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EDITOR
Jennifer Blundell

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EDITORIAL

Welcome to this edition of the Journal of the Australasian Neuroscience Nurses Association. It is with great pleasure that we present this current edition of the AJON, for it represents the ongoing professionalisation of Neuroscience Nursing practice. It reflects a body of clinicians that reflect upon, and systematically review and explore nursing practice across the continuum of care within the neuroscience field. A body of clinicians, that are dedicated to improving and providing patient centred care within an evidence based framework. It is encouraging seeing the body of evidence supporting Neuroscience nursing practice in an Australasian context continuing to expand.

So take the opportunity, publish your work, contribute to the body of knowledge that supports and governs practice and improves outcomes for our patients. And finally, be proud to be a nurse and accept recognition for the innovative work you are doing.

Tracy Desbourough

President 2005-2007

Falling Head over Heels
Reducing Falls in High Risk Neurosurgical Inpatients with the implementation of a 'High Risk Falls Room'

Kylie M Wright
RN Dip.App.Sci (Nursing) B.App.Sci (Nursing) Neuro Cert. M. Clin. Prac (Neuroscience)

Neurosurgical Clinical Nurse Consultant/Case Manager
Department of Neurosurgery
The Liverpool Health Service, NSW

ABSTRACT

Fall related injury in acute care facilities is a significant safety concern. Through processes of incident monitoring and clinical review it was identified that a high number of falls with negative consequences were occurring on the neurosurgical ward when compared to other surgical wards within our acute care hospital, hence a multidisciplinary team was formed to address this issue. The aims were to decrease the incidence of high-risk patient falls by 50% in 6 months and eventually to zero. The team organised, categorised and prioritised data and suggested falls could be prevented and hence decreased by cohorting high-risk patients together into a 'High Risk Falls Room'. A four-bedded room, within a 30-bed unit, was allocated as the gender neutral 'High Risk Falls Room'. Assistants in Nursing (AIN) were staffed to act as sitters 24 hours a day, 7 days a week Data was analysed and results presented monthly to the Surgical Quality Management Group and Neurosurgical Mortality and Morbidity (M&M) group. Six months after the introduction of the high risk falls room, the incidence of falls decreased from the baseline of 6.5 falls per month (range 5-8 falls), to just 1 fall, and within 9 months the team had achieved a zero falls incident rate. Using this model, standards and benchmarking can be set and falls incidence decreased to improve patient outcomes.

Key Words; Falls,

Background

Fall related injury in acute care facilities is a significant safety concern (Browne, Covington, and Davila, 2004). Falls are relatively common with reported rates in hospitals ranging from 2-5%, with higher rates of over 46% for specific clinical groups such as neurological patients (Australian Government Department of Health and Aging, 2004). Consequences of falls in hospitals include increased risk of complications (including fractures), extended length of stay and associated costs, added diagnostic procedures and/or surgeries, and potential litigation (Australian Government Department of Health and Aging, 2004).

Through processes of incident monitoring and clinical review it was identified that a high number of falls with negative consequences were occurring on the neurosurgical ward when compared to other surgical wards within a tertiary referral hospital. A multidisciplinary team including consumer representatives was assembled to diagnose the problem, analyse the causes, and devise strategies to reduce the falls incidence.

Methodology

Based on lessons learnt from a fall related critical incident, incident reports, and the hospital's existing falls prevention strategies, a neurosurgical focussed multidisciplinary team reviewed a previous falls project Plan, Do, Study, Act (PDSA) quality improvement cycles and brainstormed possible solutions. Findings were incorporated into a cause and effect diagram (see Fig 1).

An extensive literature review was conducted to determine causes of neurosurgical patient falls and neurosurgical

specific prevention strategies. Clinicians of varied experience levels and disciplines, patients and patient family members were also consulted via unit based focus groups, patient satisfaction surveys and family conferences

The team organised, categorised and prioritised all the data collected from all sources and following analysis suggested falls could be prevented and hence decreased by introducing the strategy of cohorting high-risk patients together in a 'High Risk Falls Room'. The team also proposed that an extension of the institution's existing low, medium and high falls risk categories be broadened to include extra descriptors to form a fourth "very high risk" category. In addition, the team developed a range of data to be collected to measure the effectiveness of the 'High Risk Falls Room' in reducing falls. This data included patient age, falls risk assessment score, Glasgow Coma Score (GCS), length of stay in the high risk falls room, near miss falls, and Diagnosis Related Groups (DRGs). The initiative was evaluated by generating weekly falls incidence reports, and continuously setting new targets to further reduce falls.

Planning and Implementation

A four-bed room, within a 30-bed unit, was allocated as a gender neutral 'High Risk Falls Room'. Assistants in Nursing (AIN) were staffed to act as sitters in the room 24 hours a day, 7 days a week.

Patients were to undergo a falls risk assessment (Mercer, 1990) within 1/2 hour of admission to the ward, and then daily thereafter, or if their condition changed. Daily falls risk assessment scores and interventions were documented in the patient's medical records. A coloured wristband was applied to the patient denoting the level of risk (Low, Medium, High). The team developed extraordinary descriptors for very high-risk patients; these descriptors became the criteria for admission to the falls room.

An extensive education program was developed to educate multidisciplinary staff on 'wrist band' colour coding, associated interventions, criteria for admission and the expected process of monitoring for the 'High Risk Falls Room'. A brochure outlining the purpose of the falls room, and falls risk assessments was developed to give to patients, family members and visitors, and a specific Falls Room AIN job description was devised. In addition, a "Falls Room" resource Folder was compiled and a falls reporting form and additional data collection tool.

Data was analysed and results presented monthly to the Surgical Quality Management Group and Neurosurgical M&M group. Any resulting actions/interventions were dealt with by a PDSA quality improvement cycle and the results of these were further discussed at the involved meetings.

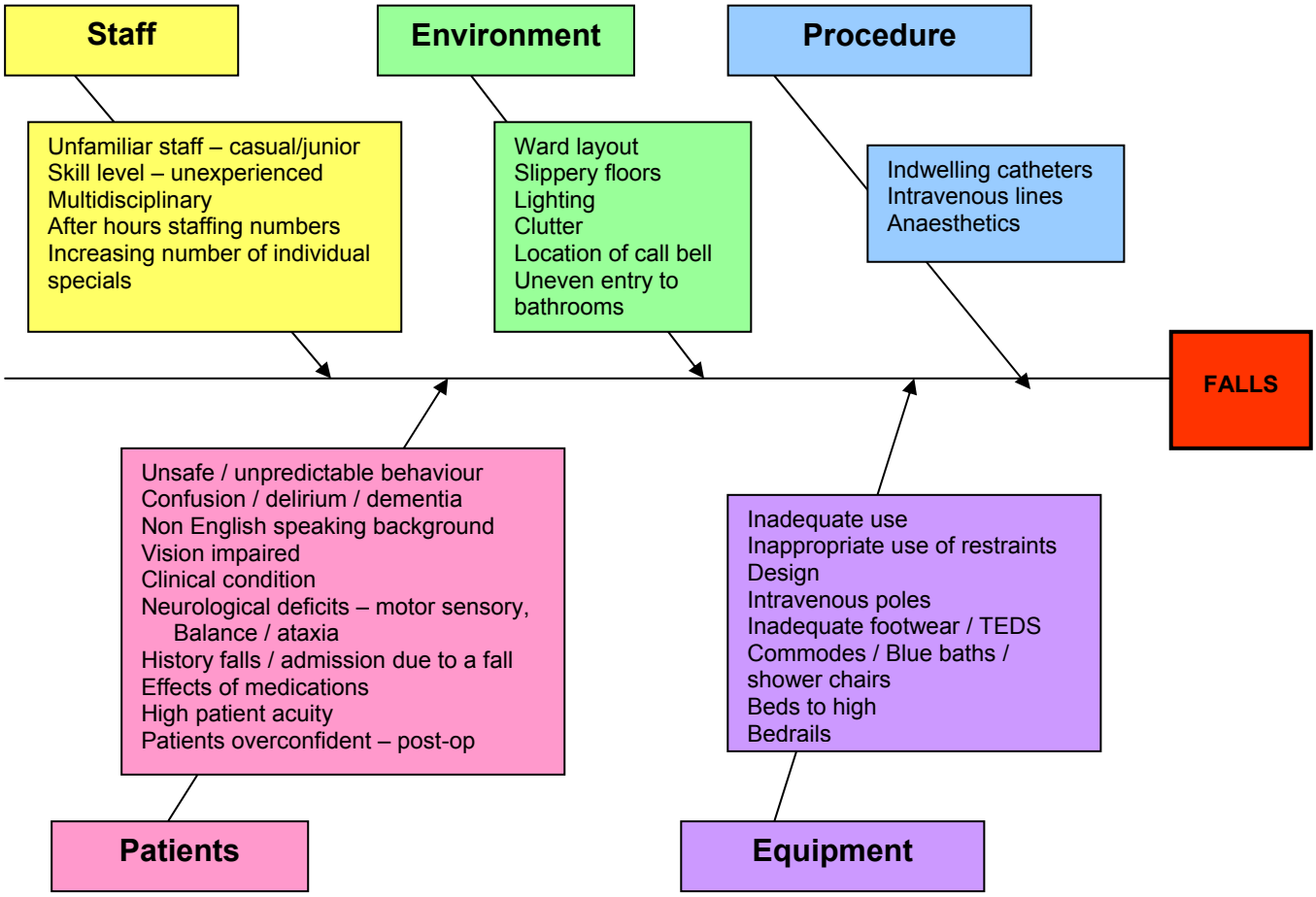

Fig.1. Cause & Effect Diagram of the causes of Falls

Outcomes and Evaluation

Compliance with falls risk assessments, application of coloured wristbands and documentation of risk scores in patient notes was 100%. In addition, a review of the data confirmed that patient's were being appropriately placed in the high-risk falls room as per the devised criteria for admission.

