THE USE OF ORAL SUCROSE TO MANAGE PAIN IN NEONATES. (AUSTRALIA)

EBONY MORRIS
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Acknowledgements

As a country Australia is renowned for it’s warm and hospitable nature, and this was widely displayed by the participants I met with for my fellowship. The open door policy they extended to me, and endless source of information, was deeply appreciated and made my fellowship the success it was.

I would extend my deepest gratitude to the below and their staff

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Peter Gray – Mater Hospital, Brisbane QLD

Stephanie Devries – Mater Hospital, Brisbane QLD

Sue Hucksion – NICS, Melbourne. VIC

Manisha Chauan – Prince Alfred Hospital, Sydney NSW

I would further extend the most deepest gratitude to

The Winston Churchill Memorial Trust for furnishing me with this once in a lifetime opportunity

The staff of the WCMT office for their hard work and support in making the arrangements for my fellowship seamless.
INTRODUCTION

Being from a medical education background having the opportunity to undertake a period of research of personal interest was thoroughly welcomed. The Winston Churchill Travel Fellowship offered a non dogmatic approach to research and allowed me to conceptualise principles, which I had only previously had the familiarity of by the reading journal articles.

Having undertaken previous research in neonatal care it was a natural progression for me to choose to research the use of sucrose as a pain reliever in neonates. Neonates (pronounced *ne-o-nate*) are newborn infants up to the age of 28 days. The care of infants is a critical issue as it is both a medical and ethical concern that treatment is carried out in their best interest. Pain management is imperative, as neonates are unable to express pain verbally, hence methods to identify and manage pain is vital.

I choose Australia to complete my fellowship as it has shown to be forward thinking in the area of neonatal care. The health education system is closely mirrored to that of the UK so there was less work translation issues to deal with. Australia accommodates eight states, all with different cultural and clinical practice. Thus I concluded this would serve as a comparison tool of the practice of pain management in neonates with sucrose across the country.

Through literature reviews I had established the use of oral sucrose as a pain reliever to be a safe and effective method. Thus my fellowship was initially designed to observe the current practice of oral sucrose use across Australia. As a newly adopted practice it was a natural progression for me to further develop my fellowship to identify the drivers to implementation of this procedure.

The clinical field is a dynamic learning environment with researchers releasing new evidence based research at an exponential rate. As to be expected much proven research does not make it into practice, a state which is termed “evidence-practice gap”. My fellowship focused on how the evidence practice gap had been bridged in relation to oral sucrose use in Australian neonatal units.
I was fortunate that my fellowship timing coincided with the well-established nationwide project **PEGS - Practice Evidence Gap Strategy**, which was a network based project designed to close the evidence practice gap in neonatal pain management in specific reference to the use of oral sucrose. I meet with the project lead of PEGS and some state champions of the PEGS initiative to fully assess the accomplishment of implementing oral sucrose use across neonatal units. I further went on to meet a representative of NICS the organisation that provided funding to the PEGS programme.
The primary premise of this fellowship was to observe pain management in neonates across Australian neonatal units. Thus prior to disseminating the findings of my fellowship I felt it useful to include a background relating to the brief physiology of pain and the current understanding of neonatal pain.

**2.1 WHAT IS PAIN?**

Pain is a **sensory** and **emotional** experience, associated with actual or potential damage to body tissue, informing us of a threat to our bodies. The sensory reception and processing of pain by the brain is defined as **nociception**. When talking of pain it is important to distinguish the **pain experience** from **nocieption**. It is imperative to know that tissue damage and pain experience are not related in a linear way, thus minor damage can cause intense pain and major damage can cause mild pain.

In broad terms pain quality can be classified as superficial or deep pain.

<table>
<thead>
<tr>
<th>PAIN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Superficial Pain</strong> - from skin</td>
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<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Deep Pain</strong> - from muscle, bone and joints</td>
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</tbody>
</table>

**Table 1. Qualities of Pain**

The defining feature of pain is that the definition is equally rooted in **psychological** expression. The psychological expression of pain is multi factorial and can mostly be attributed to **Pain behaviour** - the form of communication used to express pain such as grimacing and the **Cognitive style** – focusing on the thoughts associated with pain. These predisposing factors are laid down in the **subconscious** brain from previous pain experiences and influence each consequent pain experience.
2.2. NEONATAL PAIN

Without the expression of pain, suffering can be underestimated and untreated, a common occurrence in neonates and infants. Once believed to not feel pain to the same degree of adults, neonates are still routinely treated without analgesia (pain relief). The inclination to not use analgesia in neonates has been heavily attributed to the neonates’ inability to communicate pain sensations.

