

13 July 2022

Reducing pain in newborns during painful procedures: Evidence, practices and education.

Maternity and Newborn Clinical Conversations

Presenter:

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Professor, Department of Nursing, School of Health Sciences, Faculty of Medicine, Dentistry and Health Sciences, University of Melbourne

Acknowledgment of Country

We begin by acknowledging the Traditional Custodians who have lived and loved this country through the vastness of time.

We honour the Wurundjeri people of the Kulin nation, whose country I meet with you on today. We pay our respects to the old people, to the Elders and Ancestors who are the safekeepers and caretakers of the oldest living culture on the planet.

For this is the very bedrock of this place, our shared home and our special identity in the world and the source of shared pride as Australians.

For this land always was, and always will be, Aboriginal Land.



Artwork by Anmatyerr woman, Tradara Briscoe

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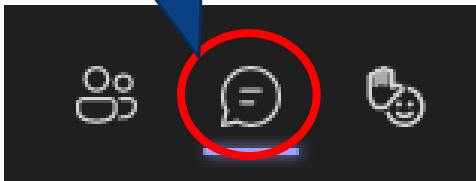
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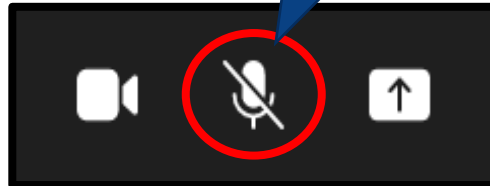
Any applicable laws or legislation take precedence over the presentation.

Before we begin

Please use the **Chat** function to contribute questions and comments throughout todays session



Please **mute** your microphone unless speaking to minimise background noise



This session will be recorded and made available on the SCV website

**Outstanding
healthcare for
all Victorians.
Always.**



Clinical Conversations

Clinical conversations are a platform for engagement with consumers and clinicians across our clinical networks to:

- share experiences
- discuss key learnings and ideas
- share innovative solutions

Will aim to include topics that matter to our consumers and clinicians, and warmly welcome your contributions and suggestions





Reducing pain in newborns during painful procedures: Evidence, practices and education

Denise Harrison (RN, RM, PhD)