Six months after the introduction of the high risk falls room, the incidence of falls decreased from the baseline of 6.5 falls per month (range 5-8 falls), to just 1 fall, and within 9 months the team had achieved a zero falls incident rate (See Figs. 2 & 3).

On one occasion within the first six months of introducing the high risk falls room the monthly fall incidence increased to 4 falls. A PDSA quality improvement cycle was undertaken and re-education and awareness of high risk falls criteria and ongoing surveillance was revisited which resulted in a steady decrease in high risk falls.

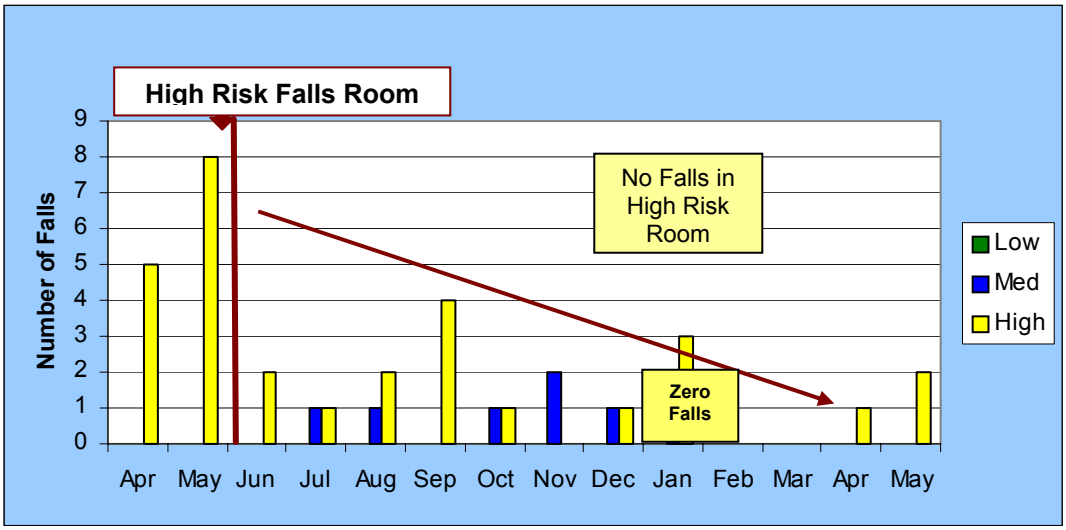

Fig. 2. Falls by Risk Category – CB 4 West Neurosurgery

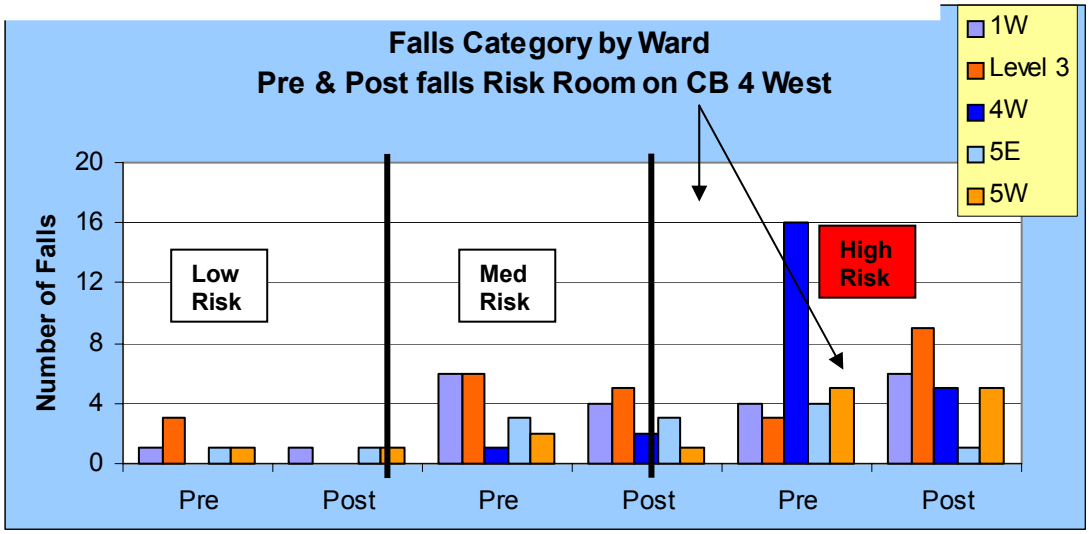

Fig. 3. Fall Category Pre & Post Falls Risk Room

Since the introduction of the falls room, only one fall has occurred within the falls room. This fall occurred whilst the patient was walking with a nurse and slipped unexpectedly due to sudden incontinence. It is important to note that this patient did not fall, but was lowered to the ground and not injured in any way. This incident was, however, collected within the data as a near miss fall. Other falls occurring to neurosurgical patients (occurring outside the falls room) involved low to medium risk patients and occurred due to uncontrollable circumstances such as seizures.

Conclusion

The implementation of a high-risk falls room decreased the incidence of high-risk patient falls on the neurosurgical ward by 50% in 6 months and eventually to zero. As a result, serious adverse events from falls have been dramatically minimised. Additionally, the falls room has been cost effective due to one 'special' nurse being utilised for four cohorted patients, as opposed to separate 'special' nurses located to various patients throughout the ward.

The low falls incidence has been sustained by 24-hour reviews of all patient fall risk categories and documentation of results in nursing care plans, as well as patients being moved into the falls room on a priority basis. In addition, regular in-services and ongoing education to multidisciplinary staff, and physiotherapist input regarding falls assessment continues. Discussion of results is a regular agenda item at ward meetings, Neurosurgical M&M meetings and the Surgical Quality Management Group. All new staff have " falls room" education provided as part of their orientation to the ward

Future Scope

With the ongoing nursing shortage, and the predicted increase in the elderly population, patient falls in hospitals require significant attention. The key to prevention is early risk identification and supervision. Locally, our team aims to employ permanent 'Falls Room' AINs who will receive intensive falls risk training and be involved in data collection. In addition, we hope to formally research and validate the sensitivity of our 'very high risk' criteria.

This model of falls prevention is applicable and transferable to any inpatient clinical unit. The team envisage benchmarking groups could be established and falls incidence measured across all hospitals leading to improved patient outcomes.

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Jason Selmon, Nursing Unit Manager, Neurosurgical Ward, Liverpool Health Services

Bradley Scotcher, Nursing Director, Surgical Services, Liverpool Health Services

Tulin Paltaci, Ward Clerk Neurosurgical Ward, Liverpool Health Services.

All Neurosurgical Nursing and Allied Health staff – CB 4 West, Liverpool Hospital

Critical appraisal of systematic review for nursing practice

Andrew Scanlon
BN, Graduate Diploma Critical Care, Graduate Certificate Clinical Care Nursing (Renal), RN, MRCNA
Lecturer-La Trobe University/ Austin Health Clinical School of Nursing, Faculty of Health Sciences, Clinical Nurse Specialist- Ward 6 west Neurosurgery/Vascular surgery

Abstract

Throughout health care literature, evidence based practice is highlighted as a critical component for competency of clinicians and patient safety. However within the area of neuroscience nursing the implementation and appraisal of systematic review in practice is lacking. This article will highlight areas of interest when critically appraising a systematic review.

Key words: Critical appraisal, Evidence, systematic review, Inclusion/exclusion criteria, Data extraction, Data Synthesis, neuroscience nursing

INTRODUCTION

In the ever-changing health care environment there is an immediate need for nurses to implement evidence based best practice to provide their patients with optimal and appropriate care. This inevitably requires nurses to access available evidence from research. To do this they must either individually spend a significant amount of time dedicated to reviewing contemporary publications found in numerous databases (from around the world) to remain current or have other means to augment their practice knowledge. Systematic reviews are seen as the most efficient way to access evidence based knowledge in a timely matter for all clinicians. Despite this fact there are very few articles by neuroscience nurses in relation to the publication or appraisal of systematic reviews within their specialty. Unfortunately to the untrained reader some systematic reviews can appear to have significance and relevance thus worthy of consideration. When in fact they may be an inappropriate and poorly designed review. The latter can have dire consequences for practice if recommendations are then integrated into clinical practice guidelines for nurses. The following paper will highlight areas of interest when critically appraising a systematic review.

SYSTEMATIC REVIEWS

Research in healthcare in some areas has reached saturation point with many important questions already addressed by more than one study over a long period of time (Ciliska, Pinelli et al. 2001). The sheer volume of research can be daunting for the average clinician with a relatively simple research question (Evans and Pearson 2001). Systematic reviews aim to improve access of clinicians by providing the most appropriate critical review of widely available and appropriate evidence specific to a clear and concise research question. As systematic reviews requires its reviewers to follow rigorous and methodical protocol during all stages of search, research retrieval, appraisal of the retrieved research for relevance and validity, data extraction, data synthesis, and interpretation (Stevens 2001; Akobeng 2005; Duffy 2005). Required methodology behind systematic reviews should overcome possible biases and improve reliability and accuracy of conclusions, which are not necessarily found within an unsystematic review such as narrative or literature review. A these reviews lack careful critical appraisal of evidence and description of an methodical approach to identify how critical appraisal of the relevant primary studies was performed (Duffy 2005).

