to benefit from this

state of the art Intensive Care Unit.

During this time the development has gone from a “hole in the ground” to a fully equipped ICU. The plans were altered numerous times, striving to achieve an exceptional outcome. It took great team work from architects, builders and clinical staff to develop something only a handful of people get the chance to do – develop a new service from the ground up. This ICU is different for several major reasons: this is a new venture for Southern Cross Hospital Wellington a small private facility hitherto providing short stay and day surgery only; and it is a new build from the footings up, with the team of nurses is being developed from one Clinical Nurse Manager.

NFP5

Why our ICU course is different - Intensive care outreach... for nursing education

Jane Hardcastle¹, Jennifer Roberts²

Christchurch Polytechnic Institute of Technology Christchurch¹, & Eastern Institute of Technology¹ Napier. ²

Considerable, variation in clinical context and geographical distribution of critical care services within New Zealand generates diversity in demand, accessibility and learning needs for registered nurses working in this field^{1,2}. Critical care service standards dictate that “the majority” of critical care nursing staff should hold a post-registration qualification in intensive care or the specialty of the unit³. Yet literature and national discussion suggests that a target of even 50% specialty qualified staff can be difficult to achieve due to; access issues, problematic facilitation of clinical release time for sufficient nurses to attend, dissatisfaction with course content, delivery approaches and/or assessment focus, poor clinical competency outcomes, assumption of prior knowledge, over-assessment and academic constraints³⁻⁸. Education for clinical practice development in critical care is most effective when teaching, learning and assessment are relevant to the nurse/student’s clinical scope and practice context⁹. Is it possible then, to facilitate relevant individual learning within any one distinct critical care course when such variability exists in clinical context and service provision in New Zealand? This presentation discusses some of the key critical care nursing education issues from the perspectives of clinical practice and tertiary education to examine the potential of inclusive on-line teaching and learning for practice development at a National level. Integration of recent advances in on-line learning software with academic expertise and an astute awareness of the need for relevant clinically focused learning that reflects national education standards¹⁰ are discussed in the context of current Advanced Critical Care Nursing (MN8.412) course development.

References:

1. Hardcastle J. E. (2003) Critical Care Education in the South Island of New Zealand – Exploring Contemporary Practice. Critical Comment (Critical Care Nurses’ section – NZNO). April;28–32
2. Drennan K, Hart G., & Hicks P. (2008) Intensive Care Resources & Activity: Australia & New Zealand 2006/2007. ANZICS, Melbourne.
3. College of Intensive Care Medicine of Australia and New Zealand (2010) Minimum Standards for Intensive Care Units. Policy Document (IC-1);1-14.
4. Critical Care Nurses’ Section (2007) Discussion Document - Critical Care Nursing Education. Education working party, Critical Care Nurses’ Section. Wellington, New Zealand. New Zealand Nurses’ Organisation.
5. Hardcastle, J. (2008) ‘Back to the bedside’: Graduate level education in critical care. Nurse Education in Practice. 8;46-53.
6. Hardcastle, J. (2006) Education for registered nurses – does one size really fit all? Kai Tiake Nursing New Zealand. 12(10);18–19
7. Pirret A. (2007) Masters’ level critical care nursing education: A time for review and debate. Intensive and Critical Care Nursing 23;183-186.
8. Aitken L.M., Currey J., Marshall A., & Elliott D. (2006) The diversity of critical care nursing education in Australian universities. Australian Critical Care 19(2);46-52.
9. Hardcastle J. E. (2004) The meaning of effective education for critical care nursing practice: a thematic analysis. Australian Critical Care. 17(3);114-122.
10. Critical Care Nurses’ Section (NZNO) (2009) Draft Standards in Critical Care Nursing Education. Wellington, New Zealand. Critical Care Nurses’ Section (New Zealand Nurses Organisation).

NFP6

Evaluation of a Critical Care Nursing Novice to Competent Development Programme.

S. Chand, J. Stewart, A. M. Pirret

Counties Manukau District Health Board, Manukau City

Background: In preparation for an increased bed capacity from 7 to 12, 24 nurses were recruited over a 6 month period (January – June 2008). Of the new staff recruited, only 3 (12.5%) achieved competent practice within the required 12 month period. As a result, in March 2009 evidence based guidelines and a new novice to competent development programme was introduced.

Aim: The aim of this study is to evaluate the effectiveness of the new novice to competent programme.

