Removal of Indwelling Devices

GAMA IPC Tour, Brisbane, 7 May 2025

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Relevant Disclosures

- Employee of University of Queensland
- Associate Editor, *Infection, Disease & Health*
- Vascular access guideline expertise for Wolters Kluwer Lippincott Procedures
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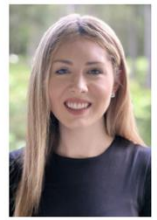

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Herston Infectious Diseases Institute (HeIDI)

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About us | Research | Education and training | Our team | Resources

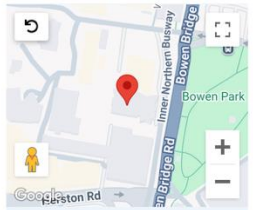
HERSTON INFECTIOUS DISEASES INSTITUTE

The Herston Infectious Diseases Institute (HeIDI) aims to deliver innovative infectious diseases research that achieves clinical excellence in the surveillance, diagnosis and management of serious infections that impact on our community, prevents and monitors healthcare-associated infections, and promotes partnerships between industry, government and academic institutions.

About us

Research

Education and training



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Infection Prevention and Vascular Access Group

Research / Infectious diseases

Healthcare should be safe, but the World Health Organisation reports one in 10 hospital patients are harmed by an avoidable infection, often of the blood, lungs or urine. Such infections are life-threatening, causing suffering, prolonged hospital stay and costs. Nurses, midwife's, doctors, scientists, epidemiologists and cleaners play key roles in infection prevention and surveillance.

We work with clinicians and consumers to generate and use evidence for clinical practices that prevent and detect infection across clinical specialties. A particular focus is on the prevention of infections in invasive medical devices such as IV therapy catheters which cause one third of healthcare associated bloodstream infections.

- AVATAR Group
- Metro North Infectious Diseases Institute
- School of Nursing, Midwifery and Social Work

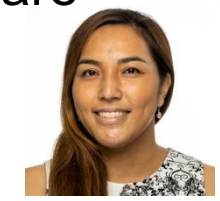
Research projects | Team | Grants | Partners | Student projects

Alliance for Vascular Access Teaching and Research

https://www.avatargroup.org.au/

More than 100 nurses, doctors, and other researchers from a range of health specialties, all passionate about preventing vascular access complications.

Leaders in the field, conducting research that has redefined vascular access and infusion therapy care standards.



Removing indwelling devices: Why should we care?

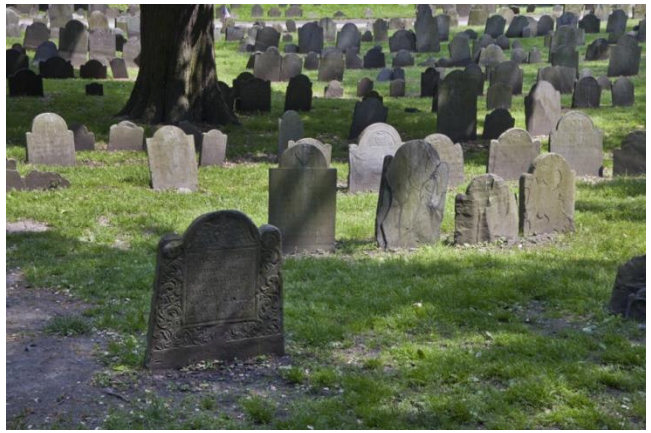
- Up to 70% of hospital patients need at least one vascular access device (VAD) for fluids or medicines during admission.
- 30–50% of VADs have complications or stop working before treatment completion, requiring insertion of a new device.
- >20% of peripheral intravenous catheters (PIVCs) are inserted but never used
- >25% of VADs have no documentation
- If the patient does not know why they have a device, they are 7 times more likely not to need it.
- Post-infusion phlebitis can occur up to 48 hours after PIVC removal
- Unnecessary devices have higher rates of catheter-associated bloodstream infection: Costly and deadly!

Consequences of Bloodstream Infection

30,000–40,000 episodes/year in USA
(Selby et al, 2021)

2016 data, USA:
$48,000/BSI,
$1.4 billion total
(Forrester et al, 2022)

Personal costs …



Mortality
12–25%
(O'Grady et al, 2011)

*Based on available CVC data

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News / National

Patients claim Queensland hospital staff sent them home without removing their cannulas

By Peter Fegan • Senior Reporter | 4:02pm Sep 26, 2021

You forgot to remove the cannula from your patients arm. Now what?

PUBLISHED ON *December 6, 2016*

Caitlin is a 22 yo female who has presented on a Friday evening after a 2 hr history of sudden onset, severe abdominal pain. On arrival she is very distressed rating her pain at 8 out of 10.
During her assessment and treatment she has an PIVC (peripheral intra venous cannula) placed in her right arm, bloods drawn, fluids commenced, and narcotic analgesia is administered with good effect.

An hour and a half later, at 8PM, it becomes apparent that Caitlin has left the department before treatment has been completed, or as we somewhat self-righteously refer to it… *absconded*.

After a quick check around the unit one of the nurses reports to you that she cannot be found … *and* she left with an 18fr cannula still in her arm. The nurse has rung Caitlin's mobile phone repeatedly, but it appears to be turned off.

r/nursing • 2 yr. ago
Ready_You_8847

I let a patient discharge with an IV

PressurePotential339 • 2y ago

I really feel for all the new nurses fretting over such insignificant shit nowadays. This is not and will never be a big deal. Oops, you forgot an IV. Go on with your life and do not worry about this. And don't bother administration about it; they care more about important things... like dress code and chart audits.

sleeprobot • 2y ago

I work in IR and we had a patient come to us for a line removal...

She was discharged with a femoral vascath Lolol and she had it for like, a few weeks before someone realized/decided she should come in to get it out. Yes she was walking around with it.

There is always someone out there doing something 10000x dumber/worse than you. When I feel bad about my nursing mistakes, stuff like this helps put it in perspective.

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Feb 27

"The morning after, my cannula was falling out. No one came to check or remove it...I took it out myself."

A mother's experience of Oxford University Hospitals Maternity Services in 2024:

My actual planned c section went very smoothly but the aftercare was awful. I was put in a private room and forgotten about.

Herald Sun
https://www.heraldsun.com.au › News › National

Jack Hedley Martin death caused by failure to remove ...

13 Dec 2019 — THE death of a Tasmanian father-of-four was caused by a hospital's failure to remove his cannula before he was discharged, a coroner has ruled.

The Forgotten Line

https://psnet.ahrq.gov/web-mm/forgotten-line

Marta L. Render, MD | May 1, 2012
View more articles from the same authors.

The Case

An 81-year-old man with a history of coronary artery disease, hypertension, cerebrovascular accidents, and chronic kidney disease was transferred to a referral hospital for percutaneous coronary intervention after presenting to a community hospital with hypotension and chest pain. At the community hospital, a central venous catheter was placed in the patient's right internal jugular vein for administration of vasopressors. When he arrived at the referral hospital, he was hemodynamically stable and the vasopressors had been discontinued for an unspecified period of time, although the central line remained in place "just in case." The patient underwent successful stenting of his coronary arteries and was discharged to an assisted living facility within 48 hours of admission.

On arrival at the assisted living facility, it was discovered that the central line was still in place. The caregivers at the assisted living facility noticed the line and returned the patient to the referral hospital the same day to have the central line safely removed. The incident was reported and investigated, revealing several contributing factors. First, the patient was a transfer who was admitted late at night, and who was signed out the next morning as 1 of 12 holdovers to the admitting teams. Second, it was "switch day" for the interns and early in the academic year, so many of them were still getting used to a new system. Third, the line had been placed somewhere else, for an indication (hypotension) that no longer existed, and it had not been used at any point during his 48-hour admission. Lastly, while the nurse noticed the line during the routine predischarge examination, she assumed that the patient was supposed to be discharged with it in place and did not call anyone from the medical team to get clarification.

Why do invasive devices get forgotten?

