College of Emergency Nurses New Zealand
Ngā Ringa Ringa Aroha NZNO

Concurrent Session Two

Can targeted interventions change clinicians' beliefs. In the treatment of infants with bronchiolitis? A survey of New Zealand and Australian clinicians: a PREDICT study

Libby Haskell | Te Whatu Ora, Te Toka Tumai, Auckland – Starship Hospital

READY TO RESPOND
KIA MATAARA

CENNZ CONFERENCE 2023

READY TO RESPOND
KIA MATAARA
CENNZ CONFERENCE 2023
19-20 October 2023 | Christchurch

Can targeted interventions change clinicians' beliefs in the treatment of infants with bronchiolitis?

A survey of New Zealand and Australian clinicians: a PREDICT study

LIBBY HASKELL| PHD

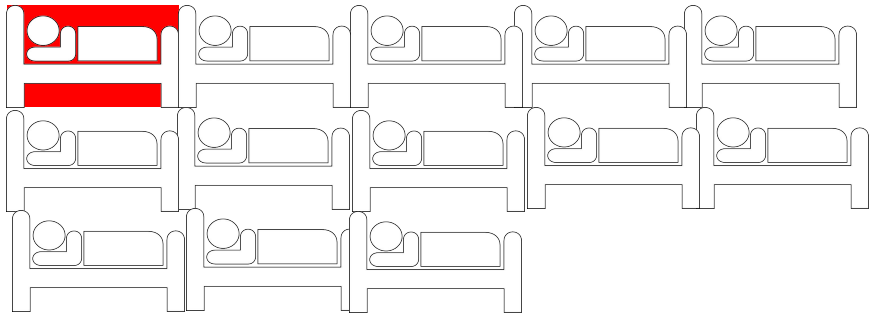
Nurse Practitioner, Children's Emergency Department, Starship Children's Hospital.

Senior Research Fellow, Dept of Paediatrics: Child and Youth, University of Auckland, on behalf of the PREDICT network.

Objectives

- Bronchiolitis overview
- Knowledge translation
- Developing interventions to improve evidence-based care
- Evaluating effectiveness at changing clinicians' practice and beliefs

Bronchiolitis - the issues in Aotearoa



x3 Māori

x4.3 Pacific

x4.7

Barnard LT, Zhang J. The impact of respiratory disease in New Zealand: 2018 update.

Bronchiolitis - the issues internationally

- The most common reason for admissions in infants <1 year of age

- USA
  - $1.7 billion/year (admissions) Hasegawa, 2013
  - Approx. 100,000 admissions Florin, 2017

Bronchiolitis - the issues

- Management is supportive
  - Hydration
  - Respiratory

- High level evidence of no benefit from:
  - Salbutamol
  - Glucocorticoids
  - Antibiotics
  - Adrenaline
  - Chest radiography (CXR)

PREDICT Paediatric Research in Emergency Departments International Collaborative

Local guidance

Journal of Paediatrics and Child Health

doi:10.1111/jpc.14104

ORIGINAL ARTICLE

Australasian bronchiolitis guideline

2024 update (12,904 papers screened)

Key changes:

- ICU management up to intubation
- High-flow nasal cannula therapy
- Monoclonal antibodies & immunisation

PREDICT Paediatric Research in Emergency Departments International Collaborative

Bronchiolitis – international and local guidance

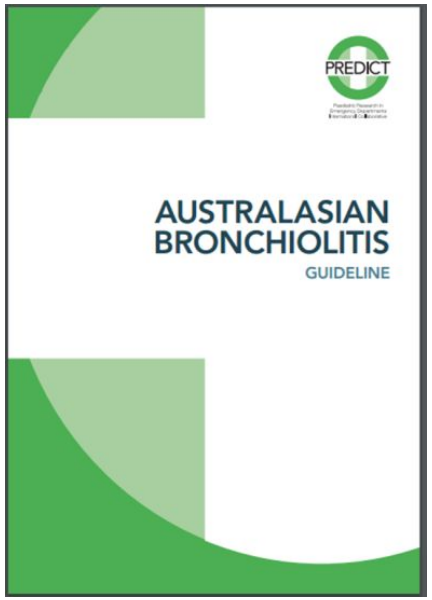
Cochrane

THE AMERICAN ACADEMY OF PEDIATRICS ®

Canadian Paediatric Society

Choosing Wisely

NICE National Institute Health and Care E



Bronchiolitis – variation in practice

Practice Variation in Acute Bronchiolitis: A Pediatric Emergency Research Networks Study

Suzanne Schuh, MD, FRCP(C),[a,b,c] Franz E. Babl, MD, MPH,[d] Stuart R. Dalziel, MBChB, FRACP, PhD,[e] Stephen B. Freedman, MDCM, FRCP(C),[f,g] Charles G. Macias, MD,[h] Derek Stephens, MSc,[b] Dale W. Steele, MD, MS,[i] Ricardo M. Fernandes, MD, PhD,[j] Roger Zemek, MD, FRCP(C),[k] Amy C. Plint, MD, FRCP(C), MSc,[k] Todd A. Florin, MD, MSCE,[l] Mark D. Lyttle, MBChB,[m] David W. Johnson, MD, FRCP(C),[f,n,o] Serge Gouin, MD, FRCP(C),[p] David Schnadower, MD,[q] Terry P. Klassen, MD, FRCP(C), MSc,[r] Lalit Bajaj, MD, MPH,[s] Javier Benito, MD, PHD,[t] Anupam Kharbanda, MD, MPH,[u] Nathan Kuppermann, MD, MPH,[v,w] the Pediatric Emergency Research Networks (PERN)

PEDIATRICS Volume 140, number 6, December 2017:e20170842

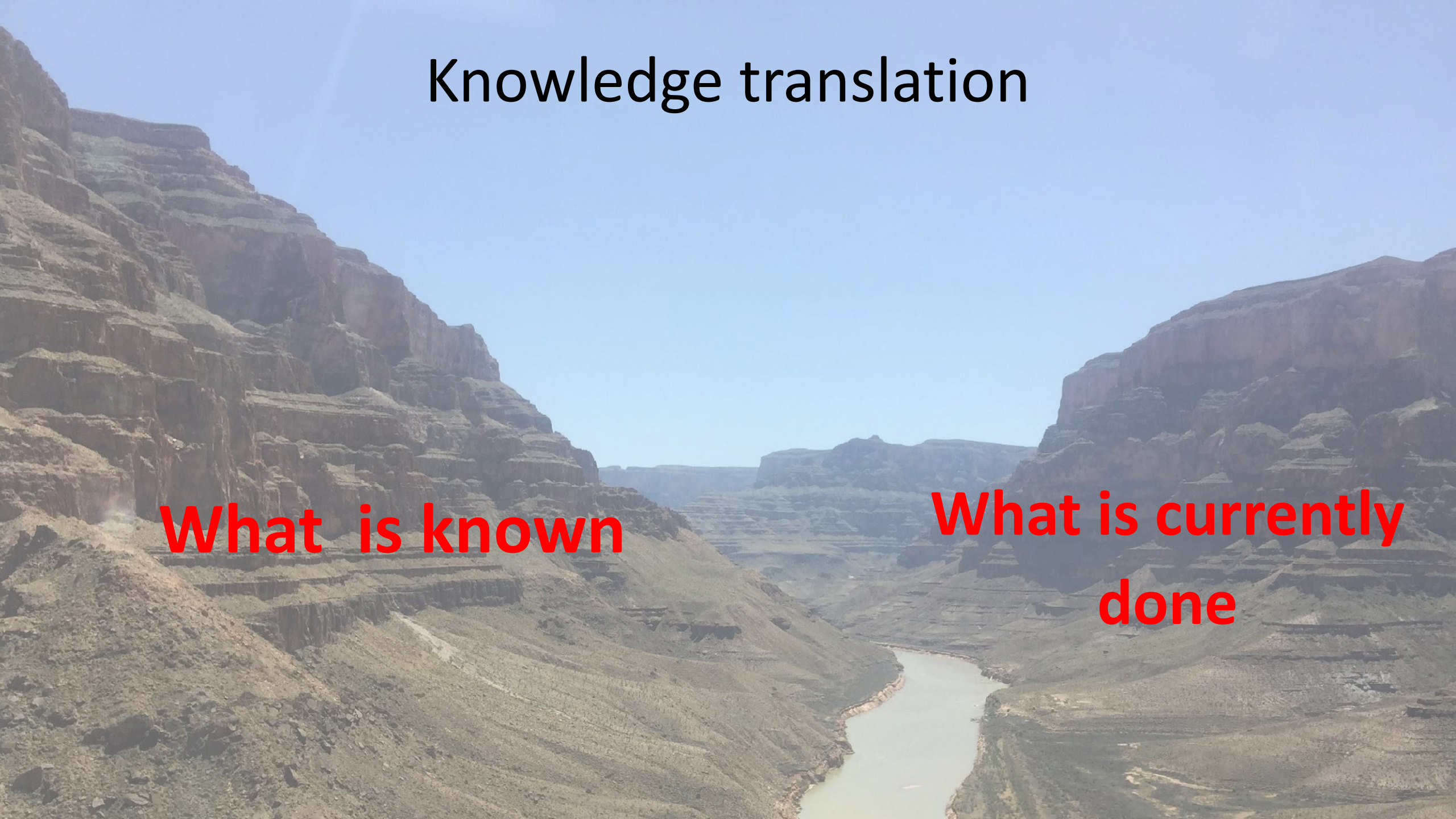
New Zealand and Australia

- CRIB2 study Oakley, 2018
- >3,400 admissions
- Between 28% & 47% of infants received

at least one non-evidence-based treatment

- Salbutamol was most frequently used (26%)

