

Reduction in 'Just in Case' Cannula Rates with a Structured Assessment and Decision Tool: An Interrupted Time-Series Study

Gillian Ray-Barruel, RN PhD
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Disclosures

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- Australian College for Infection Prevention and Control 2017 Early Career Research Grant
- Griffith University Postdoctoral Fellowship

Each year in Australia ...

- 9 million peripheral intravenous cannulas/catheters (PIVCs) are inserted in hospital patients
- 3-4 million fail before treatment completion
- Around 2 million are **never used**
- 25% are never documented





OMGPiVC

One Million Global Catheters
PiVC Worldwide Prevalence Study

Use of Short Peripheral Intravenous Catheters: Characteristics, Management, and Outcomes Worldwide

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Problems identified	Global %	Australia %
No apparent reason for use	14	23
Dressing soiled or loose	21	26
Phlebitis (1 or more symptom)	10	15
Insertion date & time not documented	49	59
No daily assessment documented	36	40
No documentation of IV flush	36	58

all intravenous catheter (PiVC) on worldwide. Failure of PiVCs premature removal and

the characteristics, and outcomes of PiVCs

study.

itized patients from rural, areas internationally.

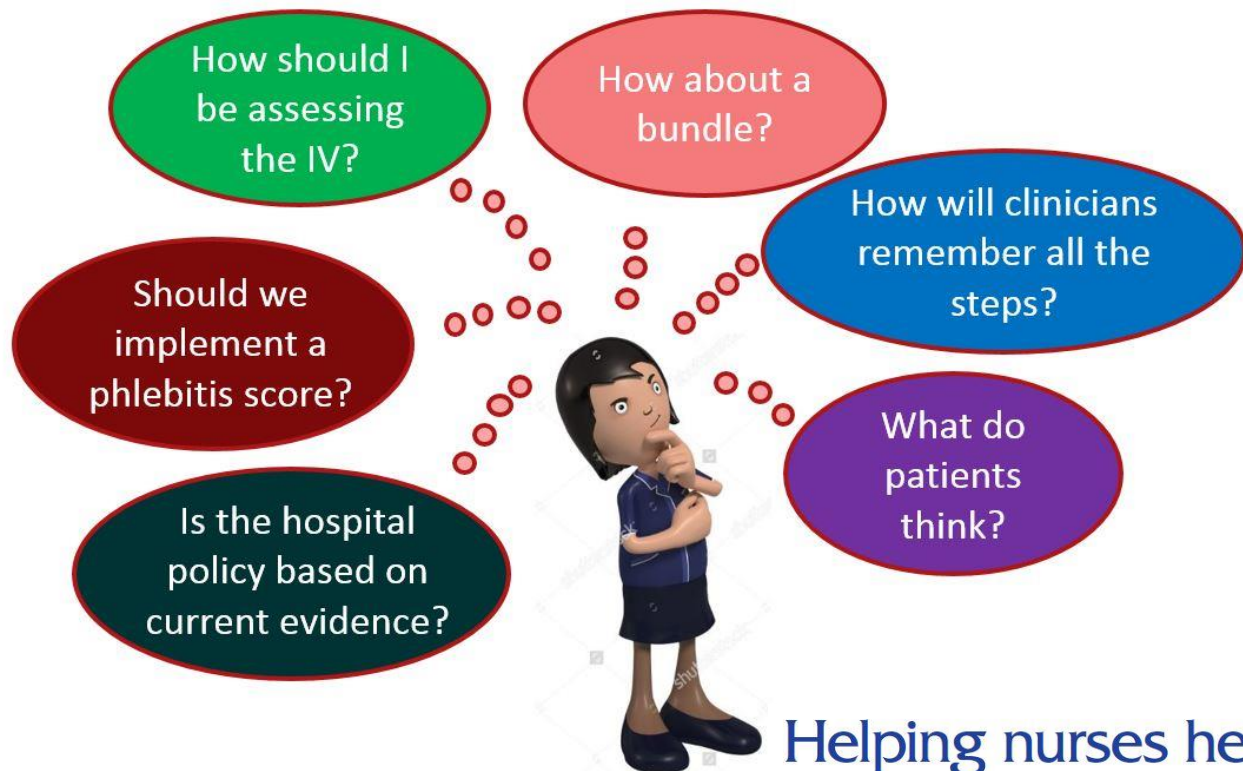
al, device, and inserter ed along with assessment of the use in different geographic