- Lack of awareness / failure to assess
- Lack of ownership
- Lack of documentation
- Procedural error
- Communication failure
- Workload

Example of Invasive Devices Log

Review need for invasive devices with Medical Officer daily									
Device	Type of invasive device (PIVC, PICC, CVL, Hickman, Subcutaneous device, NGT, IDC, ICC, epidural, PEG, drains, staples, sutures, etc.)	Site	Size (if known)	Insertion date and time	Inserted by (print name)	Removal due date	Removal date and time	Removed by (print name)	Comments (reason for removal)
1	PIVC	L) hand	22 G	4/11/16 09:00	J. Smith, RN	7/11/16	5/11/16 13:15	H. Barry, RN	dislodged
2	PIVC	R) forearm	20 G	5/11/16 17:00	H. Barry, RN	8/11/16			
3	NGT	L) nare		6/11/16 10:00	Dr Bones				
4	IDC		14 F	6/11/16 11:30	P. Harris, RN				
5	Surgical drain	R) lower abdomen		6/11/16	In OT				
6	PIVC	L) ACF	18 G	6/11/16	In OT				
7									
8									
9									
10									

PIVC-associated infection: Top 10 patient safety concerns, 2019

PIVCs can expose patients to a significant risk of infection—one that is "underreported, underrecognized, and often ignored".

Increased awareness of PIVC-related infections, coupled with routine active surveillance and follow-up reporting, can help reduce the risk.

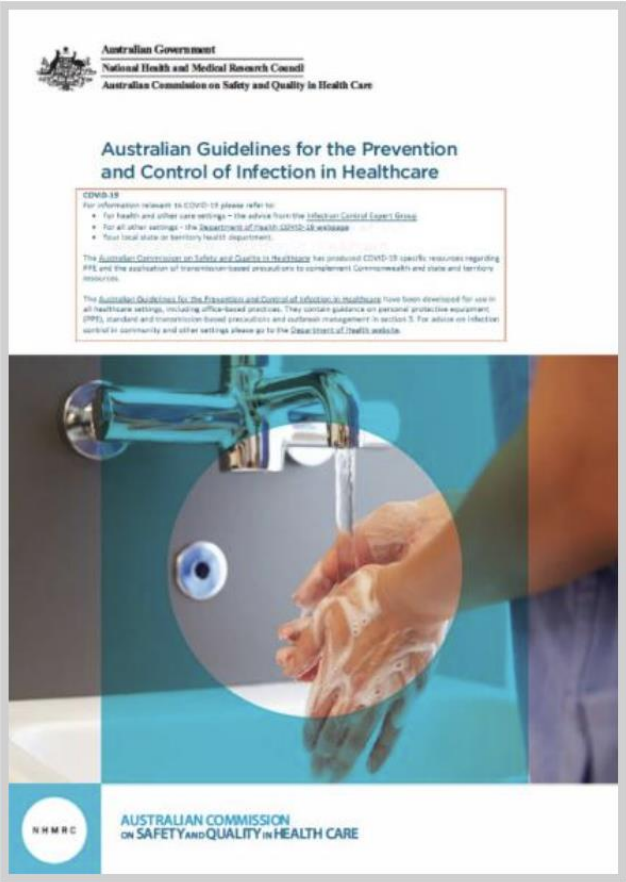
(Ref: ECRI 2019)

2019 Top 10 Patient Safety Concerns

1. Diagnostic Stewardship and Test Result Management Using EHRs
2. Antimicrobial Stewardship in Physician Practices and Aging Services
3. Burnout and Its Impact on Patient Safety
4. Patient Safety Concerns Involving Mobile Health
5. Reducing Discomfort with Behavioral Health
6. Detecting Changes in a Patient's Condition
7. Developing and Maintaining Skills
8. Early Recognition of Sepsis across the Continuum
9. Infections from Peripherally Inserted IV Lines
10. Standardizing Safety Efforts across Large Health Systems

ACSQHC guidelines

Australian Guidelines for the Prevention and Control of Infection in Healthcare (2019) - National Health and Medical Research Council (NHMRC)



Summary

- Invasive medical devices include:
  - **catheters inserted for drainage** (e.g. urinary catheters)
  - **catheters for intravascular access** (e.g. peripheral intravenous catheter, peripherally inserted central venous catheter, central venous catheter)
  - **devices for mechanical ventilation** (e.g. intubation)
  - **devices for feeding** (e.g. enteral feeding tube).
- The following sections provide best-practice guidance on strategies for the selection, insertion, maintenance and removal of invasive medical devices.

Minimising infection risk from invasive devices

ACSQHC, 2019

Key concepts in minimising the risk of infection related to the use of invasive medical devices:

- Only use an invasive medical device when clinically indicated and consider the infection-risk during decision making.
- Ensure all staff are adequately trained and competent in the skills required for safe insertion, maintenance and removal of a device.
- Choose the most appropriate device and system for the patient.
- Check the device at every shift and remove as soon as no longer necessary.
- Regularly monitor patients, the insertion site and the device for any signs and symptoms of infection.
- Minimise the period of time a device remains in a patient.
- Provide patient education on the infection risk associated with the insertion of devices and the importance of proper maintenance.
- Clearly document the insertion, maintenance and removal of the device, as well as daily review of device necessity.
- Implement appropriate surveillance systems to monitor infection rates.

CDC CVAD Checklist

Checklist for Prevention of Central Line Associated Blood Stream Infections

Based on 2011 CDC guideline for prevention of intravascular catheter-associated bloodstream infections:
https://www.cdc.gov/infectioncontrol/guidelines/bsi/index.html
Strategies to Prevent Central Line–Associated Bloodstream Infections in Acute Care Hospitals: 2014 Update
http://www.jstor.org/stable/10.1086/676533

For Clinicians:

Follow proper insertion practices

- ☐ Perform hand hygiene before insertion.
- ☐ Adhere to aseptic technique.
- ☐ Use maximal sterile barrier precautions (i.e., mask, cap, gown, sterile gloves, and sterile full body drape).
- ☐ Choose the best insertion site to minimize infections and noninfectious complications based on individual patient characteristics.
  - Avoid femoral site in obese adult patients.
- ☐ Prepare the insertion site with >0.5% chlorhexidine with alcohol.
- ☐ Place a sterile gauze dressing or a sterile, transparent, semipermeable dressing over the insertion site.
- ☐ For patients 18 years of age or older, use a chlorhexidine impregnated dressing with an FDA cleared label that specifies a clinical indication for reducing CLABSI for short term non-tunneled catheters unless the facility is demonstrating success at preventing CLABSI with baseline prevention practices.

Handle and maintain central lines appropriately

- ☐ Comply with hand hygiene requirements
- ☐ ration on a daily basis.
- ☐ use with an appropriate antiseptic (chlorhexidine, povidone
- ☐ or sterile gloves.
- ☐ meable dressings at least every seven days.
- ☐ pregnated dressing with an FDA cleared label that specifies a clinical indication for reducing CLABSI for short-term non-tunneled catheters unless the facility is demonstrating success at preventing CLABSI with baseline prevention practices.
- ☐ Change administrations sets for continuous infusions no more frequently than every 4 days, but at least every 7 days.
  - administered change tubing every 24 hours.
  - If propofol is administered, change tubing every 6-12 hours or when the vial is changed.

Promptly remove unnecessary central lines

- ☐ Perform daily audits to assess whether each central line is still needed.

For Healthcare Organizations:

- ☐ Educate healthcare personnel about infections for central lines, proper procedures for insertion and maintenance, and appropriate infection prevention measures.
- ☐ Designate personnel who demonstrate competency for the insertion and maintenance of central lines.
- ☐ Periodically assess knowledge of and adherence to guidelines for all personnel involved in the insertion and maintenance of central lines.
- ☐ Provide a checklist to clinicians to ensure adherence to aseptic insertion practices.
- ☐ Reeducate personnel at regular intervals about central line insertion, handling and maintenance, and whenever related policies, procedures, supplies, or equipment changes.
- ☐ Empower staff to stop non-emergent insertion if proper procedures are not followed.
- ☐ Ensure efficient access to supplies for central line insertion and maintenance (i.e. create a bundle with all needed supplies).
- ☐ Use hospital-specific or collaborative-based performance measures to ensure compliance with recommended practices.

Supplemental strategies for consideration:

- ☐ Antimicrobial/Antiseptic impregnated catheters
- ☐ Antiseptic impregnated caps for access ports

Promptly remove unnecessary central lines

☐ Perform daily audits to assess whether each central line is still needed.

AUSTRALIAN COMMISSION ON SAFETY AND QUALITY IN HEALTH CARE

Clinical Care Standards

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10 Quality statements

1. Assess intravenous access needs
2. Inform and partner with patients
3. Ensure competency
4. Choose the right insertion site and PIVC
5. Maximise first insertion success
6. Insert and secure
7. Document decisions and care
8. Routine use: inspect, access and flush
9. Review ongoing need
10. Remove safely and replace if needed

(ACSQHC, 2021)

Management of Peripheral Intravenous Catheters Clinical Care Standard

Quality statements

1 Assess intravenous access needs

A patient requiring medicines or fluids is assessed to identify the most appropriate route of administration for their clinical needs.

