Preventing Abusive Head Injuries In Australian Infants

Dr Melissa Kaltner
Senior Research Fellow
 Darling Downs HHS
 Queensland Health
Presentation Outline

- Abusive Head Trauma
  - Injuries & symptoms
  - Incidence
  - Associated Factors

- Preventing AHT
  - International
  - Australian
  - Example Materials
  - Current Study
What is Abusive Head Trauma?

- Abusive Head Trauma (AHT)
  - Shaken Baby Syndrome
  - Inflicted Traumatic Brain and Head Injury
Abusive Head Trauma Injuries

- **Associated Injuries:**
  - Skull fracture
  - Subdural haematoma
  - Epidural haematoma
  - Subarachnoid haematoma
  - Retinal haemorrhage
  - Rib fractures
  - Bruising
AHT Presentations

- **Symptoms:**
  - Vomiting
  - Fever
  - Irritability
  - Lethargy
  - Apnoea
  - Seizure
  - Coma
  - Breathing difficulties

- **History:**
  - Short Falls
  - Sibling trauma
  - Most common: No history of trauma
  
  (Hettler & Green, 2003)
AHT Incidence

International:

- **South Wales and South-west England:** 12.45 per 100,000 children (Jayawant et al., 1998)

- **US:**
  - 17 per 100,000
    - Under 12 months: 29.7 per 100,000
    - 12 – 24 months: 3.8 per 100,000 (Keenan et al., 2003)

- **New Zealand:**
  - 14.7 per 100,000
    - Maori: 32.5 per 100,000
    - Non-Maori: 8.6 per 100,000 (Kelly & Farrant, 2008)
Costs

- Compared to accidental cases:
  - Higher severity
  - 52% longer admission
  - 89% higher costs per patient (Libby et al., 2003)

- Cost associated with:
  - Ongoing care & rehabilitation
  - Police & Child Protection response
  - Societal costs
The Human Cost of AHT

Source: The Sunday Mail
Queensland Incidence & Associated Factors

- Establish incidence of AHT in Queensland
- Examine factors related to AHT occurrence compared to accidental injury cases

Methodology

- Retrospective examination of AHT cases in Queensland 2005 – 2009, infants aged 0 -24 months
14 Queensland hospitals:
- Tertiary Paediatric Hospitals included
- Plus CCYPCG data
Results: Age

% AHT Cases

Months of Age
Results:

○ SEIFA IRSD
Queensland Incidence

Queensland state-wide incidence of AHT per 100,000 infants aged 0 – 24 months, per year:

<table>
<thead>
<tr>
<th>AHT Severity</th>
<th>AHT Incidence (CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe AHT</td>
<td>11.9 (6.2 – 19.7)</td>
</tr>
<tr>
<td>Less Severe</td>
<td>25.8 (17 – 36.9)</td>
</tr>
<tr>
<td>Total</td>
<td>37.7 (26.9 - 51)</td>
</tr>
</tbody>
</table>

:: similar severe AHT incidence to other countries
Case ascertainment

- Severe: cases which presented to hospital and were either admitted for 24 hours or died
- Less Severe: cases which were admitted to hospital for less than 24 hours for non-life threatening injuries
  - likely underestimation
## Associated Factors

### Severe AHT compared to Severe Accidental Head Injury

<table>
<thead>
<tr>
<th></th>
<th>AHT (N = 32)</th>
<th>Accidental Head Injury (N = 225)</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median Age (months)</td>
<td>3</td>
<td>7</td>
<td>&lt; .001*</td>
</tr>
<tr>
<td>Proportion Male</td>
<td>63%</td>
<td>59%</td>
<td>.85</td>
</tr>
<tr>
<td>Proportion ATSI</td>
<td>16%</td>
<td>6%</td>
<td>.04*</td>
</tr>
<tr>
<td>Median SEIFA Index of Relative Socio-economic Disadvantage score</td>
<td>964</td>
<td>1005</td>
<td>.002*</td>
</tr>
<tr>
<td>Median Length of Stay (days)</td>
<td>7</td>
<td>2</td>
<td>&lt; .001*</td>
</tr>
<tr>
<td>Proportion ISS Major</td>
<td>78%</td>
<td>32%</td>
<td>&lt; .001*</td>
</tr>
</tbody>
</table>

*Kaltner et al. (2013)*
Prevention Implications

- Need to undertaken prevention initiatives given relative frequency

- AHT prevention needs to:
  - Be delivered early
  - Be culturally appropriate
  - Be accessible
Infant Factors:
Age associated development, encompassing:
- Physiological risk (Smith & deGeuhray, 2008)
- Crying (Barr et al., 2004).

