

# Australian College of Neonatal Nurses Inc.

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September 2015

#### About the newsletter

This newsletter is the official communication of the Australian College of Neonatal Nurses to its members, produced quarterly in March, June, September and December. It presents information on a range of professional issues and clinical topics of interest to neonatal nurses. Any member of ACNN may contribute.

Articles should be submitted by email as Word documents. Any images should be in jpg format. Referencing style should follow the Vancouver style as adopted by the journal *Neonatal, Paediatric and Child Health Nursing*. All content will be edited to newsletter standard.

Editor: Shelley Reid. The newsletter team for this issue comprised Jan Polverino, Nadine Griffiths, Amy Barker and Rachel Jones.

Please send correspondence to the newsletter team at newsletter@acnn.org.au

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Next deadline: 1 November 2015

# ACNN National Committee 2015 – 2016 *Office-bearers*

President Karen Walker

Vice president Karen New

Secretary Shelley Reid

Treasurer Neil Pulbrook

#### **Committee members**

Jennifer Dawson

Jane Roxburgh

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### From the President

t is a privilege to be the new president of the Australian College of Neonatal Nurses and I am very much looking forward to the challenges ahead. I would like to take this opportunity to introduce myself, the members of the executive and the chairs of the branches and special interest groups.

I have been a neonatal nurse for too long to mention, having initially completed my general and children's nursing at Great Ormond Street and the Royal London Hospital. When I relocated to Sydney, I completed my undergraduate degree, Masters and then my PhD in 2011. Having worked as a clinician and an educator, I now work as a researcher in Grace Centre for Newborn Care at the Children's Hospital at Westmead and also with the Cerebral Palsy Alliance.

Fortunately we retain two exceptional nurses on the executive, with Dr Karen New as vice president and current professional officer, and Shelley Reid as secretary and public officer. Neil Pulbrook is the new treasurer and brings lots of experience to the position, having been the NSW branch treasurer for many years. I am excited to welcome two new 'ordinary members' to the committee, Jane Roxburgh from NETS NSW and Dr Jennifer Dawson from the Royal Women's Hospital in Melbourne. We also have two observers, De August and Amy Forbes-Coe from Townsville. The branch members attending the executive meetings are Amy Barker from NSW, Melissa Burnett from Victoria and Diana Johansson from South Australia.

The chairs of the special interest groups are as follows:
Education SIG – Trish Bromley from Tasmania, Research SIG
– Margaret Broom from ACT, Neonatal Nurse Practitioner
SIG – Cathy Vickery from NSW, Low Resource Country SIG –
Karen New from Qld. A proposed Leadership SIG led by Angela
Casey from NSW was very well attended at the preconference
scoping meeting and I believe that this SIG will be of great
importance to neonatal nurses and to ACNN.

There have been a couple of recent changes. The first was at the AGM, where a special resolution was passed which increased the number of ordinary members allowed on the committee from two to four. The reasoning behind this was to increase the number of nurses eligible for the executive positions and to offer opportunities for the mentoring of those without prior experience. The past president is now invited to remain on the committee for a year as a co-opted

#### From the President (cont.)

non-voting member, which will allow for sharing of corporate knowledge for the new president. We are pleased that Denise Kinross has agreed to take up this role. The third change is the invitation to all chairs of the branches and SIGs to attend executive meetings and teleconferences to allow greater communication. These meetings will change to monthly and I will endeavour to email after each meeting with any updates.

The ACNN annual conference and skin seminar were excellent, and I would like to congratulate all the speakers, award winners, session chairs and the organising committee. I have had some really positive feedback about the sessions, and it was nice to see new presenters and chairs of the sessions. I am keen to encourage anyone who wants to chair sessions, and anyone interested in doing this next year can email me. At the Executive meeting prior to the conference, we interviewed and employed a Professional Conference Organiser (PCO)

to organise the ACNN conferences for the next three years. In collaboration with the PCO we will investigate funding opportunities to decrease the cost of registration. ACNN has some challenges to face. Our membership is around 600 which when you consider how many neonatal nurses are in Australia provides us with a great opportunity to expand. So our target is to increase by 10 per cent each year – sounds not too hard, but to achieve this we need some help. At the conference I asked all the members to recruit just one person but imagine if all 600 of us recruited one person. A challenge to all members – recruit one person in the next year.