2 Inform and partner with patients

A patient requiring intravenous access receives information and education about their need for the device and the procedure. Their consent is obtained and they are advised on their role in reducing the risk of device-related complications.

3 Ensure competency

A patient's PIVC is inserted and maintained by clinicians who are trained and assessed as competent in current evidence-based practices for vessel health preservation and preventing device-related complications, relevant to their scope of practice. Insertion by a clinician working towards achieving competency is supervised by a clinician who is trained and assessed as competent.

4 Choose the right insertion site and PIVC

A patient requiring a PIVC is assessed to identify the most suitable insertion site and PIVC (length and gauge) to meet their clinical needs and preferences for its location.

5 Maximise first insertion success

The likelihood of inserting a PIVC successfully on the first attempt is maximised for each patient, according to the health service organisation's process for maximising first-time insertion success.

6 Insert and secure

A clinician inserting a patient's PIVC uses standard precautions, including aseptic technique. The device is secured and a sterile, transparent, semipermeable dressing is applied unless contraindicated.

7 Document decisions and care

A patient with a PIVC will have documentation of its insertion, maintenance and removal, and regular review of the insertion site.

8 Routine use: inspect, access and flush

A patient's PIVC and insertion site is inspected by a clinician for signs of complications at least once per shift or every eight hours, when accessing the device, and if the patient raises concerns. Standard precautions including aseptic technique are used when performing site care and accessing the PIVC. Patency is checked and flushing is performed at intervals according to local policy to assess device function and minimise risk of device failure.

9 Review ongoing need

The ongoing need for a patient's PIVC is reviewed and documented at least daily, or more often if clinically indicated.

10 Remove safely and replace if needed

A patient with a PIVC will have it removed when it is no longer needed or at the first sign of malfunction or local site complications. A new PIVC will be inserted only if ongoing peripheral vascular access is necessary, consistent with the replacement recommendations in the current version of the *Australian Guidelines for the Prevention and Control of Infection in Healthcare*.

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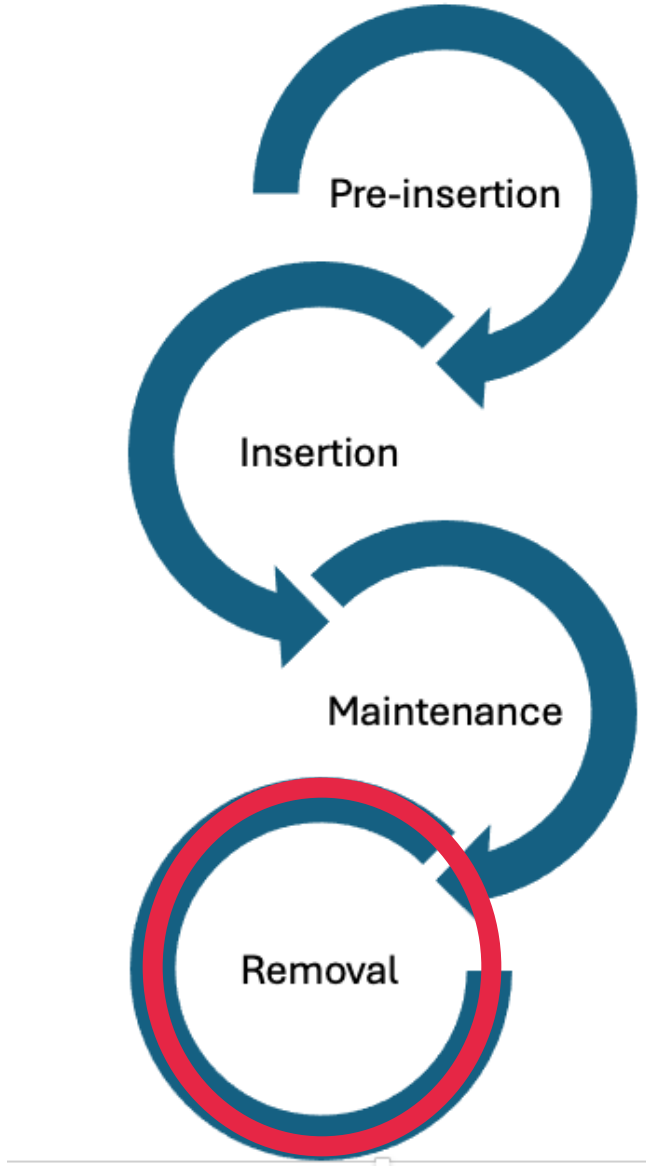
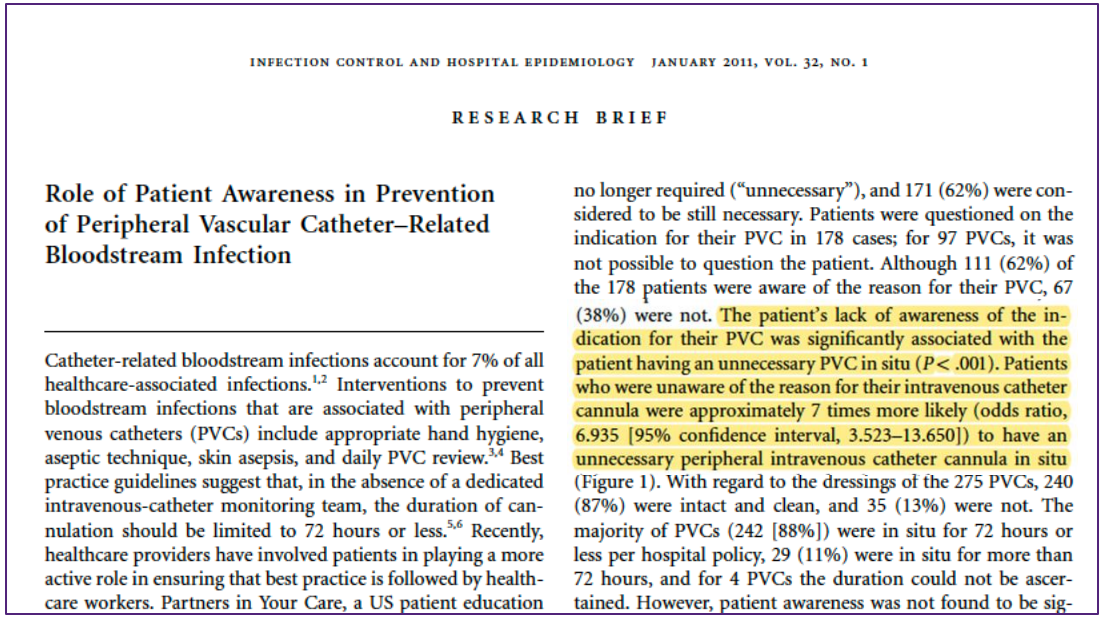


9. Review ongoing need

- Review and document the ongoing need for the PIVC at least daily
- Encourage patients to speak up if the PIVC hasn't been used in 24 hours



INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY JANUARY 2011, VOL. 32, NO. 1

RESEARCH BRIEF

Role of Patient Awareness in Prevention of Peripheral Vascular Catheter–Related Bloodstream Infection

Catheter-related bloodstream infections account for 7% of all healthcare-associated infections.[1,2] Interventions to prevent bloodstream infections that are associated with peripheral venous catheters (PVCs) include appropriate hand hygiene, aseptic technique, skin asepsis, and daily PVC review.[3,4] Best practice guidelines suggest that, in the absence of a dedicated intravenous-catheter monitoring team, the duration of cannulation should be limited to 72 hours or less.[5,6] Recently, healthcare providers have involved patients in playing a more active role in ensuring that best practice is followed by healthcare workers. Partners in Your Care, a US patient education

no longer required ("unnecessary"), and 171 (62%) were considered to be still necessary. Patients were questioned on the indication for their PVC in 178 cases; for 97 PVCs, it was not possible to question the patient. Although 111 (62%) of the 178 patients were aware of the reason for their PVC, 67 (38%) were not. The patient's lack of awareness of the indication for their PVC was significantly associated with the patient having an unnecessary PVC in situ ($P < .001$). Patients who were unaware of the reason for their intravenous catheter cannula were approximately 7 times more likely (odds ratio, 6.935 [95% confidence interval, 3.523–13.650]) to have an unnecessary peripheral intravenous catheter cannula in situ (Figure 1). With regard to the dressings of the 275 PVCs, 240 (87%) were intact and clean, and 35 (13%) were not. The majority of PVCs (242 [88%]) were in situ for 72 hours or less per hospital policy, 29 (11%) were in situ for more than 72 hours, and for 4 PVCs the duration could not be ascertained. However, patient awareness was not found to be sig-

(Ref: McHugh, 2011)

10. Remove safely and replace if needed

- Promptly remove a PIVC if signs of redness or swelling develop, or another complication such as infection is suspected.
- Promptly remove PIVCs when no longer needed.
- Follow local guidelines for PIVC replacement.
- Report and document any concerns with the device.