To appraise systematic reviews a number of relatively easy to use tools have been developed and adapted to assist a reader to make informed decisions. These tools include "10 questions to help you make sense of reviews" from the UK's National Health Service (Learning and Development. Public Health Resource Unit. 2006), which in turn was adapted from Oxman and Guyatt's "Users' guides to the medical literature: VI. How to use an overview" (Oxman, Cook et al. 1994). Another tool that is commonly referred to and adapted from is Greenhalgh's "How to read a paper: papers that summarise other papers"(Greenhalgh 1997) or Jaded et al "Guides for reading and interpreting systematic reviews"(Jadad, Moher et al. 1998) as well as one from n the Joanna Briggs Institute-RAPid User Manual (Pearson 2005). However it should be noted that these tools can be seen in themselves as being too few and have not been properly assessed as valid or reliable (Pearson, Elliott et al. 2004). Because of this criticism it is important for a reader to judge for themselves the review on its validity and transparency of methods as well as through an understanding of the systematic review process to make their own informed decision (Evans 2001).

Critical appraisal of a systematic review has three distinct stages. The research retrieval is established through how the topic relevance is addressed and search conducted. The validity and appraisal of studies and how they are included or excluded using set criteria for data extraction. And finally the interpretation of the studies included in the systematic review. How this data is then synthesized, discussed and any implications for practice or research put forward. All of which needs to not only be clearly documented within the systematic review but interpretations from which need to arise from it also.

RESEARCH RETRIEVAL

What is the research question?

First and the most important element for a systematic review is the formulation of the research question. How those conducting the systematic review have constructed the question can influence the entire outcome of a systematic review. As the question determines whether there is consistency and generalisability across populations, settings, and treatment variations, or whether findings vary significantly (Stevens 2001; Akobeng 2005). The research question needs to be both clearly and explicitly focused on the area of interest as well as explain why the problem is relevant to practice (Averis and Pearson 2003; Duffy 2005; Learning and Development. Public Health Resource Unit. 2006);(The Cochrane Library 2005).

PHASE 1

Is the topic relevant to you?

How relevant is the topic within the systematic review to what you are interested in searching for? If it is not, then it is probably necessary to find another systematic review or construct one yourself (but that is another article). When assessing the research question bare in mind that it should address choices (practical options) as well as outcomes that are meaningful to people making decisions about patient's care (The Cochrane Library 2005). How and why they may be pertinent to the specific systematic review should be addressed by a clear and concisely constructed research question.

PHASE 2

How was the search conducted?

If the systematic review is well defined in relation to the research question and relevance then the search should be straightforward. Given that there is an almost infinite number of publications and databases, systematic reviews as with any search of publications, certain limits need to be made. However, the search is still required to be both relevant and exhaustive. How these limits are determined can affect a systematic review's relevance and objectivity. This could be best illustrated through the systematic review's use of time as it is probably the most important (Montori, Swiontkowski et al. 2003). Consider the time dedicated to perform the actual search and the timeframe within which reviews will be selected. As the timeframe to conduct the study may limit the access to all available research and an open timeframe for studies used can do the opposite. These are important particularly in terms of a technical or standards related to the topic of interest. Without a definitive timeframe studies used within the systematic review may already be many years obsolete.

Another important aspect to appraise is the sources from which the research studies are taken. Appropriate healthcare based information sources can be in the form of various electronic databases electronic databases such as MEDLINE, CINAHL, Embase, Cochrane Library Embase, PsychInfo the Federal Drug Administration, and other Internet websites, contacting experts in the field, searching thesis and dissertation databases, reviewing clinical trial registries (such as the National Institutes of Health CRISP database), and hand searching for journals within the specialty as well as those non-English sources should also have been preformed (Averis and Pearson 2003; Montori, Swiontkowski et al. 2003; Whitney 2004). This is done in an attempt to include all pertinent studies from those with positive and negative outcomes. If all possible sources of information are not sought (i.e. a review of only one database) or if it is based solely on published and readily available work there is a risk of being biased toward findings with a positive result known as publication bias (Whitney 2004). Publication bias is a well known phenomenon in clinical literature, in which studies demonstrating positive results have a better chance of being published, are published earlier, and are published in journals with higher impact factors (Dubben and Beck-Bornholdt 2005). Publication bias can occur in inclusion criteria and exclusion criteria as unpublished data may not be sourced (Akobeng 2005). Always consider the possibility bias in the search as bias searches can limit the reviewer to only certain information in turn reducing its validity.

VALIDITY/ APPRAISAL OF STUDIES

Who and how many reviewers?

The quality and validity of a systematic review cannot be found by using one reviewer alone and thus systematic review must be performed by at least two independent reviewers (Duffy 2005). Because of the complexity of the content systematic reviews are typically conducted by a multidisciplinary team which can consist of a variety of persons from disciplines within the health team including nurses, doctors, physiotherapists, occupational therapists, but also scientists, clinical epidemiologists, meta-analytic statisticians, librarians, medical journalists, informatics specialists, and information managers (Stevens 2001; Grimshaw, McAuley et al. 2003).

To ensure that quality is maintained all bias must be eliminated or at the very least minimized. Any affiliation should be clearly nominated by all reviewers to exclude the potential for any related conflict of interest. This includes funding sources such as grants, occupation and employer as well as professional affiliations. This disclosure will provide the systematic review with the required transparency and level of impartiality to satisfy those appraising the review that it was performed without covert influencing factors required of all scientific undertakings (McGowan and Sampson 2005).

What are the inclusion/exclusion criteria?

All systematic reviews are required to limit the search using set criteria. This must be used to both include studies that are relevant and exclude those, which are not. These criteria operationalise the research question, by putting it into a practical format that the reviewers/searchers parameters can find relevant studies (Averis and Pearson 2003). It is vital that these criteria are clearly documented within the review, as their development is used to reduce the risk of not only publication bias, which may develop during review of the relevant studies but also result form which should be reproducible regardless on who performs the search suing the same criteria. As all systematic reviews are based on set criteria and not the results of the studies reviewed. Key points that need to have been addressed to improve the focus on the original research question are as follows:

1. Who the population or patient groups studied are and how do we define them? (Pearson 2004; Whitney 2004; Akobeng 2005; Duffy 2005; Learning and Development. Public Health Resource Unit. 2006) (Montori, Swiontkowski et al. 2003). As described the population needs to be identified. How this group of people is different from the general population by basic demographics (such as age and sex), through disease process or trauma will limit the search required, and make it applicable to a clinical setting.
2. What is the exposure, intervention or treatment given to this group (Averis and Pearson 2003; Montori, Swiontkowski et al. 2003; Pearson 2004; Whitney 2004; Akobeng 2005; Duffy 2005; Learning and Development. Public Health Resource Unit. 2006). This inclusion criteria would

pertain to condition (exposure), intervention, treatment that is to be investigated and variables from studies would be excluded if they would disrupt the homogeneity of the review. Is this relevant to your search?

3. What are the outcomes or comparisons of the exposure, intervention or treatment (Averis and Pearson 2003; Pearson 2004; Whitney 2004; Akobeng 2005; Duffy 2005; Learning and Development. Public Health Resource Unit. 2006) (Montori, Swiontkowski et al. 2003).
4. What are the study designs? Was selection clearly described and fairly applied (Averis and Pearson 2003; The Cochrane Library 2005) (Montori, Swiontkowski et al. 2003; Duffy 2005).

This final point can classify how relevant the systematic review will be as the higher the evidence level of the studies included, the more readily accepted the findings will be by those using the systematic reviews. As we know research can be rank in levels of evidence (See table 1). These hierarchies are based on the internal validity of the different research methods used. This grading of primary research reflects the degree to which different study designs are susceptible to bias (Evans and Pearson 2001). The higher the grading (i.e. level 1) the less susceptible it is to bias. For these reasons, systematic reviews of randomized controlled trials (RCTs) are considered to be evidence of the highest level in the hierarchy of research designs in evaluating effectiveness of interventions as they adhere to impartial standards (Akobeng 2005).

How was data extraction preformed?

A requirement of all systematic reviews is a quality assessment or critical appraisal of all possible studies. This quality assessment of individual studies is necessary to limit bias in conducting the systematic review, gain insight into potential comparisons, and guide interpretation of findings (The Cochrane Library 2005). The rigor with which the reviewers examines the studies is again determined by the established protocol or methods used to collect include or exclude data (Kelly, Travers et al. 2001). Of those studies selected for inclusion, information is collected in regards to certain possible variations through the process of data extraction. The objective of this phase is to design data audit forms to accurately extract information on relevant features and results of the selected studies (Khan and Kleijnen 2001). This is done by using standardized scales or tools developed within the protocol and allow transfer of data from the original research into the systematic review (Pearson 2004; Pearson 2005). This tool or instrument for data extraction should be documented as being used by two or more reviewers as this is seen to reduce the incidence of fundamental mistakes and to increase the validity of the systematic review (The Cochrane Library 2005). The method used to assess a research question should be clearly contained within the protocol and include relevant population or patient groups being studied, the intervention of interest, any comparators (where relevant), and the outcomes of interest (Akobeng 2005).

