

Clean. Cover. Cannulate.

A scalable peer-led model for infection prevention
in ultrasound-guided cannulation

Dr Sarah Browning | Hunter New England Health

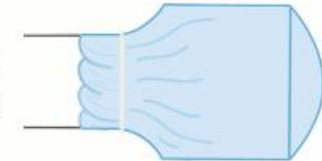
Clinical Director, Infection Prevention Service
Infectious Disease Physician, John Hunter Hospital

REMEMBER



CLEAN

COVER



CANNULATE



Disclosures

Conflicts of interest

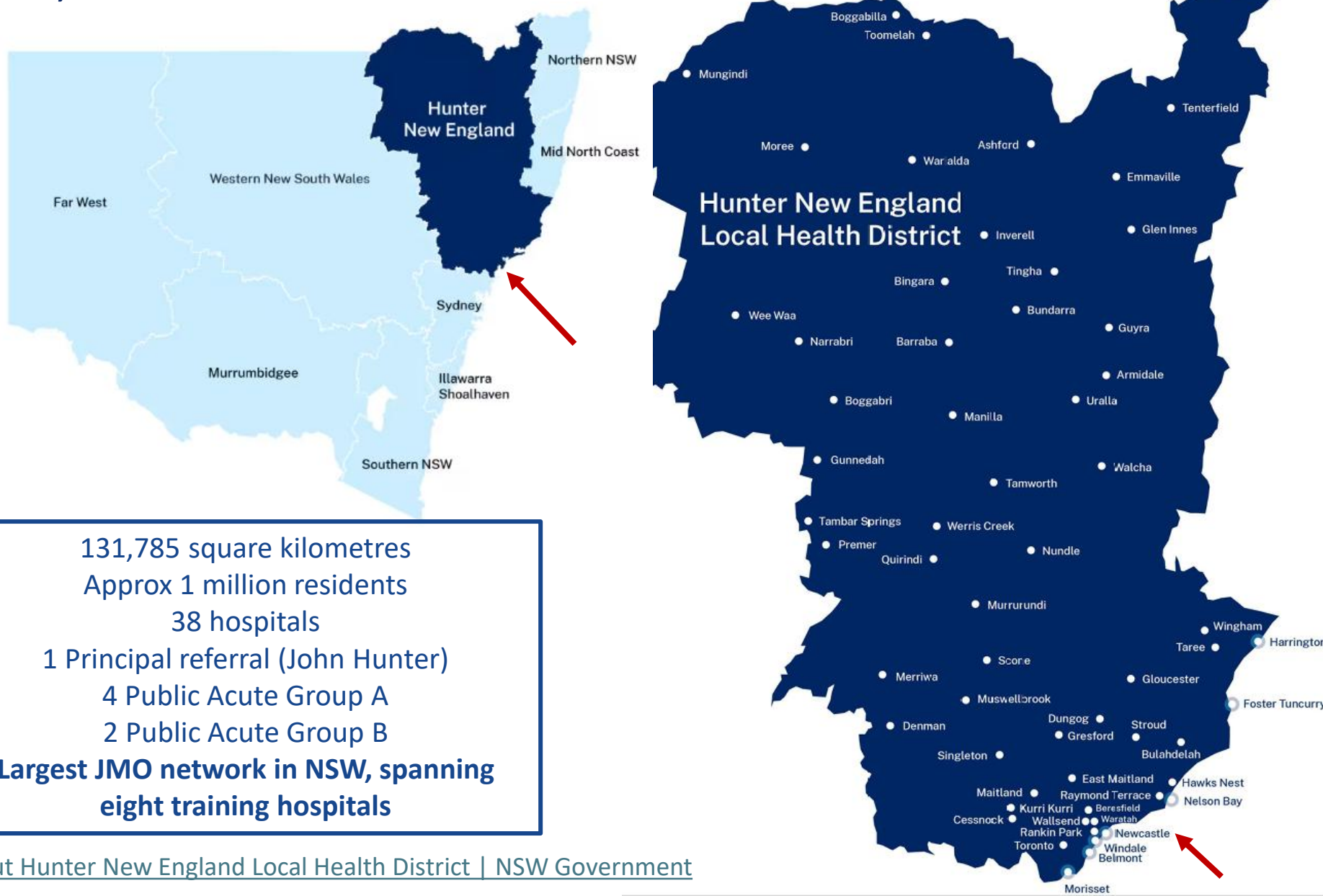
- Nil to declare

Hunter New England Local Health District

NSW, Australia



Health
Hunter New England
Local Health District



131,785 square kilometres
Approx 1 million residents
38 hospitals
1 Principal referral (John Hunter)
4 Public Acute Group A
2 Public Acute Group B
**Largest JMO network in NSW, spanning
eight training hospitals**