Situational Factors:
- Family SES
- Stressful situations (military involvement (Keenan et al., 2003), natural disaster (Keenan et al., 2004))
- Isolation (Harnett, 2008)
- Twin Status (King, Mackay & Sirnick, 2003)
- Pregnancy difficulties (Becker et al., 1998)

Caregiver Factors:
- Understanding of normal crying patterns in infants (Barr et al., 2004) and shaking dangers (Dias et al., 2005)
- Frustration tolerance (Davies & Garwood, 2001)
- Age (Keenan et al., 2004)
- Substance misuse (Coody et al., 1994)
- Psychopathology (Davies & Garwood, 2001)
- Jealousy of infant's relationship with other
Prevention: General Approach

○ Health promotion theory based: influence social and environmental factors to reduce risk
○ Delivery of caregiver education to modify social risk factors
○ Global programs: materials have been delivered to birthing parents
○ Promising results
International Prevention Approaches

- Dias et al. (2005)
  - 50% reduction in incidence

---

**Take a Break... Don’t Shake**
(Help Us Prevent SBS)

**Babies and Crying:**
Taking care of an infant can be challenging.
No one likes to hear a baby cry. It is irritating and frustrating.
Crying is the only way babies communicate their needs.

**Why is your baby crying?**
Some babies cry when they are hungry, tired or wet.
A fever or illness can make an infant more fussy.
Sometimes they just want to be held. Check these basic needs and try to make the baby comfortable.

**Remember, it's OK for babies to cry; it's normal and won't hurt them!**

---

**How to cope with your baby's crying:**
If you have tried to calm your crying baby but nothing seems to work, it is important to stay in control of your temper. Here are some tips to help you with these frustrating moments when your baby won’t stop crying:

- Put the baby in a safe place, like a crib or playpen and leave the room for a while.
- Check on the baby every 10-15 minutes.
- Listen to music, watch TV, exercise or just relax.
- Call a relative or friend. They may offer advice or watch the baby for a while.

All parents get stressed at one time or another. Be sure to set aside some time for yourself. It’s important to take care of your needs, as well as your baby’s, so you will be able to handle the most stressful situations.

**Tell Everyone You Know... Never, Never Shake a Baby!**
International Prevention Approaches

- Period of PURPLE Crying
  (National Center on Shaken Baby Syndrome, 2010)

‘PURPLE’:
- P for peak pattern
- U for unexpected timing
- R for resistance to soothing
- P for pain-like look
- L for long bouts
- E for evening clustering

Cost effective program
(Ornstein & Dipenta, 2011)
Australian Initiatives

- Westmead Children’s Hospital’s Shaken Baby Prevention Program Model (Foley et al)

- Knowledge increases
- Reduction negative beliefs about crying
Australian Initiatives: The Westmead Model video

Video:
Australian Initiatives
(Lilley, Stephens & Kaltner)

- Period of PURPLE Crying Trial in Cooktown, Cape York (Qld) (Lilley, Stephens, Kaltner et al)
- Cooktown:
  - Population 2,339
  - 16% Indigenous
- Birthing Centre trial
- Scoping Paper
- 2014 commencement
Cooktown Prevention Trial

- Gathering data
- Cultural considerations
- Community Support
- **Evaluation**
Summary

- AHT represents a significant health burden in Australia
- Prevention is straightforward and appears effective
- Free Australian programs available!
- Evaluation essential to provide support for continued expansion
Questions?

Email: Melissa_Kaltner@health.qld.gov.au