

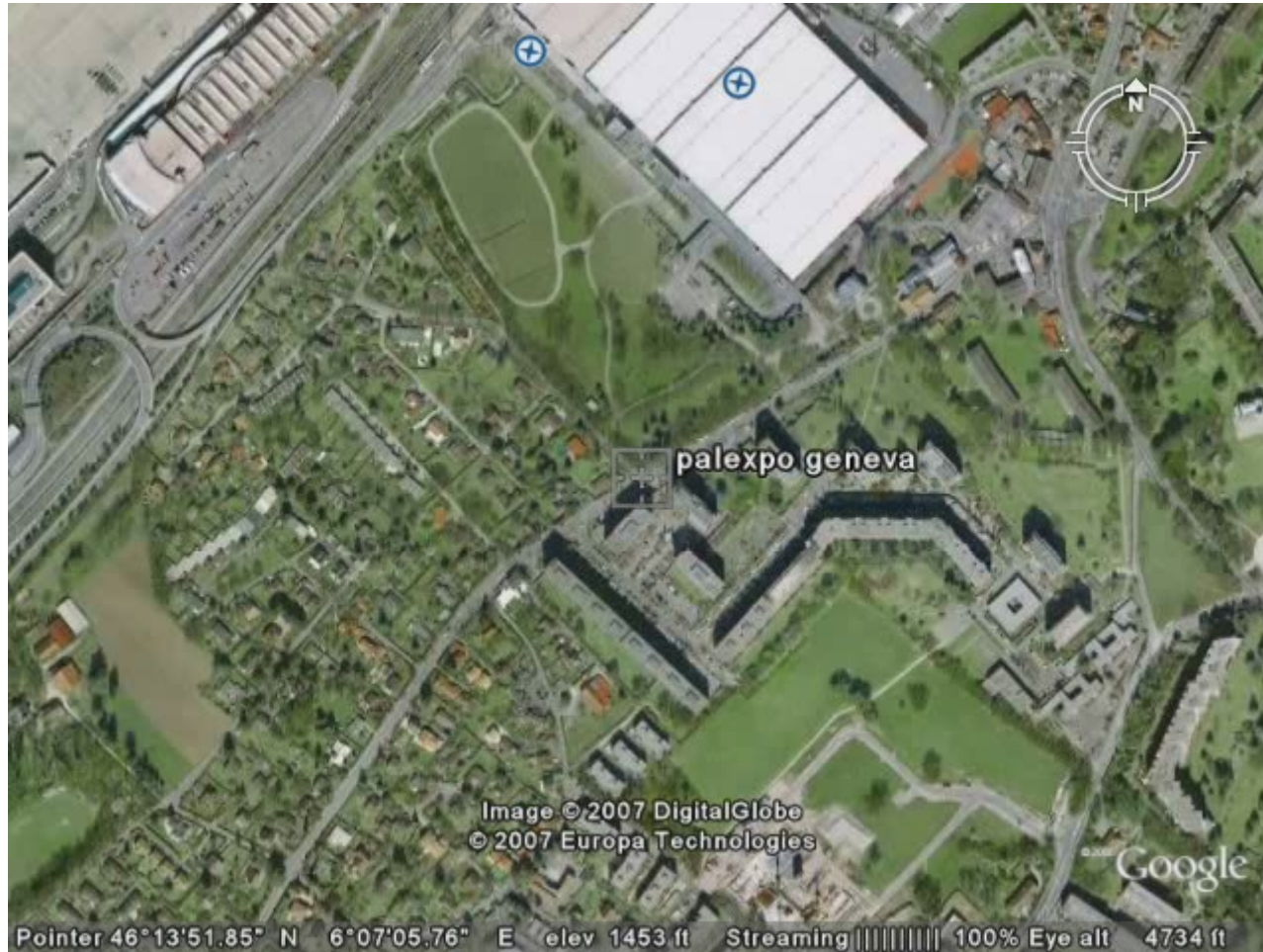
Pain Assessment of the Critically ill Child: State of the Art

Anne- Sylvie Ramelet
Clinical Research Fellow
Paediatric Intensive Care unit
Princess Margaret Hospital for Children
Perth, Western Australia



Perth Western Australia







Objectives

- ▶ Define current pain assessment
- ▶ Overview the many challenges
- ▶ Propose strategies to optimise pain assessment

How are we doing?