**Hospital 1: 820-bed
principal referral centre.**

**Target JMO cohort 100
doctors**

**Hospital 2: 215-bed
public acute group A
Haematology and
Oncology services.**

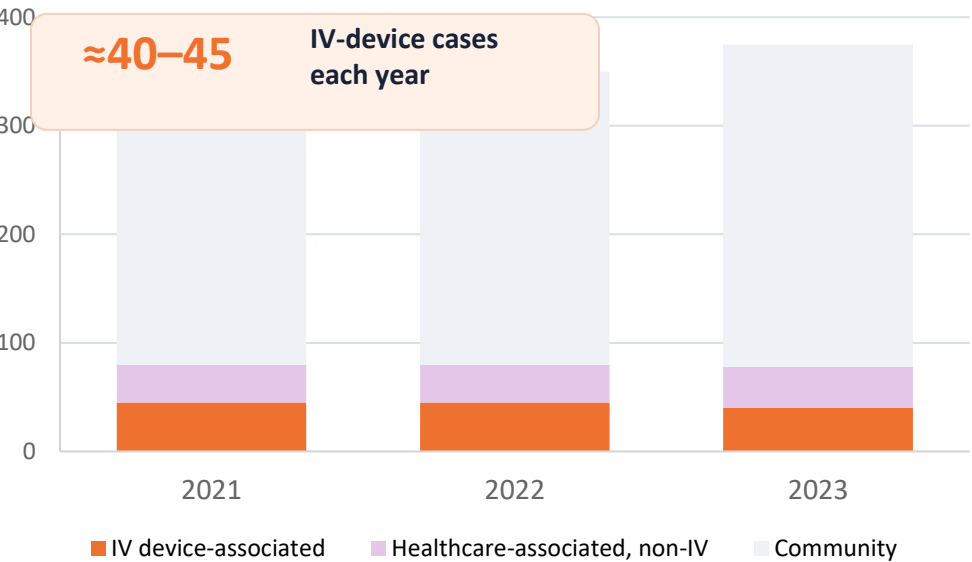
**Target JMO cohort 30
doctors**

PIVCs dominated device-associated SABSI

Hunter New England Local Health District • surveillance context

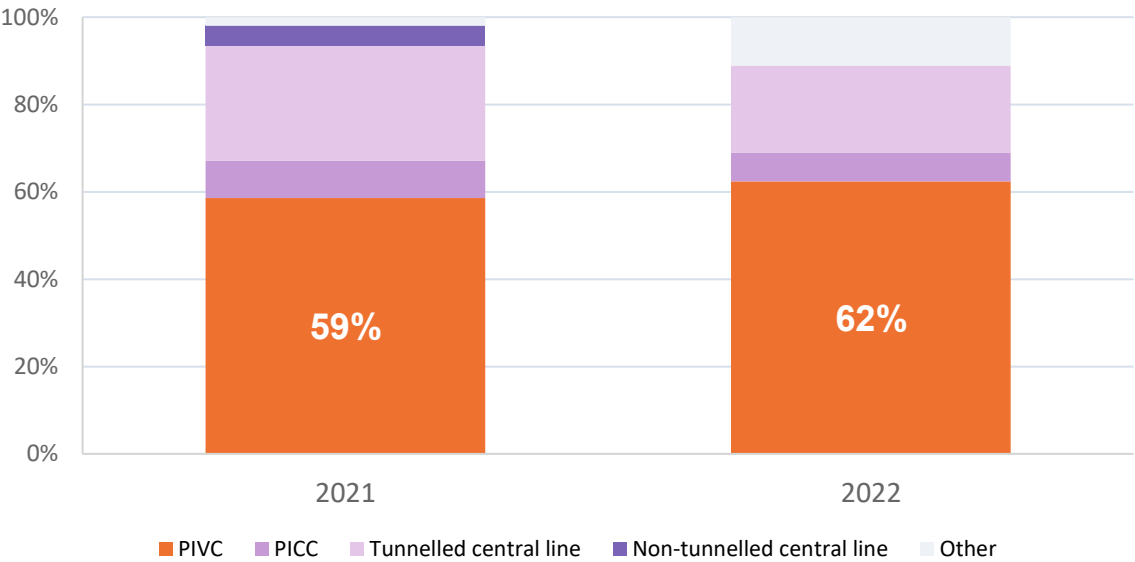
HA-SABSI burden substantial

All SABSI episodes, 2021–2023



PIVCs accounted for about 3 in 5

Distribution of IV-device-associated SABSI, 2021–2022



Why this matters

The smallest, most common device represented the largest prevention opportunity.

What level of probe disinfection is actually needed?

Peters et al. (2023): randomized noninferiority trial comparing low- vs high-level disinfection after skin contamination

654 participants • paired analysis n=478 • identical linear transducers • pragmatic bedside reprocessing

99.0%

LOW-LEVEL DISINFECTION

473 / 478 transducers had all
CFUs eliminated

100%

HIGH-LEVEL DISINFECTION

478 / 478 transducers had all
CFUs eliminated

NON-INFERIOR

LLD vs HLD

Paired difference -1.0%
95% CI -2.4 to -0.2; p<0.001

For transducers contaminated from intact skin, LLD removed microorganisms almost as completely as HLD — supporting LLD for percutaneous procedures.

Important limitation: microbiological endpoint, not patient infection rates; one LLD and one HLD product were tested.

Peters N, et al. J Ultrasound Med. 2023;42:2525–2534. doi:10.1002/jum.16286

New 2026 ASUM + ACIPC Guidelines

Requirements when using ultrasound for vascular access device insertion



Key update

Ultrasound used for vascular access device insertion is classified as a **non-invasive transducer**.



Applied to skin and does not penetrate inside the body



Clean transducer, then disinfect with a minimum of Low Level Disinfection



Use a sterile transducer cover and sterile gel to maintain aseptic technique



Australasian College
for Infection Prevention and Control

Non-Invasive Ultrasound Transducer Disinfection Guidelines

Non-Invasive Ultrasound Transducer

Applied to skin and does not penetrate inside the body

Diagnostic Ultrasound

Transthoracic Echo,
Musculoskeletal, Vascular,
Abdominal

Ultrasound Guided Percutaneous Procedure

Vascular access, injection,
aspiration, biopsy

Transducer should be cleaned and then disinfected with a **minimum** of

Transducer should be cleaned and then disinfected with a **minimum** of

Low Level Disinfection¹

Low Level Disinfection¹

¹ A higher level of disinfection may be required where a documented risk assessment identifies an increased risk of pathogen transmission or infection that is not adequately mitigated by low-level disinfection.

² For advice on infection prevention measures for different procedures refer to the Australian Guidelines for the Prevention and Control of Infection in Healthcare.