(Ref: ACSQHC 2021; Gorski et al 2021)

Hindawi Publishing Corporation
Nursing Research and Practice
Article ID 691934

Hindawi

Research Article

Postinfusion Phlebitis: Incidence and Risk Factors

Joan Webster,[1,2] Matthew McGrail,[3] Nicole Marsh,[1,2,4] Marianne C. Wallis,[2,4,5] Gillian Ray-Barruel,[2,4] and Claire M. Rickard[2,4]

Post-infusion phlebitis can occur up to 48 hours after removal. Remind the patient to report any pain, redness, swelling or purulence at the site, even after PIVC removal.

Unnecessary ('Idle') catheters are a problem

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What Defines an 'Idle' PIVC?

An 'idle' PIVC[9]

- hasn't been used for IV fluids, blood products, parenteral nutrition, or medications in the past 24 hours.
- is not anticipated to be used in the next 24 hours.[a]

[a]There are no current IV fluid or IV medication orders, no planned procedures, no cardiac monitoring, no recent history of seizures, and no unstable medical conditions or rapid response/medical emergency calls.

(Ray-Barruel, 2023)

Studies estimate that 4% to 28% of PIVCs inserted are not used.
Australian studies report that this is even higher in EDs, where ~ 50% of PIVCs inserted are not used, placing patients unnecessarily at risk of infection.

Key findings

- PIVC placement is often an essential emergency medicine precursor to lifesaving treatment, but it is not harmless.
- The median prevalence of PIVC insertions and idle PIVCs in the ED are 54.8% and 32.4% respectively.
- Idle PIVCs are associated with compromised patient safety, squandered finances and misdirected practitioner time.
- Cultures of convenience and shortfalls in education facilitate the prevalence of idle PIVCs.
- A change in culture will depend upon the adoption of formal, validated and streamlined guidelines on when to and when not to insert PIVCs in the ED.

ELSEVIER

American Journal of Infection Control

journal homepage: www.ajicjournal.org

AJIC American Journal of Infection Control

Major Article

Prevalence, risk factors, and outcomes of idle intravenous catheters: An integrative review

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[c] William S. Middleton Memorial Veterans Hospital, Madison, WI

Key Words:
Bloodstream infection
Patient outcomes
Idle lines
CLABSI

Objective: Complications of intravenous catheters remain a major contributor to health care costs and are a patient safety problem. An intravenous catheter not actively in use—an idle catheter—may increase the risk of infectious and noninfectious complications. We conducted an integrative review of the available literature to evaluate the prevalence, risk factors, and outcomes associated with idle intravenous catheters.

Methods: Searches of multiple computerized databases were conducted to identify studies on idle intravenous catheters. Data on definitions of idle catheter, type of catheter, prevalence, risk factors, and patient outcomes were extracted.

Results: Thirteen studies met inclusion criteria and were included in the review. The location and setting of the studies were diverse, including cross-sectional, retrospective, and prospective, and were conducted in varied geographic locations. The definition of an idle catheter was variable across studies. Although studies varied in terms of line-days or number of catheters placed, the primary definition of idle device was based on number of days or percent of devices left in situ without use. Four studies evaluated patient outcomes associated with idle catheters and found increased risk of infection, intensive care unit admission, and phlebitis.

Conclusions: Idle intravenous catheters are common and are associated with adverse outcomes. Prospective studies incorporating uniform definitions of idle catheters to test interventions to reduce idle catheter use are urgently needed.

GENERAL MEDICINE/BRIEF RESEARCH REPORT

Half of All Peripheral Intravenous Lines in an Australian Tertiary Emergency Department Are Unused: Pain With No Gain?

Ezra I. Limm, MBBS; Xin Fang, MBBS; Claire Dendle, MBBS, FRACP, GCHPE; Rhonda L. Stuart, MBBS, FRACP, PhD; Diana Egerton Warburton, MBBS, FACEM, MClinEpi

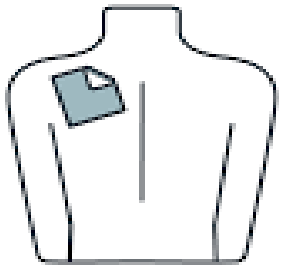
Before you insert a PIVC,

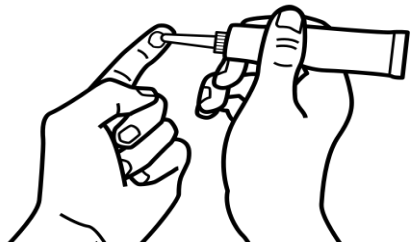
STOP and think:

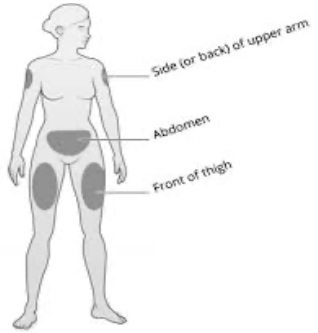
“Does the patient *<u>really</u>* need this line?”

Every time the skin is broken,

the patient is at risk.







The CREDIT Study

ORIGINAL CONTRIBUTION

CME Peripheral Intravenous Cannula Insertion and Use in the Emergency Department: An Intervention Study

Tracey Hawkins, Grad Cert (ENurse), Jaimi H. Greenslade, PhD, Jessica Suna, MHlthSci, Julian Williams, MBBS, Claire M. Rickard, PhD, Matthew Jensen, Maria Donohue, BPharm(Hons), Elizabeth Cho, Christopher Van Hise, Diana Egerton-Warburton, PhD, and Louise Cullen, PhD

- A prospective before and after study and cost analysis was conducted at a single tertiary ED in Australia.
- Data were collected 24 hours a day for 2 weeks pre- and post implementation of a multimodal intervention.
- PIVC placement and utilisation within 24 hours were evaluated in all eligible patients.

ED staff were asked to think twice before inserting a PIVC.

PIVCs inserted decreased by 10% (from 42% to 32%)

PIVCs used increased by 13% (from 70% to 83%)

Barriers to device removal

Reasons why clinicians don't remove PIVCs, *even when they are not in use*.

- "Just in case it might be needed"
- Concerns of inadequate staff skills if a patient requires urgent cannulation
- Expectations of others and fear of criticism from coworkers
- Staff convenience and workload efficiency
- Avoiding patient discomfort with potential future recannulation
- Organisational policies or practices
- Fear of legal repercussions in case of delays with laboratory testing or PIVC insertion

"Fragmentation of responsibility" — confusion or uncertainty about who's responsible for the device.
For instance, it is usually a doctor's decision to insert a PIVC, but nurses are mostly responsible for the technical aspects of insertion and maintenance.
The decision to remove the PIVC depends on the need for IV therapy (prescriber's responsibility) and site complications (usually the nurse's responsibility).