Neonates do not have the ability to verbalize their pain and hence others must recognize pain. In addition to causing distress and delayed recovery, pain in infancy is also a developmental concern. The impact of pain and distress may have short term (physiological and behavioural) and long-term consequences (increased or decreased behavioural responses to pain). Even if not expressed as conscious memory, memories of pain may be recorded biologically and alter brain development and subsequent behaviour.

Research has shown that neonates have:

- **Pain receptor pathways** matured completely by mid to late second trimester.
- Physiological responses in behavioural and body systems similar to that of pain experienced by adults and older children.
- Neonates may experience a greater sensitivity to pain and are more susceptible to the long term effects of painful stimulation.

As neonatal pain mechanisms are fully matured at birth it follows that neonates should be prescribed safe and effective pain relief during medical care. The most common occurrence of pain in the neonatal period is in the neonatal care unit, due to diagnostic and therapeutic procedures. A neonate in intensive care will undergo a number of painful procedures a day to allow healthcare workers to monitor health, hence painful procedures such as a heel lance to recover a blood sample or injections to deliver medications; in some cases such procedures can be performed on an hourly basis.

**Identified painful procedures,**

<table>
<thead>
<tr>
<th>Diagnostic</th>
<th>Therapeutic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heel lancing</td>
<td>Mechanical ventilation</td>
</tr>
<tr>
<td>Lumbar puncture</td>
<td>Postural drainage</td>
</tr>
<tr>
<td>Eye examination</td>
<td>Removal of adhesive tape</td>
</tr>
<tr>
<td>Suprapubic bladder tap</td>
<td>Suture removal</td>
</tr>
<tr>
<td>Retinopathy of prematurity examination</td>
<td>Tracheal intubation/extubation</td>
</tr>
<tr>
<td></td>
<td>Ventricular tap</td>
</tr>
<tr>
<td></td>
<td>Peripheral venous</td>
</tr>
<tr>
<td></td>
<td>catheterization</td>
</tr>
</tbody>
</table>
The pain relief proposed by systematic reviews and randomized control trials indicated oral sucrose to be an effective pharmacological intervention in reducing neonatal pain. The administration of oral sucrose to neonates increases the release of endorphins, in the Central Nervous System (CNS) in response to pain. Endorphins act by binding to opioid receptors in the CNS to inhibit the feeling of pain –thus increasing and prolonging the relief from pain and promoting a sense of well being in the neonate as demonstrated by reduced crying.
Sucrose is the carbohydrate composed of glucose and fructose, commonly termed table sugar. It is readily digested and absorbed into the bloodstream. Sucrose as an analgesic was first studied using laboratory rats in 1987, where researchers noted rats receiving a sucrose solution displayed an increase in pain thresholds compared with a control group receiving water only\(^4\).

### 3.1 SUCROSE AS A PAIN RELIEVER

Randomised controlled trials in neonates dating back to the early 1990s had recognised the ability of sucrose to be a safe and useful analgesic in neonates. Initial trials identified a significant reduction in heart rate and crying within three minutes of administration of an oral sucrose solution\(^5\). The administration of sucrose thus became the most frequently studied non-pharmacological intervention for relief of procedural pain in neonates\(^6\).

The analgesic effect of sucrose occurs by the activation of central endogenous opioid system, an action similar to that of opioid (e.g. morphine) analgesics. The presence of sucrose in the mouth also stimulates the release of endorphins from the hypothalamus sector of the brain. Studies have attributed the pain relieving quality of sucrose to the presence of a sweet taste in the mouth; researchers have termed this the “sweetness effect”\(^7\).

### 3.2. ORAL SUCROSE ADMINISTRATION

Sucrose is administrated orally by placing 0.5ml drop of 24% sucrose solution under the tongue two minutes before a painful procedure (see pic). The peak response time of two minutes is the time needed for taste stimulation to activate the endogenous opioid system for the release of endorphins. The dosage is then recorded on the infant’s medication record. Below is a sucrose protocol as issued by Hawaii medical
Subject: Sucrose Administration to Neonates for Pain Control

Purpose:

“Toot Sweet” is a 24% sucrose solution that works quickly through sublingual absorption. It promotes the release of endorphins, the body’s own natural painkillers. The peak effect is reached when the sucrose solution (24%) is given 2 minutes prior to beginning the procedure, which coincides with physiological release of the endorphins. The action of sucking on the pacifier is also believed to potentiate the effect of sucrose.