Even though systematic reviews are weighted towards the review of RCTs and quantitative trials for best evidence, qualitative research is just as important in terms of the context of the particular question asked (Popay, Rogers et al. 1998). How these studies are preformed is necessary for the systematic review in that inappropriate study design (qualitative questions using quantitative designs) will adversely or incorrectly affect the overall findings. Whether it is quantitative or qualitative it is vital to understand which is best suited to a particular study design. As a qualitative approach would presents findings summarized across studies as a narrative review, whereas the quantitative approach would summarize the studies based on statistical synthesis (Whitney 2004). Quantitative questions about the effectiveness of treatment or prevention are best answered by RCTs, whereas questions about harm or prognosis are best answered by cohort studies (Roberts and DiCenso 1999). Qualitative questions such as how a patient experiences an event is best answered by Phenomenology, culture by Ethnography and social psychological processes by Grounded theory (Ploeg 1999). The use of these rigorous scientific methods to conduct systematic reviews limits errors and reduces chance effects, thus providing more reliable results upon which to draw conclusions and make decisions (Stevens 2001).

Sometimes studies included in systematic reviews can be inherently flawed. These mistakes can be attributed to Selection bias (arising from the method used to randomize

and blind the subject from the assessor), Performance bias (from differences in the care provided other than the treatment), Attrition bias (difference between groups in relation to losses) and Detection bias (difference in outcomes attributed to lack of concealment of the subject and or investigators)(Averis and Pearson 2003). As a result the use of quality rating scales should be used in the analysis component of a systematic review to ensure make comparisons are made consistently and thoroughly of outcome of study strength (Stevens 2001). All of these measures should be available within the systematic review to assure quality measures have been meet.

Interpretation

How is data synthesis presented?

As the objective of a systematic review is to summarise the results from different studies to obtain an overall evaluation of the effectiveness of an intervention or treatment, synthesis of the data should allow those interested in a specific systematic review to investigate whether the effect is roughly comparable in different studies, settings and participants (Averis and Pearson 2003). It is possible to present summary data in such a way to make it appear ambiguous, too specific or too general and thus limiting or rendering the information unusable to the clinician (Duffy 2005). Data synthesis conclusions should be apparent as to whether or not the studies presented have provided sufficient evidence to answer the review question or not. Conceptually, the statistical analysis addresses whether results across studies are similar, the extent of similarity, and the best estimate of the treatment effectiveness and efficacy (Whitney 2004). This is best presented in format that best addressed these areas, usually tabular.

Unfortunately, this is not always practical as studies maybe too small or has limited effect sizes. These studies may be combined to provide the evidence required through the process of meta analysis. Meta-analyses combines data from multiple studies and summarizes all the reviewed evidence by a single statistic, typically a pooled relative risk of an adverse outcome with confidence intervals (Grimshaw, McAuley et al. 2003). This is done under the assumption that different studies addressing the same issue will tend to have findings in the same direction. If this has been done it should be assessed to see if it is appropriate to in terms of study samples, interventions and outcomes should be very similar (clinical homogeneity). It can also be inappropriate to perform a meta analyses as studies may vary too widely due to the use of either heterogeneous studies be it clinical (related to inclusion/exclusion criteria or intervention or outcome dependant) or statistical (estimates of effects of interventions vary substantially across trial) as a results may differ significantly across the study (Duffy 2005; Herbert and Bo 2005). Search strategies would typically include studies that exhibit greater variability or heterogeneity. This may vary in both magnitude and direction causing the meta-analysis to result in an artificial and potentially misleading artificial result.

Is the discussion appropriate?

Final analysis is best provided in the discussion or summary of results. Conclusions from the available data should arise directly from the results of the review (Khan, ter Riet et al. 2001; Averis and Pearson 2003; Duffy 2005). It is this information that will be used to guide nursing practice in the form of recommendations. The reader of a systematic review should be able to decide if these recommendations are applicable to their area of practice through careful consideration of how the data is presented. Presentation needs to be done in such a way to facilitate an understanding of the limitations within the review and how set inclusion/exclusion criteria how search strategies were implemented and how these limitations may effect this reviews application for practice (Ciliska, Cullum et al. 2001).

Are the implications for practice feasible?

Questions that need to be asked to assess and implications for practice are; Are they identified? Are they clear and explicit? Are they related specifically to the data obtained from the review? Are there any areas omitted? Are the recommendations feasible? How does this relate to your patients? It is of the utmost importance to the reader to question whether this review relates to patients in their care and whether the evidence presented is feasible (cost benefit, side effects, harmful effects,) to implement into practice (Ciliska, Cullum et al. 2001; Learning and Development. Public Health Resource Unit. 2006).

Are there any recommendations for further research?

Again questions asked of recommendations for further research are similar to that of implication in practice in that they should identify any further research required, are related to the review, is further research feasible and have limitations of current research been addressed. These are not only specific directives for proposed new research but also what is required to be supported by the data available as well as limitations found within the reviewed studies (Averis and Pearson 2003; Duffy 2005). As these recommendations are not only intended to guide practice but also future research they should be clearly stated (Khan, ter Riet et al. 2001).

CONCLUSION

Systematic reviews can be seen as great resource for time poor nursing staff. However if those reviewing this resource do not critically appraise it, there is a possibility that inherent bias or flaws in poorly designed systematic reviews may influence practice without proper scientific evidence to substantiate it. This can put not only nurses but also those who they are charged to care for at risk. Understanding not only how systematic reviews are developed will assist not only neuroscience but also all nurses to make informed decisions for their clinical practice.

Table 1: Levels of Evidence

Level I: Evidence obtained from a systematic review of all relevant randomized controlled trials (RCTs)
Level II: Evidence obtained from at least one properly designed RCT.
Level III.1: Evidence obtained from well-designed pseudo-RCTs (alternate allocation or some other method).
Level III.2: Evidence obtained from comparative studies with concurrent controls and allocation not randomized (cohort studies), case-control studies or interrupted time series with a control group.
Level III.3: Evidence obtained from comparative studies with historical control, two or more single arm studies, or interrupted time series without a parallel control group.
Level IV: Evidence obtained from case series, either post-test or pretest and post-test.

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Future considerations in the transition of paediatric neuro-developmental patients to adult services

Rachel Coleman & Stephanie Moore

Rachel Coleman, RCompN, BHSc (Nursing), PGDipBus
Charge Nurse, Paediatric Neuroservices, Starship Children's Health

Stephanie Moore, BHSc (Nursing)
Nurse Specialist, Paediatric Neurosurgery, Starship Children's Health

Abstract

Transition of care has emerged as an important issue as many young people with chronic conditions are now surviving into adulthood. Key themes are evident in the literature including a range of barriers to transition.
This paper focuses on the considerations for young people with neuro-developmental conditions that make their evolving adolescent needs unique. There are three main models of transition; primary care based, disease focused and a generic adolescent model. Each has benefits and limitations as discussed.

Clinicians need to recognise the significance transition can have in the lives of the young person and family and ensure that both paediatric and adult services are prepared and knowledgeable around the needs of the young person and family.
Transition should not be a one off event, rather it should be a process that is considered and discussed within the team, including the young person and their family. Patient and family involvement from early stages is imperative to ensure transition is a smooth and less threatening process, thereby ultimately achieving the best possible outcome for the young person, their family and health professionals.

.**Key words:** Paediatric, Transition of care, Neurodevelopmental, Neuroservices, Adolescence

Background

Transition of care has emerged as an important issue as epidemiology of childhood chronic conditions and the expectations for and among these young people have changed (Scal, 2002). Chronic conditions that once may have had a poor outcome are now associated with survival into adulthood (Blum et al, 1993, cited in, Scal, 2002). Tuffrey and Pearce (2003) state that "around 70% of young people with cerebral palsy will survive to adulthood, more than 50% of children with spina bifida, and over 25% of boys with muscular dystrophy" (p 1011). The fact that these patients are now living into adult life means services need to ensure the care requirements of neurodevelopmental patients and their families are met (Scal, Evans, Blozis, Okinow, Blum, 1999). There is much international literature debating the topic of transition of adolescents into adult services. There appears to be consensus around the fact that much work is needed to be done and that the issue is one contemporary health professionals cannot ignore (Viner, 1999).

A review of the literature identified key themes including barriers to transition and nursing considerations, and an exploration of current international and local practice provided recommendations for future directions for the service

Literature review

Much of the literature reviewed discusses young people with conditions such as diabetes, cystic fibrosis, and sickle cell disease; however few papers considered the implications for young people and their families who have neurodevelopmental conditions. Tuffrey & Pearce (2003) suggest that "neurological conditions can have a profound effect on an adolescents self esteem and sense of identity and many young people with neurological disability do not have

the social skills to seek out and maintain services themselves" (p 1011). Baker, Spector, McGrath & Soteriou's (2005) research on the 'impact of epilepsy in adolescents' substantiates the profound impact that neurological conditions have on adolescents' psychological wellbeing.

Rosen, Blum, Britto, Sawyer and Siegel (2003) state that the goal of an organised, coordinated transition to adult health care for young people with chronic conditions is primarily to optimise health, enabling each person to attain his or her maximum potential. Lewis-Gary (2001) suggests that transition is an individualised process that begins during adolescence and should occur in stages.