Over 35 neonatal pain measures and more for children

▶ More than 10 published reviews

von Bayer et al. Pain 2007;127:140- 50;

Stinson et al. Pain 2006; 125:143- 57;

Ramelet ACC 2004; 17:33- 45;

Duhn et al. Adv Neonatal Care 2004; 4:126- 40

▶ Many protocols have been developed

<http://www.racp.edu.au/public/publications.htm>

<http://www.painedu.org/resources.asp>

▶ Position statements and recommendations

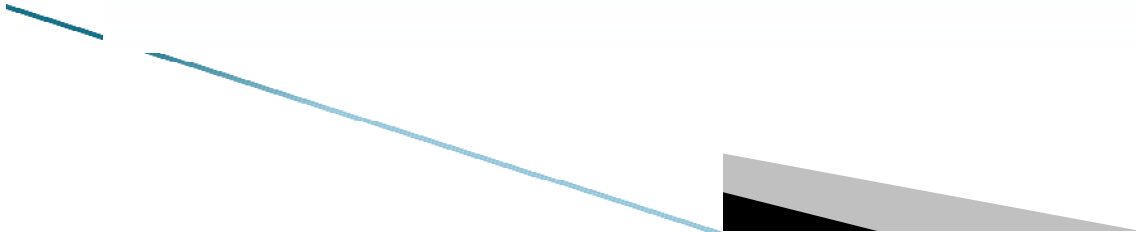
<http://www.ampainsoc.org/advocacy/pediatric2.htm>

Summary Proceedings From the Neonatal Pain- Control Group Pediatrics
2006;117:S9- S22

Yet Pain is still poorly assessed

- ▶ 19% of NICUs used validated pain measures in Italy [Lago et al. Ped Anesth 2005;15:925-31](#)
- ▶ 6% in Australia [Harrisson et al. JPaed Child Health 2006; 42:6-9](#)
- ▶ When assessed regularly, inter-rater reliability of assessments between experienced nurses was poor (0.21-0.64) [Katz et al. Europaediatrics Oct 2006; Barcelona](#)

And current pain management remains suboptimal

- ▶ Prospective observational study [Simons et al. Arch Pediatr Adolesc Med. 2003;157:1058-64.](#)
 - ▶ To describe the frequency of use of analgesics in invasive procedures
 - ▶ 151 neonates
 - ▶ Mean of 14 (\pm 4) procedures per day
 - ▶ Pre-emptive procedural analgesia given to 35% of neonates
 - ▶ 40% received no procedural analgesia
- 

Morphine for procedural pain in ventilated preterm neonates

Carbajal et al. Pediatrics 2005; 115:1494-500

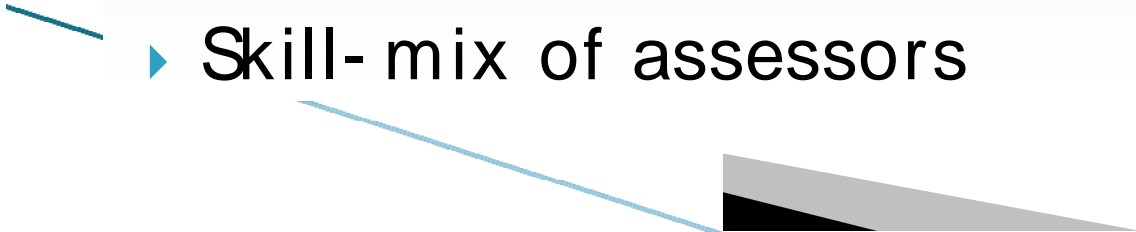
- ▶ NEOPAIN trial
- ▶ 42 neonates
- ▶ Loading doses of 100mcg/ Kg + infusion 10-30 mcg/ Kg/ h vs placebo
- ▶ Intervention: 3 heel sticks- before, 3 h, and 20- 28 h after loading dose
- ▶ Pain scores were not statistically different between groups
- ▶ Inadequate analgesia for invasive procedures

What are the challenges?