Policy:

Sucrose solution (24%) is supplied by the pharmacy department. Unit dose “Toot Sweet” will be supplied via floor stock or the automated dispensing system. Once the product is open, the solution may be kept at the bedside for 24 hours if contamination has not occurred. Write date and time on the container as to when it was opened.

Sucrose solution (24%) is used in conjunction with other non-pharmacologic interventions (pacifier, swaddling or positioning) to ameliorate pain in infants who are undergoing painful procedures such as, but not limited to heel sticks, circumcisions, eye exams, IV insertions and lumbar punctures.

Numerous studies have shown that infants exhibit less painful behaviors when given small amounts of sucrose. Sucrose solution (24%) is not used alone when an anesthetic or analgesic is indicated.

Order of sucrose solution should read as follows: “Sucrose solution (24%) as ordered pm for pain or discomfort” on Medication Administration Record (MAR).

Sucrose solution (24%) may be used on infants equal to or greater than 27 weeks gestation. Refer to below-listed dosing chart. Sucrose solution (24%) will not be used on infants less than 27 weeks gestation, infants who have suspected or proven gastrointestinal dysfunction/abnormalities such as ileus, obstruction, necrotizing enterocolitis or who are postoperative. Sucrose solution (24%) should not be used for unstable or compromised neonates.

Sucrose solution (24%) can be used on infants up to 3 months of age. Efficacy for pain control is not reported after three months corrected age. (Corrected age refers to developmental age. For example: 34 week gestation infant now 10 weeks old is considered 1 month corrected age.)

Procedure:

<table>
<thead>
<tr>
<th>Total Sucrose solution (24%) volume per procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>27-31 weeks gestation</td>
</tr>
<tr>
<td>32-36 weeks gestation</td>
</tr>
<tr>
<td>Greater than 37 weeks gestation</td>
</tr>
</tbody>
</table>
Sucrose solutions are supplied from pharmaceutical companies in various sizes, in addition sucrose solutions can be made by the hospital pharmacy.

![Images of sucrose solutions](image1.png)

**30ml bottle – multi dose**

**12oz solution cup – multi dose**

**Twist Tip Vials – single dose**

**4**

**PEGS: NEWBORN PAIN PROJECT**

The use of oral sucrose to relieve pain across Australian and New Zealand neonatal units is new intervention brought into practice via the formation of the PEGS Newborn Project. The PEGS project was set up in January 2006 having received funding from The National Institute of Clinical Studies (NICS) for a two-year project. The main objective was to reduce the evidence-practice gap of pain management in all 23 neonatal intensive care units across Australia in the first instance then follow up target regional hospitals, children’s wards, emergency departments and general practitioners.

Having appraised the work of PEGS online, my first contact with the PEGS project was Kaye Spence the project leader at The Children’s Hospital at Westmead, Sydney. Kaye Spence AM, a Clinical Nurse Consultant and Associate Professor in Nursing at the University of Sydney; took a secondment to establish and run the national PEGS project under the leadership of the renowned neonatologist Professor David Henderson Smart, who I was unable to meet but his work was wholly conveyed by Kaye Spence.

As project lead Kaye Spence gave me an insight into the background of the project and the overall national management. I also went on to meet state coordinators in Queensland, NSW and Victoria; who provided me with a more localised overview of the implementation and management of sucrose use.
4.1 IMPLEMENTING PEGS NATIONALLY
Kaye Spence AM at Westmead

The PEGS project was established in response to the NICS call for submission of network-based project for implementing evidence-based practice (Section 5). Professor David Henderson Smart applied on behalf of the Australian and New Zealand Neonatal Network, to host a project in reference to neonatal care. Based on the published evidence for the use of sucrose for procedural pain there was a collective request for this to be the subject of project. In addition to this it was agreed that the project should incorporate pain assessment, hence the project would look at pain as the main topic, divided into (A) Sucrose for procedural pain; (B) Pain assessment and narcotic use.