This is an exciting time and I look forward to working with all of you to benefit neonatal nursing. I am open to all suggestions, so please email me on president@acnn.org.au

Kavenswaller

## Karen Walker

## **NSW Clinical Nurse Consultant Column**

## Congenital CMV

## Barbara Jolley

**CNC Nepean NICU** 

Working within the neonatal intensive care unit (NICU) environment can often be both a challenging and rewarding experience. Often described as 'never a dull moment' working with sick and vulnerable neonates and their families, our working lives can take various turns and twists we aren't expecting.

Why is it that these challenges usually present at the most inappropriate of times? They often happen around the time of holiday periods and long weekends. Such was the case in this instance – Friday of a long weekend.

Cytomegalovirus (CMV) is the most common congenital infection of the developing world. It is the leading viral cause of mental delay and the most frequent non-hereditary cause of sensorineural hearing loss worldwide. Crowded living conditions, poor sanitation, sexual practices and increased exposure to infants and children all contribute to increasing rates of infection and a higher seroprevalence. The virus can be isolated from urine, saliva, cervical and vaginal secretions, semen, breastmilk, tears, blood products and transplanted organs. Seroprevalence of infection varies between 65 and 90 per cent among adults. <sup>1,2,3</sup>

Newborn infection occurs as the consequence of one of three routes of transmission: (i) intrauterine; (ii) intrapartum; and (iii) post-natal (breast milk acquisition). Intrapartum infection is usually the result of a susceptible woman acquiring infection from a child in the family, or day care environment early during the gestation.<sup>4</sup> Hearing loss is the most significant

developmental abnormality in children with asymptomatic infection. One study found hearing loss in 7.2 per cent of patients with asymptomatic infection.<sup>5</sup>

In contrast to neonates without symptoms, symptomatic congenital CMV neonates often have dramatic presentations. CMV symptomatic neonates can have sensorineural hearing loss, microcephaly, motor defects, mental delay, chorioretinitis and dental defects. Presentations include hepatomegaly, splenomegaly, microcephaly, jaundice and petechiae. Eye involvement including chorioretinitis, strabismus and optic atrophy is also seen. Hearing loss is common; this usually is bilateral and progressive. Mental capacity outcome is usually psychomotor delay. CT findings may demonstrate intracerebral calcifications, ventriculomegaly and loss of grey-white matter differentiation. There is often loss of normal brain architecture, with associated loss of normal radial neuronal migration. 5,7,8,9,10,11

A.A. was an 18-year-old woman, pregnant for the first time, with blood group A positive. Group B streptococcus status was positive. Antenatal foetal ultrasound had shown normal doppler flow studies, however the pregnancy was complicated by foetal growth restriction. Maternal TORCH screening was consistent with previous CMV infection, showing CMV IgG antibodies, and immunity to rubella. Delivery at term was by caesarean section without labour.

A live male infant (I.A.) was born at 11:25 hours with a birth weight of 1900 grams (< 3rd centile). Apgar scores were 9

at 1 minute and 9 at 5 minutes with no resuscitation being required. The arterial cord pH was 7.23 with lactate 3.2. He was admitted to the NICU at 50 minutes of age due to his low birth weight. The day was the Friday before the June long weekend.

I.A. was placed in an incubator for isolation purposes. There was no significant respiratory distress. Following a discussion with Paediatric Infectious Disease Specialist and mum, antiviral medication (initially IV ganciclovir, then changed to oral valganciclovir) were started and continued for a total of six weeks. Recent literature supports six-week antiviral treatment with ganciclovir/valganciclovir to prevent neurological deterioration, in particular hearing loss; however current data (especially data on long term outcome) is still limited. A.A. was keen for the prophylactic treatment, and I.A. went on to complete this course.

Our unit had not used antiviral medications in the past and thus had no experience. The Cancer Care Unit (on site in the hospital) was contacted for assistance. Systems were implemented to ensure staff had access to all equipment and resources required to care for I.A. Education was required for staff on the precautions needed around administration and storage of IV ganciclovir. Education reinforcement was also needed on how to remove PPE safely so as not to self-contaminate with cytotoxic medication.