Knowledge translation



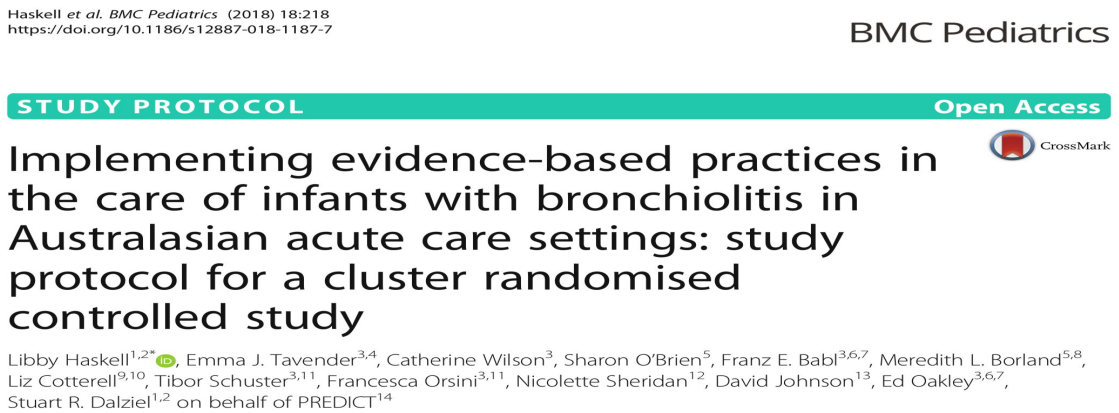
KT bronchiolitis study - aim

- To determine if targeted, theory-informed KT interventions reduces the use of CXR, salbutamol, glucocorticoids, antibiotics and adrenaline in infants with bronchiolitis compared to passive dissemination of a guideline

PREDICT Paediatric Research in Emergency Departments International Collaborative

KT bronchiolitis study - design

- A multi-centred cluster randomised controlled trial
- Comparing targeted, theory-informed KT interventions vs. passive dissemination of a bronchiolitis guideline



Haskell *et al. BMC Pediatrics* (2018) 18:218
https://doi.org/10.1186/s12887-018-1187-7

BMC Pediatrics

STUDY PROTOCOL Open Access

Implementing evidence-based practices in the care of infants with bronchiolitis in Australasian acute care settings: study protocol for a cluster randomised controlled study

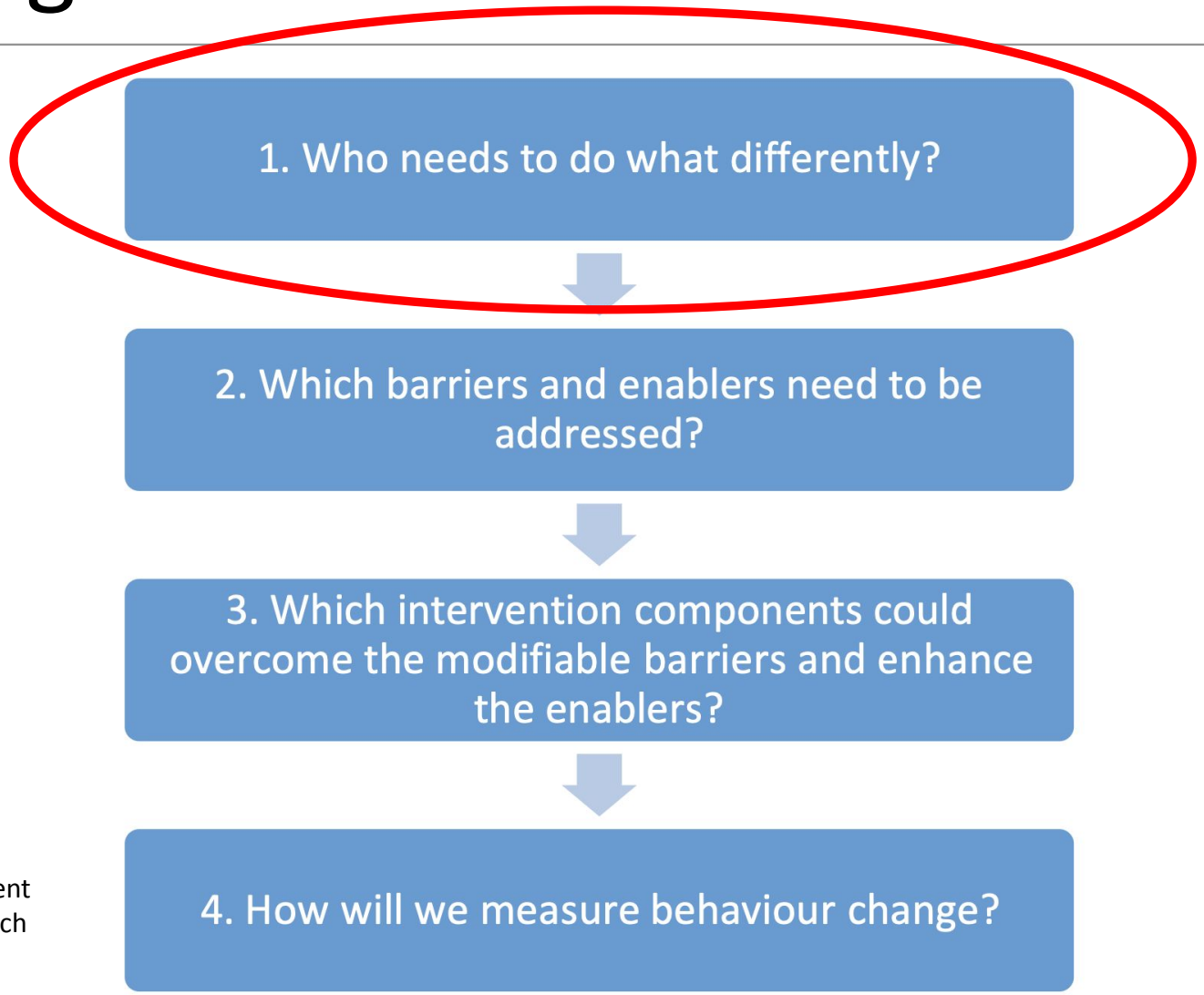
Libby Haskell[1,2*], Emma J. Tavender[3,4], Catherine Wilson[3], Sharon O'Brien[5], Franz E. Babl[3,6,7], Meredith L. Borland[5,8], Liz Cotterell[9,10], Tibor Schuster[3,11], Francesca Orsini[3,11], Nicolette Sheridan[12], David Johnson[13], Ed Oakley[3,6,7], Stuart R. Dalziel[1,2] on behalf of PREDICT[14]