Method: Using an evaluation methodology, a questionnaire was circulated to all nurses who had completed the new programme from its commencement up to December, 2009 (N=30).

Participant confidentiality and anonymity were maintained.

Results: Fourteen questionnaires were returned (47% response rate). Sixty-four percent of participants spent 1-2 weeks on a 1-1 orientation with all participants perceiving this timeframe to be adequate. The number of preceptors varied from 1-5, with 71% of participants seeing this as adequate. All participants worked 12 hour shifts throughout the orientation programme, all finding this shift conducive to learning. All participants perceived they benefited from the compulsory study days. Following the programme, 82% perceived they were practicing safely and effectively.

Since the introduction of the new programme 83% of nurses have achieved competent practice within the required 12 month period.

Conclusion: Development of evidence based guidelines and the new novice to competent programme was effective in better preparing nurses in achieving competent practice.

NPP101

Intensive Care Nurses Perception of Closed suctioning System compared to Open Suctioning System.

John,S; Sharp, T. L; Song ,R

Critical Care Complex, Middlemore Hospital, Auckland, New Zealand

Introduction: Nursing Staff normally trial new equipment prior to its use. The H1N1 pandemic during the New Zealand 2009 winter resulted in the introduction of a closed suction system as an infection control strategy without firstly trialing the product.

Aim: The aim of this study was to determine nurses' perception of the closed suctioning system (CSS).

Method: Using an evaluation design, a questionnaire was circulated to 30 randomly selected intensive care nurses working within a tertiary metropolitan hospital. All study participants had used an open suctioning system prior to the introduction of CSS. The questionnaire was piloted prior to circulation. Participant anonymity and confidentiality were maintained throughout the study.

Results: Twenty four questionnaires were returned (80 % response rate). Only 75 % of nurses preferred the CSS, but 96% identified it as preventing environmental contamination. Fifty percent of nurses perceived CSS as less effective in secretion clearance than the open suction system. Less than 1% of nurses viewed the OSS as more convenient and less time consuming than CSS.

Conclusion: Intensive care nurses perceive that when compared to the open suction system the CSS is effective in reducing environmental contamination. However, there were mixed views on other advantages of the CSS.

NPP102

Why Wellington ICU's Different – Working Towards a Self Contained Bed Space

Catherine Mullen and Penny Keogh

Wellington Hospital, Wellington

The proposed poster presentation illustrates the features of Wellington Hospital Intensive Care Unit's (ICU) new bed space. When ICU migrated to a new facility in 2009, one of the main objectives of the nurse led Design Team was to provide a bed space that minimised the nurses need to leave the patient thus maintaining a safe and user friendly work environment. Essentially, a self contained bed space.

The move brought a change from a pod structure with small bed spaces to a linear layout with bed spaces 5m² greater than the Joint Faculty of Intensive Care Medicines (JFICM) minimum standard. The previous pod shape allowed high visibility of patients, quick and easy access to supplies and ease of communication and care planning among nurses. The larger linear layout would change this but the Design Team believed these challenges could be overcome by maximising the benefits the larger bed space could offer.

The Team set about creating a quality working environment for nurses that would be effective, efficient and not compromise patient safety. This goal was achieved through the introduction of advanced communication technologies, a change in staffing structure, improvement of working processes and provision of an adaptable work space that housed all essential supplies. Evidence of the success of these changes was provided through positive feedback from a post migration staff climate survey. Nurses reported overall satisfaction with the bed space design and feel it has led to a safe, efficient and positive work environment.

NPP103

The Development and Implementation of the Adult Severe Sepsis Management Guidelines at Wanganui District Health Board

Deborah Mudgway, Joanne Vigenser

Wanganui District Health Board, Wanganui

Sepsis is a leading cause of mortality in critically ill patients. The most effective way of providing standardized care for the septic patient has been well documented, to be the implementation of rapid identification and initiation of treatment. Using the early goal-directed therapy (EGDT) guidelines referred to as the Surviving Sepsis Campaign (2004), a protocol to standardize the care has been developed at Wanganui Hospital. The development process followed the usual plan, do, study, act, cycle, with the implementation of the protocol in late 2009. An evaluation and audit has yet to be completed. The protocol includes guidelines regarding the first six hour treatment bundle and following 72 hours of specialist assisted care implemented in the Critical care Unit are given. Its development has not been without its difficulties.