Sterile transducer cover and gel to maintain aseptic technique

Surgical aseptic technique²

Central venous catheter,
Regional nerve catheter

Standard aseptic technique²

Peripheral vascular catheter,
Tissue biopsy or aspiration,
Therapeutic injection

Clean. Cover. Cannulate.

A junior medical officer-led quality improvement initiative

THE CHALLENGE

- 01 A growing clinical skill**
Ultrasound-guided cannulation is increasingly performed by junior doctors.
- 02 Training is often informal**
On-the-job learning can de-prioritise transducer reprocessing requirements.
- 03 HLD is impractical**
High-level disinfection is not readily accessible for JMOs in most HNE hospitals.

WHY THIS APPROACH?

✓ A practical, guideline-aligned alternative

For non-invasive ultrasound transducers, low-level disinfection combined with a sterile probe cover and appropriate aseptic technique is feasible in everyday clinical practice.

The opportunity

Improve JMO practice without creating an unworkable reprocessing pathway.

OUR GOAL

Embed clean technique and sterile probe-cover use into every ultrasound-guided cannulation.

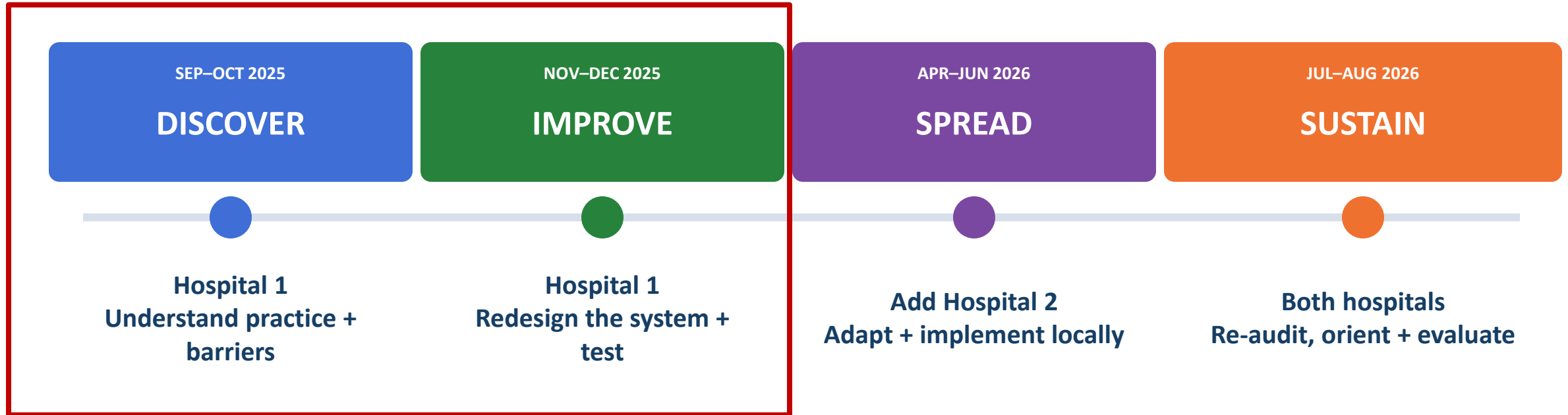
Protect
patients

Build
confidence

Improve
practice

Clean. Cover. Cannulate.

September 2025 to August 2026



The design logic

Start small → show feasibility → add a second context → build sustainability.