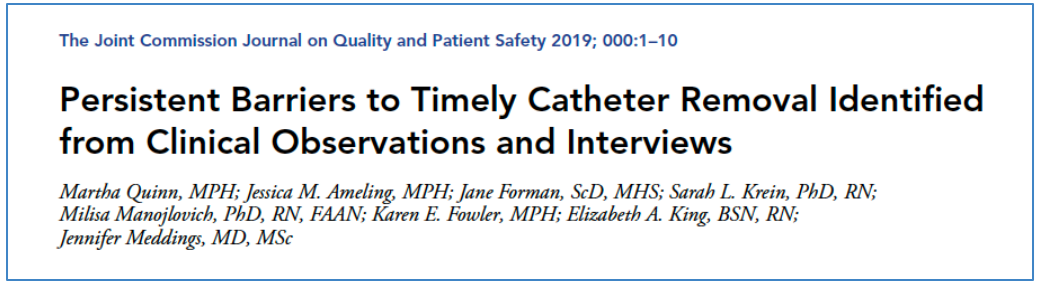

The Art and Science of Infusion Nursing

It Depends

Decision-Making for Insertion and Removal of Short Peripheral Catheters

Annette M. Bourgault, PhD, RN, CNL, FAAN • Daleen A. Penoyer, PhD, RN, CCRP, FCNS, FCCM • Michele J. Upvall, PhD, RN, CNE, FAAN

ABSTRACT
Short peripheral catheters (SPCs) are frequently idle when they are not being used for clinical indications. Focus group interviews were performed with multidisciplinary clinicians at a large tertiary hospital to explore SPC practice related to inserting or maintaining idle SPCs. Findings indicated that decision-making regarding insertion and removal of peripheral intravenous catheters depends on internal and external influences, such as the clinicians' knowledge and skills, emotional responses, expectations of others, organizational policies and practices, and the patient. In today's complex health care environment, the need for an SPC may constantly change, yet decision-making about SPC insertion and removal must remain patient-centered and evidence-based.
Key words: clinicians, deimplementation, focus group, hospital, intravenous, nurses, practice, qualitative, short peripheral catheter, vascular access


The Joint Commission Journal on Quality and Patient Safety 2019; 000:1–10

Persistent Barriers to Timely Catheter Removal Identified from Clinical Observations and Interviews

Martha Quinn, MPH; Jessica M. Ameling, MPH; Jane Forman, ScD, MHS; Sarah L. Krein, PhD, RN; Milisa Manojlovich, PhD, RN, FAAN; Karen E. Fowler, MPH; Elizabeth A. King, BSN, RN; Jennifer Meddings, MD, MSc

Facilitators for device removal

- Clear criteria for device use
- Clear guidelines for device removal
- Daily reminders for device need
- Clear expectations and role responsibilities
- Organisational culture of questioning device use and encouraging early removal

- Empower staff to make evidence-informed decisions in consultation with the team and patient
- Educate patients & carers on the reason for the device & expected duration
- Encourage patients to speak up with any concerns

- Routine audits of practice to track idle catheter rates
- Benchmark with literature and peer organisations

"Every day,
Every patient,
Every device…
Is it needed?
Is it working?
Can it come out?"

Device audits

Infection, Disease & Health 26 (2021) 182–188

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: http://www.journals.elsevier.com/infection-disease-and-health/

Research paper

'How many audits do you really need?': Learnings from 5-years of peripheral intravenous catheter audits

Nicole Marsh [a,b,c,d,*], Emily Larsen [a,b,c], Barbara Hewer [b], Emily Monteagle [f], Robert S. Ware [f], Jessica Schults [a,b,c,e], Claire M. Rickard [a,b,c,e]

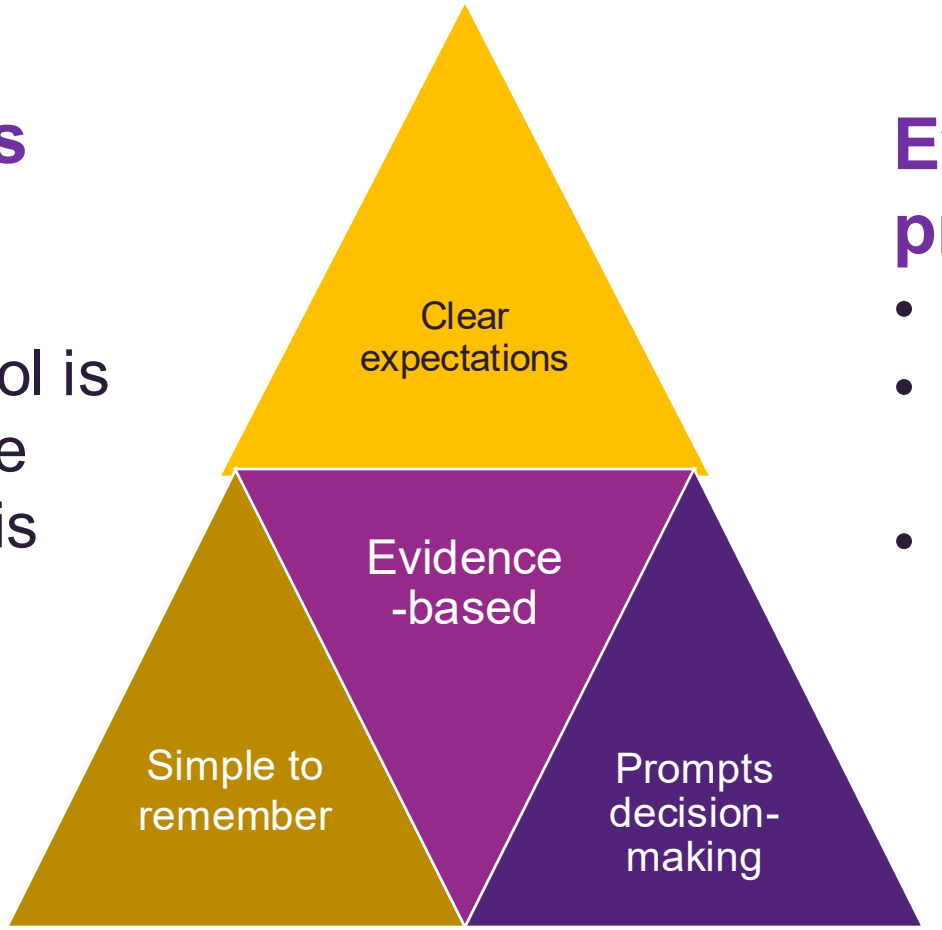
Highlights

- Improving PIVC auditing practices will help identify early signs of infection.
- PIVC audit should be between 100 and 250 PIVCs per audit round.
- Auditing of PIVC care is an effective method to promote best practice and improve clinical care.

Standardised device assessment

Clear expectations

- Every device gets assessed
- Every item of the tool is assessed every time
- Plan for the device is discussed

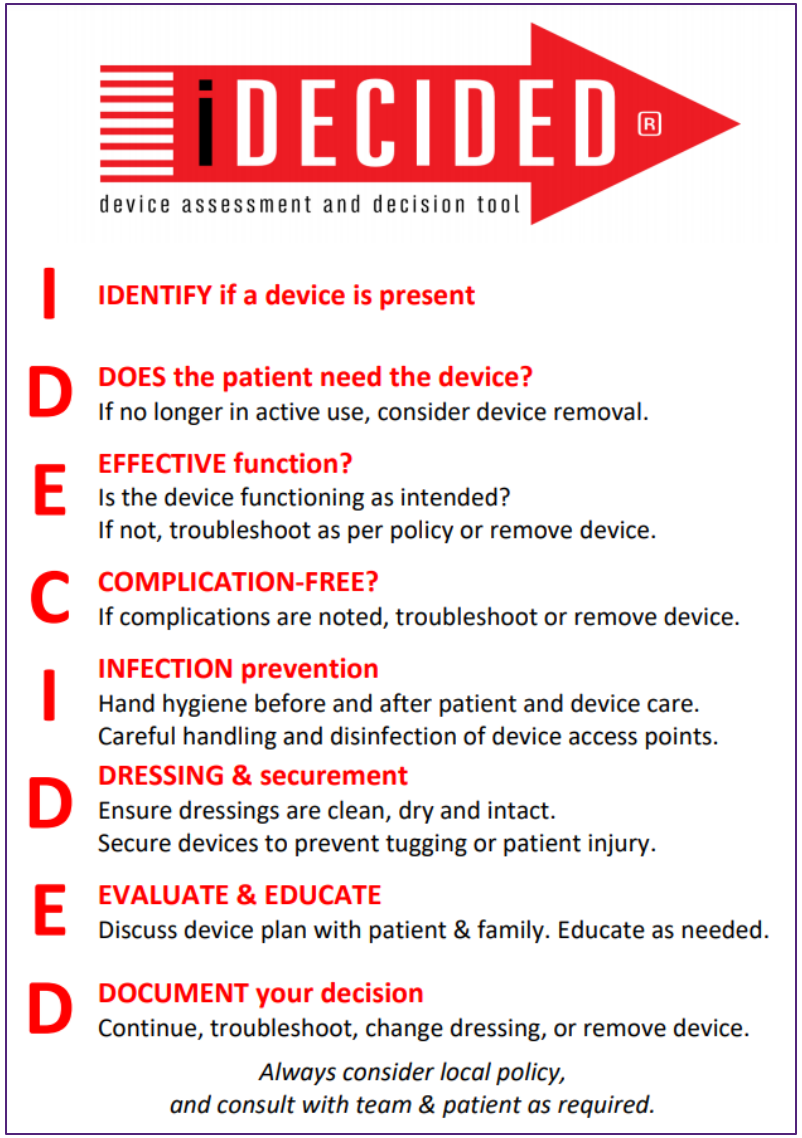


Every assessment prompts a decision

- Leave it in
- Troubleshoot (if needed)
- Take it out (resite if needed)

Principles of assessment

Assess the site for complications every time the PIVC is accessed, each shift, and hourly if fluids are infusing.