Professor, Department of Nursing

Faculty of Medicine, Dentistry and Health Sciences



@Prof_DeniseHarrison

Be sweet
to babies

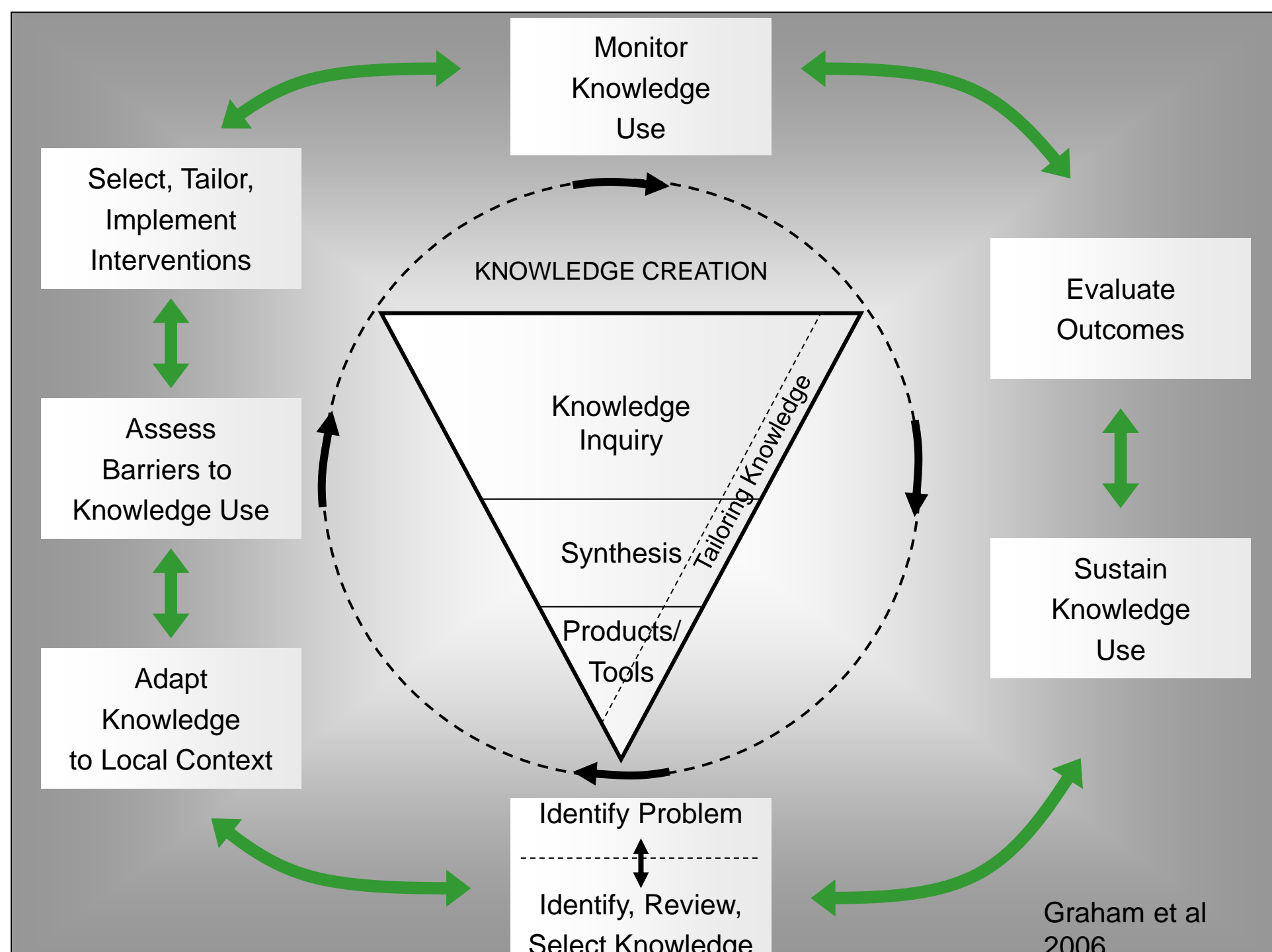


Who am I?

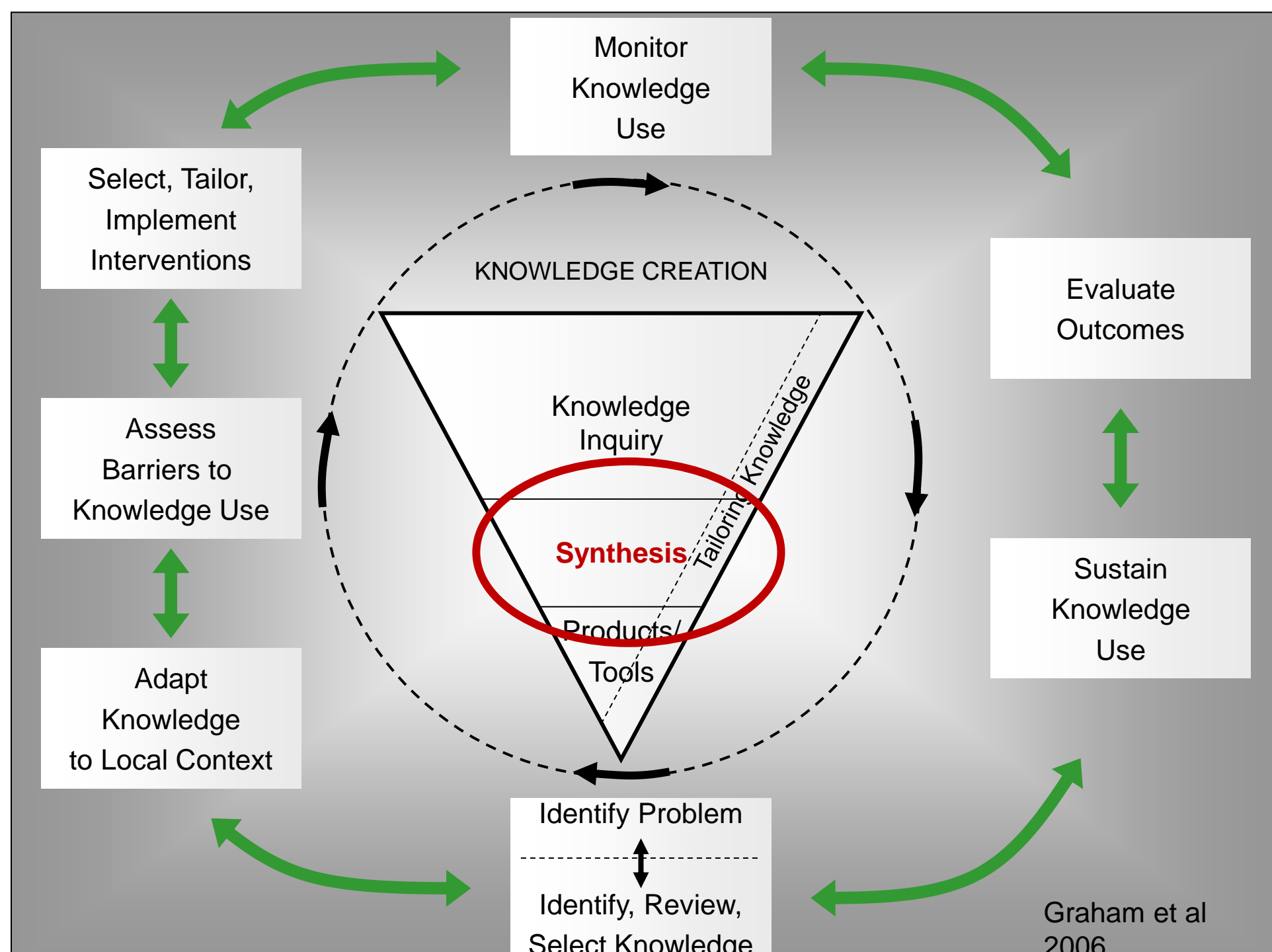
- Lead of the Be Sweet to Babies program of research
- Background – RCH NICU Nurse for a long time. Plus Midwifery and PICU
- Roles - Mainly Clinical Teaching, but also ANUM & pilot NNP.
- Research: Neonatal & infant pain, knowledge translation
- From 2011- 2019. Professor & Chair in Nursing Care of Children, Youth & Families – University of Ottawa & Children's Hospital of Eastern Ontario (CHEO)
- From 2020 – University of Melbourne