KT bronchiolitis study - sites

6

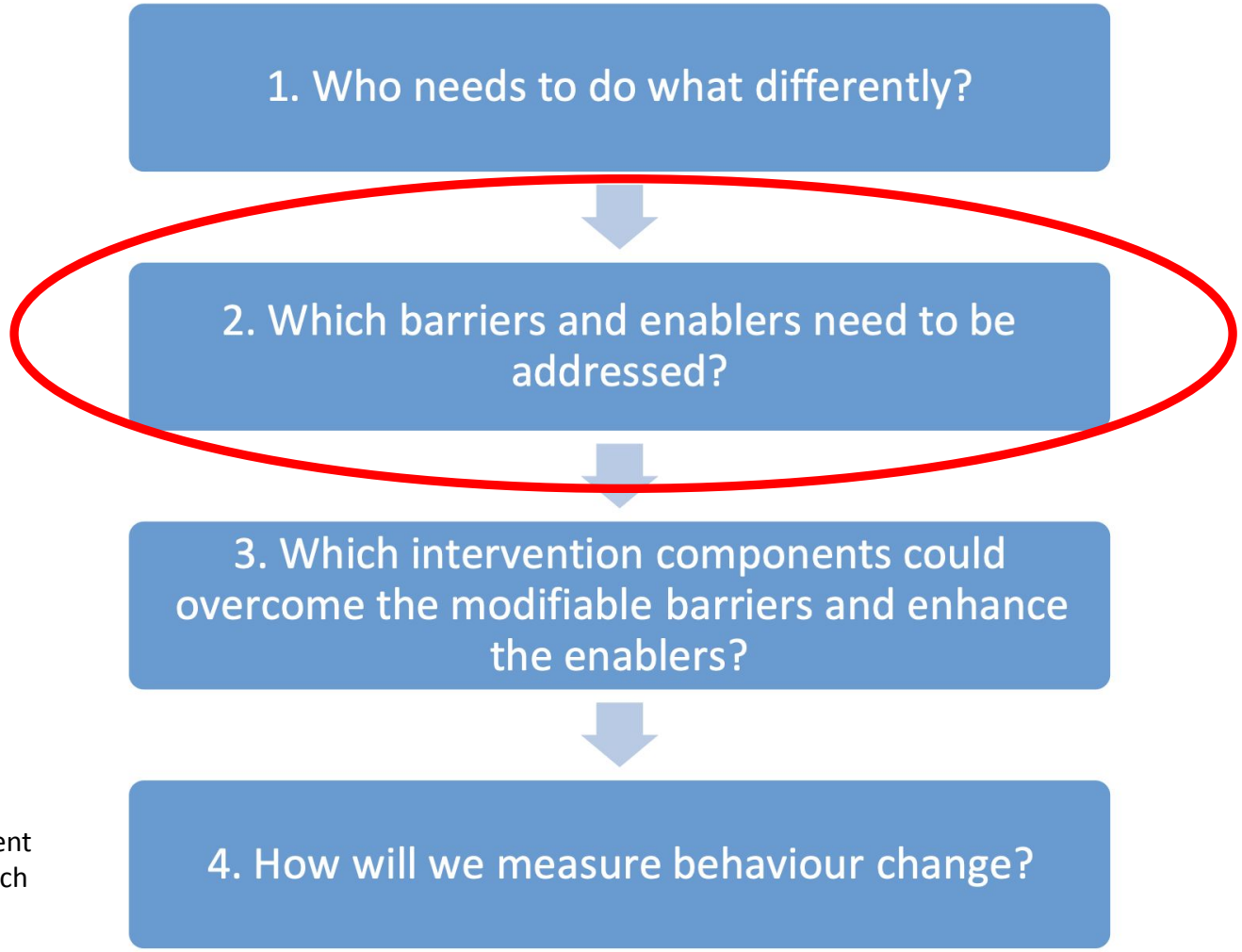
20

Designing targeted, theory-informed Knowledge Translation interventions



French *et al*. Developing theory-informed behaviour change interventions to implement evidence into practice: a systematic approach using the Theoretical Domains Framework. *Implement Sci* 2012; **7**(1): 38.

Designing targeted, theory-informed Knowledge Translation interventions



French *et al*. Developing theory-informed behaviour change interventions to implement evidence into practice: a systematic approach using the Theoretical Domains Framework. *Implement Sci* 2012; **7**(1): 38.

KT bronchiolitis study

- Clinician interviews identified factors influencing bronchiolitis management using the Theoretical Domains Framework

Haskell *et al. BMC Pediatrics* (2020) 20:189
https://doi.org/10.1186/s12887-020-02092-y

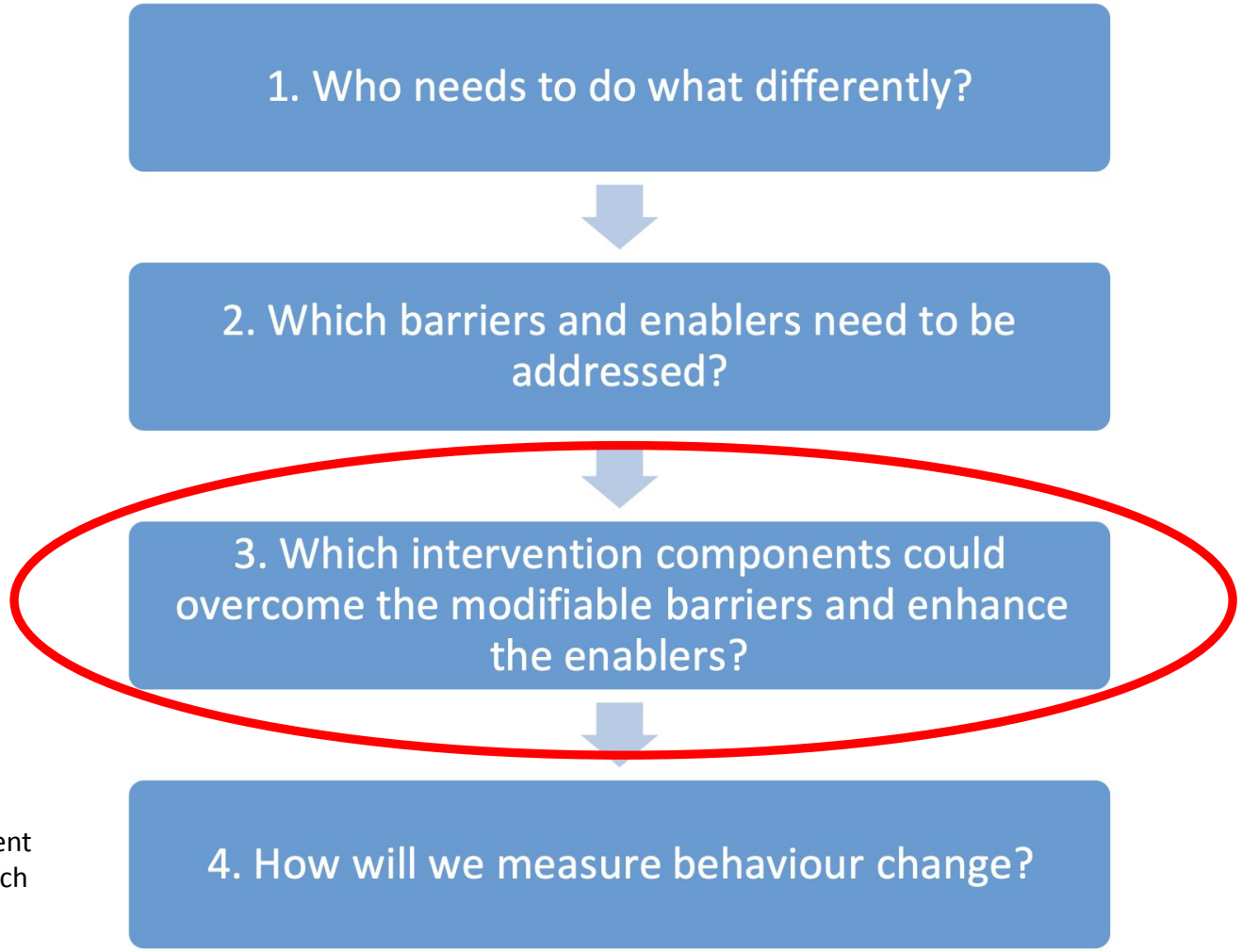
BMC Pediatrics

RESEARCH ARTICLE Open Access

Understanding factors that contribute to variations in bronchiolitis management in acute care settings: a qualitative study in Australia and New Zealand using the Theoretical Domains Framework

Libby Haskell[1,2*], Emma J. Tavender[3,4], Catherine Wilson[3], Franz E. Babl[3,4,5], Ed Oakley[3,4,5], Nicolette Sheridan[6], Stuart R. Dalziel[1,7] and On behalf of the Paediatric Research in Emergency Departments International Collaborative (PREDICT) nectwork, Australia

Designing targeted, theory-informed Knowledge Translation interventions



French *et al*. Developing theory-informed behaviour change interventions to implement evidence into practice: a systematic approach using the Theoretical Domains Framework. *Implement Sci* 2012; **7**(1): 38.