I found PEGS programme methodology to be forward thinking, as the model devised was required to be sustainable for future projects. The steps of the program were outlined as

- Establish Local pain teams in each NICU
- Identify current pain management practices
- Review current guidelines
- Critically appraise the current available evidence
- Identify barriers for change
- Prepare for change
- Measure the change
- Best practice for newborn pain management

The PEGS logo was well received; it denotes the pegging together of the two strands of evidence and practice. Staff in units would occasionally wear pegs which generate interest from parents and allowed the transmission of pain management information
**4.1.1 LOCAL PAIN TEAMS**

The vast size of Australia required an appointment of State coordinators of which, it was decided that these should be nurses as pain assessment and management at bedside is a nurse driven intervention. The coordinators were charged with

- Going into hospitals to provide an in-service, outlying the PEGS project aims and objectives.
- Establish local pain project teams within individual neonatal units, comprising of one nurse and medical champion
- Creating an audit of practice to identify baseline practice to enable units to benchmark their practice across the country.

Positions of state coordinators and local champions required dynamic individuals. It was noted that champions needed to be effective in delivering information, have the ability to appraise practice and to possess respect from their peers. It wasn’t essential for the individual to have prior knowledge of the use of sucrose but it as advocates of the practice, the position called for them to comprehend and *believe* the evidence, as they were effectively being charged with selling this practice to their peers.

**4.1.2 REVIEWING CURRENT PRACTICE**

To identify current practice across neonatal units PEGS used the results of current surveys, Dr Peter Gray, a neonatologist from Brisbane Queensland (2006), conducted one of these. He identified that although there was high-level evidence that the use of oral sucrose benefited neonates in procedural pain, it was a poorly adopted practice. The table below shows the use of sucrose as recorded by Dr Gray, across state regions. As seen the states of Queensland, South Australia and Australian Capital Territory reported no current practice. The identification of individual state practice allowed state coordinators to deliver a more directed approach to implementation.

<table>
<thead>
<tr>
<th>Units, n</th>
<th>Analgesia for venepuncture n (%)</th>
<th>Analgesia for heel prick n (%)</th>
<th>Analgesia for intravenous cannulation n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>New South Wales</td>
<td>61</td>
<td>6(10)</td>
<td>6(10)</td>
</tr>
<tr>
<td>Queensland</td>
<td>43</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>South Australia</td>
<td>18</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Tasmania</td>
<td>6</td>
<td>1(17)</td>
<td>1(17)</td>
</tr>
<tr>
<td>Victoria</td>
<td>47</td>
<td>9(19)</td>
<td>8(17)</td>
</tr>
<tr>
<td>Western Australia</td>
<td>29</td>
<td>6(21)</td>
<td>6(21)</td>
</tr>
<tr>
<td>Australian Capital Territory</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>5</td>
<td>1(20)</td>
<td>1(20)</td>
</tr>
<tr>
<td>All</td>
<td>212</td>
<td>23(11)</td>
<td>21(10)</td>
</tr>
</tbody>
</table>

*Table 2 Use of oral sucrose analgesia for minor invasive procedures in the maternity units of the States and Territories of Australia*

Dr Peter Gray was kind enough to offer me some of his time to discuss his findings and views on the PEGS programme in his hospital but due to scheduling we were unable to meet.
4.1.3 GUIDELINES

There had been a collective call for units to have protocols outlying neonatal pain management, however staff expressed the lack of time to compile such guidelines. PEGS identified this as a central tool in implementing change across the board and set about reviewing current clinical guidelines used in units. In the years prior to the PEGS, various agencies addressed the importance of pain management. Guidelines and position statements were fittingly complied but loosely enforced across neonatal units. PEGS identified the need for unit-based guidelines or protocols summarizing pain management practice. PEGS took the initiative to write guidelines to be distributed across the PEGS network, producing uniformity.