#### Special considerations

- Pregnant, breast feeding or staff trying to fall pregnant must not look after baby or assist with medication administration
- 1.3 metre space needed surrounding neonatal bed

#### Additional equipment

- Purple cytotoxic gowns
- Purple cytotoxic gloves
- P2 disposable face masks
- Adequate supply of protective goggles
- Purple cytotoxic rubbish bags
- Air tight container designated only for medications
- Adequate supply of disposable scissors
- Cytotoxic spill kit

#### Education

Precautions needed around administration and storage of IV ganciclovir

- Disposable gown, double sterile gloves, goggles and P2 mask to be worn by both nurses
- Medication to be checked by two RN/RMs only
- Scissors to be used to open package onto sterile field
- Air bubbles not to be expelled from syringe
- Prime extension tubing with normal saline not ganciclovir. Extension tubing will need to be flushed post administration to ensure correct amount of medication administered
- Medication needed to be stored within sealed bag within

sealed container in dedicated fridge

#### Personal protective equipment

- Although less than one per cent of ganciclovir is excreted in the urine and faeces, contact with body fluids poses a risk to health care workers, carers and visitors
- Staff to wear gown and purple gloves when attending to care
- Only need to wear goggles and mask if there is risk of inhaling body fluid
- All items to be disposed of, including linen if soiled with body fluids, into a white plastic bag, secured and placed in purple bin bag
- If wearing two pairs of gloves remove outer glove, remove goggles, remove gown, remove mask, remove inner gloves, perform hand hygiene
- if wearing 1 pair of gloves remove gloves, perform hand hygiene, remove goggles if worn, remove gown, remove mask if worn, wash hands

The Cancer Care CNC was invaluable with her assistance. Instruction sheets were developed with all necessary information. The Cancer Care CNC had knowledge on ganciclovir and caring for adult patients, but nothing about neonates, and we had experience with neonates and nothing about cytotoxic drugs. Knowledge and experience was combined and a plan was put into place.

Phone numbers were exchanged and a roster was drawn up for 'on call' to deal with any issues that might arise over the course on the long weekend. The NICU's NUM3, NUM1 and CNC were all on call for a day each of the three-day long weekend.

Currently there are four licensed drugs for systemic treatment of CMV infection: ganciclovir, valganciclovir (oral prodrug of ganciclovir), cidofivir and foscarnet. Ganciclovir is phosphorylated by UL97, a kinase unique to CMV replication.¹ Ganciclovir and valganciclovir are the only two medications that have been employed in the treatment of congenital CMV infection to date.¹,¹6 The National Institute of Allergy and Infectious Diseases Collaborative Antiviral Study Group conducted a pharmacokinetic-pharmocodynamic study that established the safe dose of intravenous ganciclovir to be administered to infected infants.¹² This was followed by a Phase III randomised controlled study to determine the effects of ganciclovir therapy on hearing in the treatment of symptomatic congenital CMV disease.¹³

Neutropenia is the most frequent toxicity associated with ganciclovir and valganciclovir therapy, whereas significant (and possibly irreversible) renal toxicity can be seen with cidofovir. Foscarnet administration can also result in renal toxicity as well as significant electrolyte imbalances. Several of these drugs have potential toxicities that are of concern, including carcinogenesis, teratogenesis, and azospermia (ganciclovir,

Cont. on page 4

#### NSW CNC Column (cont.)

valganciclovir, and cidofovir) and deposition into bone or dentition (foscarnet) that may have significant implications when treating an infant. Given these potential side effects, careful consideration of the indications for the clinical use of these antivirals is necessary before using them for CMV infection in neonates and infants.<sup>16</sup>

Ganciclovir is generally used as primary treatment for CMV, however it is difficult to maintain administration in the neonate as it is administered intravenously. Thus valganciclovir is often used to complete the six-week course and this was the case with baby I.A. Acosta<sup>14</sup> and Kimberlin<sup>15</sup> evaluated 24 neonates receiving six weeks of therapy with either IV ganciclovir or oral valganciclovir. The study showed intravenous followed by oral therapy provided similar systemic exposure to ganciclovir alone. However, they also found that toxicity is similar with infants developing moderate or severe neutropaenia. Amir <sup>17</sup> concluded that prolonged therapy of symptomatic congenital CMV infection with intravenous ganciclovir followed by oral valganciclovir is safe: while the main side effect of treatment was transient neutropenia, there appears to be a better auditory outcome than with short-term treatment.