620 PiVCs in 51 countries.

for intravenous medication (n nantly inserted in general vo-thirds of all devices were

placed in non-recommended sites such as the hand, wrist, or antecubital veins. Nurses inserted most PiVCs (n = 28,575, 71%); although there was wide regional variation (26% to 97%). The prevalence of idle PiVCs was 14% (n = 5,796). Overall, 10% (n = 4,204) of PiVCs were painful to the patient or otherwise symptomatic of phlebitis; a further 10% (n = 3,879) had signs of PiVC malfunction; and 21% of PiVC dressings were suboptimal (n = 8,507). Over one-third of PiVCs (n = 14,787, 36%) had no documented daily site assessment and half (n = 19,768, 49%) had no documented date and time of insertion.

CONCLUSIONS: In this study, we found that many PiVCs were placed in areas of flexion, were symptomatic or idle, had suboptimal dressings, or lacked adequate documentation. This suggests inconsistency between recommended management guidelines for PiVCs and current practice. *Journal of Hospital Medicine*. May 30, 2018. doi: 10.12788/jhm.3039 © 2018 Society of Hospital Medicine



Helping nurses help PIVCs: decision aids for daily assessment and maintenance

Gillian Ray-Barruel and Claire M Rickard

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Infusion phlebitis assessment measures: a systematic review

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Jenny E. Murfield BSc(Hons)³ and Claire M. Rickard RN PhD²

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Keywords

assessment, measurement, peripheral intravenous catheter, phlebitis, psychometric assessment, scales

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Abstract

Rationale, aims and objectives Phlebitis is a common and painful complication of peripheral intravenous cannulation. The aim of this review was to identify the measures used in infusion phlebitis assessment and evaluate evidence regarding their reliability, validity, responsiveness and feasibility.

Method We conducted a systematic literature review of the Cochrane library, Ovid MEDLINE and EBSO CINAHL until September 2013. All English-language studies (randomized controlled trials, prospective cohort and cross-sectional) that used an infusion phlebitis scale were retrieved and analysed to determine which symptoms were included in each scale and how these were measured. We evaluated studies that reported testing the psychometric properties of phlebitis assessment scales using the Consensus-based Standards for the selection of health Measurement Instruments (COSMIN) guidelines.

Results Infusion phlebitis was the primary outcome measure in 233 studies. Fifty-three (23%) of these provided no actual definition of phlebitis. Of the 180 studies that reported measuring phlebitis incidence and/or severity, 101 (56%) used a scale and 79 (44%) used a definition alone. We identified 71 different phlebitis assessment scales. Three scales had undergone some psychometric analyses, but no scale had been rigorously tested.

Conclusion Many phlebitis scales exist, but none has been thoroughly validated for use in clinical practice. A lack of consensus on phlebitis measures has likely contributed to disparities in reported phlebitis incidence, precluding meaningful comparison of phlebitis rates.

Phlebitis Scales

- 71 different phlebitis scales
- None had high validity or reliability measures
- Lack of consensus on phlebitis definitions and scales leads to wide range in reported phlebitis rates.
- Not helpful!

Standardising PIVC assessment & care

Culture

Guidelines

Education

Bundles

Checklists

Audits



I-DECIDED: a clinical decision-making tool for improving peripheral intravenous catheter assessment and safe removal in hospitals (I-DECIDED Study)

<http://www.avatargroup.org.au/i-decided.html>

I-DECIDED™

IV assessment and
decision tool

I IDENTIFY if an IV is in situ

D DOES the patient need the IV?