This presentation will examine the process followed and how the barriers were overcome to implement this protocol. For instance Wanganui Hospital maybe one of the few in New Zealand that does not have a serum lactate available. Due to contractual and budget constraints currently samples are sent to another hospital delaying the results significantly. High emphasis is therefore placed on patient assessment and the inclusion of a Sepsis Screening Tool. An education plan was initiated, throughout the hospital at all levels. A data collection process is planned regarding, patient acuity, completion of the treatment bundles and outcome of each patient receiving the EGDT. Feedback will be provided in order to encourage physician compliance.

NPP104

The Nursing Handover Process of Patients Admitted To Critical Care: A Quality Project

P.D. Culverwell

Critical Care Complex, Middlemore Hospital, Auckland

Introduction: In early 2009, communication issues between Kidz First Emergency Care (KFEC) and the Intensive Care Unit (ICU) nursing staff were identified when admitting paediatric patients to ICU.

Objective: To improve the nursing handover of patients admitted to the critical care unit.

Method: A qualitative design, using semi-structure interviews were used to identify the most preferred handover process for paediatric patient admissions. Participants (N=22) were interviewed on the following four options:30'

30'Phone handover

40'Physical handover – KFEC nurse comes to ICU with patient. ICU nurse listens to handover while also attending to patient care tasks (status quo).

50'ICU nurse goes down to KFEC to obtain handover and brings patient back to ICU.

60'Dedicated nurse in ICU to take handover, who is also the nurse assigned to the care of that patient. Admission nursing tasks are delegated by that nurse to other participating team members.

Participant confidentiality and anonymity was maintained.

Results: Of the 22 participants, 12 nurses preferred option 4, four nurses preferred option 2, three nurses preferred option 3, one nurse preferred option 1 and the remaining two participants preferred more than one option. As a result of this study, a nursing handover guideline was developed and piloted using option four. Following the pilot, the guideline was extended to be used in both the adult and paediatric critical care areas.

Conclusion: A guideline outlining role definition of ICU nursing staff when admitting new patients is an effective quality initiative in improving communication between the transferring teams.

MFP200

Neuromuscular Blocking Agents Use by Medical Professionals In New Zealand Intensive Care Practice

Mahmoud el Bably, Ross Freebairn

Intensive Care Services, Hawke's Bay Memorial Hospital – Hastings, New Zealand

Introduction: The optimal role neuromuscular blocking agents (NMBA)in the management of ventilated ICU patients remains controversial .(1-3) Guidelines suggest they should be reserved as rescue therapy, although more recent evidence suggests judicious NMBA use may reduce inflammation and mortality (4-7). NMBA use in New Zealand Intensive Care practice remains is unmeasured.

Aim: To describe the current NMBA use by NZ Intensive Care medical practitioners.

Method: A representative from every NZ ICU was contacted to encourage ICU medical practitioners to complete an online multiple-choice survey over a period of two weeks. Low return rates were followed up with emails.

Results:

Who: 70 responses, 77% consultants, 43% with VR-ICM.

How: 68% never or hardly ever used NMBA in ICU ventilation. Of those using NMBA, 88% used it mainly or exclusively as a bolus, while none used only infusions. When using NMBA 64% used a pressure mode, 27% used a volume mode. 27% preferred a form of SIMV. Neuromuscular monitoring is used rarely or never by 50% while 25 % always use it.

Which: Practitioners most frequently used Rocuronium, Vecuronium and Pancuronium

For Whom: NMBA use in ARDS, Sepsis, post cardiac arrest, advanced gestation or morbidly obese patients was infrequent. Use in Head injury was moderate, while a high frequency of use was described if high FiO₂/PEEP and the dys-synchronous mechanical ventilation occurred.

Conclusion: While the frequency of use NMBA prescribing in NZ ICU is relatively low, there is considerable variation in the indications, monitoring, medication used, and end points targeted.