Hospital 1: 820-bed Metropolitan Principal Referral Centre

Hospital 2: 215-bed acute hospital with haematology and oncology services

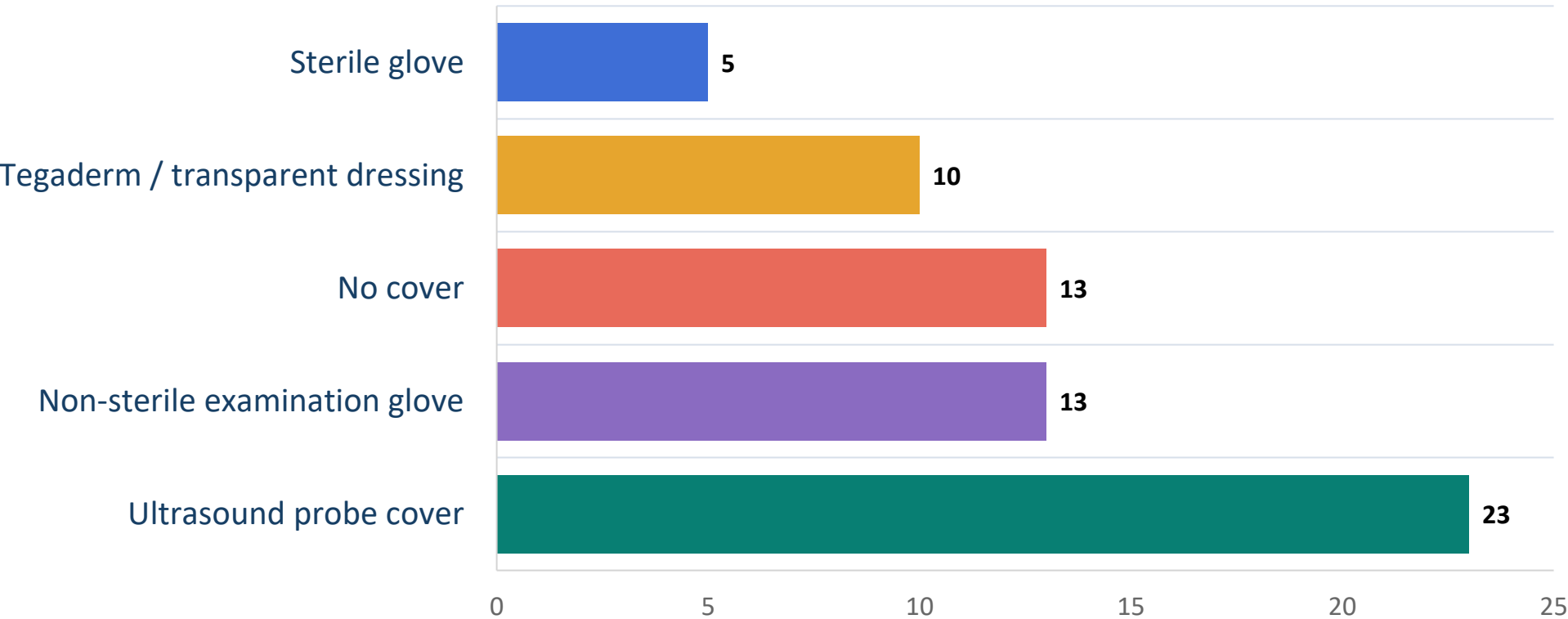
Baseline survey of 34 JMOs

Probe-cover practice was highly variable

“To cover an ultrasound probe during peripheral IVC insertion, I use...” • Multiple responses permitted



Dr Mia Bowden



The probe cover was the most frequent response, but inconsistent practice remained widespread.

Knowledge gaps of concern

Preliminary JMO survey • n=34



Dr Mia Bowden

How JMOs answered each knowledge check

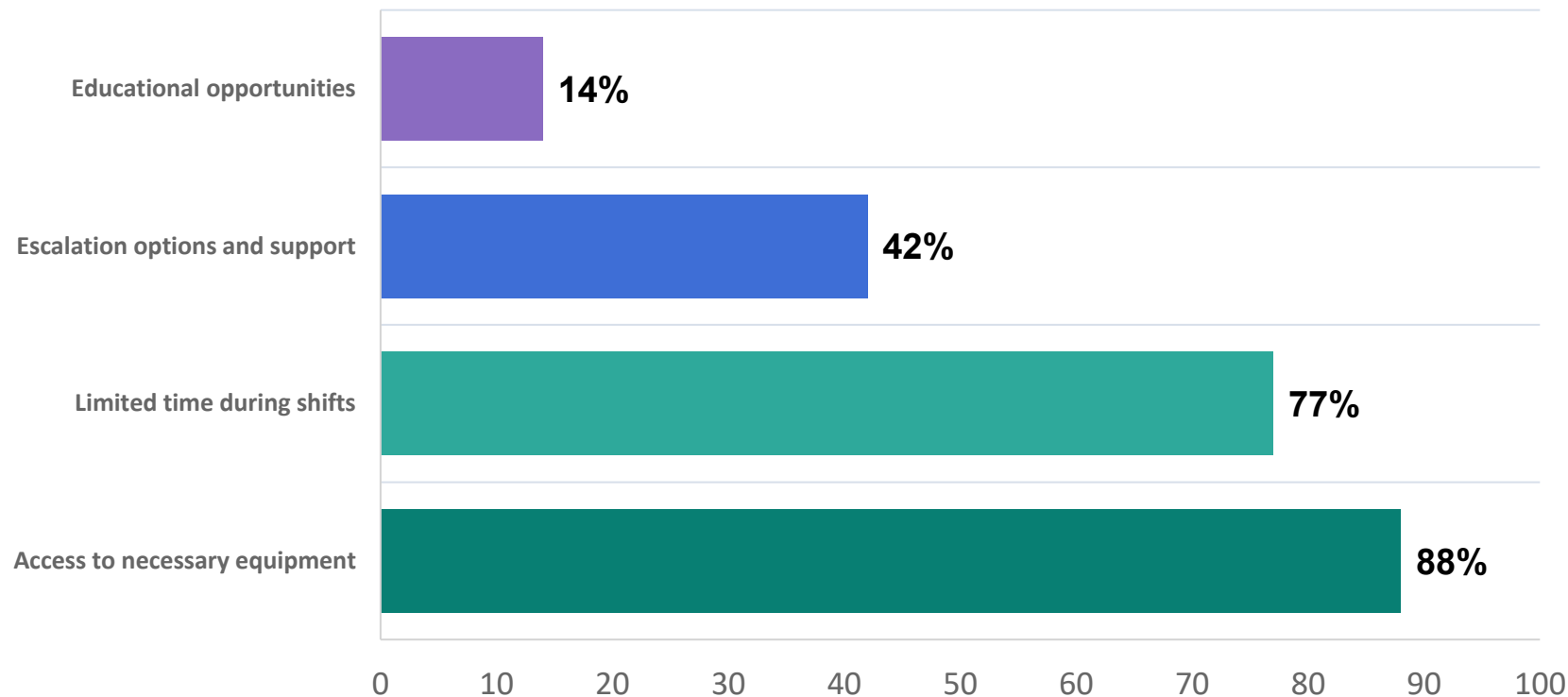


Takeaway

Training must address specific misconceptions—not simply provide more information.

Equipment and time dominated the barriers in baseline survey of 34 JMOs

JMOs rating each barrier as 'very' or 'extremely significant'



88%

rated equipment access
as a major barrier

TOP 2

The two leading barriers
were system and
workflow constraints.

The first improvement priority was access to equipment—not education alone.