E EFFECTIVE function?

C COMPLICATIONS at site?

I INFECTION prevention

D DRESSING & SECUREMENT

E EVALUATE & EDUCATE

D DOCUMENT your **DECISION:**
Continue or remove the IV

I-DECIDED Study

- Clinicometrics
 - Content validity
 - Inter-rater reliability
- Interrupted time-series
 - PIVC assessments
 - Chart audits
 - Staff focus groups
 - Patient interviews

Open Access

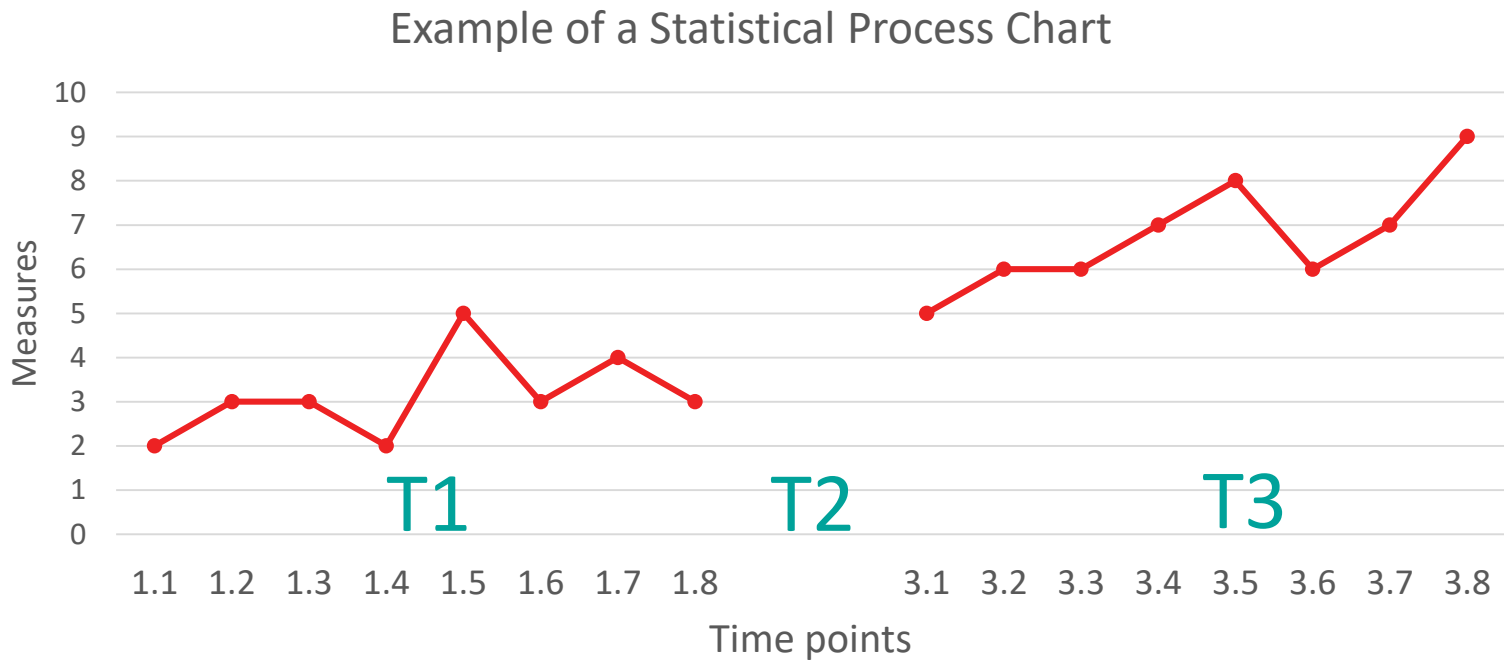
Protocol

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}

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doi:10.1136/bmjopen-2017-021290