I.A. was diagnosed with symmetrical intrauterine growth restriction. As stated above maternal TORCH screening was consistent with previous CMV infection (positive for CMV IgM) and immunity to rubella; however, I.A. was IgM positive for CMV and had a positive CMV urine culture fluorescence. Congenital CMV infection was thought to be the cause of growth restriction.

The initial head ultrasound showed bilateral foci of calcification of the wall of the lateral ventricles. There was also a complex bilateral fluid collection in the region of the germinal matrices which may have represented old germinal matrix haemorrhage. MRI brain showed a prominence of extra-axial CSF spaces and ventricles which was likely in keeping with a degree of atrophic changes. T2 high signal in the right caudathalamic groove may represent hemosiderin deposition from previous germinal matrix haemorrhage.

The repeat head ultrasound showed further progression of periventricular and white matter calcifications as well as increase of ventricular size involving both lateral ventricles consistent with early cortical atrophy.

I.A. developed neutropenia with the lowest neutrophil count 0.6x10\*9/L on 25/6/2014. The antiviral dose was adjusted or withheld intermittently to allow count recovery (see graph).

Unfortunately, CGH arrays sent for assessment of growth restriction showed heterozygous micro deletions within chromosome 11 and 13. The micro deletion within the chromosome 13 involves the BRCA2/FANCD1 gene which poses the risk of breast cancer, other neoplastic disease and Fanconi anaemia.

Our clinical geneticist was consulted for the abnormal genetic testing. A.A. received genetic counselling and given the implication of the result was also tested for similar gene mutations; fortunately the results were negative.

During a routine examination a left hip click was felt. An ultrasound of the hip was performed and showed bilateral grade one acetabular dysplasia with hip joint laxity. Follow-up scan in two months' time was suggested if clinically indicated.

Some good news was that no chorioretinitis was found when the eyes were examined. A repeat eye check did not show any evidence of chorioretinitis. The eye examination was planned to be repeated post discharge.

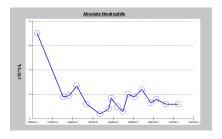
An AABR hearing screen test was normal prior to discharge. Although reassuring, this is not a guarantee of normal hearing especially in the presence of congenital CMV infection when hearing could deteriorate in the first two years of life. The statewide hearing screening services organised a follow up hearing screen with Audiology Department, The Children's Hospital at Westmead.

I.A. remained in NICU for the six-week duration of the medications (for both IV ganciclovir and oral valganciclovir).

A.A. lived at home with her family and younger siblings. It was determined that the safe storage and administration of cytotoxic medications could not be ensured in that environment and the safety of family members needed to be taken into account. Since this case we have discharged another baby home with parents on oral Valganciclovir medication.

These decisions need to be made on an individual case basis.

No medications were prescribed at the time of discharge. Prior to discharge blood results were within acceptable ranges. I.A. received routine hepatitis B vaccination, and then was recommended to follow normal immunisation schedule. Follow up appointments were made for hearing, eye checks, hip review, with the local GP and for long term developmental follow up.



#### Summary

Many challenges were encountered in nursing I.A. Some of those identified included:

- I.A. was born on a Friday before a long weekend with limited resources available over the long weekend
- Our unit was not experienced with the use of cytotoxic medications
- All equipment needed (purple gloves, P2 masks, purple

- rubbish bags etc needed to be sourced from Cancer Care
- Guidelines for preparation, administration and disposal of antiviral medications needed to be written
- Young primiparous mother with limited family support who came from a large non-English speaking background family and was still living at home with young siblings.

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Items of interest to ACNN members everywhere.

Please consider contributing to this newsletter.

Send contributions to newsletter@acnn.org.au

## NSW neonatal nurses win top state awards

## Judith Meppem Lifetime Achievement Award

The NSW Ministry of Health established the Excellence in Nursing & Midwifery Awards in 2013. The highest honour is the Judith Meppem Lifetime Achievement Award, which honours the state's first Chief Nurse. The first recipient of this award in 2013 was Kaye Spence AM, and on 9 September 2015 this award was given to Sandie Bredemeyer OAM, who until her recent retirement at the end of August worked as Clinical Nurse Consultant in RPA Newborn Care.