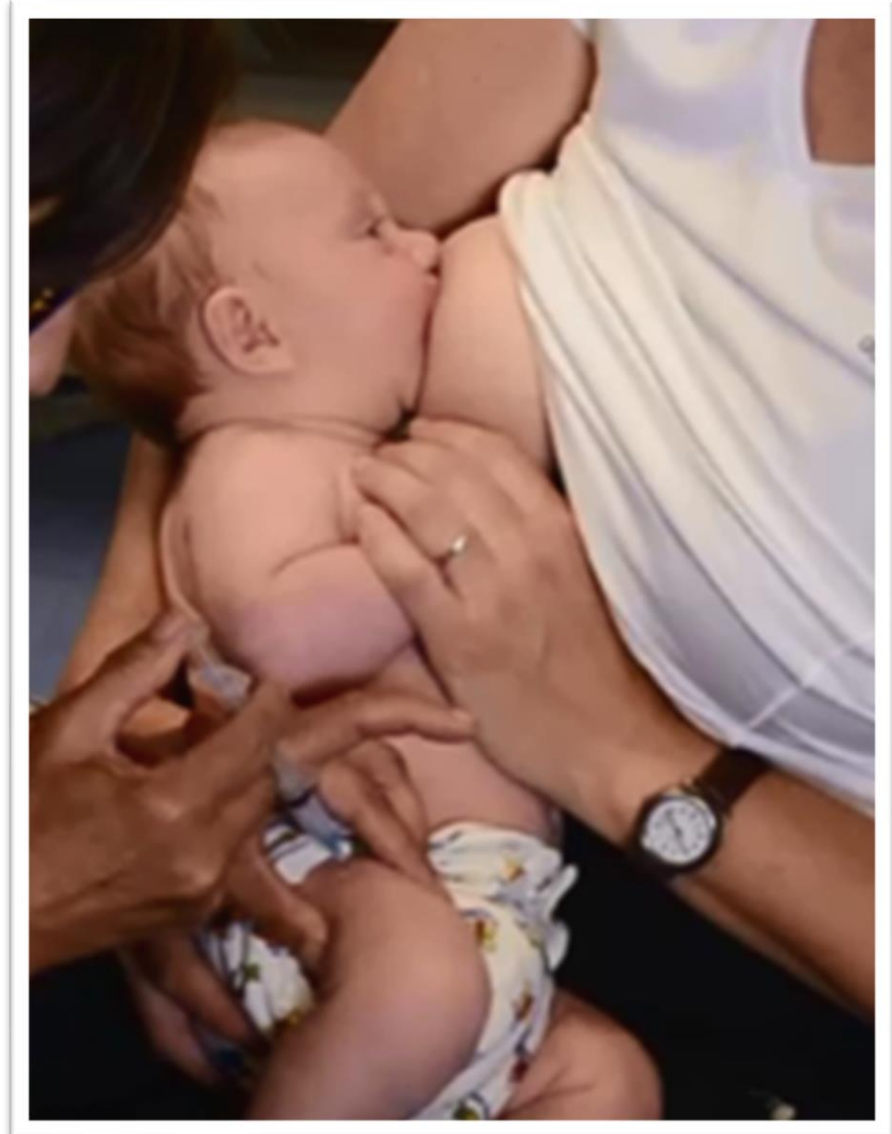
Program of research Informed by the Knowledge to Action Framework