Interrupted time series



I-DECIDED study time points

T1 (pre)

- 4 months, 8 time points
- PIVC assessments, chart audits, focus groups, patient interviews
- Inter-rater reliability testing

T2

- 2 months
- Education
- Posters
- Lanyard cards
- Trial VAD form introduced

T3 (post)

- 4 months, 8 time points
- PIVC assessments, chart audits, focus groups, patient interviews
- Inter-rater reliability testing

I-DECIDED™

IV ASSESSMENT & DECISION TOOL

IDENTIFY if an IV is in situ
If an IV has been removed in past 48 hrs, observe site for post-infusion phlebitis.

DOES patient need the IV?

If not used in past 24 hrs, or unlikely to be used in next 24 hrs, consider removal. Consider change to oral medications.

EFFECTIVE function?

Does the IV infuse and/or flush well? Follow local policy for flushing and locking.

COMPLICATIONS at IV site?

Pain $\geq 2/10$, redness $> 1\text{cm}$, swelling $> 1\text{cm}$, discharge, infiltration, extravasation, hardness, palpable cord or purulence.

INFECTION prevention

Hand hygiene, scrub the hub & allow to dry before each IV access.
Careful use of administration sets.

DRESSING & securement

Clean, dry, and intact. IV and lines secure.

EVALUATE & EDUCATE

Evaluate concerns. Educate as needed. Discuss IV plan with patient & family.

DOCUMENT your decision

Continue to monitor, change dressing/securement or remove IV.

*Always consider local policy,
and consult with team & patient as required*



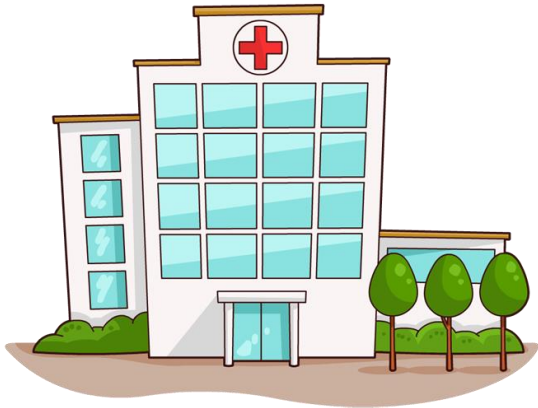
(ytds patient identification label here)

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VASCULAR ACCESS DEVICE ASSIGNMENT FORM

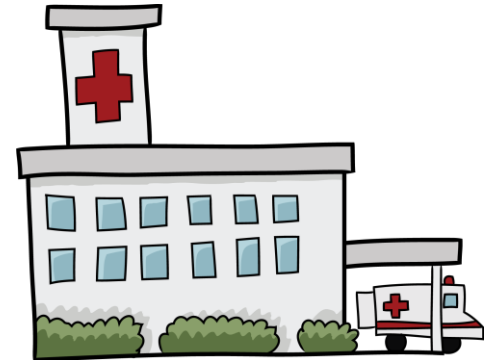
Hospital 1

- Public (630 beds)
- 2 wards (40 beds)
- Infectious diseases
- Surgical



Hospital 2

- Public (217 beds)
- 3 wards (53 beds)
- Medical
- Cardiac
- Surgical



Results from Hospitals 1 & 2

- 1747 patients screened, 847 PIVCs
- 639 PIVCs consented, assessed and chart audited
- 55 patients had 2 PIVCs
- 20 education sessions, 125 staff attended
- 17 focus groups (7 pre, 10 post), total 78 nurses
- 4 patient interviews