References:

1. Forel, JM, Roch, A and Papazian, L Paralytics in critical care: not always the bad guy. *Curr Opin Crit Care* 15:1, 59-66 (2009)
 2. R. C. Freebairn, J. Derrick, C. D. Gomersall, R. Young, G. Joynt. Oxygen delivery, oxygen consumption and gastric intramucosal pH are not improved by a computer-controlled, closed-loop vecuronium infusion in severe sepsis and septic shock. *Critical Care Medicine* (1997); volume 25, issue 1, 72-77.
 3. Putensen, C, Hering, R, Muders, T and Wrigge, H Assisted breathing is better in acute respiratory failure. *Curr Opin Crit Care* 11:1, 63-8 (2005)
 4. Dellinger RP, Levy MM, Carlet JM, Bion J, Parker MM, Jaeschke R, et al. Surviving sepsis campaign: International guidelines for management of severe sepsis and septic shock: 2008. *Intensive Care Med* 2008, Jan;34(1):17-60.
 5. MJ Murray et al. Clinical practice guidelines for sustained neuromuscular blockade in the adult critically-ill patient. *Critical Care Medicine* (2002); Volume 30, issue 1, 142-156.
 5. J-M Forel, A Roch, V Marin, P Michelet et al. Neuromuscular blocking agents decrease inflammatory response in patients presenting with ARDS. *Critical Care Medicine* (2006); Vol 34, No 11, 2749-2757
 7. Papazian L, et al. Systematic two-day muscle relaxants course in the early phase of severe acute respiratory distress syndrome. A multicenter randomized controlled trial. *Intensive Care Med* 2009, Sep 22;35(S1):s6
-

MFP201**Use of venturi entrainment to deliver nasal high flow oxygen**

Gerald Wong ICU Registrar, Mark Finnis Senior ICU Specialist

Intensive Care Unit, Royal Adelaide Hospital, Adelaide

Objective: To evaluate the use of an adjustable venturi device with standard wall oxygen supply to deliver nasal high flow oxygen.

Design: We set up a circuit using a standard 15L/min oxygen rotameter connected to a wall outlet, 2m standard oxygen tubing, an adjustable venturi device, humidification chamber and nasal high flow circuit and cannulae. Delivered FiO₂ and total flow rates were measured over a range of oxygen flow rates and venturi settings. The study was conducted in two parts – a bench-top study to define the usable range and using a human subject to assess loaded performance of the circuit.

Setting: Royal Adelaide Hospital Intensive Care Unit

Participants: One study author

Results: A clinically useful range of total flow rates (30-50L/min) and delivered FiO₂ (0.4-0.6) was achieved using the arrangement described. The variation in performance seen with loading of the circuit was clinically insignificant. We have calibrated this adjustable venturi device for use with the Fisher and Paykel heater chamber and circuit.

Conclusion: We demonstrated that nasal high flow oxygen can be delivered in a clinically useful and predictable manner using a venturi entrainment device.

MFP202

Early recognition of the deteriorating patient program: is it sustainable?

Avard B, McKay H, VanLeuwan C, Mitchell I

The Canberra Hospital, Canberra, ACT

Introduction: Despite significant physiological disturbances for more than 24 hours, manifested clinically as derangement in vital signs, there is a failure in recognising patients with clinical instability in general hospital wards. To address this failure a multifaceted early recognition of the deteriorating patient (ERDP) pilot study was introduced in the Australian Capital Territory, including a newly designed observation chart, a track-and-trigger system, and an education program : COMPASS[®]. The success of the pilot study led to an ACT-wide rollout of an ERDP program.

Aim: To determine whether the ERDP pilot's successes have been sustained as an ongoing program.

Method: Data collection from July 2008 until January 2010 has included the numbers of healthcare workers trained in COMPASS[®], frequency of vital sign measurements, accuracy of the modified early warning score (MEWS), incidence of and time to medical review, including a medical emergency team review following clinical deterioration and adverse events such as unplanned intensive care admissions and unexpected hospital deaths.

Results: 2369 healthcare workers (2124 nurses, 216 doctors and 29 physiotherapists) have been trained in COMPASS[®]. The median frequency for vital sign measurement has been sustained at 7.9/day, including respiratory rate 7.5/day and the accuracy of the MEWS has improved from 49% to 85% over the duration of the study. The time to medical review following clinical deterioration has been sustained at less than 20 minutes and the number of MET reviews has almost doubled from pre-rollout (1034 versus 520 METs per annum). There has been no change in the number of unplanned admissions to the intensive care unit (191/1653, 11.6%) or hospital mortality (355/26775, 1.3%).

Conclusion: Many elements of the process of recognising the deteriorating patient have been sustained in the ERDP program and include the culture of seeking early assistance by both the medical and nursing staff. To be able to impact upon the hospital mortality will necessitate work around the influence of the human factor upon the early recognition of the deteriorating patient.