Aim of this presentation: Highlight the evidence of neonatal pain management



Breastfeeding for pain reduction



The *un*-published evidence...

As a student midwife, circa 1989, at the RWJ Women's Hospital, my mentor in the postnatal unit told me...

“We breastfeed all the babies during their newborn screening, so they don't cry”

I said, “OK”

My *recollections* of this 'normal' practice...

All babies breastfed during heel lance

No baby cried

No baby choked

It was not ergonomically difficult (we just sat on the bed or on a chair beside the bed)

Babies bled well/easily.



The Published Evidence

Author & Details	Intervention	# Trials	# Participants
Shah et al, 2012	<i>Breastfeeding</i>	10	1075
	Breastmilk	10	996
Benoit et al 2017	<i>Breastfeeding</i>	14	1517
	Breastmilk	7	675

- *Breastfeeding* reduces crying, facial expressions, pain scores and heart rate changes from baseline.
- No adverse effects, including choking, coughing
- Expressed breast milk does *not* reduce pain

Challenges to implementing evidence: Beliefs

- Infant will choke, aspirate
- Procedure will take longer to perform
- Mother does not want to be there
- Ergonomically awkward
- Infants will associate mother with painful procedure

Not supported by evidence

Babies feed ~8 X/day.
Makes no sense that they would associate pain with feeding

Challenges to implementing evidence

- Practical challenges:
 - Timing of bloods (middle of night or early in the AM?)
- Evidence: Effectiveness, feasibility and utilisation in sick infants not known



Question

Does your unit have a policy stating babies should be breastfed during newborn screening/other non-urgent heel pricks if the mother is breastfeeding (where feasible & culturally appropriate)?

Question

Do you/your unit consistently facilitate mothers to breastfeed their babies during newborn screening or other non-urgent heel pricks?

**If baby
cannot be
breastfed...**



Skin-to-skin care (SSC) for procedural pain

- 25 studies & 2001 infants (Term =7, preterm =18) during:
 - Heel lance (19)
 - IM injection (4)
 - Both heel lance and venipuncture (1)
 - Tape removal (1)
- SSC reduced crying and pain scores compared to no treatment, water. sweet solutions. Combined sweet solutions and SSC more effective than either alone
 - Physiological responses variable

Challenges to practice

- Feasibility & practical challenges:
 - Timing of bloods (middle of night or early in the AM?)
 - Ergonomics concerns
 - Feasibility, effectiveness and safety for:
 - Extremely pre-term infants?
 - Sick infants?
 - Post-operative infants?



Question

Does your unit have a policy stating babies who cannot be breastfeed during newborn screening/other non-urgent blood draws, be held SSC when feasible?

Question

Do you/your unit consistently encourage mothers to do SSC with their preterm infants during newborn screening or other non-urgent heel pricks?

Question

Do you/your unit encourage fathers/others to do SSC with preterm infants during newborn screening or other non-urgent heel pricks?