Hospital 1: safe practice was not realistically possible

#1 ward stock audit

13%

(2/15) wards with sterile
probe covers at baseline

✓ Sterile probe covers added to ward stock

✓ Long cannulas stocked alongside covers

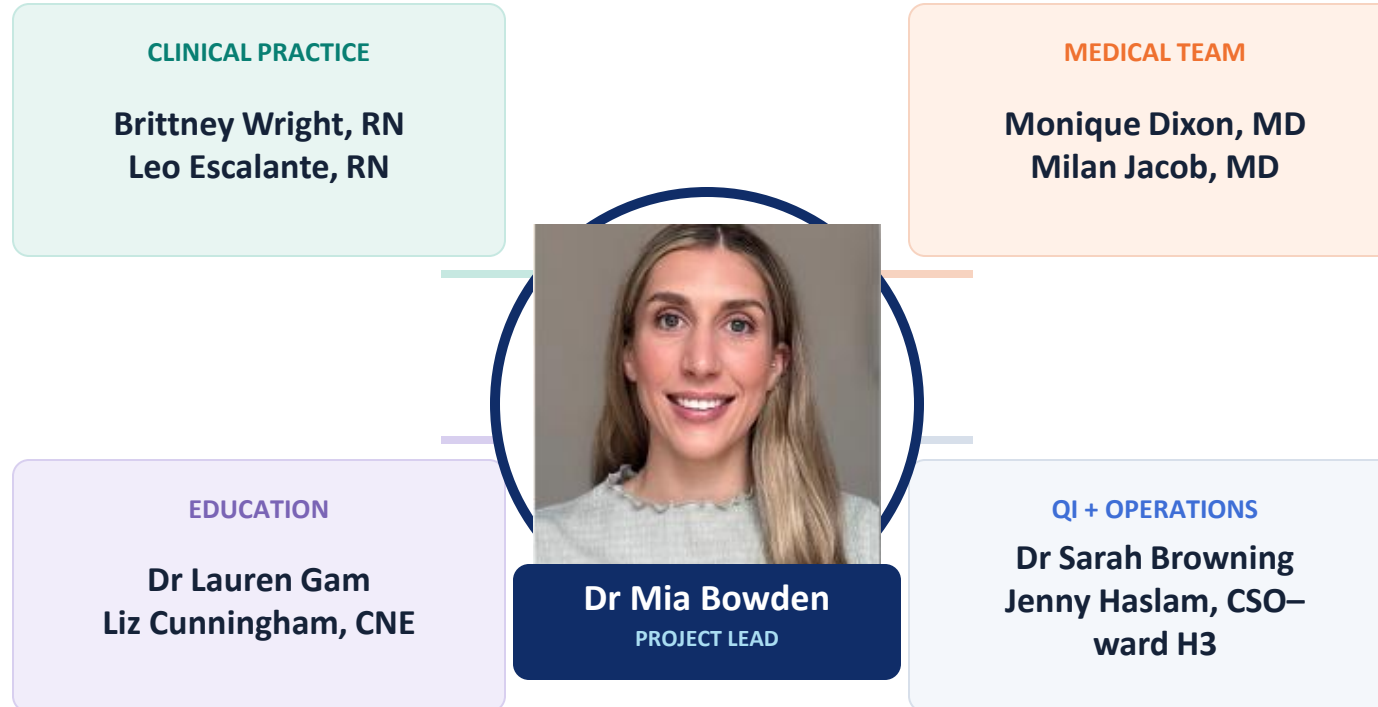
✓ Standard labels and storage locations

✓ Barcode and replenishment issues escalated

Without the right equipment, JMOs could not do the right thing.

Mia brought the right people around the problem

FOCUS–PDSA • Find the problem before designing the solution



Together, they mapped the work as it really happened

01

Follow the workflow

Locate equipment → inspect the probe → reprocess → move to the bedside

02

Ask “why?” at each barrier

Equipment access, transport and reprocessing friction became visible

03

Prioritise practical changes

The system had to enable safe practice before education could stick

FOCUS made improvement a team sport—not a solo project.

FOCUS–PDSA methodology

SMART AIM

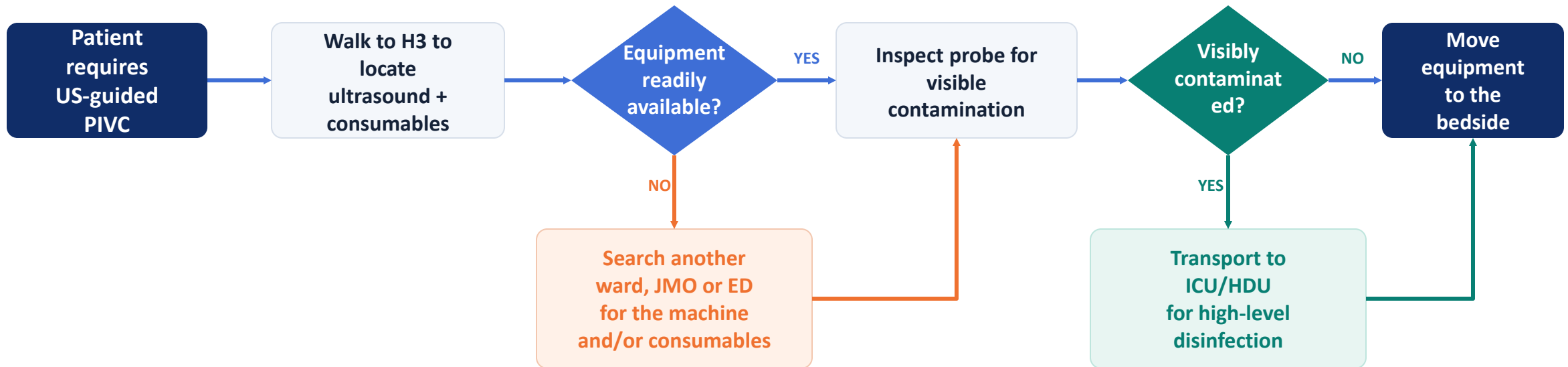
By December 1st, 90% of JMOs surveyed will indicate consistent use of sterile probe covers when performing U/S guided PIVC insertion

F	Find the process	Baseline survey of JMOs on adult inpatient wards at JHH (September 2025), promoted through QR codes, teaching, email, social media and common areas.
O	Organise the team	A multidisciplinary QI team: 5 doctors, 3 nurses and 1 Clinical Support Officer.
C	Clarify current practice	Five meetings developed the AIM statement, mapped the current insertion process and created a driver diagram.
U	Understand causes	COM-B was used to explore JMO behaviour and hypothesise barriers to minimum IPC requirements.
S	Select changes	Change ideas were prioritised by likely impact and ease of implementation.