If it's not needed, not working, or not tolerated, remove it!

International Journal of Nursing Studies 148 (2023) 104604

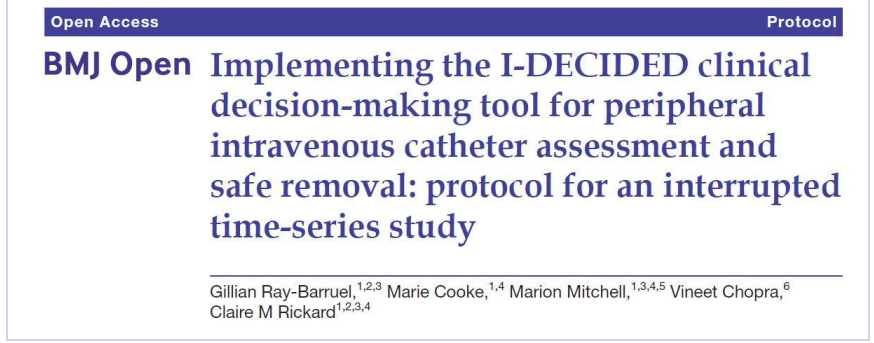
Contents lists available at ScienceDirect

International Journal of Nursing Studies

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

The impact of a structured assessment and decision tool (I-DECIDED®) on improving care of peripheral intravenous catheters: A multicenter, interrupted time-series study

Gillian Ray-Barruel [a,b,c,d,e,f,g,*], Vineet Chopra [d,h,i], Paul Fulbrook [j,k,l], Josephine Lovegrove [a,b,c,j,m], Gabor Mihala [n], Michael Wishart [o], Marie Cooke [d,e], Marion Mitchell [e], Claire M. Rickard [a,b,c,d,e,m]

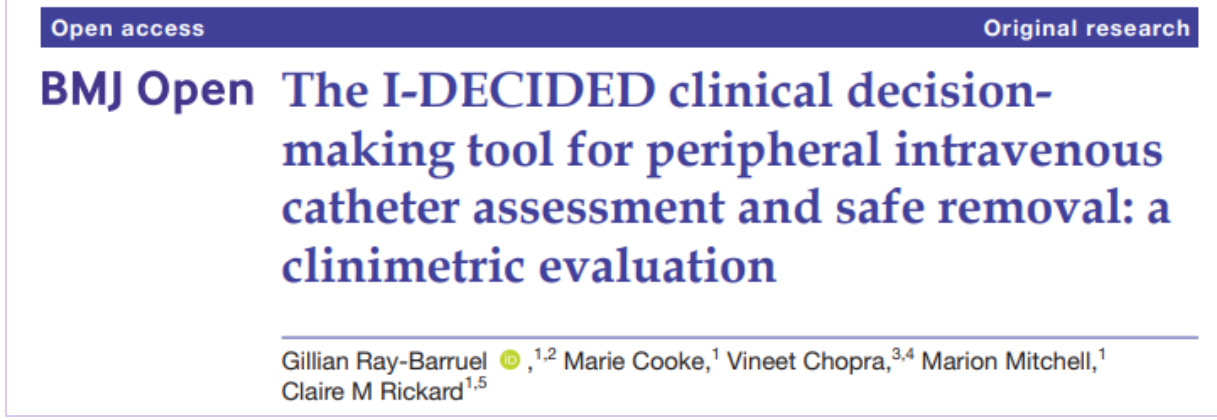


Open Access Protocol

BMJ Open

Implementing the I-DECIDED clinical decision-making tool for peripheral intravenous catheter assessment and safe removal: protocol for an interrupted time-series study

Gillian Ray-Barruel,[1,2,3] Marie Cooke,[1,4] Marion Mitchell,[1,3,4,5] Vineet Chopra,[6] Claire M Rickard[1,2,3,4]



Open access Original research

BMJ Open

The I-DECIDED clinical decision-making tool for peripheral intravenous catheter assessment and safe removal: a clinimetric evaluation

Gillian Ray-Barruel ,[1,2] Marie Cooke,[1] Vineet Chopra,[3,4] Marion Mitchell,[1] Claire M Rickard[1,5]

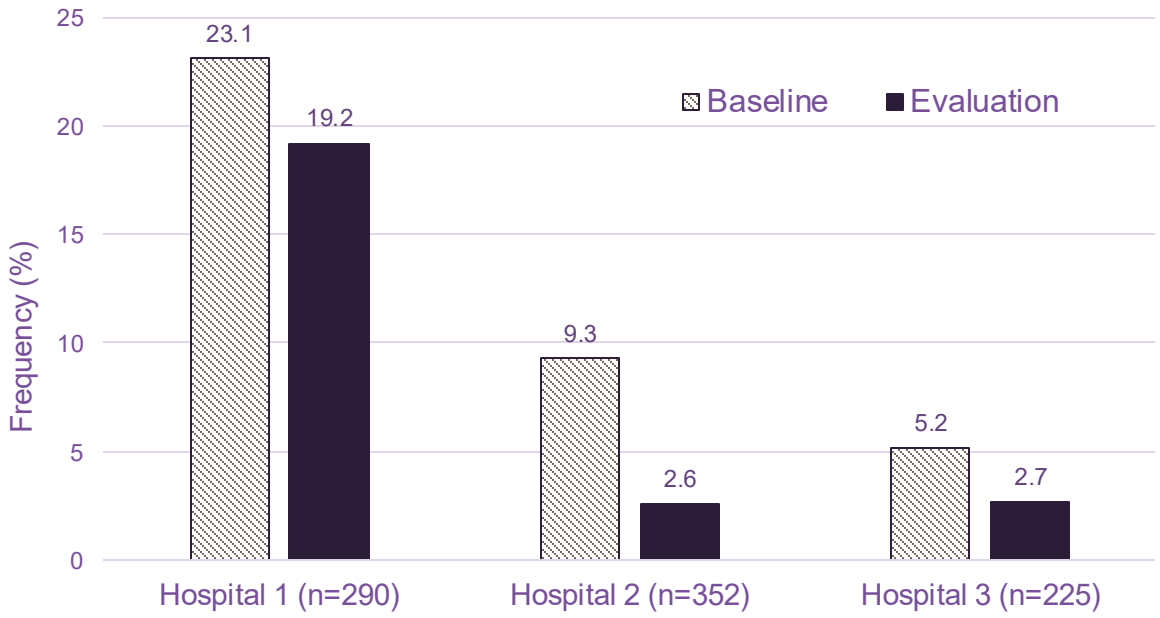
- 3 Brisbane hospitals
- 11 months

Content validity index Mean 0.93

Inter-rater reliability 87.13%
(34 pairs of assessors, 68 assessments)

Unnecessary/Idle catheters

- PIVC not used in the past 24 hours or unlikely to be used in the next 24 hours.
- PIVCs in unstable or telemetry patients were excluded.



Overall results:
Pre 12.7%
Post 8.3%

ARR –4.4%
95% CI –8.5, –0.3
p = 0.035

What did the nurses say?

"I have not been nursing for all that long, so I feel like it's a good trigger to get me to remember to check it."

"I think I was always doing it the same. But I was always sort of assessing more focusing on what the site looked like and if it was still okay to use. But I wasn't always thinking about whether they needed it … making that decision whether I could take it out ..."

"It's made me think more often about whether they need the cannula."

"Deciding if we actually do need it or can we take it out. Because I know now, I am really asking on the rounds. 'Have you got a cannula to come out?'"

"I think, at the start, I was really resentful of it. I was like, another piece of paper, but I actually think it's been okay. It really has made me think a lot more about the patients' cannulas... It's definitely been beneficial, I think, as much as I hated it at the start."