Sweet-tasting solutions

Sucrose is the most extensively studied intervention to decrease pain in infants



The published evidence

Systematic Review	Author & Details	# Trials	# Participants
Sucrose and glucose for newborn infants (Chinese)	Huang et al. 2019	31	4999
Sucrose and glucose for newborn infants	Harrison et al. 2017	168	~12,000
Sucrose for newborn infants	Stevens et al. 2016	74	7049
Non- Sucrose for newborn infants (mainly glucose)	Bueno et al. 2013	38	3,785
Sweet solutions for infants (1-12 months)	Kassab et al. 2012	14	1,551
Sweet solutions for infants (1-12 months)	Harrison et al. 2010	14	1,618
Sweet solutions for children	Harrison et al. 2015	7	808 children

Question

If baby cannot be breastfed or held SSC
- Do you/your unit consistently use
sucrose or glucose during newborn
screening or other non-urgent heel
pricks/venipuncture?

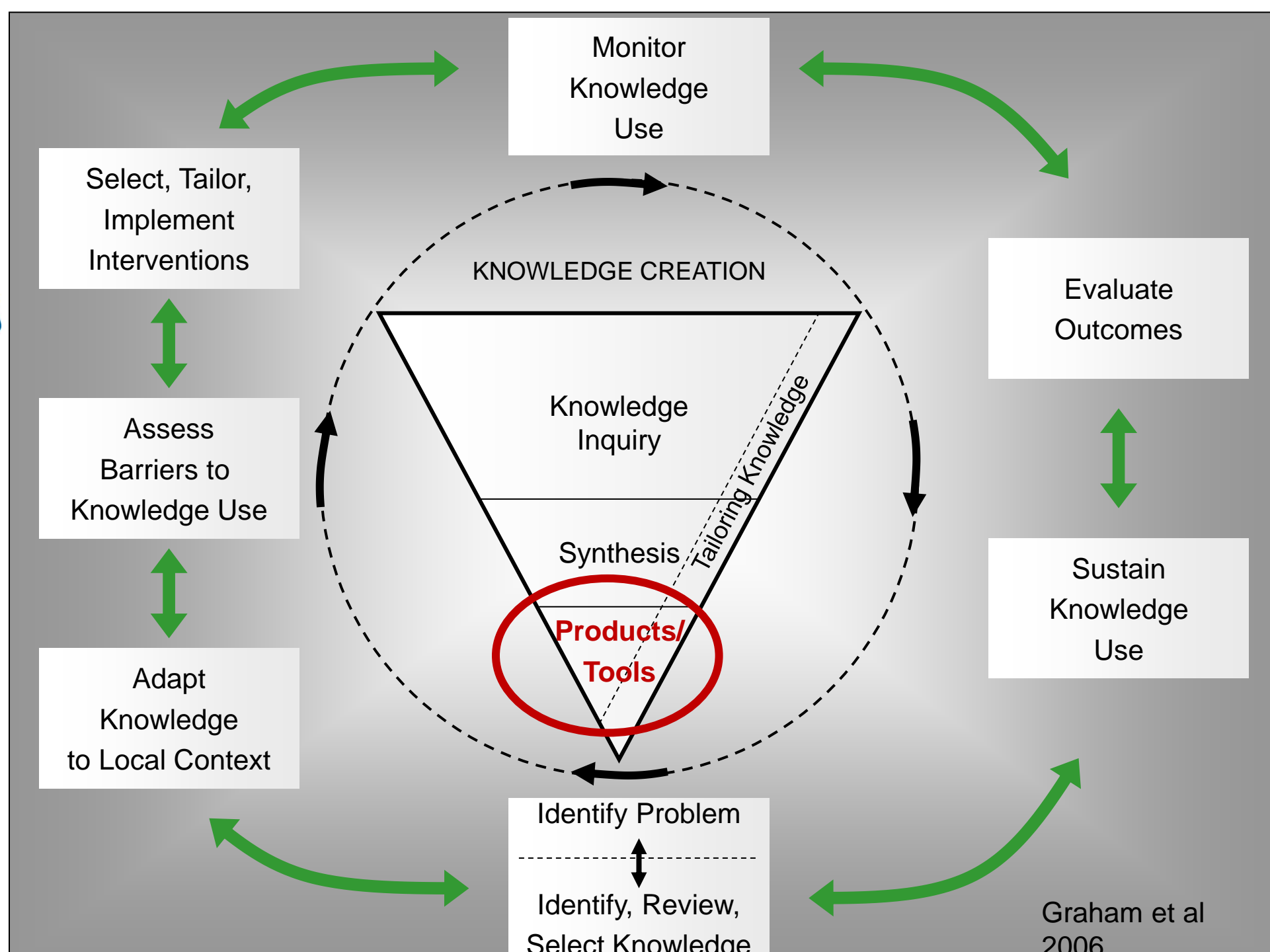
Question

Where does your unit document pain management for neonates during painful procedures?