PDSA	Short-term changes commenced from November 2025 to create immediate impact.	Longer-term interventions targeted sustainable behaviour change for future JMO cohorts.
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The workflow made safe practice unnecessarily difficult

Current-state process map • developed with the multidisciplinary team



What the mapping revealed

1

Searching across wards

2

Unnecessary transport and equipment handling

3

Expectation that HLD be performed away from the bedside

The change ideas needed to remove friction—not simply add education.

Hospital 1: Discover and Improve

820-bed Principal Referral Centre • target JMO cohort ≈100

SEP–OCT 2025

Find the barriers

34

JMOs completed the
baseline practice
and knowledge
survey

The JMO QI team mapped the
real workflow and prioritised
barriers using FOCUS–PDSA.

NOV–DEC 2025

Remove system friction

01

Stock the essentials

Sterile probe covers and related
consumables

02

Make them visible

Standard storage, organisation and labelling

03

Teach the expected practice

Peer-supported education embedded in
JMO teaching

The sequence mattered

1

Fix access

2

Standardise the environment

3

Then reinforce through education

System redesign created the conditions for behaviour change.

The intervention was a bundle—not a lecture

Make safe practice possible, visible and expected



MAKE IT POSSIBLE

Redesign the stock system

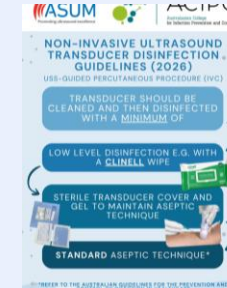
- Sterile probe-cover kits
- 18G + 20G long cannulas
- Standard storage + labelling
- Imprest barcodes for automatic restocking



MAKE IT VISIBLE

Prompt at the moment of care

- Signs on ultrasound machines
- Posters in clinical areas
- Consumables placed where JMOs look
- Repeated ward stock audits



MAKE IT EXPECTED

Teach one clear standard

- Mandatory JMO teaching
- Informal peer education on wards
- Orientation for new cohorts
- **ALWAYS: Clean. Cover. Cannulate.**

AUDIT + ADAPT

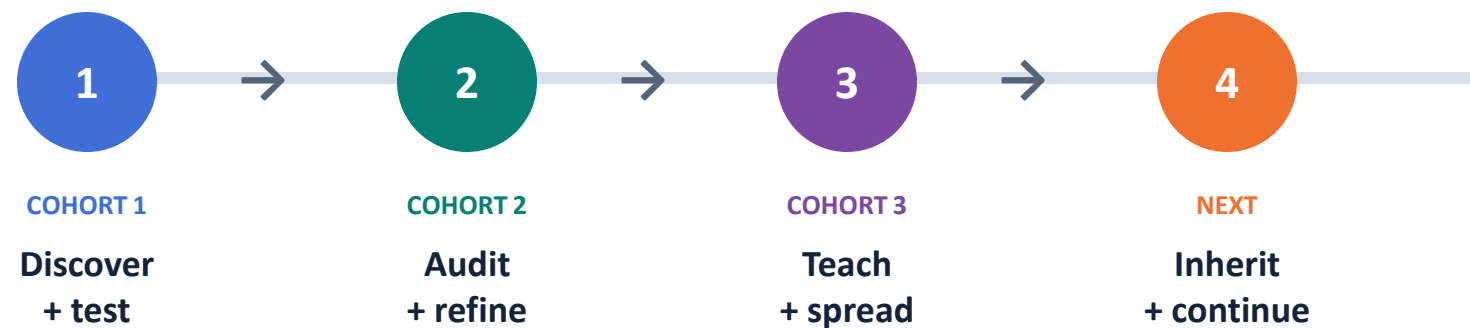
Stock audits, rapid surveys and spot interviews guided each refinement.

PDSA had to move with a 10-week workforce

Hospital-wide change required persistence, creativity and deliberate handover



THE JMO RELAY



WHY A TEXTBOOK CYCLE WAS NOT ENOUGH

- JMOs worked across the entire hospital—not one ward
- They changed teams, wards and often hospitals every 10 weeks
- Every incoming cohort needed to hear, see and practice the standard

Handover as a part of the intervention was a necessity, and implementation at all training hospital is required

Education had to meet JMOs wherever they were

Multiple forums reinforced the same PIVC practice*



JMO-created education resources

A reinforcing ecosystem

- ✓ **Formal forums**
Mandatory teaching + orientation
- ✓ **Clinical workflow**
Ward teaching & point-of-use prompts
- ✓ **IPC Bites**
Short, memorable peer-created messages
- ✓ **JMO-led “ACCESS” team**
Practical skills, confidence & credentialling

The same message appears in write-up rooms, wards, and mandatory education sessions. Social media account to come...

*IPC Bites and ACCESS QIPs ran in parallel and reinforced the CCC intervention.