MFP 203

An Audit of Changes in Ventilatory Practice over the Last Decade.

Richard More, Ted Ward, Forbes Bennett, Louise Trent, Ross Freebairn

Intensive Care Services, Hawke's Bay Memorial Hospital – Hastings, New Zealand.

Introduction: In the decade 1998-2008 considerable new evidence became available supporting changes from the traditional practice in the ventilation strategy for ARDS and other conditions, and may have influenced clinical practice.

Aim: To quantify changes in intensive care ventilation practice in the last decade.

Setting: Regional non-metropolitan ICU.

Patients: Critically ill patients mechanically ventilated for > 24 hours.

Method: A retrospective analysis of two groups of 45 sequential adult patients ventilated for >24 hours in 1998 and 2008. Respiratory parameters at 24 and 96 hours were collated from records.

Results: 43 patient records from 1998 and 38 from 2008 were available for review. At 24 hours the median tidal volumes (mL) 800 (range 400-1000 mean 743) In 1998 and 457 (297-866, 457) $p < 0.0001$ in 2008. At 24 hours in 1998 & 2008 the median arterial partial pressure of carbon dioxide (mmHg) was 33.100(24.9-60.8,35.8) and 40.3(25.2-64.0, mean 41.4) $p = 0.0024$, and of oxygen 146(45-258,152) and 103(64-178, 108) $p=0.0002$ respectively. No difference in the Aa gradient

measured ($p=0.667$) or in minute ventilation delivered ($p=0.1734$) was demonstrated. Respiratory parameters at 96 hours showed similar changes.

Conclusion: Tidal volumes utilised in 2008 are lower than those used a decade ago. Although Aa gradients were not different, lower partial pressures of oxygen appear to be targeted, while higher carbon dioxide appears to be tolerated by clinicians. Practice in our ICU has changed, possibly in response to evidence of lung damaging ventilation using traditional parameters.

MFP204

Changes over time in the Radiation Exposure of Intensive Care Patients receiving Ventilation following Admission with Trauma

Micaela Yee^a, Rochelle Barron^a, Tom Knobloch^a, Umesh Pandey^b, Catherine Twyford^b, Ross Freebairn^a

Intensive Care Services^a, and Department of Radiology^b Hawke's Bay Hospital, Hastings NZ

Objective: To describe the cumulative effective dose of radiation received during the ICU stay of patients admitted with trauma, who received mechanical ventilation in ICU, over two time periods.

Design: A retrospective analysis of radiologic and clinical data.

Setting: A regional non metropolitan intensive care unit.

Method: Two cohorts (starting 01/01/04, and 01/01/09) each comprising of forty consecutively admitted adult Intensive care patients admitted with trauma who received mechanical ventilation in ICU were studied. Frequency and type of radiological examinations, demographic and clinical data from the radiological data base, hospital admission record and AORTIC database were collated. Cumulative effective doses were calculated for both periods, and expressed as total dose and average daily dose during ICU admission. (1, 2)

Main Results: The median cumulative effective dose per patient (in move) was 39.7 (range 0.02- 86.9, mean 38.3) in 2009 compared to 32.8 (Range 0.02- 144.8, mean 31.9) in 2004, $p=0.0257$. A trend towards increased CT examinations per patient was observed over the same interval (mean 2.38 v 2.08), $p= 0.14$. Dose per day in ICU was 7.6 (0.02-734.6,75.6) in 2009 compared to 4.7 (0.02-237.7,17.40) in 2004, $p= 0.02$.

Conclusion: The total and daily radiation exposure of ICU patients with trauma receiving mechanical ventilation has increased over time. Studies in other health systems have found similar changes (3). The increased risk of radiation should be prospectively monitored, and staff should be aware of the increased risk resulting from this change in practice.

1: Smith-Bindman, R, Lipson, J, Marcus R et al. Radiation Dose associated with Common Computed Tomography Examinations and the Associated Lifetime Attributable Risk of Cancer. Arch Intern Med 2009; 169: 2078-2086
2: Hui, C, MacGregor, J, Tien H, Kortbeek, J. Radiation dose from initial trauma assessment and resuscitation: review of the literature. 2009 Can J Surg; 52: 147-152.