- ☐ Medication record
- ☐ Progress notes
- ☐ Other
- ☐ We don't document
- ☐ Don't know

Be sweet to babies

Knowledge Translation tools



Newborn pain: Showing the evidence:

[Click Here for Newborn Pain Video](#)



Be Sweet To Babies During Painful Procedures

Question

Had you seen this video before?

The Utilisation...Do we use the evidence in practice?

Journal of Paediatrics and
Child Health



doi:10.1111/jpc.12064

ORIGINAL ARTICLE

Procedural pain in neonates in Australian hospitals: A survey update of practices

Jann Foster,^{1,3,4} Kaye Spence,^{5,9} David Henderson-Smart,³ Denise Harrison,^{6,7,10,11} Peter H Gray⁸ and John Bidewell²

SYSTEMATIC REVIEW

Epidemiology of painful procedures performed in neonates: A systematic review of observational studies

M.D. Cruz^{1,3}, A.M. Fernandes^{2,3}, C.R. Oliveira^{4,5}

Neonatology 2014;105:218–226
DOI: [10.1159/000357207](https://doi.org/10.1159/000357207)

Neonatology

Eight Years Later, Are We Still Hurting Newborn Infants?

Daniëlla W.E. Roofthoof^a Sinno H.P. Simons^c Kanwaljeet J.S. Anand^d
Dick Tibboel^b Monique van Dijk^b



Contents lists available at ScienceDirect

Journal of Neonatal Nursing

journal homepage: www.elsevier.com/locate/jnn

Original Article

A systematic review of YouTube videos on pain management during newborn blood tests

Denise Harrison^{a,b,*}, Shokoufeh Modanloo^{a,b}, Ashley Desrosiers^c, Louise Poliquin^c, Mariana Bueno^d, Jessica Reszel^b, Margaret Sampson^a

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^d The Hospital for Sick Children, Peter Gilgan Centre For Research and Learning (PGCRL), 686 Bay Street, Toronto, Ontario, M5G 0A4, Canada



Contents lists available at ScienceDirect

Newborn & Infant Nursing Reviews

journal homepage: www.nainr.com



Neuroprotective Core Measure 5: Minimizing Stress and Pain—Neonatal Pain Management Practices During Heel Lance and Venipuncture in Ontario, Canada



Pain in Canadian NICUs

Have We Improved Over the Past 12 Years?

Céleste Johnston, RN, DEd,* Keith J. Barrington, MB, ChB,† Anna Taddio, BScPhm, PhD,‡
Ricardo Carbajal, MD, PhD,§ and Françoise Filion, RN, MSc*†

(Clin J Pain 2011;27:225–232)

Staff Nurse Utilization of Kangaroo Care as an Intervention for Procedural Pain in Preterm Infants

Britney Benoit, MSc(AIN, RN, PhD(c); Marsha Campbell-Yeo, PhD, NNP-BC, RN; Celeste Johnston, D
Margot Latimer, PhD, RN; Kim Caddell, BN, RN; Talia Orr, BScN, RN



ELSEVIER

International Journal of Nursing Studies

journal homepage: www.elsevier.com/ijns



Epidemiology and neonatal pain management of heelsticks in intensive care units: EIPPAIN 2, a prospective observational study



Parents of NICU babies (N=162)