KT bronchiolitis study

- KT interventions developed addressing findings from qualitative clinician interviews with behaviour change techniques most likely to influence factors identified

Haskell *et al. BMC Health Services Research* (2021) 21:769
https://doi.org/10.1186/s12913-021-06724-6

BMC Health Services Research

RESEARCH Open Access

Development of targeted, theory-informed interventions to improve bronchiolitis management

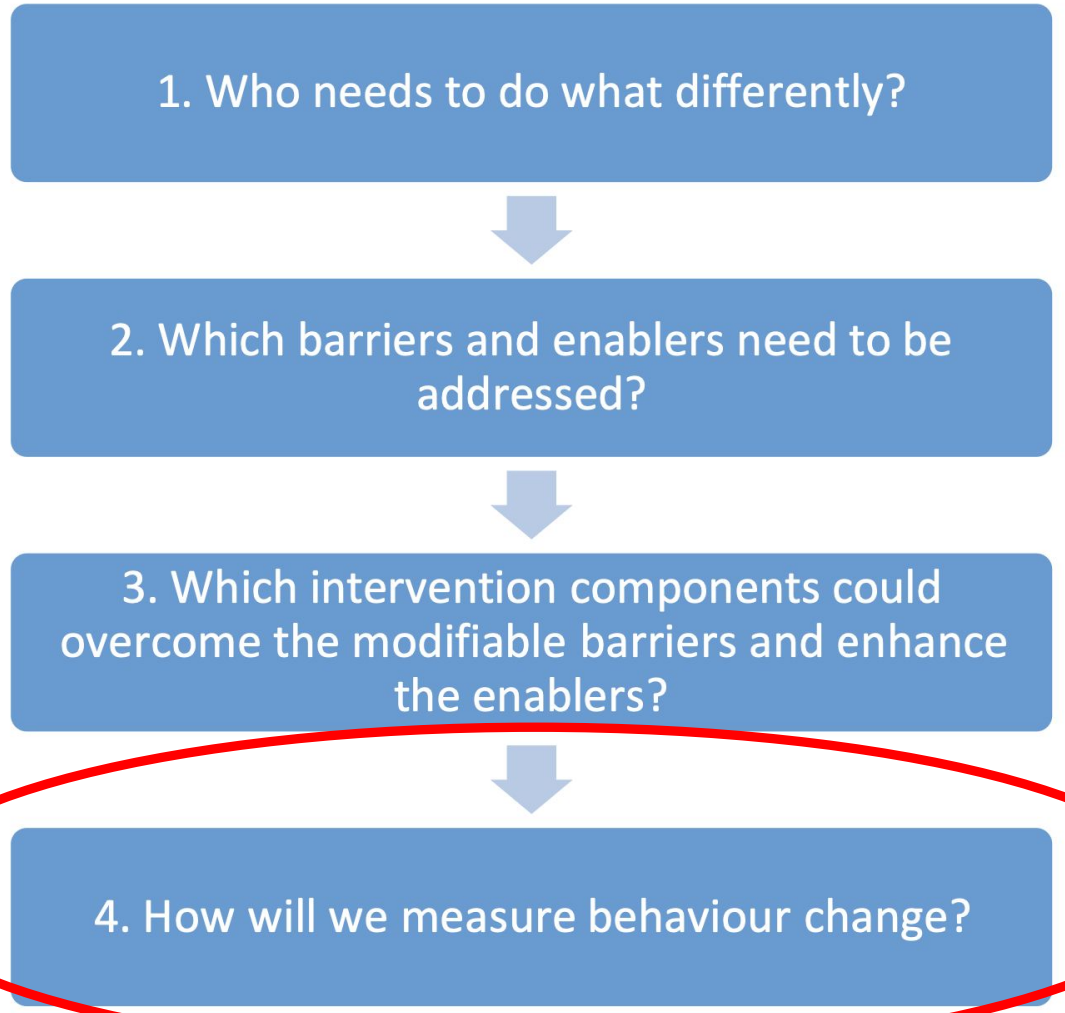
Libby Haskell[1,2*], Emma J. Tavender[3,4], Catherine L. Wilson[3], Sharon O'Brien[5,6], Franz E. Babl[3,4,7], Meredith L. Borland[5,8], Elizabeth Cotterell[9,10], Nicolette Sheridan[11], Ed Oakley[3,4,7], Stuart R. Dalziel[1,2,12] and on behalf of the Paediatric Research in Emergency Departments International Collaborative (PREDICT) network, Australasia

Knowledge translation - Interventions

All interventions	Control site	Intervention site
Electronic and printed copy of: - Complete Australasian Bronchiolitis Guideline - Summarised bedside clinical guideline	✓	✓
Stake-holder meeting to create buy-in		✓
Four clinical leads (nursing and medical, from ED and inpatient paediatrics)		✓
One day train-the-trainer for clinical leads		✓
Provision of KT training materials: - Educational power points / fact sheets / posters / caregiver information sheet		✓
Monthly audit and feedback site reports		✓

PREDICT Paediatric Research in Emergency Departments International Collaborative

Designing targeted, theory-informed Knowledge Translation interventions



French *et al*. Developing theory-informed behaviour change interventions to implement evidence into practice: a systematic approach using the Theoretical Domains Framework. *Implement Sci* 2012; **7**(1): 38.

KT bronchiolitis study – primary outcome

Compliance or non-compliance for each individual patient with the guideline during the first 24hrs (acute care period) following presentation to ED with regards to key therapies/management processes known to have no benefit:

- CXR
- Salbutamol
- Glucocorticoids
- Antibiotics
- Adrenaline

PREDICT Paediatric Research in Emergency Departments International Collaborative

KT bronchiolitis study – secondary outcomes

Compliance or non-compliance

- While in ED
- While an inpatient
- During acute care period (first 24hours)
- During total hospitalisation

Length of stay

Death or ICU admissions

Process evaluation

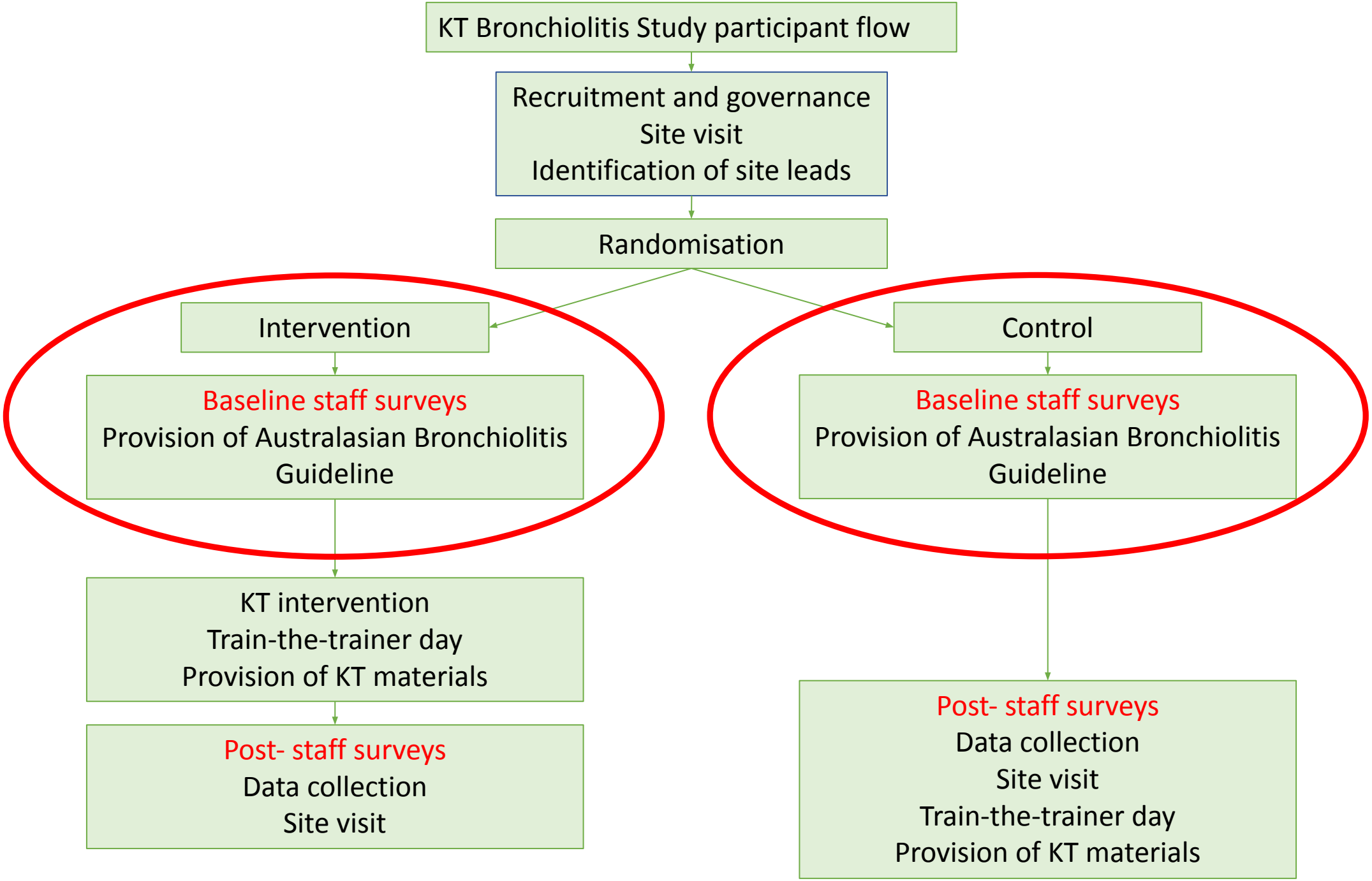
Were mechanisms of action used effective at changing clinician beliefs