Viner (1999) suggests that transition is "the purposeful, planned movement of adolescents and young people with chronic physical and medical conditions from child centred to adult orientated health care system"(p 271). This definition is echoed by the Society of Adolescent Medicine in the United States (cited in Scal, 2002), most authors agree that transition should be considered a process rather than a one off event, and it requires? buy in and consensus from clinicians, patients, families and other staff (Tuffery & Pearce, 2003, Scal, 2002, Viner, 1999, Reiss, Gibson, and Walker, 2005). Viner (1999) goes further to say "…there is a general lack of awareness of the need for transition planning and a lack of guidelines on established transition services" (p 271).

Three main models of transition are discussed in the literature. Sawyer (1997, cited in, Soanes & Timmons, 2004) and Viner (1999) suggest the disease focused model is based on specific conditions such as cystic fibrosis and diabetes. Many centres using this type of model have paediatric specialists closely aligned to adult sub-specialists focusing on the similar physiological needs of the patients, carrying through from childhood to adult disease management. This ensures physical illness remains a priority, enabling close collaboration between adult and child professionals (Soanes & Timmons, 2004).

Primary care based models tend to be coordinated by the young persons' general practitioner. Soanes and Timmons (2004) suggest that this model is less popular, perhaps due to the natural differences in focus, accessibility and resourcing between primary through to quaternary services. Viner (1999) also suggests that many young people with chronic conditions do not have a regular general practitioner, and suggest that currently UK general practitioners lack education and resources to carry out this role (Viner, 1999).

Betz (1998) agrees that adolescents with chronic conditions face unique challenges as they approach adulthood. The generic adolescent model is based around recognising the specific physical, physiological and social needs young people have during the adolescent years, rather than focusing on disease specific considerations. Care under this model tends to be coordinated by adolescent specialists including medical, nursing (nurse specialist) and allied health (play therapist) professionals (Soanes & Timmons, 2004). However young people with neurological and degenerative conditions may have very different experiences and issues, than perhaps young people with diabetes. A focus and understanding of the disease specific management and adolescent health needs would be optimal to ensure the best health outcomes for this patient group.

"Adolescence is a turbulent period of development marked by identity formation and self definition..." (Baker, Spector, McGrath & Soteriou, 2005, p 556). Baker et al (2005) and Appleton, Chatwick & Sweeney (1997) state that epilepsy is the most common neurological disorder of adolescence with a prevalence of 1.5-2% of the adolescent population in the UK. It has been suggested by Baker et al (2005) that an adolescent with epilepsy had significantly higher levels of depression and associated low self esteem and higher levels of social anxiety. This confirms that epilepsy does have a significant psychological effect on adolescents (Baker et al, 2005). Therefore it is imperative that teenagers are provided with the specialist services and supports that they require. Baker et al (2005) states "currently they find themselves caught between paediatric and adult services, with neither service being able to fully support them during this difficult period of transition" (p 561). Tuffrey & Pearce (2003) believe further research needs to be done to evaluate the different models and the associated life outcomes for the individual.

"The goal of transition in healthcare for young adults with special healthcare needs is to maximise life long functioning and potential through the provision of high quality

developmentally appropriate healthcare services that continue uninterrupted as the individual moves from adolescence to adulthood" (Tuffery & Pearce, 2003, p1011). Cluff (1981, cited in Scal, Evans, Blozis, Okinow, & Blum, 1999) suggests that the primary goal of transition healthcare services should be to maximise functioning and wellbeing. Scal et al (1999) goes on to suggest that while this may well be the goal of transition, the recent focus has been on disease rather than functional outcomes.

Most literature agreed, "age alone is an insufficient indicator of transition timing" (Soanes & Timmons, 2004, p 105). Generally services start considering transition from 15-18 years of age. However many authors suggest transition timing should be based on the maturity of the patient, readiness for transition for both the patient and family and the ability of the patient to self care and seek services (Viner, 1999). This poses a significant question around transition of young people who have severe physical and/or mental disability. These patients may never cognitively develop beyond that of an infant or child, they may never be physically nor mentally capable of self care and may always be fully dependent for care, decision making and management. When therefore should we transition these patients? The dilemma lies in the fact that while many patients will remain significantly developmentally and cognitively delayed; physically they may develop to not only the size of an adult but also have other pubertal, sexual and social needs of an adult. This can be extremely challenging to manage in a paediatric setting.

For some families with a young person with specific neurological needs, the reality of transition into adult facilities may mean the cessation or decrease in access to services including community support, schooling and respite. Carson & Hieber (2001) state, "one common barrier to successful transition is the reluctance of many adult paediatric patients and their families to change providers" (p 52). This is not surprising as some families may have seen the same neurologist and have been going to the same inpatient ward for 17 years. Some authors suggest families may have become dependent on the paediatric services (Reiss et al, 2005).

The reality is however that the paediatric and adult medical and nursing paradigm are very different and this may be very threatening to both the patient and family. Although Por, Golberg, Lennox, Burr, Barrow and Dennard (2004) suggest that "family remains the strongest support available to the adolescent with chronic illness… and must be included in all decision making," (p 359) most adult facilities focus on the individual rather than a family approach. Family centred care models are rare in the adult health care setting (Hagood, Lenker, & Thrasher, 2005). It has to be said that "adolescents sit poorly between the family centre, developmentally focused, paediatric paradigm (which frequently ignores their growing independence and increasingly adult behaviour) and the adult medical culture, which acknowledges patient autonomy, reproduction and employment issues, but neglects growth, development and family concerns." (Viner, 1999, p 271). Much of the literature poses the question that perhaps neither the paediatric nor the adult environment is the most appropriate for an adolescent with chronic developmental and neurological needs.

Anecdotal evidence from our service has highlighted situations where recently transitioned families have delayed admissions to hospital until late in an acute event due to fear of not being able to stay with and remain involved in the inpatient care of the adolescent in an adult based facility. The fact that a moderate to severely disabled young person may not be able to make decisions nor advocate for themselves, means involving the caregivers and families is essential in attaining the optimal outcomes for the young person. Simply not having the facilities for a caregiver to stay the night, less flexible clinic times, rigid policies around patients being accompanied into procedures can make transitioning to adult facilities even more threatening and alienating for patients and families.

Another barrier to transition may be finding appropriate services outside paediatrics for the young person. Viner (1999) states "adult physicians may have little interest in "paediatric" disease in adult life" (p 272). This coupled with an apparent reluctance by paediatricians in some specialties to hand over adolescent patient's means "many paediatricians in the UK and elsewhere continue to see young people with chronic illnesses well into adult life" (Tuffrey & Pearce, 2003, p 1011).

In fact, Scal, Evans, Blozis, Okinow & Blum (1999) suggest that the lack of adult medical providers interested in transition health issues appears to be the primary obstacle to successful transition today. It is suggested that patients and families may pick up on this issue leading to distrust and concern over the commitment and appropriateness of the adult provider (Viner, 1999).

The difficulties with transition are compounded by the fact that there is no one process or international standard around how and when to transition young people. There is much written and debated however research tracking outcomes are limited. There are many factors why transition becomes an important aspect of care for young people. At some point having a young adult in a bed beside a baby, waiting in clinics and emergency departments with children becomes questionable in its appropriateness. Adolescents require privacy, different types of interaction, support and supervision than children.

Reiss et al (2005) undertook a qualitative research project looking at the transition experiences of young people with disabilities and special health needs, their families and health care providers. They found that the two main factors that affect the success of transition are the cognitive ability of the young person and the progressive nature of their disability. It was found that young adults with impaired cognitive ability but sufficient skills for independent living could transition with success, provided they received the appropriate supports (Reiss et al, 2005). The problem of transitioning young adults with severely impaired cognitive ability was that it was difficult to find adult specialists who were prepared to provide care for the young adult and work collaboratively with the family (Reiss et al, 2005). Reiss et al (2005) go on to say that resistance on the part of young adults and their families is often cited as the reason for unsuccessful transition. Their results however suggested that the resistance is not totally unfounded, but is a sign that the care offered by the adult specialist is perceived to be inferior to the care provided in the paediatric medical system (Reiss et al, 2005). What is also perceived as imperative for successful transition is the termination of existing treatment relationships in a therapeutic manner, in order to facilitate development of new relationships with adult providers (Reiss et al, 2005).

Por et al (2004) agree that the transition period can be a rocky one where neither the paediatric nor the adult team feel fully responsible for the care of the patient, leading to contradictory advice, miscommunication and therefore potential conflict. In the research that Reiss et al (2005) undertook it was clear that parents and caregivers who had been supporting and fully involved in their adolescents healthcare reported feeling excluded when the young person is transitioned to the adult service. It does depend on the disability or condition that the young person has; it may well be appropriate that the young person should be starting to take a more active role in his or her own health and wellbeing. On the other hand this may not be appropriate or realistic for young people with severe neurodevelopmental disability.

Current Practice at Starship

Within Starship, services such as Gastroenterology (cystic fibrous), Endocrine, and Cardiology have defined processes for transition of their patients to the adult service. However this process varies within each speciality. As an example young people with cystic fibrous are transitioned at 16-18years of age. There is a co-ordinated approach from both the adult and paediatric nurse specialists. They have clear policies in place, and meet as a team with the young person and family during the transition process.

In comparison within the Neuroservices unit there is a diverse client group, including young people with spina bifida, cerebral palsy, epilepsy, brain tumours and traumatic brain injury. They all have unique needs, outcomes and transition considerations. Generally adolescents are transitioned from 16-18 years old, although it differs within the service with some Paediatrians continuing to provide care until patients are 19 or 20 years of age. For the adolescent with neurodevelopmental disabilities transition tends to coincide with the cut off point for paediatric respite, schooling and community services. In New Zealand it is predominately the General Practitioner or the parents who are left to co-ordinate care for these young people, once they are in the adult service.