(A) painful procedural procedures,

<table>
<thead>
<tr>
<th>Diagnostic</th>
<th>Therapeutic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lumbar puncture</td>
<td>Bladder catheterization</td>
</tr>
<tr>
<td>Eye examination</td>
<td>Central line insertion/removal</td>
</tr>
<tr>
<td>Venipuncture</td>
<td>Chest tube insertion/removal</td>
</tr>
<tr>
<td>Suprapubic bladder tap</td>
<td>Chest physiotherapy</td>
</tr>
<tr>
<td>Retinopathy of prematurity examination</td>
<td>Dressing change</td>
</tr>
<tr>
<td>Heel lancing</td>
<td>Gavage tube insertion</td>
</tr>
<tr>
<td></td>
<td>Intramuscular injection</td>
</tr>
<tr>
<td></td>
<td>Laser therapy for retinopathy</td>
</tr>
<tr>
<td></td>
<td>Mechanical ventilation</td>
</tr>
<tr>
<td></td>
<td>Postural drainage</td>
</tr>
<tr>
<td></td>
<td>Removal of adhesive tape</td>
</tr>
<tr>
<td></td>
<td>Suture removal</td>
</tr>
<tr>
<td></td>
<td>Tracheal intubation/extubation</td>
</tr>
<tr>
<td></td>
<td>Ventricular tap</td>
</tr>
<tr>
<td></td>
<td>Peripheral venous catheterization</td>
</tr>
</tbody>
</table>

(B) neonatal pain responses

<table>
<thead>
<tr>
<th>Physiological</th>
<th>Behavioural</th>
<th>Hormonal</th>
<th>Autonomic</th>
<th>Body Movements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase in:</td>
<td>Change in facial expression:</td>
<td>Increased release of</td>
<td>Flushing</td>
<td>Arching of back</td>
</tr>
<tr>
<td>Heart rate</td>
<td>Screwing up of eyes</td>
<td>Cortisol</td>
<td>Mydriasis</td>
<td>Thrashing of limbs</td>
</tr>
<tr>
<td>Blood pressure</td>
<td>Nasal flaring</td>
<td>Catecholamines</td>
<td>Pallor Sweating</td>
<td>Writhing</td>
</tr>
<tr>
<td>Respiratory rate</td>
<td>Curving of the tongue</td>
<td>Growth hormone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oxygen consumption</td>
<td>Grimacing</td>
<td>Renin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean airway pressure</td>
<td>Quivering of the chin</td>
<td>Aldosterone</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Muscle tone</td>
<td>Glucagon</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Antidiuretic hormone</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(C) and principles of management.

It outlined the principles of management as

- Prevention – consider whether each test/intervention is necessary
- Environment – reduce stress from noxious stimuli (acoustic, tactile, visual, vestibule)
• Behavioural methods – breastfeeding, sucrose, swaddling, multi sensory stimulation (inc massage, eye contact, soft speech)
• Pharmacological agents
• Pharmacological therapy for ongoing pain

4.1.4 PREPARING FOR CHANGE
As in all environments prompting change is often a daunting task. Prompting change in a working clinical environment is equally daunting as it is often evidence-based. Thus getting staff to take the time to disseminate and accept the evidence for change can be time consuming and reluctantly received. The PEGS project furnished much time on the identification of barriers to change. Tools were used from international organisations such AGREE – Appraisal of Guidelines for Research & Evaluation Instrument and the Registered Nurses of Ontario.

The state coordinators held focus group within the units to identify barriers and enablers to implementing the use of sucrose. In addition PEGS heavily advocates the use of surveying, for instance where communication was identified as a barrier, a survey was carried out on team practice. The issued guideline contained a sample of an audit tool as expected to be carried out by the units.

When implementing change the identification of best practice for that particular environment is important. Where the use of oral sucrose was identified as a medication, it brought into question as to who should administer it. As pain management at the bedside is nurse driven it was decided that it would be best practice to have oral sucrose as a nurse prescribed medication. Most hospitals have thus implemented it as a nurse initiated medication; hence nurses prescribe and administer it. This further removed the barrier of time management preventing oral sucrose not being used due to nurses having to chase doctors to prescribe oral sucrose prior to every procedure.

4.2 PEGS IN THE NEONATAL UNIT
I went on to meet State coordinators who relied how PEGS was run at a unit level. A core principle of the PEGS objectives was promoting a sense of ownership in the unit. In making the project peer led it, it removed the stigma of dictatorial change from the top instead promoting a “bottom-up” approach.
4.2.1 EDUCATION

For the use of oral sucrose to be successfully implemented, the education of staff and parent would have to be the principle driver of PEGS.