Early signals supported moving beyond one hospital

Hospital 1 preliminary findings • Nov 2025 • ward stock audit (n=15) and follow-up survey (n=11)

13% → 60%

Wards stocking sterile probe covers

2/15 → 9/15 wards

12% → 45%

JMOs using only a sterile probe cover

Self-reported equipment choice

50% → 27%

Access reported as a barrier “rarely” or “never”

A meaningful shift in availability

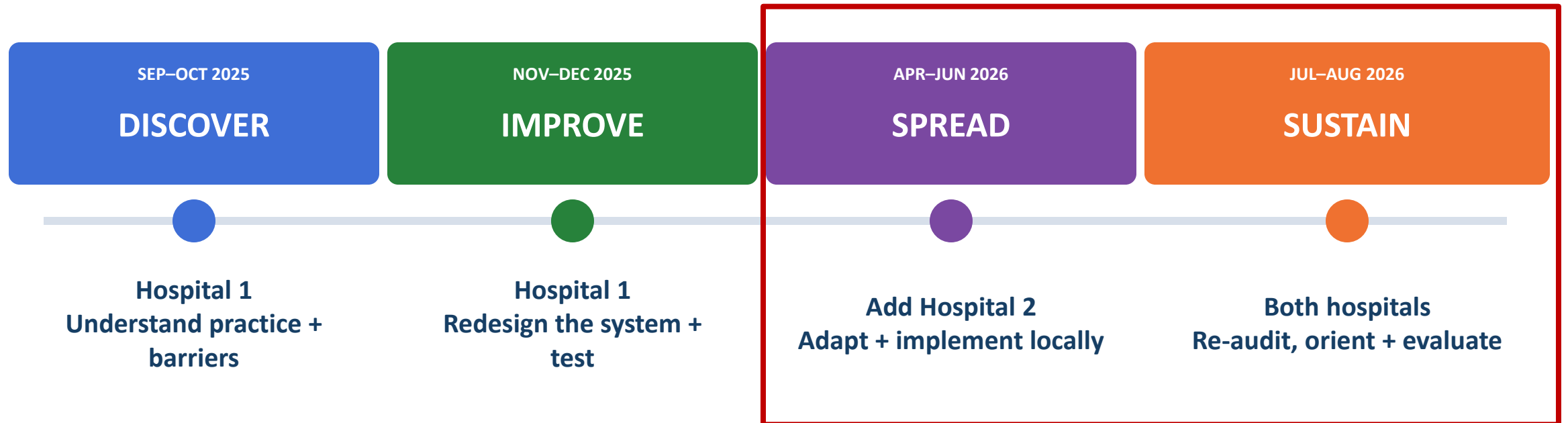
Knowledge changed less

Across all true/false items, improvement in correct responses was ≤15 percentage points.

The preliminary signal was strongest for access and equipment use—not knowledge alone.

Clean. Cover. Cannulate.

September 2025 to August 2026



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Hospital 2: Adaptation—not duplication

Hospital 2 added April–June 2026 • Both hospitals evaluated July–August 2026



Dr Suki Jetley

HOSPITAL 2

A new context

215 beds

Acute Group A hospital with
haematology and oncology services

- ✓ Engage local clinical stakeholders
- ✓ Adapt equipment and storage solutions
- ✓ Deliver locally relevant JMO education

HOSPITAL 1

Keep improving

- 1 Re-audit ward stock
- 2 Use rapid JMO surveys to guide necessary refinements (PDSA)
- 3 Orient each new JMO cohort
- 4 Maintain posters, resources and peer teaching



Dr Anthea Azzi

Behaviour change demonstrated across two hospitals, July 2026



Reported likelihood of routinely using a sterile ultrasound probe cover following implementation

Hospital 1: (n=74)



Hospital 2: (n=28)



Self-reported likelihood of routine sterile probe cover use

■ High (8–10) ■ Moderate (7) ■ Low (0–6)

Likelihood of routine use sterile transducer cover ‘high’ or ‘moderate’

Hospital 1: **72%** | Hospital 2: **90%**

Project Awareness

Hospital 1: **88%** | Hospital 2: **96%**

Self-reported consistent use of low-level disinfection

Hospital 1: **77%** | Hospital 2: **64%**

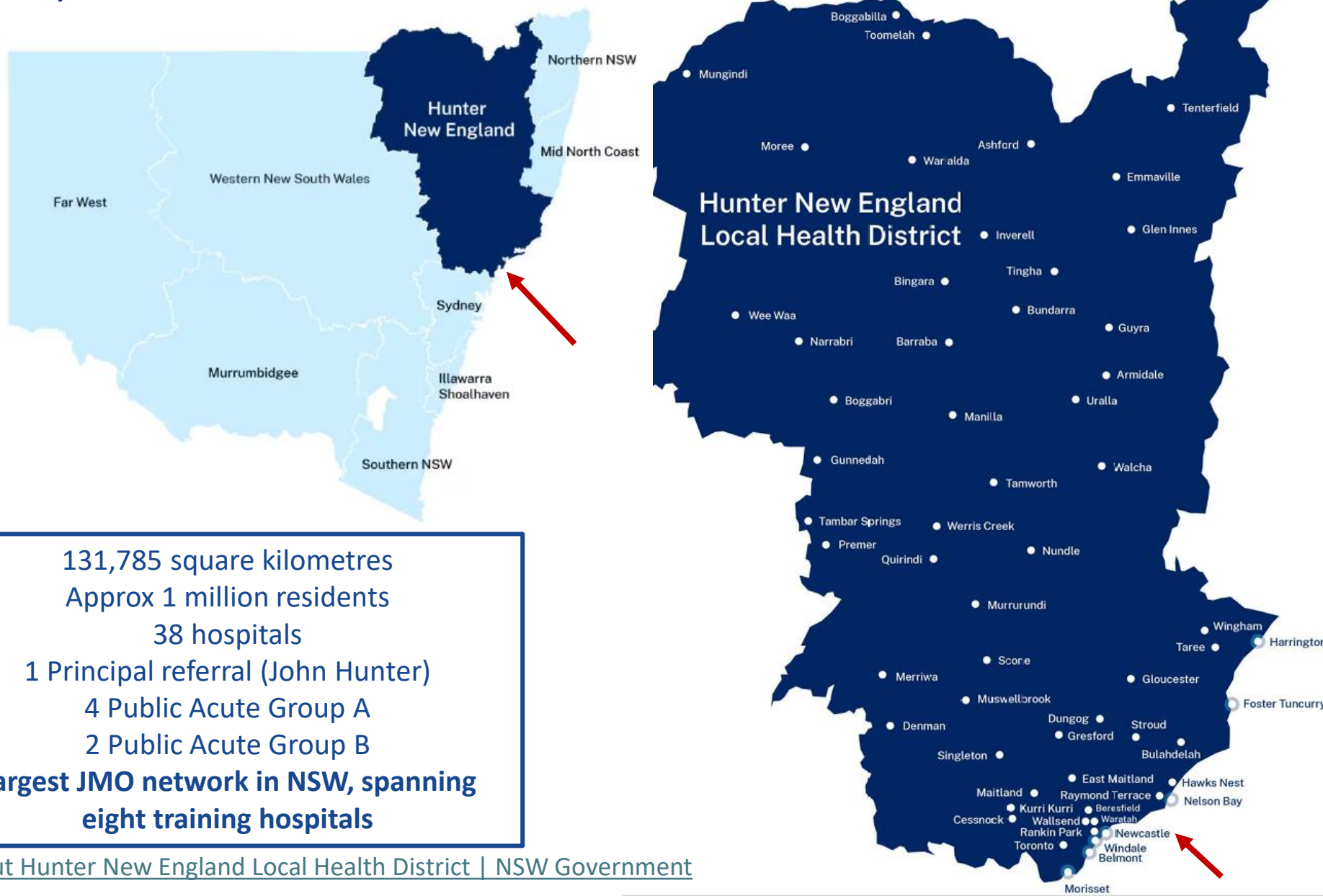
Most clinicians reported a high likelihood of routinely using sterile probe covers following implementation. The intervention was successfully transferred to a second tertiary hospital with a view to replicate this project at all training sites in our health district.