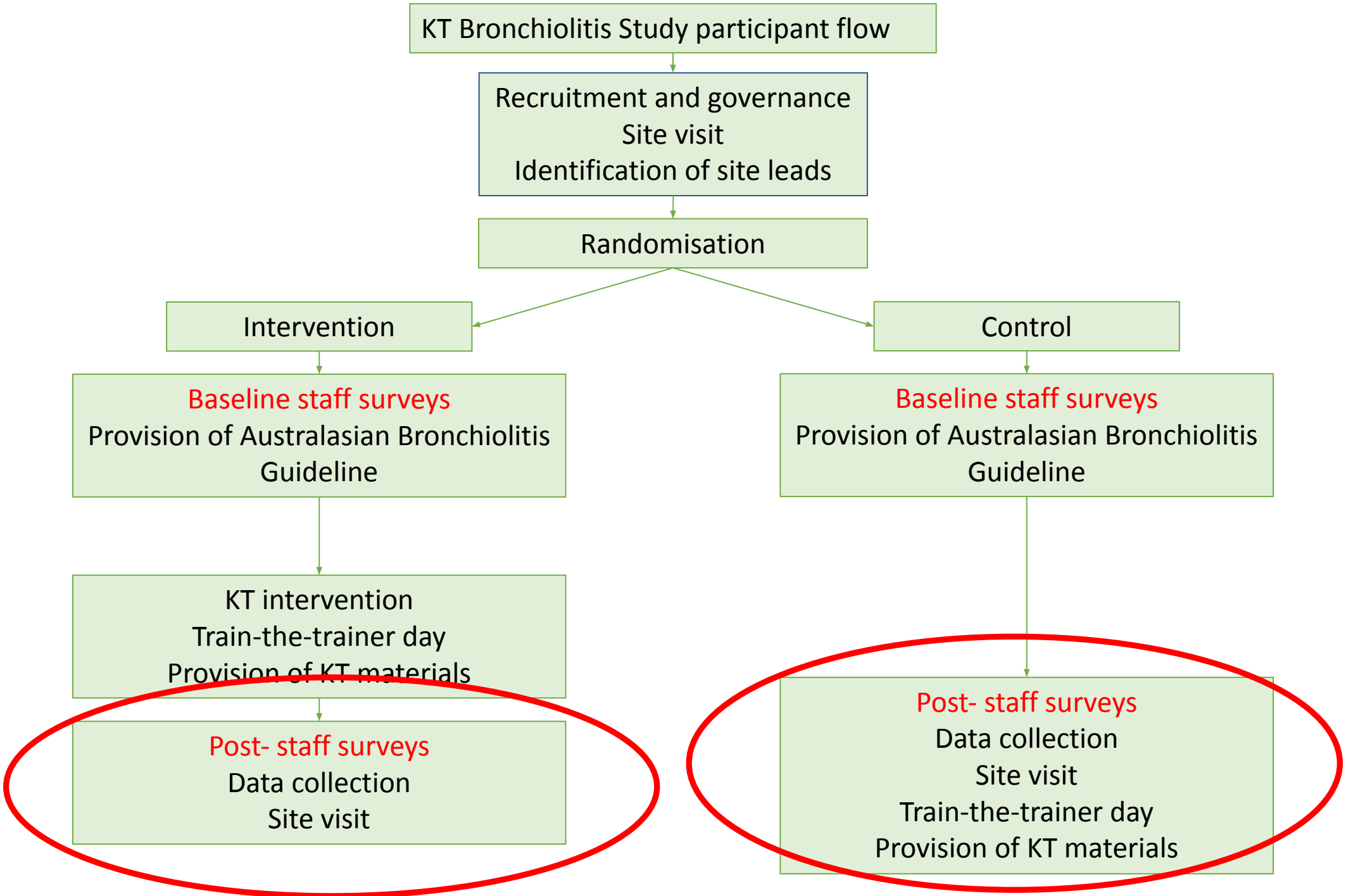
PREDICT Paediatric Research in Emergency Departments International Collaborative

KT bronchiolitis study – Methods data

- Retrospective
- Randomised cases (n=100-150/year)
  - <1 year at presentation
  - ED and final diagnosis bronchiolitis
- Intervention year (2017) and three years prior
- Baseline and post- intervention surveys of clinicians (nurses and doctors at both control and intervention hospitals)

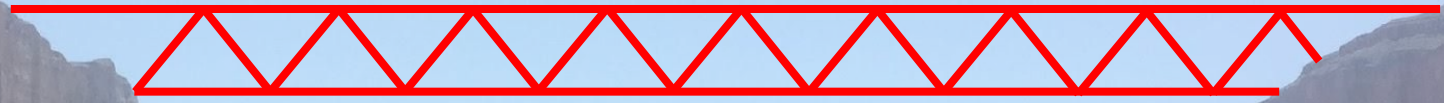
PREDICT Paediatric Research in Emergency Departments International Collaborative


KT Bronchiolitis Study participant flow
Recruitment and governance
Site visit
Identification of site leads
Randomisation
Intervention
Baseline staff surveys
Provision of Australasian Bronchiolitis Guideline
KT intervention
Train-the-trainer day
Provision of KT materials
Post- staff surveys
Data collection
Site visit
Control
Baseline staff surveys
Provision of Australasian Bronchiolitis Guideline
Post- staff surveys
Data collection
Site visit
Train-the-trainer day
Provision of KT materials


KT Bronchiolitis Study participant flow
Recruitment and governance
Site visit
Identification of site leads
Randomisation
Intervention
Control
Baseline staff surveys
Provision of Australasian Bronchiolitis Guideline
Baseline staff surveys
Provision of Australasian Bronchiolitis Guideline
KT intervention
Train-the-trainer day
Provision of KT materials
Post- staff surveys
Data collection
Site visit
Post- staff surveys
Data collection
Site visit
Train-the-trainer day
Provision of KT materials

Knowledge translation - Interventions

Improved care by additional 14.1%



JAMA Pediatrics | Original Investigation

Effectiveness of Targeted Interventions on Treatment of Infants With Bronchiolitis
A Randomized Clinical Trial

Libby Haskell, MN; Emma J. Tavender, PhD; Catherine L. Wilson, MPH; Sharon O'Brien, BNurs; Franz E. Babl, MD; Meredith L. Borland, MBBS; Elizabeth Cotterell, MPH; Rachel Schembri, PhD; Francesca Orsini, MSc; Nicolette Sheridan, PhD; David W. Johnson, MD; Ed Oakley, MBBS; Stuart R. Dalziel, PhD; for the PREDICT Network

Guidelines improved care by 12%

But did we change influencing factors?

Survey questions addressed previously identified factors influencing bronchiolitis management from six domains from the Theoretical Domains Framework (qualitative work):

1. Knowledge
2. Skills
3. Beliefs about consequences
4. Social / professional role and identity
5. Environmental context and resources
6. Social influences

PREDICT Paediatric Research in Emergency Departments International Collaborative

But did we change influencing factors?

	Intervention		Control	
	Baseline n=493	**Post-intervention n=495**	**Baseline n=503**	**Post-intervention n=467**
Female	**348 (71%)**	**352 (71%)**	**362 (72%)**	**336 (72%)**
Time in profession > 10 yrs	219 (44%)	256 (52%)	188 (37%)	231 (50%)
Nurse	247 (50%)	249 (50%)	257 (51%)	243 (52%)
Enrolled Nurse	6 (1%)	7 (2%)	14 (3%)	19 (4%)
Registered nurse	183 (37%)	179 (36%)	179 (35%)	154 (33%)
Senior nursing	39 (8%)	46 (9%)	49 (10%)	53 (11%)
Advanced role	16 (3%)	16 (3%)	14 (3%)	17 (4%)

Haskell, et al. J Paediatr Child Health. 2021.

PREDICT Paediatric Research in Emergency Departments International Collaborative

But did we change influencing factors?

	Intervention		Control	
	Baseline n=493	**Post-intervention n=495**	**Baseline n=503**	**Post-intervention n=467**
Female	348 (71%)	352 (71%)	362 (72%)	336 (72%)
Time in profession > 10 yrs	**219 (44%)**	**256 (52%)**	**188 (37%)**	**231 (50%)**
Nurse	247 (50%)	249 (50%)	257 (51%)	243 (52%)
Enrolled Nurse	6 (1%)	7 (2%)	14 (3%)	19 (4%)
Registered nurse	183 (37%)	179 (36%)	179 (35%)	154 (33%)
Senior nursing	39 (8%)	46 (9%)	49 (10%)	53 (11%)
Advanced role	16 (3%)	16 (3%)	14 (3%)	17 (4%)

Haskell, et al. J Paediatr Child Health. 2021.

PREDICT Paediatric Research in Emergency Departments International Collaborative

But did we change influencing factors?

	Intervention		Control	
	Baseline n=493	**Post-intervention n=495**	**Baseline n=503**	**Post-intervention n=467**
Female	348 (71%)	352 (71%)	362 (72%)	336 (72%)
Time in profession > 10 yrs	219 (44%)	256 (52%)	188 (37%)	231 (50%)
Nurse	**247 (50%)**	**249 (50%)**	**257 (51%)**	**243 (52%)**
Enrolled Nurse	6 (1%)	7 (2%)	14 (3%)	19 (4%)
Registered nurse	183 (37%)	179 (36%)	179 (35%)	154 (33%)
Senior nursing	39 (8%)	46 (9%)	49 (10%)	53 (11%)
Advanced role	16 (3%)	16 (3%)	14 (3%)	17 (4%)

Haskell, et al. J Paediatr Child Health. 2021.