5: Salottolo, K, Raphael Bar-Or R, ; Fleishman M, et al. Current utilization and radiation dose from computed tomography in patients with trauma. Crit Care Med 2009; 37:1336 –1340

MFP 205

Intensive Care Triage in Australia and New Zealand – Original Article.

Paul J Young and Richard Arnold

Wellington Hospital Intensive Care Unit and School of Mathematics, Statistics and Operations Research, Victoria University of Wellington

Aim: To compare the attitudes towards common intensive care triage scenarios in New Zealand and Australia and to evaluate Australasian intensive care triage practice.

Method: A web-based survey of Australian and New Zealand intensive care doctors measuring demographics, details of recent triage decisions and attitudes towards various triage scenarios

Results: A total of 238 responses were obtained (32.6% response rate). The mean number of triage decisions was 6.3 per clinician per week in New Zealand (95% CI 4.6-8.0) and 8.5 per week in Australia (95% CI 6.6-10.4) (test for difference in means, $p=0.08$). The mean rate of refusal for the week prior to the survey was 30.8% (95%CI 19.5-42.1) among New Zealand respondents and 25.1% (95% CI 19.7-30.4) among Australian respondents (test for difference in proportions, $p=0.35$). Australian respondents were more likely than New Zealand respondents to agree that it was appropriate to admit a patient:

- with a non-survivable brain injury who may progress to brain death ($p=0.0001$);
- with acute respiratory distress syndrome in the setting of relapsed acute myeloid leukaemia ($p=0.0005$);
- in a persistent vegetative state with pneumonia due to malposition of a feeding tube ($p=0.03$);

However, there were no differences found between Australian and New Zealand respondents on the appropriateness of admitting a patient:

- in a persistent vegetative state with pneumonia with a non-iatrogenic cause ($p=0.58$);
- with an infective exacerbation of chronic obstructive pulmonary disease with a background of functional impairment ($p=0.060$);
- of an advanced age who is unable to extubate due to drowsiness and hypoventilation following a laproscopic hernia repair ($p=0.99$);
- suffering from a massive stroke, intubated in a crowded Emergency Department, but now needing extubation and palliation ($p=0.99$).

”

Conclusions: New Zealand doctors have more selective views of what constitutes an appropriate admission to intensive care.

MFP206

Immune markers of adverse outcome in pulmonary arterial hypertension (PAH)

Adrienne Edwards¹, Sarah Gunningham², Bridget Robinson^{1,2}, Mark Smith^{1,2}, Richard Troughton^{1,2}, Lutz Beckert^{1,2}

¹Canterbury District Health Board, Christchurch, N.Z. ²University of Otago, Christchurch, N.Z.

Background: Substantial evidence implicates inflammation in the pathogenesis of PAH. Lymphocyte deficiency in rats predisposes to severe PAH. A low CD8+ cell count in the peripheral blood of idiopathic PAH patients was recently reported.

Aims: Identify lymphocyte aberrations in PAH and correlate them with clinical outcome measurements and inflammatory related protein expression.

Methods: Six patients with idiopathic PAH and four with connective tissue disease associated PAH were recruited and matched with controls from the general population. Lymphocyte sub-typing, cardiac injury marker measurements and cytokine arrays were performed on peripheral blood obtained at recruitment.

Results:

	Alive n=6 female, 2 male	Premature Death n=2 female	Reference Population
Mean Age	50 (35-68)	56 (59,53)	58 (47-67)
Mean CD4+	1.09 (0.24-1.99)	0.7 (0.4,1.0)	0.3-1.4x10 ⁹ /L
Mean CD8+	0.48 (0.15-0.8)	0.07 (0.06,0.08)	0.2-0.9x10 ⁹ /L
Mean CD56+	0.26 (0.1-0.53)	0.05 (0.03,0.07)	0.09-.6x10 ⁹ /L
Mean BNP	105 (5-492)	173 (159,186)	<30pmol/L
Mean Tn-I	0.016 (0.01-0.03)	0.045 (0.03,0.06)	<0.01-0.03ug/L

Cytokine array data reveals an increase in LFA-1 alpha and IL-23 expression in association with the lymphocyte aberrations and premature death.

Conclusions: Low CD8+, low CD56+ and high CD4:CD8 ratio is a marker of adverse outcome in PAH. Specific cytokine markers are associated with the lymphocyte changes, and these could be a target for further research and potentially new lymphocyte directed therapies. Supported by: The National Heart Foundation of New Zealand.