- ▶ Accurate assessment, interpretation, and management of pain in critically ill children
- ▶ Integration of pain assessment into practice and sustain appropriate use of pain assessment/management strategies

Van Dijk et al. Why not stick to a pain/distress protocol in the PICU? 5th World Congress on PIC 2007; Geneva

Why is pain assessment so difficult in the PICU/NICU

- ▶ Diverse population/ developmental age
 - ▶ Various pathologies
 - ▶ Different type of pain: acute, procedural, postoperative, chronic, cancer pain
 - ▶ Masking effect of sedative/ hypnotic agents
 - ▶ Impaired communication
 - ▶ Discriminate pain from other adverse conditions
 - ▶ Various pain management practices
 - ▶ Skill- mix of assessors
- 

Pain in critically ill infants

- ▶ Description of indicators of persistent pain in critically ill infants is limited [Boyle et al. Pain 2006; 124:87-91](#)
- ▶ The vigour of behavioural pain responses diminish with severity of illness, duration of noxious stimuli, and gestational age [Craig et al. Clin Perinatol 2002; 29:445-57](#)
- ▶ There are subtle behavioural changes between intensity and type of pain (e.g. postoperative pain alone and postoperative pain + procedural pain) [Ramelet et al. Ped Crit Care Med 2006; 7:19-26](#); [Boyle et al. Pain 2006; 124:87-91](#)
- ▶ Children who are pharmacologically paralyzed cannot display behavioural responses

Pain scales for the non-communicative PICU patient

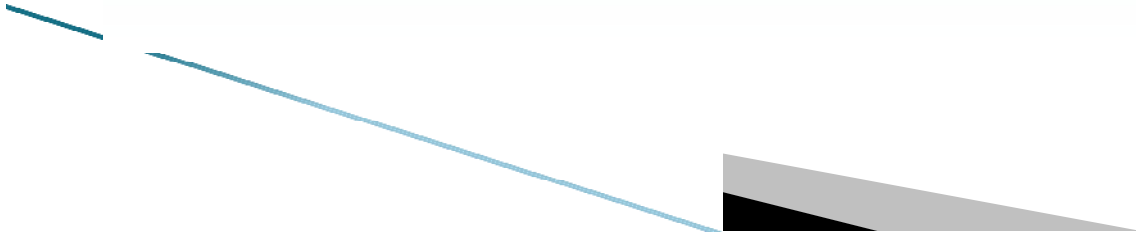
- ▶ Premature Infant Pain Profile (PIPP)
- ▶ COMFORT
- ▶ FLACC
- ▶ MAPS- Revised©