Healthcare Staff

I met with Jann Foster, a state coordinator in charge of special care nurseries in New South Wales. Having previously coordinated a CPAP trial in the five special care nurseries, she had established a network that was brought into the PEGS project. Jann strongly advocated the need for providing information to staff and parents. This included giving the supporting evidence and emphasising clinical guidelines. The issue of clinical guidelines was particularly important in NSW as a policy directive had been released making it mandatory for healthcare workers to effectively assess and manage pain in neonates, hence Jann Foster was especially focussed on the units to take ownership of the subject of pain management. I was struck by the visual approach PEGS took when supplying information as highlighted by Jann Foster who had noted that the initial supplying of information to the units as digital literature transfer onto the computers of the units was not well received as staff would express lake of time to read reams of information, effectively equating to information overload.

Meeting Karen New, the state coordinator of Queensland based at the Royal Brisbane & Women’s Hospital proved enlighten, as Queensland was a state identified as not having prior use of oral sucrose. Karen New identified the previous belief that neonates did not feel and record pain was the main consensus as to why a perceived time consuming procedure was not performed. The lack of knowledge called for the delivery of cross sectional evidence based information to be delivered. Karen New now delivers lectures as part of the transition to neonatal nursing programme about the use of sucrose in neonatal care. Medical staff were also educated in the use of sucrose and further educational developments are being arranged.

Through educating staff, outdated believes such as neonates being unable to feel pain were addressed and disproved. Some issues were harder to dispel as experienced when resistance to sucrose use because of the baby friendly hospital incentive (BFHI). The BFHI was set up to prompt maternity wards to endorse breast-feeding, it designated that no artificial substance should be introduced into the infants’ mouth. Postnatal wards in particular were resistant to implementing oral sucrose, as having identified themselves as a baby friendly hospital; they classed sucrose as an artificial substance. This misnomer was explained to the units as
1. It is more baby friendly to give an infant sucrose for pain relief than nothing at all.
2. Sucrose was not ingested; it was absorbed under the tongue hence it is not a food.
3. Sucrose is a medication used to treat a medically induced i.e. pain, being induced by a medical procedure.

**Parental Education**

PEGS identified the need for parental support, which was best received through education. By the production of posters and flyers (see below) were produce and given to parents or placed in prominent positions around the neonatal units. Some units produced additional innovative modes of promotion such as neonatal unit which hosted a “Pink for Pain” day, during which all the staff wore pink and literature was printed on pink paper to highlight pain management and the use of sucrose in the neonatal units.

Parents too were advocates for the use of sucrose, I was told of a parent who had requested a physiotherapist on a different ward to use sucrose before conducting a procedure on the infant, as this was the practice she had become accustomed to in the neonatal unit. On another occasion a parent was overhead explain the mechanism of sucrose in relation to the release of endorphins.
4.2.2 PEER MONITORING

The concept of peer monitoring holds through the PEGS project, units are assigned a baseline practice figure that allows themselves to compare their practice to other units across Australia. Colleagues are constantly reminded to administer sucrose before procedures and memory aids such as stickers are placed in prominent places around the units, such as supplies store cupboards. PEGS releases a newsletter periodically which gives a progress overview of the project and details future objectives (see below).
ANZNN participation

The Australian hospitals of the ANZNN have now all committed and signed the participant agreement for the project. We found getting Ethics Approval quiet a challenge and are pleased to report that we are only waiting on the outcomes of a few of the submissions.

Ninety-five percent of the hospitals are actively involved in the project. Local nursing and medical champions have been identified and the majority have established Pain Project Teams. This is an important component of the project for change to take effect.

The local teams have been quiet resourceful in providing best practice initiatives. However there still remains the issue of conflicting needs in terms of workload and opportunities to evaluate practice through quality improvement initiatives.

The support of the Directors of the ANZNN hospitals is vital to the success of the project.

Feedback Back Reports

Earlier this year each participating hospital was sent a feedback package which contained the results of the audits of procedural pain and assessment and management of pain in ventilated infants. The results were presented in a format where each local team could consider their practice in relation to the national average and other participating units.

The team will be following up with each of the local teams to help identify strategies for practice change. The use of quality improvement initiatives will be the focus of the strategies.

All units were given a CD with your data, if you haven’t seen it ask your local champion to show you and then discuss your practices.

In addition the parent brochures and posters and latest newsletter were included. Informal feedback about the packages has been positive.