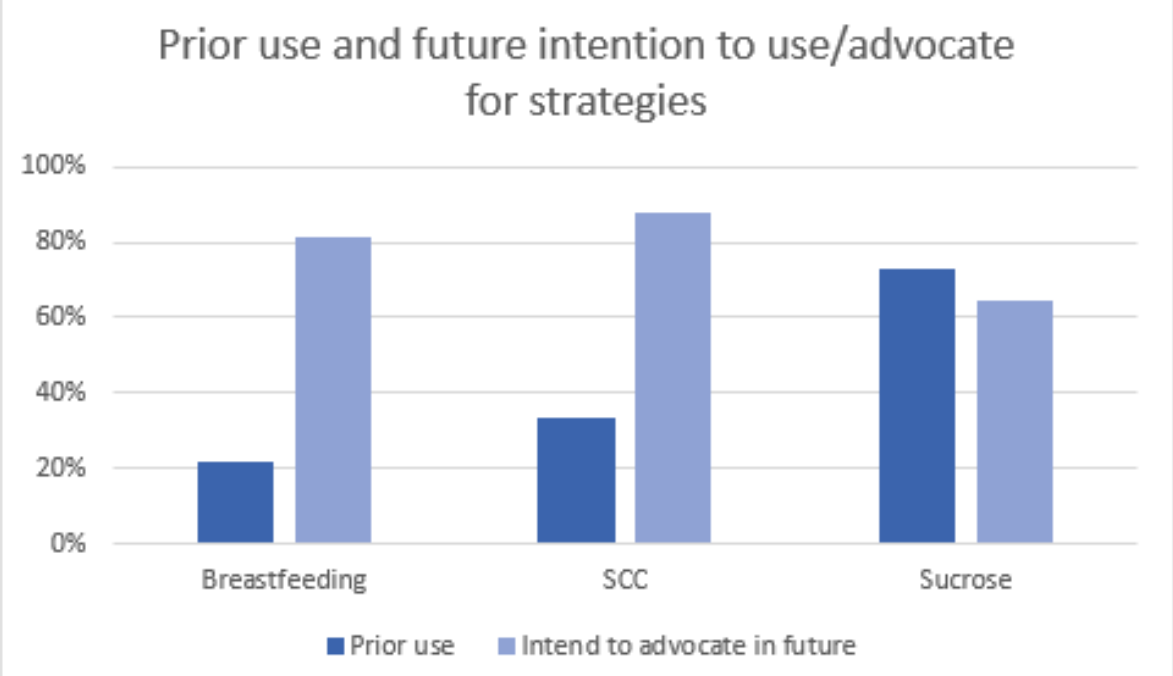
Take part in our survey!



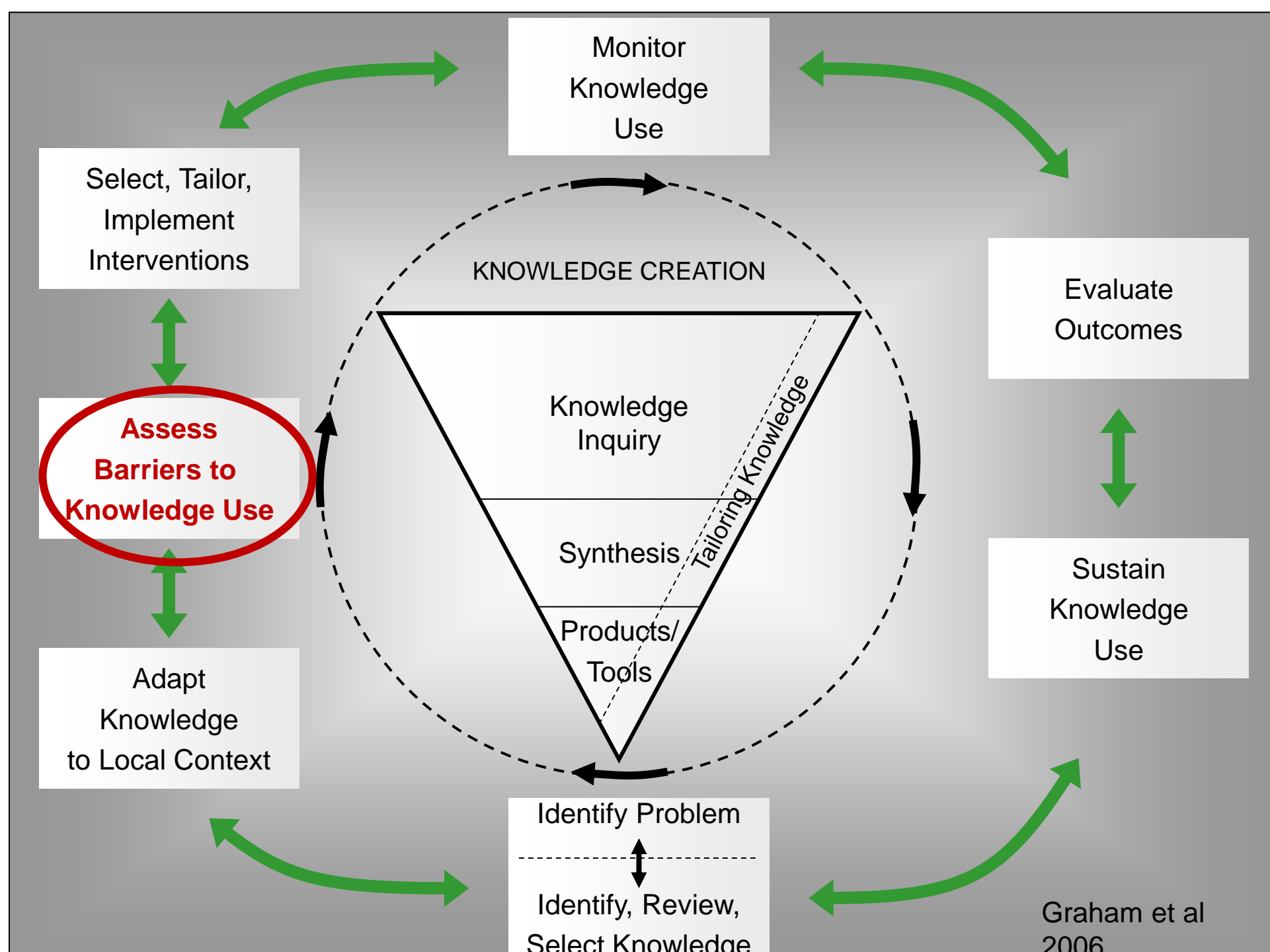
Contribute to research into pain reduction for babies undergoing painful hospital procedures