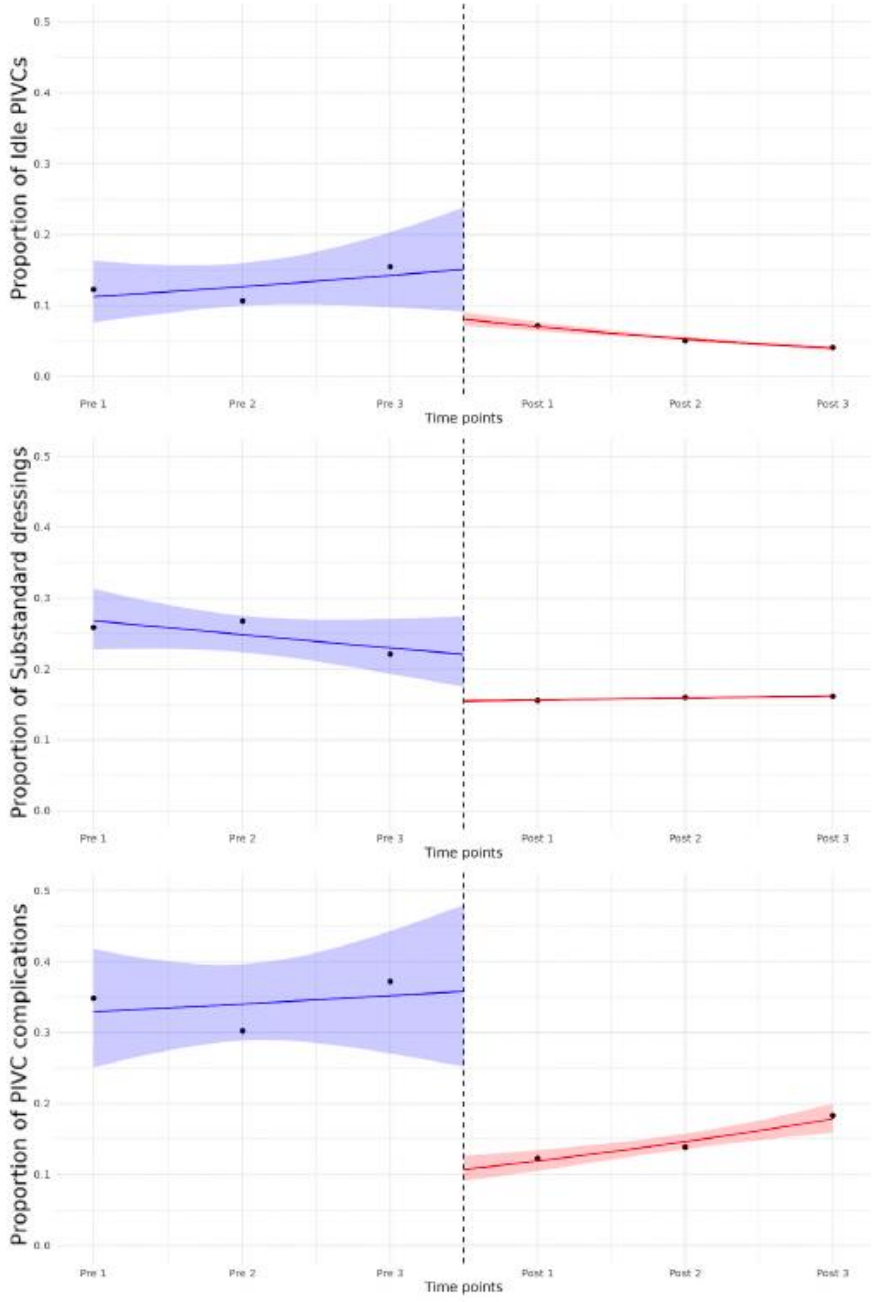
14 focus groups, 60 nurses in Evaluation phase

Paediatrics in Brazil study

TABLE 2 | Study primary outcomes ($N = 585$).

Variables	Pre-intervention ($n = 289$) n (%)	Post-intervention ($n = 296$) n (%)	Difference (95% CI)	Risk ratio (95% CI)	p-level[a]
Idle PIVC	37 (12.8)	16 (5.4)	−7.40 (−12.03, −2.76)	0.42 (0.24, 0.7[illegible])	**0.002**
Substandard dressings	65 (24.9)	44 (15.9)	−9.02 (−15.81, −2.23)	0.64 (0.45, 0.9[illegible])	**0.010**
Complications	89 (34.1)	41 (14.8)	−19.30 (−26.41, −12.19)	0.43 (0.31, 0.60)	**<0.001**

Note: Bold values are statistically significant at $p < 0.05$.
Abbreviations: CI, confidence interval; PIVC, peripheral intravenous catheter.




Special Section

TEXTO & CONTEXTO ENFERMAGEM
TEXT & CONTEXT NURSING TEXTO & CONTEXTO ENFERMERÍA

I-DECIDED®-BRAZIL: CROSS-CULTURAL ADAPTATION OF AN ASSESSMENT AND DECISION-MAKING TOOL FOR PERIPHERAL INTRAVENOUS CATHETER

Thiago Lopes Silva[I]
Gillian Ray-Barruel[II,III]
Amanda Ullman[II,IV]
Patrícia Kuerten Rocha[I]

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[II]University of Queensland, School of Nursing, Midwifery and Social Work. Brisbane, Australia.
[III]Metro North Hospital and Health Service, Herston Infectious Diseases Institute. Brisbane, Australia.
[IV]Griffith University, School of Nursing and Midwifery, and Menzies Health Institute Queensland, Alliance for Vascular Access Teaching and Research. Nathan, Australia.
[V]Children's Health Queensland Hospital and Health Service. Brisbane, Australia.


Journal of Advanced Nursing

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EMPIRICAL RESEARCH QUANTITATIVE

Impact of the I-DECIDED Tool to Improve Peripheral Intravenous Catheter Care in Paediatrics: Interrupted Time-Series Study

Thiago Lopes Silva[1] | Gillian Ray-Barruel[2,3,4] | Amanda Ullman[2,4,5] | Mari Takashima[2,5] | Denise Miyuki Kusahara[6] | Sabrina de Souza[1] | Jefferson Wildes da Silva Moura[1] | Aline de Souza Bitencourt[1] | Patrícia Kuerten Rocha[1]

Implementing a Nurse-Driven Decision-Making Tool to Reduce Idle Peripheral Intravenous Catheters (PIVs):

An Evidence-Based Practice Project

By: Anna Mack, RN, Ashley Squires, RN, Erin Sweeney, RN, Doris Osuorah, APRN, AGNP-BC, MSN-ed, Judy Cotter, MSN-ed RN CNE

PURPOSE

The purpose of this evidence-based project is to improve the identification and removal of idle and symptomatic PIVs on two inpatient units at Abbott Northwestern Hospital.

BACKGROUND

- A vascular access nurse at Abbott Northwestern Hospital (ANW) identified a gap in PIV care and management, with an estimate that approximately 25% of patients had an idle PIV.
- We followed the Iowa Model of Evidence-Based Practice for this project. Cullen et al., 2023

SYNTHESIS OF EVIDENCE

- Idle PIV is defined as a PIV that has not been used in 24-hours and has no plan to be used in the next 24-hours (flushes excluded). Alexandrou et al., 2018
- PIVs have the potential to cause blood stream infections and other complications. Alexandrou et al., 2018
- Despite known risks associated with PIVs, there has been minimal research dedicated to this topic.
- Many nurses lack the confidence and decision-making skills to assess whether a PIV is clinically indicated. Raynak, A. et al.,2020

PRACTICE CHANGE

- I-DECIDED Tool (Figure 1) selected as a validated decision-making tool to identify and remove idle PIVs. Ray-Burrel et al., 2023
- Created a decision-making tool to assist with determining which PIVs could or should be removed when patient had more than one PIV.