PREDICT Paediatric Research in Emergency Departments International Collaborative

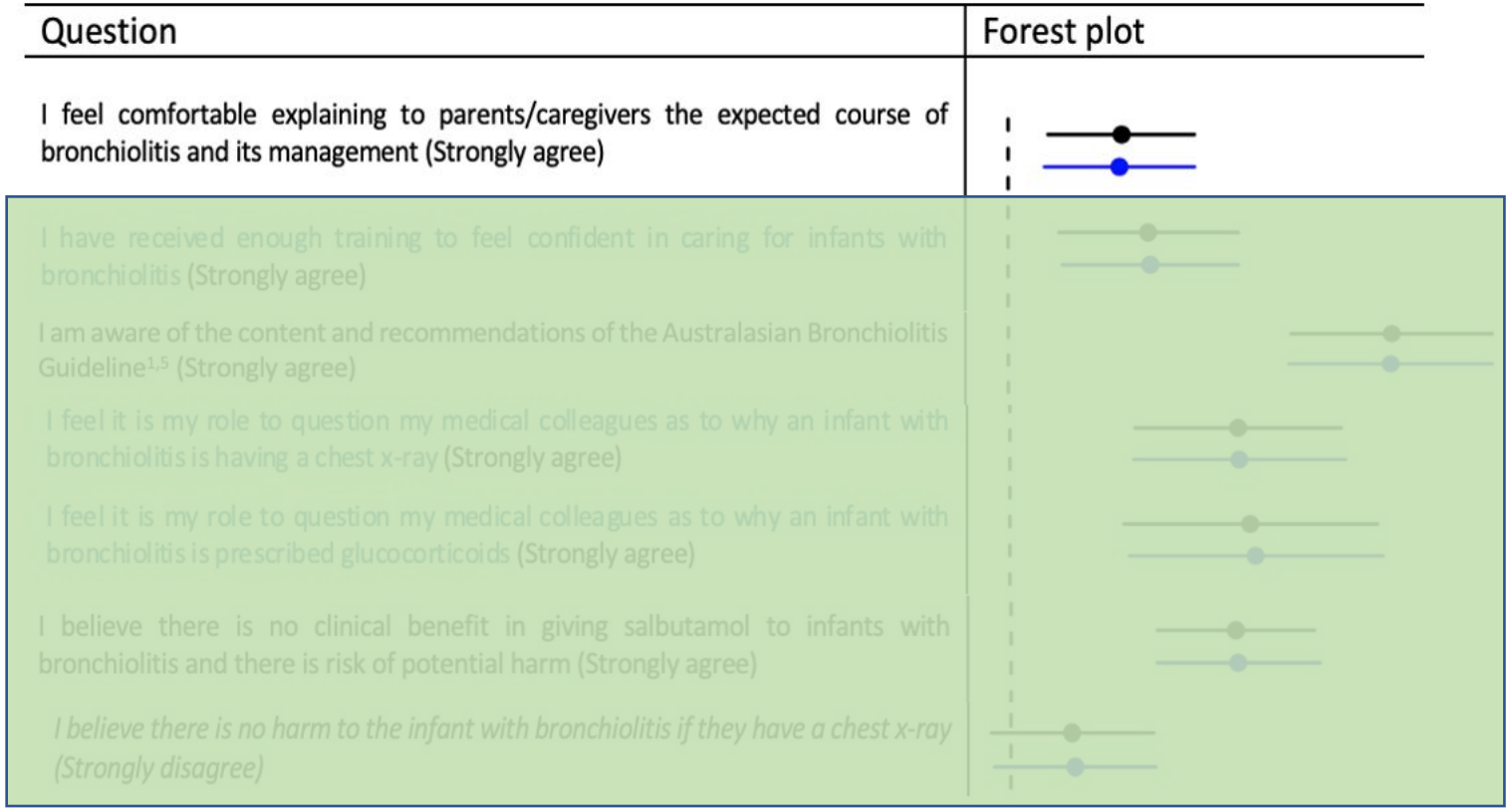
But did we change influencing factors?

	Intervention		Control	
	Baseline n=493	**Post-intervention n=495**	**Baseline n=503**	**Post-intervention n=467**
Female	348 (71%)	352 (71%)	362 (72%)	336 (72%)
Time in profession > 10 yrs	219 (44%)	256 (52%)	188 (37%)	231 (50%)
Nurse	247 (50%)	249 (50%)	257 (51%)	243 (52%)
Enrolled Nurse	6 (1%)	7 (2%)	14 (3%)	19 (4%)
Registered nurse	**183 (37%)**	**179 (36%)**	**179 (35%)**	**154 (33%)**
Senior nursing	39 (8%)	46 (9%)	49 (10%)	53 (11%)
Advanced role	16 (3%)	16 (3%)	14 (3%)	17 (4%)

Haskell, et al. J Paediatr Child Health. 2021.

PREDICT Paediatric Research in Emergency Departments International Collaborative

Forest plots for questions addressing influencing factors

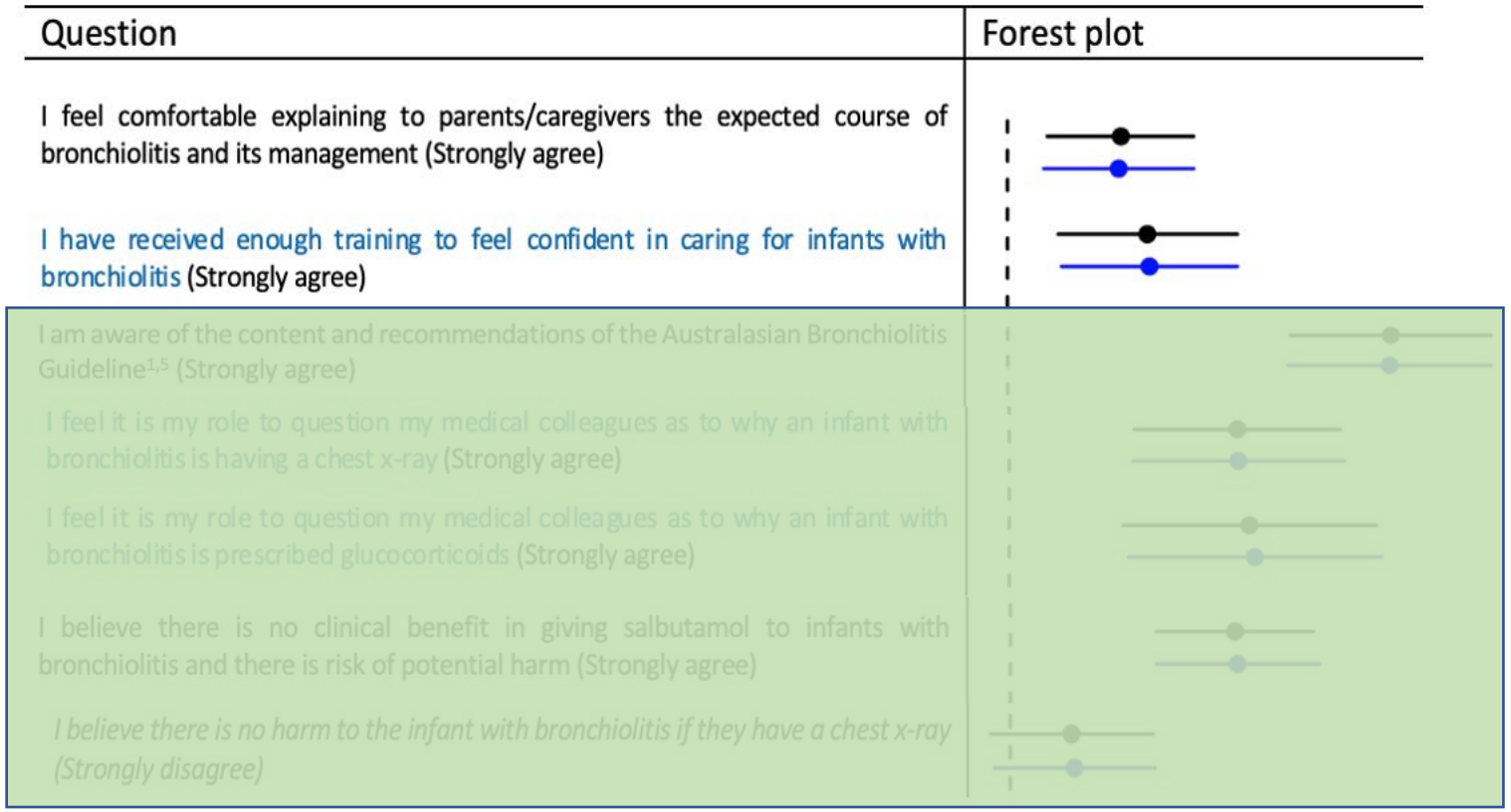


Black – No baseline adjustment
Blue – Baseline adjustment

Black – nurses and doctors
Blue – nurses only

Haskell, et al. J Paediatr Child Health. 2021.

