



# Minimising Childhood Immunisation Pain using a cold-numbing device (CoolSense®)

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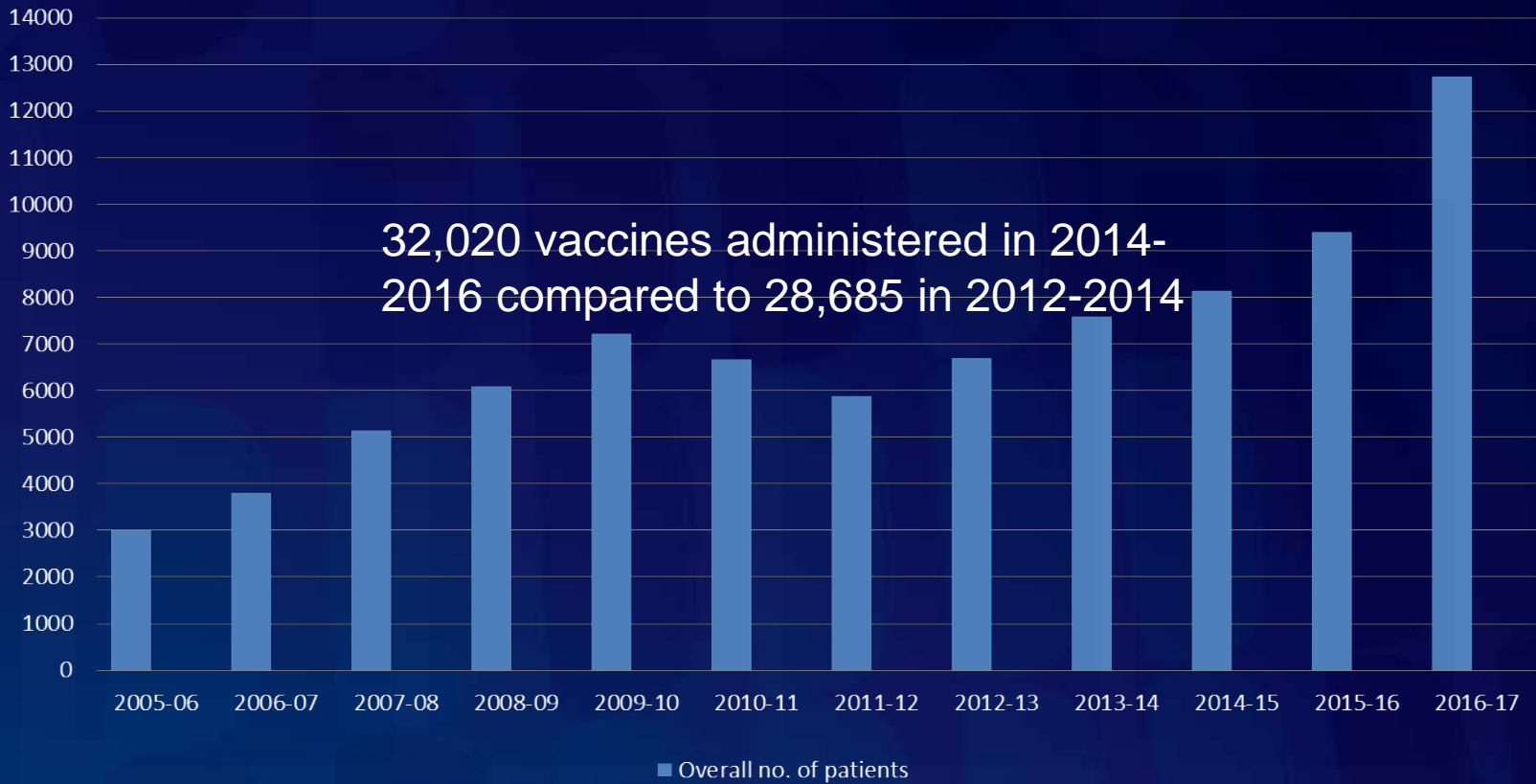
# The RCH Immunisation Service

- Funding through partnerships with the Vic. Dept of Health Services - Immunisation section
- Three core services
  - Drop-in centre
  - Telephone advice line
  - Weekly outpatient clinic
- Inpatient Immunisations