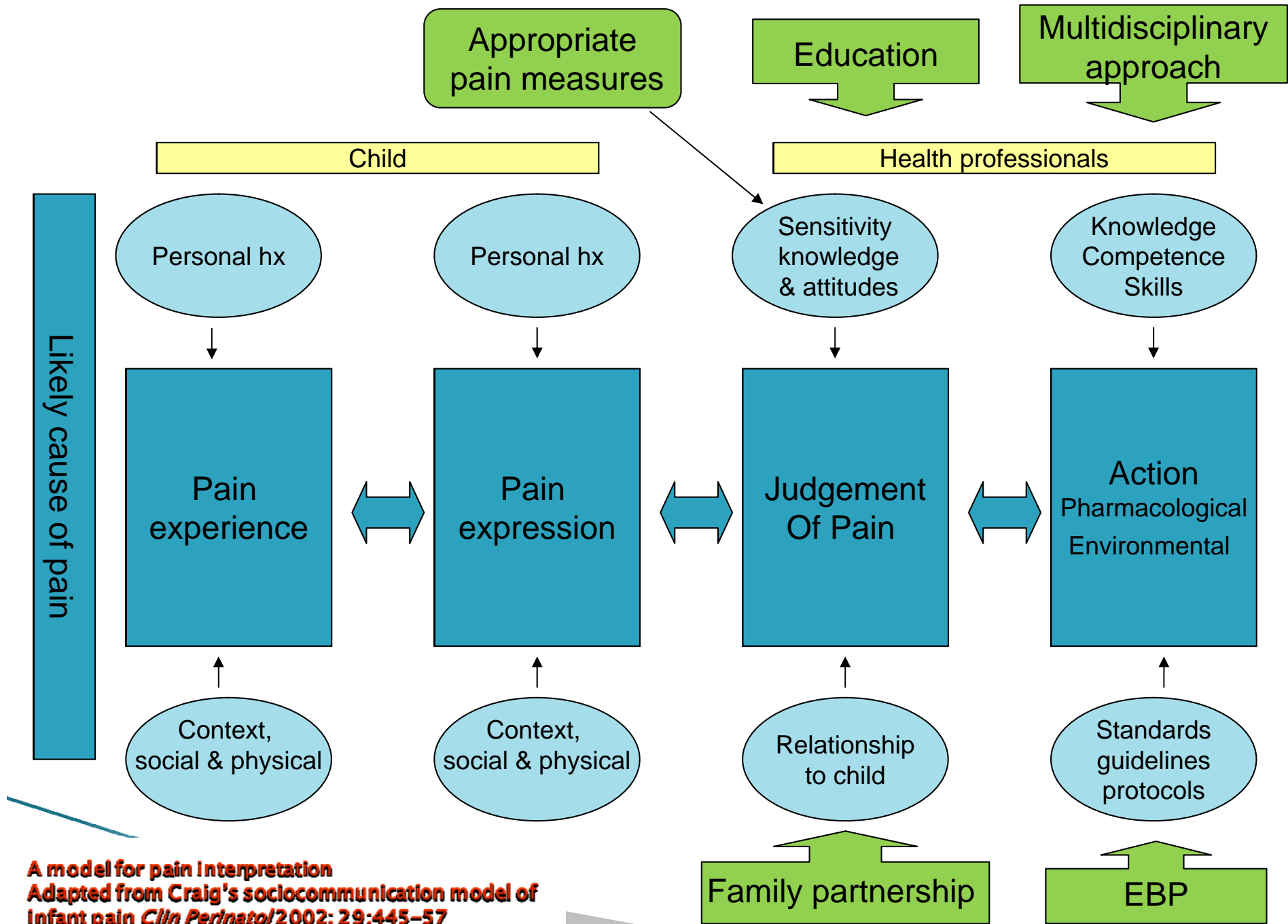
MAPS-Revised ©

- ▶ Developed from pain cues observed in postoperative critically ill infants
- ▶ 5 categories: vital signs, breathing pattern, facial expressions, body movements, state of arousal
- ▶ Possible scores: 0- 10
- ▶ Tested for reliability, construct, concurrent and convergent validity, and clinical utility

Ramelet et al. Ped Anesthes 2007;17:333-44
Ramelet et al. Ped Anesthes In Press

Integrated pain assessment

- ▶ Clinical practice guidelines
 - ▶ Pain scoring systems
 - ▶ Sedation measures
 - ▶ Target desired level of sedation [Curley et al. 5th World Congress on PIC 2007](#)
 - ▶ Algorithm to facilitate interpretation of pain and other causes for behaviour [Hummel & vanDijk Seminars in Fetal & Neonat Med 2006;11:237-45](#)
 - ▶ Integrate algorithm into standard practice
- 



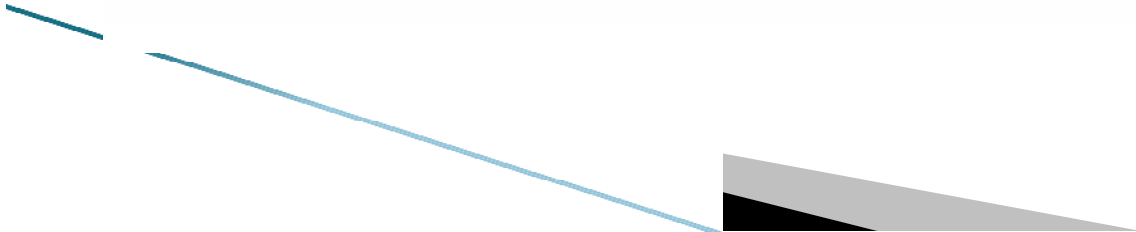
A model for pain interpretation
 Adapted from Craig's sociocommunication model of
 Infant pain *Clin Perinatol* 2002; 29:445-57

Impact of pain and sedation

assessment Chanques et al. Crit Care Med
2006; 34:1691-99

- ▶ Pre/ Post test intervention study
- ▶ Sample: 230 adult patients; > 24hrs ICU stay
- ▶ 20% decrease in incidence of pain
- ▶ 18% decreased in incidence of agitation
- ▶ Decreased duration of mechanical ventilation (120 vs 55 hrs)
- ▶ 10% decrease in nosocomial infections rate

Concluding Remarks

- ▶ Pain measures should not be used in isolation
 - ▶ Standardization of pain assessment in combination with evidence-based algorithm for treatment options may improve pain management
 - ▶ Effectiveness of pain assessment and treatment combination on health outcomes needs to be tested
 - ▶ Further research in the decision-making process for pain management in the critically ill is warranted
- 

Greetings from Australia



This document was created with Win2PDF available at <http://www.win2pdf.com>.
The unregistered version of Win2PDF is for evaluation or non-commercial use only.
This page will not be added after purchasing Win2PDF.