A set of stickers were distributed to each unit—the aim was to place them around the point of care as reminders about strategies to reduce the painful interventions for the babies.
The PEGS programme was awarded funding by the independent government body NICS (National Institute of Clinical Studies). NICS was set up in 2002 by the government to support clinicians with the implementation of **best practice** and **evidence-based practice**. “NICS works to improve health care by helping close important gaps between best available evidence (what we know) and current clinical practice (what we do).”*

NICS is privileged to have a diverse staff cohort, with varied range of skills, which aids in their delivery of expertise in knowledge translation and evidence implementation. I meet with Sue Huckson of NICS in the Melbourne Office who gave me an insight in to the work NICS and the formation of the evidence uptake network program. Through a think tank with the leading thinkers in spearing implementation, the concept of networks was a strong recurring theme, a mechanism that brought people together through a common objective and interaction. Networks have gained popularity in the healthcare field as a way of engaging healthcare professionals in a ‘bottom up’ approach to implementing day-to-day decision making in care delivery. The strategy was to promote the healthcare field to form networks to establish relationships and to instigate thoughts of evidence practice gaps that could be closed.

Awards of $10,000AU was awarded to eleven teams to scope up a project proposal within a network to identify an evidence practice gap and outline what elements the network would identify methods to address and close this gap. The proposal had to fully outline

- the evidence–practice gap
- the importance of the gap
- the aim for improving practice
- evidence implementation strategy and evidence in support of that strategy
- governance and membership
- means of monitoring change in practice
- plans for obtaining support for the Network beyond NICS funding

This initiative had many benefits as the self-reflection required to compose a proposal gave unsuccessful teams the start out for future funding reach. Two networks were chosen from the eleven submitted proposals, the Australian New Zealand Neonatal Network (ANZNN) and the Diabetes Collaborative Network.
Pain management was part of a recurring theme seen by NICS and the ANZNN proposal to improve the management of procedural pain in newborn infants with the use of sucrose analgesia followed well in this patient quality of care issue. NICS works on the principles of change required to implement change. Hence they are able to identify key enablers of change such as access to evidence, the need for champions to support evidence and commitment of organisations to focus on best practice and evidence. The use of NICS expertise is very directed, accordingly in reference to the PEGS programme specific barriers around pain management were addressed.

**CONCLUSION**

Having conversed with participants of the PEGS programme at differing levels I was able to get a complete depiction of the scope of the project. With pain being such an important quality of care issue, the stakes were high for this project and I feel the model they implemented to instil change was a positive and effective framework. At the time of writing my report, PEGS were carrying out their follow up audits to evaluate the level of change that PEGS have installed. I am confident that the results as a whole will be pleasing, I am sure there will be neonatal units where the change of practice has not been as positive as would have hoped but I believe this will not be a surprise to the coordinators of PEGS as they have good insight into the progress individual units are displaying.

As with all programmes of change it was not without its shortfalls but I would offer that the quality that allows PEGS to be successful is their ability to self appraise and identify needs for improvement and closing of knowledge gaps. The continuous communication between units served a tool to keep the use of oral sucrose at the forefront as a lasting practice pain intervention.

It was noted that the units that displayed the most committed cooperation was those where there was greater nursing leadership. Whilst pain management at the bedside is a nursing intervention I would have liked to see more medical staff led advocacy for the use of sucrose.

Having the expertise of NICS to hand is an immense bonus for PEGS, as implementing change is a uphill struggle and having an organisation that holds a large reserve of knowledge is hugely beneficial. The requirement of NICS to compile a model that was self sustaining after
the end of funding is a proactive manoeuvre allowing the PEGS project to gain momentum and progress in future years.

Essentially the principal question that arose from my fellowship is “Would I recommend the PEGS project as a model for promoting sucrose use in UK neonatal units?” The answer would unequivocally be yes. I thought it was a complete model which focussed squarely on the issues that surrounds producing a solid foundation for implementing and sustaining the use of sucrose for pain management.

In terms of recommendations for future implementation of sucrose use, mine would mirror those as outlined by the ACNN position Statement in 2004\(^{10}\).

- Establish unit based guidelines outline pain management practice incorporating pain assessment and pain intervention i.e. use of oral sucrose
- Development of pain reduction strategies
- Addition of neonatal pain (to include pain physiology, pain source, short and long term effects of pain and assessment of pain.) to the curriculum of midwifery, neonatal nursing and neonatology. Mandatory refreshment education to elder qualified professionals.
- Management to ensure staff have access to and understanding of current evidence based literature
- Inclusion and education of parents on pain management at the bedside.
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“Healthy citizens are the greatest asset any country can have.”
Winston Churchill
1921 – 1955