# Overall service activity

## Immunisation Service Activity







# Background

- Most children dislike needles and are quite anxious about them
- Some develop a considerable fear (needle phobia)
- About 10% of adults have needle phobia<sup>1</sup>
  - onset of needle phobia is prior to age 10 in 70%

1. Ost LG. Blood and Injection phobia: background and cognitive, physiological and behavioural variables. J Abnormal Psychology 1992;101 (1)68 – 74

# Background cont...

- A Child's early experiences can determine whether medical help is sought in the future<sup>2</sup>
- Distress with immunisation can also lead to non-adherence with immunisation schedules<sup>3</sup>
- Important to reduce pain and distress when immunizing

2. Jenkins, K. Needle Phobia. A Psychological Perspective. British Journal of Anaesthesia 2014; 113(1): 4-6.

3. Schechter, N. et al. (2007). Pain reduction during pediatric immunizations: evidence-based review and recommendations. Pediatrics 119(5), e1184-1198.

# Making immunisation a positive experience



- Help prevent vicarious conditioning
- Children can be ‘led’ or ‘instructed’ to be fearful of needle procedures<sup>4</sup>
- Negative experiences portrayed by family, friends and the media
  - dental visits
  - immunisations
  - blood tests

4. Smalley A. Needle phobia. Pediatric Nursing 1999;11(2)17-20

# Standard care/Distraction Techniques



Bubbles



Toys

Buzzy®





# Coolsense®



# What's so cool about Coolsense®?

- Pain numbing device used for injection sites.
- Operating temperature is -2 to -6 degrees
- Only takes 5-10 seconds to work
- Can be used multiple times
- Chemical free
- No waiting time for topical analgesia to work
- Cost effective
- Reduced sensation of pain
- Gives children some control

# Evidence

- Prospective observational audit of 100 children and adolescents (6-18 years)<sup>5</sup>
- Used for Intravenous cannulation
- Audit demonstrated effective skin analgesia. 94% pts rated pain  $\leq 3$  (using NRS)
- RCH Clinical guideline developed
- [http://www.rch.org.au/policy/policies/Coolsense\\_Pain\\_Numbing\\_Applicator/](http://www.rch.org.au/policy/policies/Coolsense_Pain_Numbing_Applicator/)

5. Ragg et al., (2017) A clinical audit to assess the efficacy of the Coolsense® Pain Numbing Applicator for intravenous cannulation in children. Anaesthetic Intensive Care. 45(2) p.251-255

# RCH Immunisation Service and Coolsense®

- RCH Immunisation Service began using device in May 2017
- Used for ages 3.5 yrs – 18 yrs
- Widely accepted and simple to use
- Continual monitoring of effectiveness and safety in all age-groups
- Pilot study commenced late May 2017

# Minimising Immunisation Pain – Pilot Study



## Trial / Pilot Objectives:

1. Determine feasibility for larger RCT
2. Provide data to inform sample size for RCT
3. Measure patient compliance
4. Measure parents perceptions



# Minimising Immunisation Pain – Pilot Study cont.



## Study Design/Methods:

- Sequential Randomisation into four groups: 10 children per group = 40 total:
  1. **Standard care** – distraction using bubbles
  2. **Buzzy® (no wings) and standard care**
  3. **Buzzy® (with wings) and standard care**
  4. **Coolsense® and standard care**

# Minimising Immunisation Pain – Pilot Study cont.



- Inclusion Criteria:
  - All children aged 3.5 to 6 years of age inclusive
  - Presenting for a **single** immunisation
- Exclusion Criteria:
  - Confirmed needle phobia
  - Child with Haemophilia or bleeding disorder
  - Eczema/skin damage at injection site
  - Child with development/behavioural disorder

# Other Considerations

- Cost effectiveness
- Storage of devices
- Education and training of staff
- Reduce admissions to DMU and need for sedation
- Better patient experience and outcomes

# Conclusion

- Nurses need to be aware of procedural anxiety and attempt to decrease this through better pain control.
- Coolsense® is simple to use, enjoyed by most children and adolescents and can help to make immunisation a positive experience.





# Acknowledgements

- Dr Kirsten Perrett
- Sonja Elia
- RCH Immunisation service nurses, medical and admin
- RCH Comfort Kids
- Templestowe Auxillaries and RCH Foundation
- DHHS Victoria – Immunisation section



# QUESTIONS?