Forest plots for questions addressing influencing factors

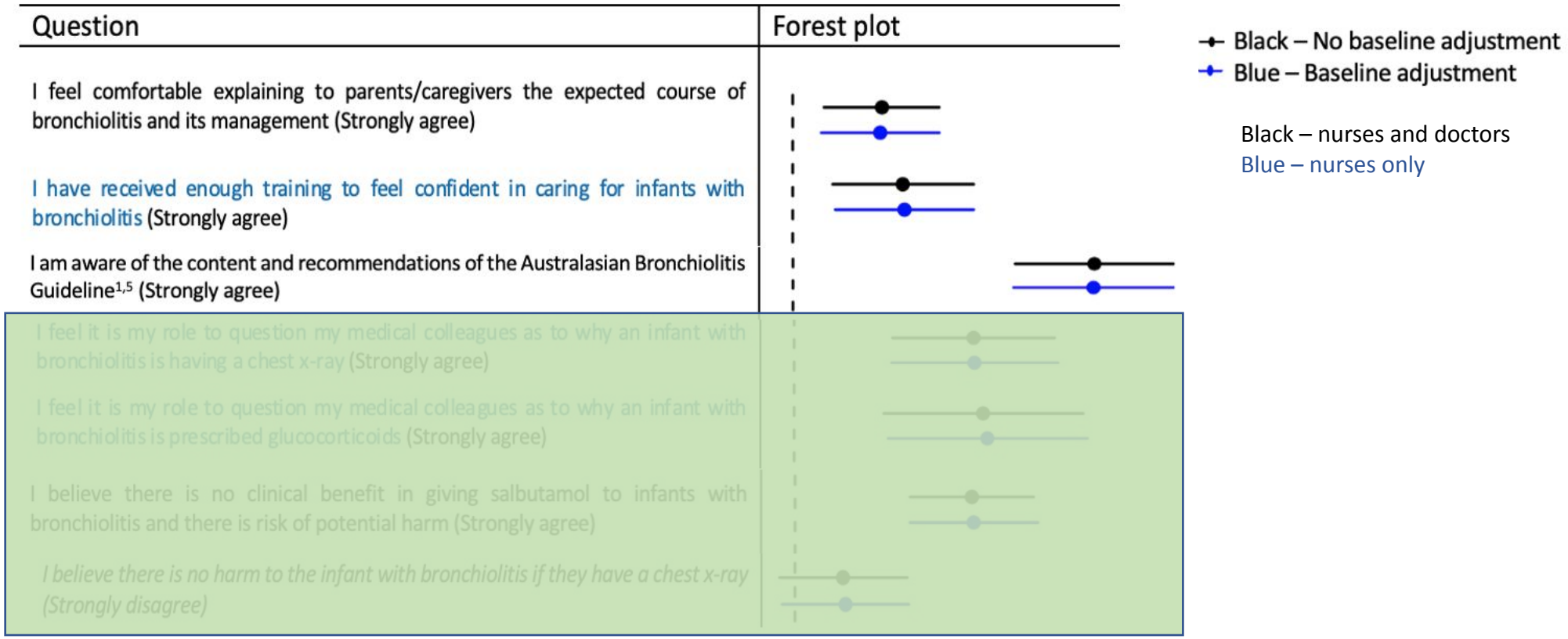


Black – No baseline adjustment
Blue – Baseline adjustment

Black – nurses and doctors
Blue – nurses only

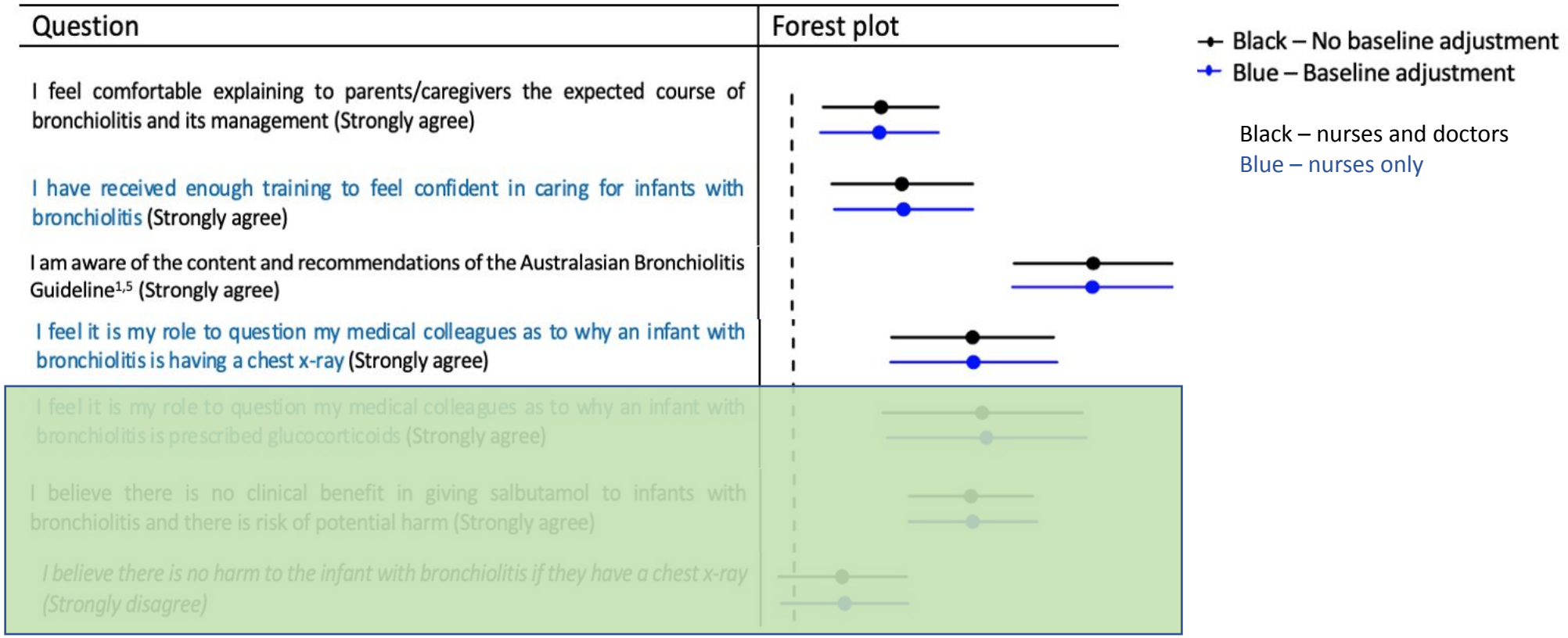
Haskell, et al. J Paediatr Child Health. 2021.

Forest plots for questions addressing influencing factors



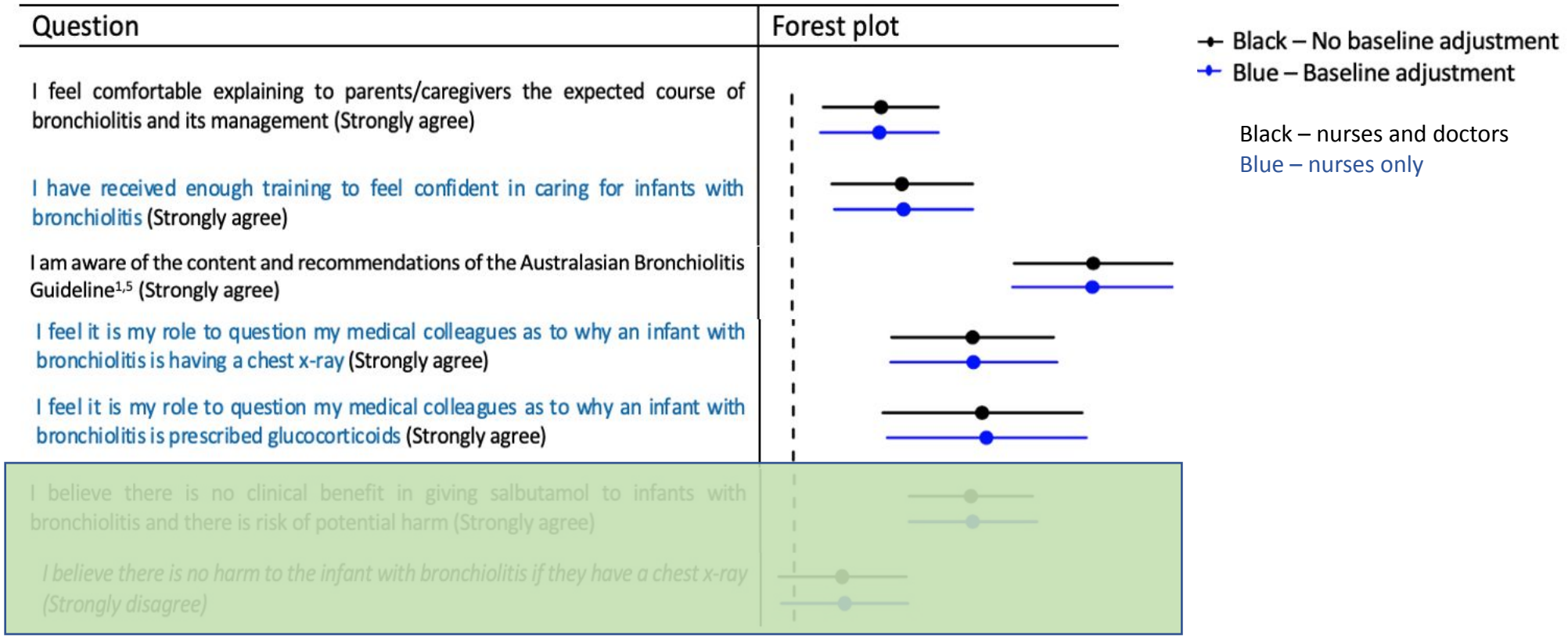
Haskell, et al. J Paediatr Child Health. 2021.