Sandie began her career by training at the Prince Henry and Prince of Wales Hospitals, receiving prizes for her academic and clinical excellence. She then trained as a midwife at St George Hospital, gaining another award for clinical proficiency. It was after this that Sandie began her neonatal nursing career at the former King George V Hospital in 1983. She completed the postgraduate certificate in neonatal nursing, and guess what, she won another prize.

Her roles in neonatal nursing have included clinical nurse educator from 1985 then in 1989 she was appointed Clinical Nurse Consultant in Perinatal Nursing, a role she held until her retirement this year. She continued her education by completing a master by research program then a PhD in nursing, awarded in 2004. She also initiated and fostered research by nurses and also across disciplines. She worked on programs that passed on her clinical excellence to nurses and midwives from Malaysia and Macedonia and locally was often consulted for her expert advice, which she was always willing to share. In 2005 Sandie received the Medal of the Order of Australia for services to perinatal nursing.

On a personal level Sandie is acknowledged to be kind, compassionate and a tireless worker for the benefit of others. In particular the families who have come under her care have appreciated her efforts to help them have the best outcomes

possible. Her colleagues and associates from all professional disciplines value her highly not only for her expertise and commitment to the advancement of neonatal care, but also her care and concern for them. Sandie was in constant demand as a mentor and she did not hesitate to provide others with the benefit of her knowledge, experience and professionalism.



Sandie (right) receiving her award

#### Excellence in Innovation – Education



Nadine Griffiths is the Nurse Educator at Grace Centre for Newborn Care, Sydney. Nadine has worked in the paediatric and neonatal critical care setting for over 15 years in Australia and the United Kingdom. She has an interest in promoting staff development in the clinical setting by supporting the development of innovative unit based education initiatives.

## Excellence in Nursing/Midwifery - Graduate



Alyssa Fraser is also from the Grace Centre for Newborn Care, Sydney. She was nominated for her outstanding contribution to the unit during her graduate year which included exceptional support to neonates and their families, a can-do attitude and her friendly and approachable persona in the workplace.

# NSW Breastfeeding column

She can do it ... if we will do it! Nurturing the mother baby dyad when the mother has a catastrophic medical event during delivery

#### **Heather Taylor**

**RPA Newborn Care** 

Pseudonyms are used throughout this article

Recently our newborn care unit received a baby from a smaller local hospital whose mother, Maryam, suffered a stroke during a caesarean section. Her baby, Adam, was admitted to the special care nursery (SCN) to board while his mother was nursed in intensive care on life support. It was communicated to us by her husband that she was passionate about breast feeding her newborn, having fed her first child for two years.

While still on life support in the acute stage of Maryam's recovery, the lactation team, with the help of access midwives (extra staff deployed where required) overnight, began expressing and initiating lactation. By the second day Maryam woke up and was extubated. Although she was disorientated and a little confused in her new surroundings she was very aware that she was a new mum and was desperate to be with and feed her newborn. From that day on the lactation team, nurses from SCN and night access midwives endeavoured to take the baby for breastfeeds as often as was possible in a busy SCN.

In the first week Maryam was incredibly anxious for her baby and it was reported by the intensive care staff that she was not sleeping. Every time the baby was taken for feeds Maryam would relax and sleep. Although Maryam was unable to speak coherently owing to her stoke, we witnessed these precious moments of contact, not only therapeutic for her own recovery but also important in her bonding and attachment with Adam. Sometimes mixed messages were reported of Maryam "not wishing to breast feed" and that we were "forcing her to do it". Quite soon we realised that culturally she found having a male intensive care nurse at night was preventing her from wishing to breastfeed in front of him and so she would refuse until change of shift.

Our team did their very best to nurture this mother baby dyad. It was not without its difficulties. Maryam was moved to a neurology ward further from the nursery making it difficult in the busy ward life to allow the required time needed to take Adam for breast feeds. Our ability to leave Adam with Maryam for extended periods was limited due to concern by both the neonatal and neurology nurses of the risk of

suffocation if left alone. This meant increased separation and distress to Maryam. Staffing and time away from the unit was an ongoing issue keeping Maryam and Adam apart and was often dependent on staffing constraints as to how he could be prioritised.