The above-mentioned diagnostic groups obtain their primary medical management by Neurologists, Neurosurgeons, and

Paediatrians within the paediatric service. Neurosurgical and Neurodevelopmental Nurse Specialists are involved from an inpatient and outpatient case management and care co-ordination perspective. They provide a key point of contact, support and continuity of care for the young person and family. However within the adult service the nurse specialist role tends to be disease specific (for example, stroke and epilepsy), and may not be able to provide support for young people transitioning with other neurological conditions.

Recommendations

There are key areas identified in the literature that services need to consider when developing a process or guidelines around transition. In order to minimise the potential impact on the young person and family, discussions and planning should start early, for example at outpatient clinic appointments before adolescence. It is well documented that a barrier to successful transition is the lack of adult providers that are clinically knowledgeable and willing to take on the care of adolescents with "paediatric conditions"; therefore it is important for paediatric services to identify which clinicians would be prepared to take on this role and what resources are available within the adult environment, including availability and scope of nurse specialist roles. Services need to be aware of what hospital and community services and resources are available, and what the factors (including age) determine the cessation of support. It is in both paediatric and adult services best interests to network and keep communication channels open in order to discuss and plan transition of young people and their families, striving to make the experience a positive one for both the young person and their family and the health professionals involved**.**

Conclusion

The demand for paediatric beds continues, while many countries experience increased pressure to work within financial and environmental constraints, it brings into question the appropriateness of young adults languishing in paediatric beds.

Health services of today and the future need to consider what services these patients need, how best to manage them and where the most appropriate setting may be. More work also needs to be done focusing on outcomes for the young person, their family, and health care providers.

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Abstracts from the 2006 Scientific Meeting

The abstracts for the 2005 Scientific Meeting are presented below. They provide you with a snapshot of the research and practice that neuroscience nurses are engaged in, as well as case study presentations.. The poster abstracts will be presented in Volume 18:2

Reviewing the Role of the EEN in Neurosurgery

Finkel, R

Abstract:

After a review of the nursing workforce in NSW, the NSW Department of Health released a directive to utilise the role of the EEN across all hospitals in NSW, Westmead Hospital included. This directive stated that EENs should make up 20% of the total nursing workforce in hospitals. Prior to this directive the Neuro / Trauma HDU (D5b, Westmead Hospital) had an all RN approach to nursing. The directive made the management and education team in D5b look closely at the role of the EEN in a HDU and took steps to create a skill tree for EENs to ensure they could safely look after HDU patients. This paper will look at the advantages and disadvantages of the role of the EEN in a HDU setting, provoking many minds that make up the nursing workforce as to how effective and safe the EEN is. It will also address future directions for the EEN in HDUs.

Intracerebral Arteriovenous Malformation (AVM): A Case Presentation

Bailey, R

Abstract:

Introduction: The case presentation focuses on a 20-year-old man, presenting with vague symptoms and tingling in one hand. CT and MRI showed a right parietal occipital AVM. AVM's are typically found in young adults. They consist of a tangled mass of dilated blood vessels formed through the direct communication of an artery and vein without a capillary bed. They are a relatively rare occurrence and are responsible for 4% of strokes in young people. Treatment A combined approach to treating the AVM was chosen. The patient underwent embolisation with a liquid poly-metric agent (onyx) prior to surgery. Post surgery the patient was sedated in a barbiturate coma to prevent cerebral ischaemia. Complications During embolisation of the deepest portion of the AVM some of the small vessels were perforated causing a subarachnoid haemorrhage. As a complication of being ventilated and sedated in a barbiturate coma the patient developed ventilation acquired pneumonia, which required treatment with nitric oxide. A tracheostomy was performed due to slow respiratory improvement. Respiratory deterioration and strict blood pressure parameters pressure led to pressure areas developing on the patient's sacrum and occipital area.

Discussion: The treatment choice for grade 3 to 5 AVM's on the Spetzler-Martin scale is embolisation prior to surgery. The use of barbiturates remains controversial and no study has been able to show an improvement in outcomes of patients after using barbiturates. Barbiturates have been linked with an increase in infection rates. Nitric oxide dilates the pulmonary vessels increasing the VQ match, improving gas exchange. Sodium nitroprusside was ceased on the patient due to worsening gas exchange.

Outcome: On discharge to the ward the patient was orientated to time, place and person. He had a paralysis of the left arm due to an infarct on the right motor cortex region.

Decision Making in MS Care. A tool for therapy options for people with MS

O'Maley, T.

Abstract:

Multiple Sclerosis (MS) is a long-term disease that affects the central nervous system (CNS). MS can have many different effects on patients and their families. The increasing level of disability and symptoms experienced by many patients can affect working, family and social life. From 1996-2000, 4 disease modifying therapies (DMT's) became available in the Australian market. Many research studies have been conducted to look at the benefits of the different licensed DMT's. However, comparing the findings of these studies with each other can be extremely difficult. This is because of differences in the way these studies were designed and conducted. For example, they have not all studied similar patients, and different measures of the benefits of treatment have been used. For many patients the choice of which therapy is to undertake left in their hands. This presentation will examine the development of a Decision Making Tool developed to reflect the options for people with MS in Australia, and was developed in expansion of an expert patient concept using evidence presented in a patient friendly format

Multiple Sclerosis: Two Case Presentations

O'Maley, T

Abstract:

In perhaps no other disease is the phrase "no two cases are alike" repeated to patients than in MS. An accurate and reliable diagnosis of MS is of great importance to enable early advice on treatment options, on management of future relapses, and on the potential prognosis of the disease. Even today, with the advancement in MRI and pathological technology, the diagnosis of MS remains a predominately "clinical" diagnosis, and is based on a classic presentation of symptoms that include optic neuritis, transverse myelitis, internuclear ophthalmoplegia and paresthesia; and on the identification of other neurologic abnormalities, which may be indicated by the patient history and exam. This presentation will examine 2 "relapses" of MS in patients that had our clinical staff reaching for textbooks and searching for alternative diagnosis; 1 fascinating in its simplicity, 1 devastating in its severity.

How to critically appraise a systematic review

Scanlon, A

Abstract:

In the ever-changing health care environment there is an immediate need for nurses to implement evidence based best practice and this inevitably requires research. Nurses must either individually spend a significant amount of time dedicated to reviewing contemporary publications found within numerous databases from around the world to remain current or have other means to augment their practice knowledge. Systematic reviews are seen as the most efficient way to access evidence based knowledge in a timely matter for all clinicians. However some systematic reviews are seen as better than others and to the untrained reader what appears to be significant and worthy of consideration may be in fact be an inappropriate and poorly designed review. The latter can have dire consequences for practice if used and integrated into clinical practice guidelines for nurses.

New communication initiatives for neurosurgical patients from New Caledonia.

Everingham, E

Abstract:

Caring for neurosurgical patients who do not speak English and come from diverse cultural backgrounds presents many challenges for nurses. The new millennium saw the opening of Westmead Private Hospital in Western Sydney and the beginning of neurosurgical services. This included providing care for a unique population of patients - French speaking people from New Caledonia. Over the last four years, patients from New Caledonia have been transferred to the hospital for neurosurgery due to an arrangement with their French government welfare organisation, C.A.F.A.T. This presentation will highlight the variety of dynamic quality initiatives introduced for C.A.F.A.T patients over the last three years since the commencement of a neuroscience CNC position. The essential elements of a flexible neurosurgical nursing team will be outlined as the driving force behind these initiatives. The scope of quality activities spanning from the introduction of a new neurological observations chart, translated menus, French flip cards, and French entertainment resources, will be discussed. Finally, the results of patient comment cards will be outlined. As this is an ongoing process the future plans and aspirations of this

service will be highlighted through short case studies of patients from New Caledonia.

Management of Clinically Mild Traumatic Brain Injury in the Emergency and Acute setting

Williams, M., Byers, S. *, Braid, K., McCarthy, K

Abstract:

Studies have shown that patients who have sustained a mild traumatic brain injury (MTBI) can have ongoing symptoms such as poor concentration, irritability, memory problems, dizziness & headache. The MTBI Continuing Practice Improvement (CPI) team identified from subjective and anecdotal reports that patients experienced difficulties after discharge relating to ongoing symptoms. The CPI team also identified that early intervention & referral to appropriate services would benefit this group of patients. As a result the team developed a referral guideline for patients admitted to acute wards with mild to severe TBI to guide assessment and further referral. Because many people with MTBI present to the Emergency Department (ED) but are not admitted, the team then designed & implemented a MTBI clinical pathway to ensure these patients were managed efficiently whilst delivering best practice care. Six months after implementation audits have shown that the processes put in place have improved management of patients with MTBI, increased awareness of posttraumatic amnesia amongst ED staff and established appropriate best practice care for patients.