Forest plots for questions addressing influencing factors



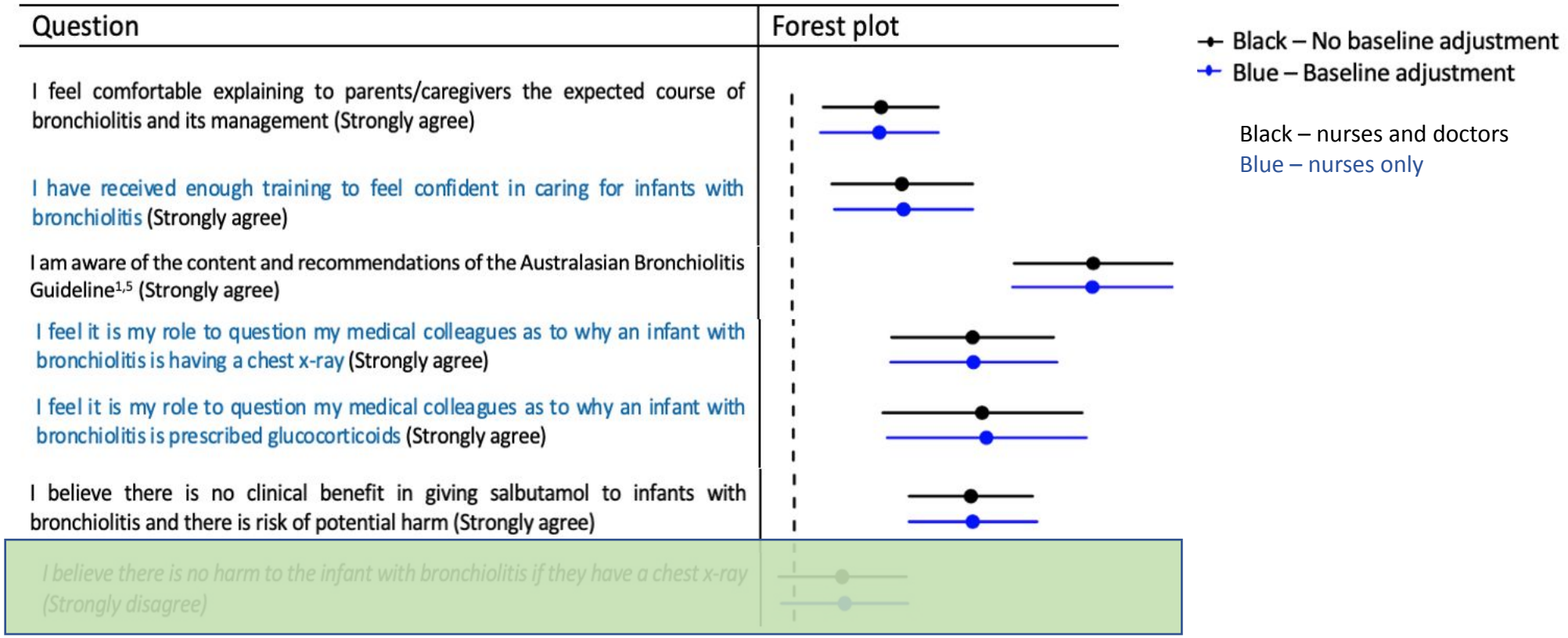
Haskell, et al. J Paediatr Child Health. 2021.

Forest plots for questions addressing influencing factors



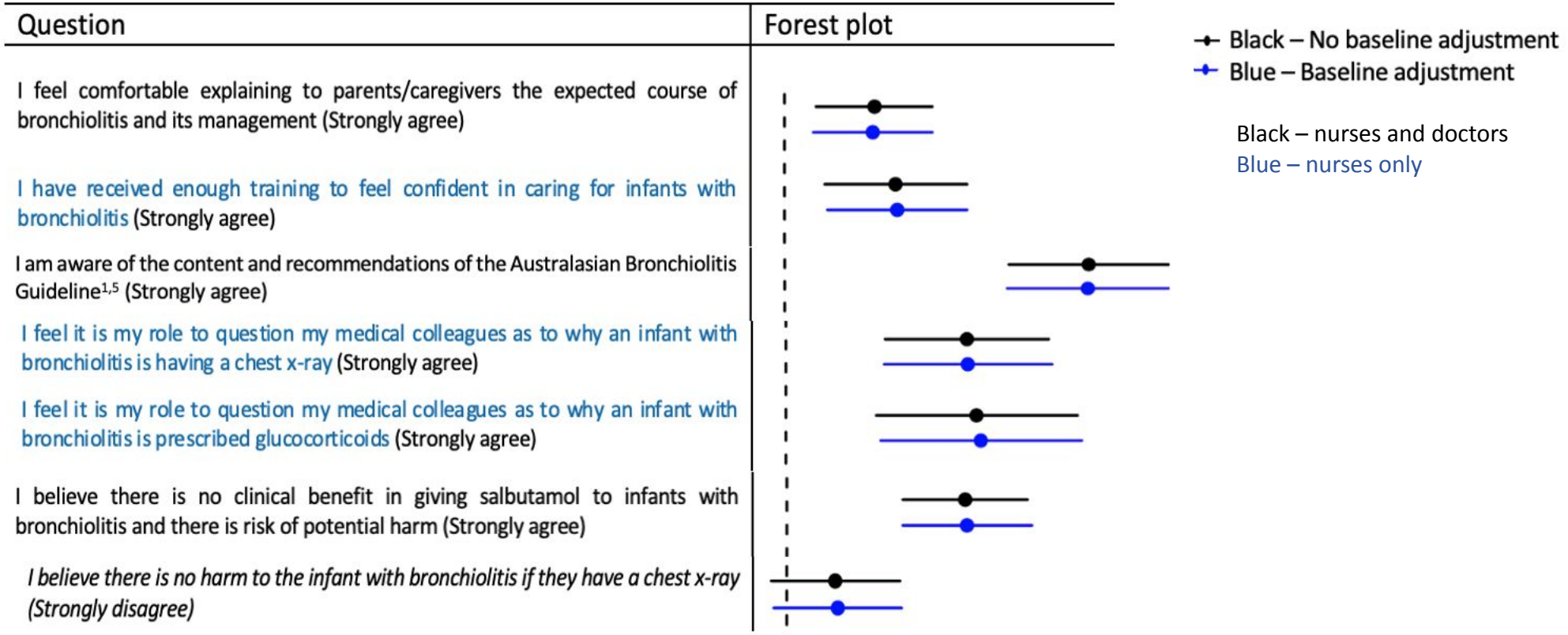
Haskell, et al. J Paediatr Child Health. 2021.

Forest plots for questions addressing influencing factors



Haskell, et al. J Paediatr Child Health. 2021.

Forest plots for questions addressing influencing factors



Haskell, et al. J Paediatr Child Health. 2021.

What about sustainability of change?

- Understanding how and why evidence-based practices are sustained remains unclear

- Sustainability studies are rare

PREDICT
Paediatric Research in Emergency Departments International Collaborative

What about sustainability of change?

- KT sustainability study (mixed methods)
  - Sustainability of practice change
  - Sustainment of intervention use
  - 20 sites back on board; data collection and interviews completed

PREDICT
Paediatric Research in Emergency Departments International Collaborative

Future directions

- Australasian Bronchiolitis Guideline release 2024

- Widespread roll-out of revised intervention package
  - Online support with implementation
  - Auditing and benchmarking
  - Particular interest in regional / rural / remote

PREDICT Paediatric Research in Emergency Departments International Collaborative

Conclusions

- Managing bronchiolitis well is important
- Targeted interventions can change factors influencing non-evidence-based bronchiolitis care
- Nurses are in a great position to effect change

Thank you