Pumping equipment and education for neurology ward staff was facilitated. With another sibling and cultural differences, dad was limited in how much assistance he could provide during this time and he had no family support in Australia. He was often visibly distressed and perceived as being difficult. The realisation of what lay ahead was often overwhelming for him.

Throughout Maryam's five-week stay until transfer to the rehabilitation hospital, our staff managed up to fifty per cent breast feeding or expressing. The main contraints were lack of staff and a busy medical and rehabilitation schedule for Maryam. Other hurdles that needed to be crossed were handling and positioning, as Maryam had a dense hemiparesis. The lactation team worked with the occupational therapist and physiotherapist to explore ways of positioning so she would be able to attend to Adam and position him safely. Maryam was also taught how to manage her expressing independently.

Prior to transfer to the rehabilitation hospital, liaison by the lactation team and staff at the rehabilitation hospital continued to support breastfeeding by providing expressing equipment and training rehabilitation staff in its use. We received some positive feedback that Adam was able to have daily visits to Maryam and some expressing continued throughout her stay until discharge home. Three months from her stroke this determined and inspirational mother was discharged home to her family continuing to partially breastfeed her baby.

This experience highlighted the importance of being be able to meet the needs of every mother baby dyad and how this benefits both the mother and the baby in many ways. Adam provided Maryam with determination and created goals to work towards, while Adam was able to receive the nurture he required for normal healthy growth and development.

## ACNN NSW Branch 28th Country Seminar - Albury

#### Lauren Kendrick

Clinical Nurse Educator Paediatrics Albury Wodonga Health

The 28<sup>th</sup> Country Seminar was held at the Commercial Club on Saturday, 20 June 2015. Fifty-one staff from Albury Wodonga Health attended including participants from Wangaratta, Holbrook, Lockhart, Albury Private Hospital, Alpine health, Wagga and Shepparton.

The opening speaker was Wendy Pratt, the lactation specialist from Wodonga Maternity who gave a very informative presentation on breastfeeding issues and how we can support babies and families.

The presentation by Alys Cummings (speech pathologist, Albury Health) on feeding engagement in newborn care was interactive and valuable for all delegates. It promoted some discussion on the myriad feeding difficulties that can arise in neonatal care both in the NICU, special care and community environments. The next presentation from Shanayde Daly (dietician, Albury Health) elaborated on Alys' presentation by giving the delegates information on how to the support the vulnerable neonate with their nutritional status and what bedside nurses can do to improve nutrition outcomes for all infants.

Dr Tracey Merriman who is a paediatric surgeon working at Albury Wodonga Health presented a renal case study on a patient with bladder extrophy who was delivered and stabilised in Wodonga. It was interesting to hear about this case as many of the nurses and midwives had been a part of the infant's care and then she gave us all a quick review of embryology and ins and outs of renal abnormalities that can occur in the gestation period.

It was exciting to hear from Dr Lynn Sinclair who presented the fabulous work of her team collating and delivering the 'Good Egg' resuscitation packs around the state. Lynn's presentation was made even more exciting with her announcement that she would be delivering a 'Good Egg' pack to Albury Wodonga Health. A personal story from one of the local midwives hit home about the importance of this announcement. She had to collect supplies for one of the paediatricians to take to a rural hospital for an unexpected delivery of preterm twins; she said it would be so much easier now for her to grab the 'Good egg' pack and know that this contained all that the paediatrician required.

After the lunch break we participated in practical sessions, facilitated by Amy Barker and Nadine Griffiths, on respiratory support and the growth and development of infants. Both of these were interactive and prompted discussion amongst the participants about the best care and great practical tips were delivered as well as the most up to date evidence.

The 'red light, green light' game about which infant is regulated and which is not from Nadine Griffiths was a

fantastic and interactive way to finish the day.

Overall the conference was a great opportunity for the nurses and midwives from around the region to catch up, network and gain some fantastic professional development points. It was appreciated from a number of participants that so many of the presenters had made the effort to travel as opportunities for education like this are scarce in a regional area. I commend Amy Barker, Nadine Griffiths and Lynn Sinclair as the organising committee for arranging such a worthwhile day.

I look forward to the next ACNN conference and encourage ACNN NSW Branch to continue with the support for the country seminars as due to distance, financial and time constraints this is often one of the only conferences that rural and regional nurses and midwives are able to attend.