Bujalka, Cruz et al and Harrison. Evaluation of a parent-targeted video to improve newborn pain management. *Advances in Neonatal Care*. In Press



THEME	EXAMPLE
Not aware & not used – “I wish I knew”	Disappointed that these are not standard policy in providing pain relief & comfort ago
	We were never told about these pain reduction strategies, I wish the hospital would have told us
	No one taught me anything. My experience was overall traumatic and horrible
Supported by nurses	Staff taught me about these methods. They were great at showing the strategies to me



Barriers to *using* recommended strategies

Lack of knowledge of:	Evidence of effectiveness
	Consequences of untreated/inadequately treated pain
	<i>HOW</i> to do heel lance (& other procedures) while baby held/fed
Organizational structures:	Procedures done in 'procedure rooms' or parents asked to leave
	Routine bloods done very early in the morning
	No room for mothers
Nurses' preferences, comfort:	Prefer mothers/parents are not present
	Feel uncomfortable with parents present
Culture:	Difficult to change

Be sweet
to babies

Co-production of new 'ergonomics' video:
[CLICK HERE](#)



Question

Had you seen this video before?

Current knowledge/research gaps

- We do not know if video is likely to be considered by our nurses and midwives and phlebotomists to be: feasible to use, acceptable, useful and effective in addressing barriers (ie is it *implementable*?)
- We do not know current newborn pain management practices (last study was 2005)

Where to next?

- Nationwide surveys - pain management practices & *implementability* of the video
- Pilot study of video in diverse settings



Unsure of best ergonomics for doing heel lance with baby breastfeeding & skin-to-skin?

Watch our brief 'ergonomics' video for a step by step guide to best positioning:



Knowledge gaps remain

- How to best support parents to be involved in the NICU?
- Efficacy, effectiveness, safety of sucrose, other pain management strategies, for extremely preterm babies (i.e. <23/40 GA)
- Feasibility, effectiveness and safety of skin-skin, other pain management strategies) for sick/surgical infants with prolonged length of stay



Moving evidence into consistent clinical practice involves...

- Using effective knowledge translation strategies
- Partnering with:
 - Clinicians
 - Leaders
 - Organisations
 - Parents
- Documentation



Thank you

Denise Harrison

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Twitter: [@Prof_DeniseHarrison](https://twitter.com/Prof_DeniseHarrison)



One last poll...