Thromboembolism in Neurosurgery

Author: Lear, D

Abstract:

Deep venous thrombosis (DVT) is a major cause of morbidity and mortality. Neurosurgical patients constitute one of the highest risk groups for venous thromboembolitic complications with an incidence rate reported in the literature to be as high as 25%. Specific risk factors related to neurosurgery are motor deficit, age greater than 60 years and prolonged surgery. Although mechanical prophylaxis provides effective management against DVT, the added efficacy of low dose heparin regimes has to be weighed against risks of major postoperative haemorrhages and their subsequent deleterious neurological sequelae. The benefits of low molecular weight heparin (LMWH) in conjunction with mechanical methods for the prevention of DVT in neurosurgery will be reviewed A retrospective review of all neurosurgical patients clinical records (n= 1941) over a 2 year period in a busy tertiary hospital neurosurgical unit found the incidence of thromboembolism to be 2.9 % (n= 57) which falls markedly below reported rates. The aim of the review was to determine the most efficient DVT prophylactic strategy in the neurosurgical patient. A structured review of current literature was undertaken and incidence rates were collated, duration of admission to diagnosis of thromboembolism identified and specific risk factors explored.

Telemetry for Epilepsy - a nursing perspective

Fuller ,V & Rogers,S

Abstract:

Epilepsy affects approximately 1% of people in the community. Most of those affected are able to live their life as they wish with medication management. However, there are a significant number of people with epilepsy who are socially compromised due to the effects of this problem. They have difficulties with education, gaining and attending employment, driving, living full social lives and even attending personal hygiene unsupervised. Managing those with intractable epilepsy involves a holistic approach including medical, surgical and psychological services. The Neuroscience Unit at Westmead Hospital plays an important role in the assessment and surgical management of those with epilepsy. This presentation will focus on the nursing protocols and practices used to provide video telemetry, intracranial electrode monitoring, seizure management and the administration of radioactive isotopes on the ward. These practices and protocols are regularly reviewed and adapt to the changing needs of the patient and hospital environment.

"Falling Head over Heels" Reducing Falls in Neurosurgical Inpatients with the implementation of a 'High Risk Falls Room'.

Wright,K.

Abstract:

Fall related injury in acute care facilities is a significant safety concern[1]. Through processes of incident monitoring and clinical review it was identified that a high number of falls with negative consequences were occurring on the

neurosurgical ward, hence a multidisciplinary team was formed and a strategy for co-horting high risk patients together into a 'High Risk Falls Room' was implemented. The aim was to decrease the incidence of high-risk patient falls. As part of a team approach, nurses ensured standard fall-prevention strategies were implemented, but in addition to this, patients meeting extraordinary descriptors and deemed "very high risk" were placed together in the same room under constant surveillance and observation. Six months after the introduction of the high risk falls room, the incidence of falls decreased from the baseline of 6.5 falls per month (range 5-8 falls), to just 1 fall, and within 9 months the team had achieved a zero falls incident rate. This presentation will outline the methods utilised for planning, implementation, outcome identification, evaluation of the program and room and the ongoing challenges for the Liverpool Health Service Neurosurgical Ward "Falling Head over Heels" project.

"You really made a difference for us". The SSWAHS Brain Tumour Education and Support Group - What have we achieved and how do we help our patients?

Wright, K

Abstract:

A diagnosis of a brain tumour is a catastrophic life event for most people. Surgery, radiation therapy and chemotherapy encompass the biological, disease-related facets of this condition yet the psychosocial effects of a brain tumour diagnosis and its treatment have enormous impacts on quality of life. These patients and their family members are a vulnerable group with specific needs who require immense support. The SSWAHS Brain Tumour Education and Support Group commenced in September 2003 with the aim of providing practical and emotional support to brain tumour patients and their family members. This collaborative initiative, between the Liverpool Hospital Department of Neurosurgery and Cancer Therapy Centre, has been evaluated on an ongoing basis and group participants have continually highlighted the positive benefits gained from the meetings and reinforced the necessity for continued support. This presentation describes our processes for commencing and maintaining a brain tumour education and support group, how we help our patients, the highlights and achievements throughout our 3-year journey, and our plans for the future.

"Where are the Wally's Now?"

Goodman, S.

Abstract:

Acute and Chronic back pain is a widespread health problem in the community. It creates many issues for individuals, medically, physically, socially and emotionally. There are now new surgical options available for back pain, alternative options to the more invasive Spinal Fusion surgery. The Wallis Implant is a mechanical supplementation non- rigid device for degenerative intervertebral disc disease. This surgical option has been shown to have fewer complications, reduced length of stay, quicker recovery rates and improved patient satisfaction. The past 2 years at Epworth hospital has seen fifty patients undergo the implantation of the Wallis Implant. Our data clearly indicates positive outcomes in relation to pain, function, independence and mental health. This procedure is both innovative and exciting. The presentation will include recent research findings that focus on follow up patient outcomes at 12-18 months post insertion of the Wallis implant.

Neurosurgical Nursing Workforce

Sutherland, V., Lear, D, Eastwood, A., Wright, K., Becker, K, Rennie, N, Trudinger, C

Abstract:

In 1999, the Health Minister, commissioned a major review of the NSW Health Services. From this review the Greater Metropolitan Services Implementation Group (GMSIG) Report recommended the establishment of a Neurosurgical Coordinating Committee (NCC), consisting of 5 integrated neurosurgical networks. Another GMSIG recommendation was to address the issue of recruitment, training and retention in neurosurgery. In response, the NCC requested and obtained recurrent funding from the Health Minister. In December 2002, the Neurosurgical Nursing Professional Development Scholarship Committee (NNPDSC) was created to coordinate and distribute a "Scholarship Fund" to provide neurosurgical nurses in NSW opportunities to receive financial assistance with educational costs for neurosurgical advancement. The NNPDSC operates on the premise that "the development of a well-funded learning infrastructure which features a structured educational program ... and ongoing professional development opportunities are valuable strategies in attracting and retaining staff" (GMT2, Metropolitan Hospitals Report, 2002). This paper reviews the

activities and overall performance of the NNPDSC to determine measurable benefits of a centralised neurosurgical nursing managed Scholarship Fund in the areas of recruitment, training and retention for neurosurgical nurses working in NSW.

Advancing Technologies in Lumbar Spine Surgery

Tucker. * & Seex, K

Abstract:
Lumbar Disc replacement (LDR) is a rapidly advancing yet controversial area of spinal surgery. First developed in the mid 1980's its main purpose to offer an alternative to fusion with the emphasis being placed on maintaining mobility of the spine. LDR restores and preserves segmental motion, reinstates foraminal height and provides protection of the adjacent segments. Within Nepean private Hospital a study was conducted to test the outcomes of 50 patients who underwent Lumbar Disc Replacement. The patients were required to complete a Visual Analogue Scale and the Oswestry disability Index to ascertain their pre and postoperative pain and disability scores. It has been demonstrated by a reduction in these scores that there has been a reduction in the pain and level of disability experienced by each patient through a 24-month period.

Hydrocephalus - A patient's journey from admission to discharge.

Jhoomun, T., Balfour, P., Heywood, T.

Abstract:
Each year in Australia, one in every 1,000 children is born with hydrocephalus. Many more children and adults acquire hydrocephalus as a result of accidents, tumours, bleeding or infection. Left untreated, hydrocephalus can cause severe disability, even death. When hydrocephalus occurs it is a result of either a blockage to the flow of the CSF, or the body's inability to absorb it. When this happens, the CSF builds up within the ventricles and in CSF compartments over the surface of the brain (subarachnoid space). The CSF build-up causes the ventricles and CSF compartments to swell or enlarge, which results in pressure on the brain or stretching of the nerve fibres connecting different parts of the brain. Without treatment, hydrocephalus results in compromised mental functioning, visual disturbances, walking difficulty, incontinence, and reduced conscious state. In a recent case, a 69-year-old man (John) presented to the Emergency Department at Monash Medical Centre with lethargy, decreased mobility and confusion. A CT scan confirmed communicating hydrocephalus and John was booked for Ventriculo-Peritoneal shunt surgery. 13 days post op. the patient still displayed confusion on the ward and was transferred for rehabilitation to the Kingston Centre. In this presentation we will discuss how John's hydrocephalus was managed in the Operating theatre, on the Ward and in the Rehabilitation setting prior to discharge.

Quality of life of caregivers post-stroke

Desborough, T

Abstract:
Background. Health-related quality of life (HRQoL) research in stroke has focused on survivors with little attention to caregivers. The limited available data suggest that caregivers with poor physical health, increased strain and depression have worse HRQoL, however other studies demonstrate no change in HRQoL of partners of survivors. Previous studies are small (generally <10 subjects) and there is no HRQoL data on caregivers in Australia. The influence of service utilisation on carer outcomes in Australia is also uncertain.
Aims. To assess: (a) the impact of stroke on caregiver HRQoL and social relationships.
(b) whether mood impairment in stroke survivors or carers affects carer HRQoL.
(c) the influence of service utilisation on carer HRQoL.
Methods. 120 caregivers of consecutive acute stroke patients admitted to Gosford Hospital assessed with a standardised questionnaire (addressing demographics, co-morbidities, mood, strain, social support, marital adjustment and HRQoL), during the acute hospital stay, and at 3 and 12 months post-stroke. Patient demographics, impairment, mood and cognition are also assessed. The study is linked with a concurrent study in the patient population investigating mood impairment post stroke.
Discussion. Information gained from this study will be used to plan further interventional studies aimed at reducing burden and improving HRQoL in caregivers. Results of this study have the potential to impact upon the delivery and educational focus of nursing care and the educational tools and strategies used to educate this patient and caregiver population.