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Next steps: district-wide scale-up is now urgent

5 teams

Dedicated 3Cs team needed at every remaining training hospital

STOCK

Unreliable sterile-stock-room supply threatens success across sites

TRAINING

Standardised training opportunities across all hospitals

Four actions — run in parallel

- Local 3Cs teams: audit and improve each hospital's system
- IPC Bites: a flood of peer-delivered education to JMOs district wide
- ACCESS: embed the bundle in training, assessment + credentialling (peer-led)
- District: standardise stock, locations, labels + barcodes

JMOs rotate across the district. The system must travel with them.

One message—repeated across the health district

Partnering with industry to embed practice change across our health district

**Hunter New England
Local Health District**





Clean

Cover

Cannulate

Clean non-invasive ultrasound transducers with Clinell Universal Wipes, apply a sterile transducer cover, and cannulate using aseptic technique to support effective disinfection before ultrasound-guided peripheral intravenous cannulation (PIVC) insertion.

GAMA Healthcare Australia Pty Ltd.
Suite 1, 33-37 Duerdin St, Notting Hill VIC 3168, Australia.
+61 (0)3 9769 6600 | info@gamahealthcare.com.au | www.gamahealthcare.com.au

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**Hunter New England
Local Health District**



Ultrasound-guided PIVC insertion



Perform hand hygiene and don PPE



Working from top to bottom, clean to dirty, clean the probe before use



Reperform hand hygiene and don PPE



Apply sterile transducer cover



Use sterile gel and maintain asepsis



Maintain aseptic technique during insertion



Remove probe cover safely



Clean probe after use and leave to air dry



Perform hand hygiene



Clean

Cover

Cannulate

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WHY A rotating workforce needs repetition—not reliance on memory.

PIVCs remain the most significant contributor to device assoc. HA-SABSI

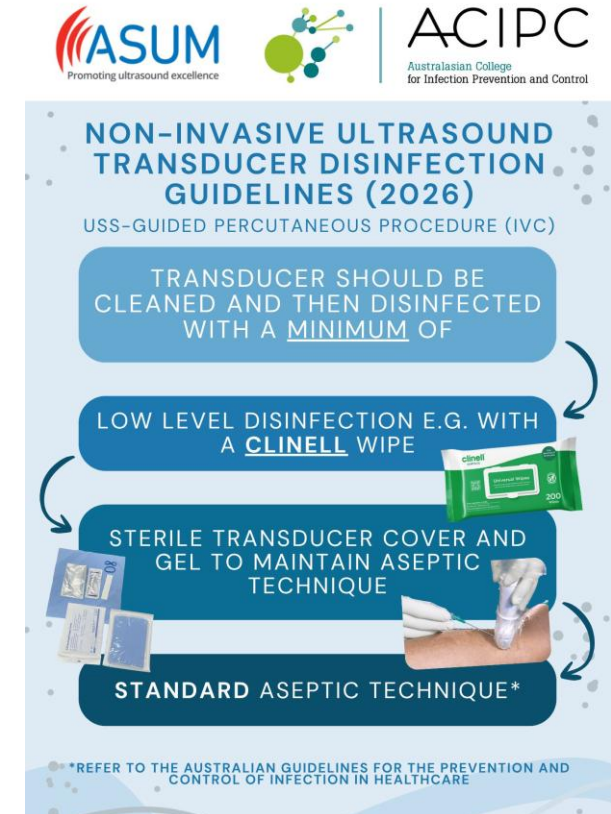
Hunter New England Local Health District • 2021–2025 surveillance

IV device-associated SABSI by device type



The trend is encouraging—but PIVC prevention presents the largest opportunity for better patient outcomes

Make safe practice possible. Then make it normal.



Clean. Cover. Cannulate.

Sarah.Browning@health.nsw.gov.au

Thank you to the project leads: Lauren Gam • Mia Bowden • Anthea Azzi • Sukriti Jetley