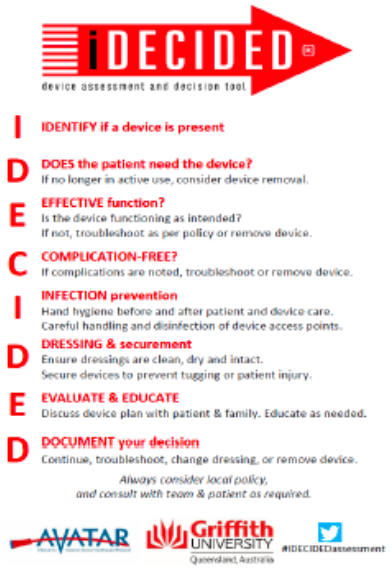


Figure 1: I-DECIDED Device Assessment and Decision Tool

IMPLEMENTATION STRATEGIES

Create Awareness & Interest	Build Knowledge & Commitment	Promote Action & Adoption	Pursue Integration and Sustained Use
• I-DECIDED tool (reminders on computer stations) • Posters with QR Codes • Champions identified • Attend huddles	• Education Posters (Figure 2) with QR codes, I-DECIDED video • Weekly MythBusters Emails to staff from EBP Team • Change Champion education at UBC Day	• Weekly MythBusters Emails • Tip sheets for staff • Inservice table and Rounding on Units • Competitive scoreboard (PIV Playoffs; Figure 3)	• Unit Audits • Encourage continued involvement of Change Champions • Recognition: Follow-up emails for playoffs and Pizza party

*Developed plan using Cullen, Hanrahan, Steffen, et al., 2022, Iowa Implementation for Sustainability Framework©

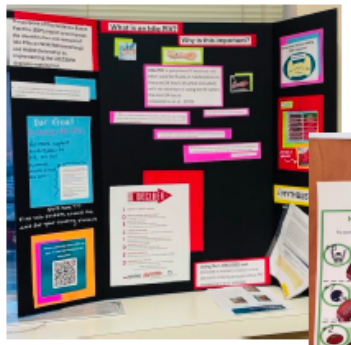


Figure 2:Education Posters

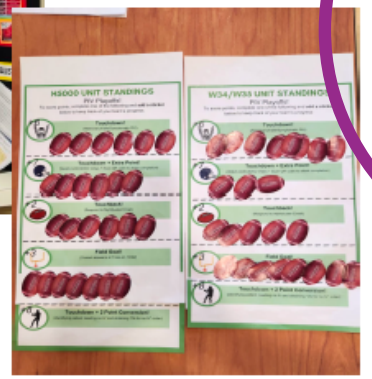


Figure 3: PIV Playoffs Scorecard

EVALUATION

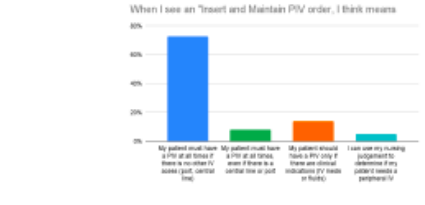


Figure 4. Baseline Attitudes and Behaviors Survey Results

- Pre-implementation audit found 28% of patients had an idle PIV.
- Post-implementation audit found 15% of patients had an idle PIV.

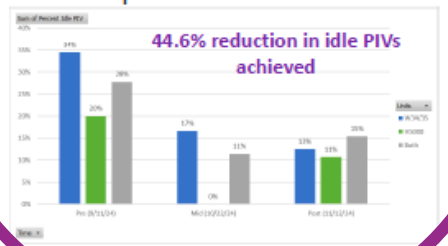


Figure 5: Idle PIV Audit Results

- PIV playoffs results:
  - 42 idle PIVs removed
  - 36 nurses responded to/engaged with myth buster emails
  - 14 I-decided video views

NEXT STEPS

Consider expansion of education to other units in the hospital

- Present findings at Unit Council and Nursing Grand Rounds
  - Discussion regarding PIVs has already begun in Unit Council emails to staff
  - Consider adding PIV auditing to the current Unit Council audit days

Continue to engage key stakeholders

- Ex. Providers, nursing leadership, infection prevention, information services, patients

We highly encourage additional research and evidence-based practice projects on the removal of idle PIVs

ACKNOWLEDGEMENTS

Thank you to the Allina Health Foundation and St. Catherine University Interprofessional Clinical Scholars Program for funding this evidence-based practice project.

Allina Health FOUNDATION
St. Catherine University

REFERENCES

Cited references available as a handout.

Just Say No to the Just in Case Cannula: An Implementation Science Trial

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

Implementing Best Practice for Peripheral Intravenous Cannula in Australian Emergency Departments:

A Stepped-wedge Cluster Controlled Trial and Health Economic Analysis

Peripheral intravenous cannulas (PIVC) are commonly used in Emergency Departments (ED) to gain vascular access. They are generally safe and simple to insert. They are however painful for patients, use resources and have a small risk of occupational exposure to staff.

With only half of healthcare workers utilizing PIVCs effectively, our initiative aims to address this critical issue.

PIVCs, while deemed beneficial, can inflict pain, divert attention from essential care, and pose serious health risks like hospital-acquired infections.

There is also the annual cost of PIVC insertion in Australian adult Emergency Department insertions which is estimated at A$594 million with the unused contribution being A$305.9 million and 11,790 clinician days.

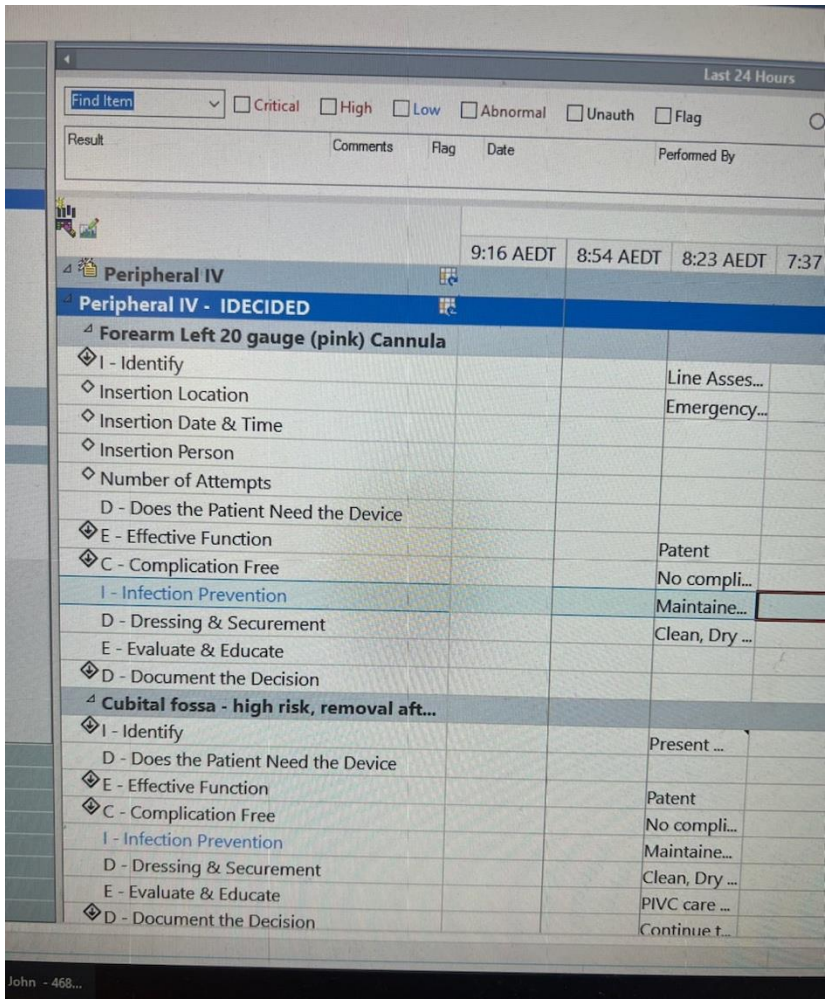
Through a strategic rollout in participating health services, our project promises significant healthcare improvements, paving the way for a nationwide transformation. Follow our groundbreaking journey over the next five years as we strive to make a lasting impact on patient well-being.

Nine participating trial hospitals are:
1. Monash Medical Centre (Monash Health)
2. Casey Hospital (Monash Health)
3. Dandenong Hospital (Monash Health)
4. Alfred Hospital (Alfred Health)
5. Sandringham Hospital (Alfred Health)
6. Box Hill Hospital (Eastern Health)
7. Gold Coast University Hospital (Queensland Health)
8. Robina Hospital (Queensland Health)
9. Royal Hobart Hospital (Tasmania Health)

Trial details: ANZCTR - Registration

Funding: Medical Research Future Fund (MRFF)

Contact: Prof Diana Egerton-Warburton Diana.Egerton-Warburton@monash.edu



Conclusion

- Every device insertion contains some element of risk: *"Think before you stick!"*
- Daily device reminders raise device awareness.
- The I-DECIDED tool has been proven in several studies to reduce unnecessary PIVCs.
- Involving patients in device education includes understanding the reason for the device.
- Unit culture and a supportive leader are crucial.
- Ongoing compliance audits and feedback is critical.

"Every day,
Every patient,
Every device…
Is it needed?
Is it working?
Can it come out?"

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Literature references available on request

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