Interventional Neuroradiology (INR) The Prince of Wales Experience

Fulham, C

Abstract:

Interventional Neuroradiology is a relatively new specialty first developed in the early 1960's, which has revolutionised the practice of medicine, the standard of care, and patient outcomes attained in-patients with vascular disease of the central nervous system (CNS). It affords a minimally invasive approach to the treatment of CNS vascular disease. Existing procedures include but are not limited to, balloon test occlusion, embolisation of cerebral and spinal arteriovenous malformations (AVM's) and arteriovenous fistula's (AVF'S), carotid artery stenting, endovascular coiling of cerebral aneurysms, intracranial angioplasty and percutaneous vertebroplasty. Impressive advances in both imaging and equipment technology over the past fifteen years have enabled lesions previously thought untreatable to be treated. This notable development in clinical practice will be highlighted in a case presentation.

This paper will discuss the introduction of the INR service at Prince of Wales Hospital. It will address some of the difficulties encountered in the initial stages of implementation, the educational initiatives developed to enable safe clinical practice, and the impact experienced on service delivery. Data representative of service provision - patient numbers, procedural breakdown and outcomes will also be presented. In addition a case presentation highlighting the positive effect of interventional neuroradiology will be discussed.

Cerebral tissue oxygen monitoring: Licox, The Nepean Hospital experience

Byers, S. *, Casikar, V., Seppelt, I.

Cerebral tissue oxygen monitoring has been used to assist in the management of patients with traumatic brain injury at Nepean Hospital, Sydney since January 2005. As with any new technology there have been pitfalls and successes. This retrospective review will describe our experience with cerebral tissue oxygen monitoring and it's role in the management of patients with traumatic brain injury. Systematic analysis of each case can be used to identify opportunities for improvement in clinical practice, increase our knowledge of the technology, its uses and limitations.

Neuroscience nurses use of self as an assessment indicator

Blundell, J.

Abstract:

Assessment of subjective aspects of patient care is a challenge when caring for patients where the normal assessment parameters used in the conscious patient are not available. In a qualitative study about positioning making the patient comfortable was determined by objective and subjective elements as nurses assessed whether the patient "looked" comfortable using visual cues, use of self as a reference point, touch and "knowing" the patient. The nurse's own body, while playing an integral physical role in turning and repositioning patients was also an instrument of care, as it became a reference point of comfort determination when the registered nurses positioned patients who were unable to communicate their needs.

Early Prevalence and Determinants of Mood Impairment Post-Stroke.

Townend BS, Whyte S, Desborough T *, Crimmins D, Markus R, Levi C, Sturm JW

Abstract:

Background Early identification of post-stroke mood impairment (PSMI) or its determinants could bring better outcomes through earlier treatment; however the prevalence, time-course and determinants of PSMI within the early phase needs further investigation. Methods Consecutive hospitalised stroke survivors were assessed within 2-5 days of onset, and at 1 and 3 months post-stroke. Baseline data included demographics, co-morbidities, stroke subtype, and pre-stroke disability and cognition. At baseline, 1 and 3-month interview medications; physical impairment, disability, cognition and social support were assessed. PSMI was defined as a score of >8 on the depression subscale of the Hospital Anxiety Depression Scale (HADS). The factors independently associated with PSMI at each time point were determined using regression analyses. Results The prevalence of PSMI within 5 days and at 1 and 3 months post-stroke was 5%, 16% and 21% respectively. (n=125) The independent determinants for PSMI at 1 month were disability, social support and the change in impairment score between initial

and 1 month assessments; while at 3 months disability, social support and institutionalisation were independent determinants. PSMI was independently associated with mortality at 3 months post-stroke. Conclusion PSMI increases in prevalence over the initial weeks post-stroke, and is associated with increased disability and death.

The Final Diagnosis

Schweizer, N.

Abstract:

Diagnosis of death via the brain function criteria is indeed the final diagnosis. It is in some respects the most important diagnosis as no mistakes can be made. Some controversy still surrounds "brain death" and the criteria required worldwide. The code of practice throughout the world has not been systematically investigated. Here in Australia however it accounts for 1% of all diagnosis of death and is defined under the Human Tissue Act. "Brain Death" is defined as the irreversible cessation of all brain function. It is understandable that relatives of a patient that has died using the brain criteria can think their loved one is in a coma or a persistent vegetative state, after all the person is still warm and pink and their heart beats of its own accord. It is for this very reason that it is essential for all nursing staff, particularly nurses who care for Neuro patients and their families to have a firm understanding of "brain death", how it is diagnosed and its implications.

This is me in case I forget to tell you!' keeping the knowledge of the course of illness where it is needed.

Wallace, L., O'Connor, G.

Abstract:

Patients diagnosed with a primary brain tumour receive enormous volumes of information at every level of their treatment path. They also attend a variety of venues and see a variety of health professionals. Do they always remember what they have been told - NO Do they always have someone with them who knows - NO Can they always answer your questions - NO Do they know where and when they need to attend visits - NO Do they take information with them to inform others - NO At Monash Medical Centre all patients diagnoses with a primary brain tumour are referred to the Palliative Nurse Consultant (Neuro-oncology). Ideally prior to discharge and prior to being given their diagnosis. A patient held record is given to the patient and / or their carer at first visit. This record contains initial information which includes Pathology, - tumour, biochemistry etc Details of the treating team (including allied health snapshots of their performance and any deficits present)

Any imaging done is saved to disc and included. Appointment details such as radiotherapy and oncology. Discharge summaries and letters of referral. Patients and their carers are invited to take this record with them whenever they go to an appointment. Treating team members are encouraged to document every attendance. GP's are invited to participate. Any allied health assessments, neuropsychological reviews etc are recorded along the way to paint a picture of treatment, care, medications, imaging and clinical decline. This strategy started impressively but has not provided the results we had hoped. WHY NOT!!! patients and their carers need to remember to take their record with them. No record is effective if not used. Gaps in treatment make the picture hazy. WHAT NEXT!!! We are reviewing the records to see whom it has worked on and who not. Where are the gaps? What makes it work for one and not another? What can we do to ensure compliance? Where it has worked the feedback has been very positive. Where it has not worked the response is often WHAT RECORD!!! Discussion invited on where to from here.

'Who deserves the bed?' the person in emergency or the patient waiting at home. A waiting list strategy in Victorian hospitals.

Wallace, L

Abstract:

Waiting lists continue to make news all over the country; they are a personal and political nightmare for anyone working in an overstretched health system. Patients often wait months to years, many in pain and unable to work. Calls to these patients offering admission often at short notice can go unanswered or can be declined for many valid reasons. A recent strategy in Victorian Hospitals aimed at treating patients from selected waiting lists has proved very successful

The challenge is now to expand the breadth of the strategy and keep the good works happening. Several strategies were

implemented to review waiting lists, determine blocks and ask patients what was needed to enable their treatment to be provided. These strategies will be explored in this paper. What was done, by whom and how! The results of the strategy both in data and quality will be presented. The dramatic reduction in both numbers of patients waiting and duration of time on waiting lists will be demonstrated. This strategy demonstrates the benefits of working smarter but not always harder.

Book Review

Palliative Neurology

Maddocks I, Brew B, Waddy H, & Williams I. (2006) *Palliative Neurology,* Cambridge University Press, Cambridge.
ISBN 13-978-0-67429-8

This book has been written to fill an existing gap for persons caring for those with neurological conditions, as much current palliative care literature focuses on cancer. This text on palliative care for people with neurologic conditions is timely as with increased age expectancy the number of people living with neurologic disease is on the increase. The authors, three of whom practice in Australia, include a palliative care physician and three neurologists. They wrote this text for all healthcare team members who may be involved in caring for persons with neurodegenerative conditions, with the possibility that family members who act as carers may also find it useful.

The first section introduces palliative management with specific application to neurological disease. Characteristics of palliation such as the patient focus, continuity and comprehensiveness of care, support throughout the disease progress and team work are discussed as well as decision making points along the disease trajectory . There is also a chapter that highlights major problems areas that can affect the efficacy of palliative care. These include poor communication and difficulties within and between team members. The section concludes with common themes in palliative care including appropriate therapy and working alongside complementary and alternative medicine.

The second section focuses on nine areas of major discomfort in advanced neurological illness. Muscles and movement, including disorders of muscle tone, seizures, falls and drug induced disorders. Bulbar symptoms, respirations including -dyspnoea, hypoventilation, secretion retention and assisted ventilation are also covered as well as gastrointestinal and urinary problems. Pain, an often overlooked symptom in neurological disease, covers-nociceptive, neuropathic and central pain. Delirium, restlessness, depression, anxiety, grief and bereavement are discussed under cognitive, behavioural and psychological factors. Issues such as temperature regulation, sweating, pruritis, hiccups and headache are covered in the final chapter of this section.

Section three addresses specific disorders each under the headings of -supportive and terminal phases. The disorders covered are cerebrovascular disease; demyelination; movement disorders; dementia; motor neurone disease; infection,

including Crutzfeldt Jacob Disease; HIV and HIV – AIDS; muscular dystrophy; neuropathies; Huntingdon's disease; cerebral neoplasms and Traumatic Brain Injury sequelae.

Section four discusses ethical issues such as consent, advance directives, proxy decision making and altered conscious state, terminal sedation and euthanasia.

The final section consists of a number of appendices covering -practical aspects of home care, including the environment, education and support. Effective palliation service, medications and finally related points for reference such as related readings and web sites are provided.

Jennifer Blundell

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Chew, D. and Woodman, S. (2001) 'Making Clinical Decision in Neuroscience Nursing', *Australasian Journal of Neuroscience Nursing*, Vol. 14 (4): .5-6.

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