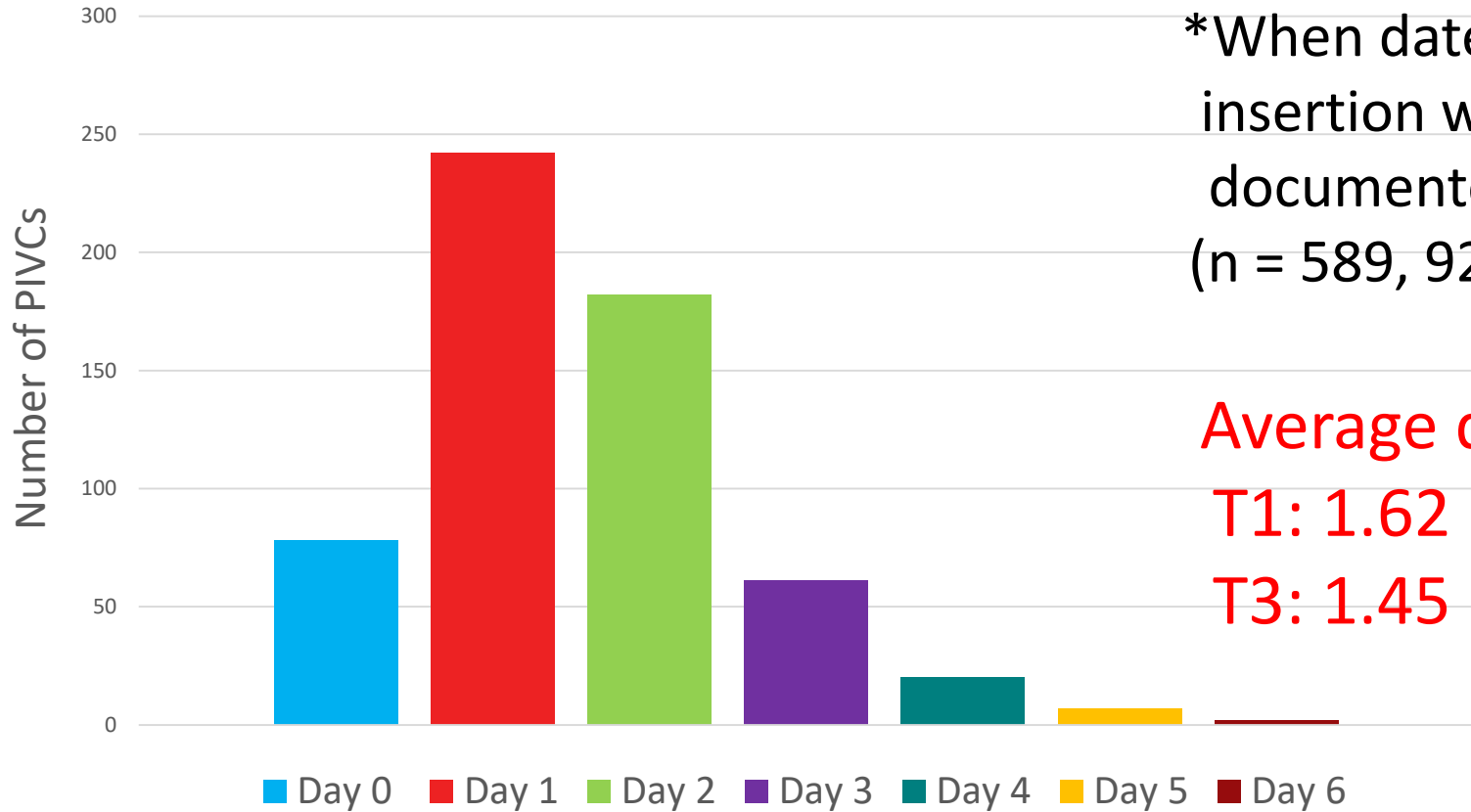
Redundant / Idle PIVC

Defined as:

- PIVC not used in the past 24 hours or unlikely to be used in the next 24 hours,
AND
- Patient stable and with no apparent reason for having a PIVC.



Dwell time (N = 639 PIVCs)*

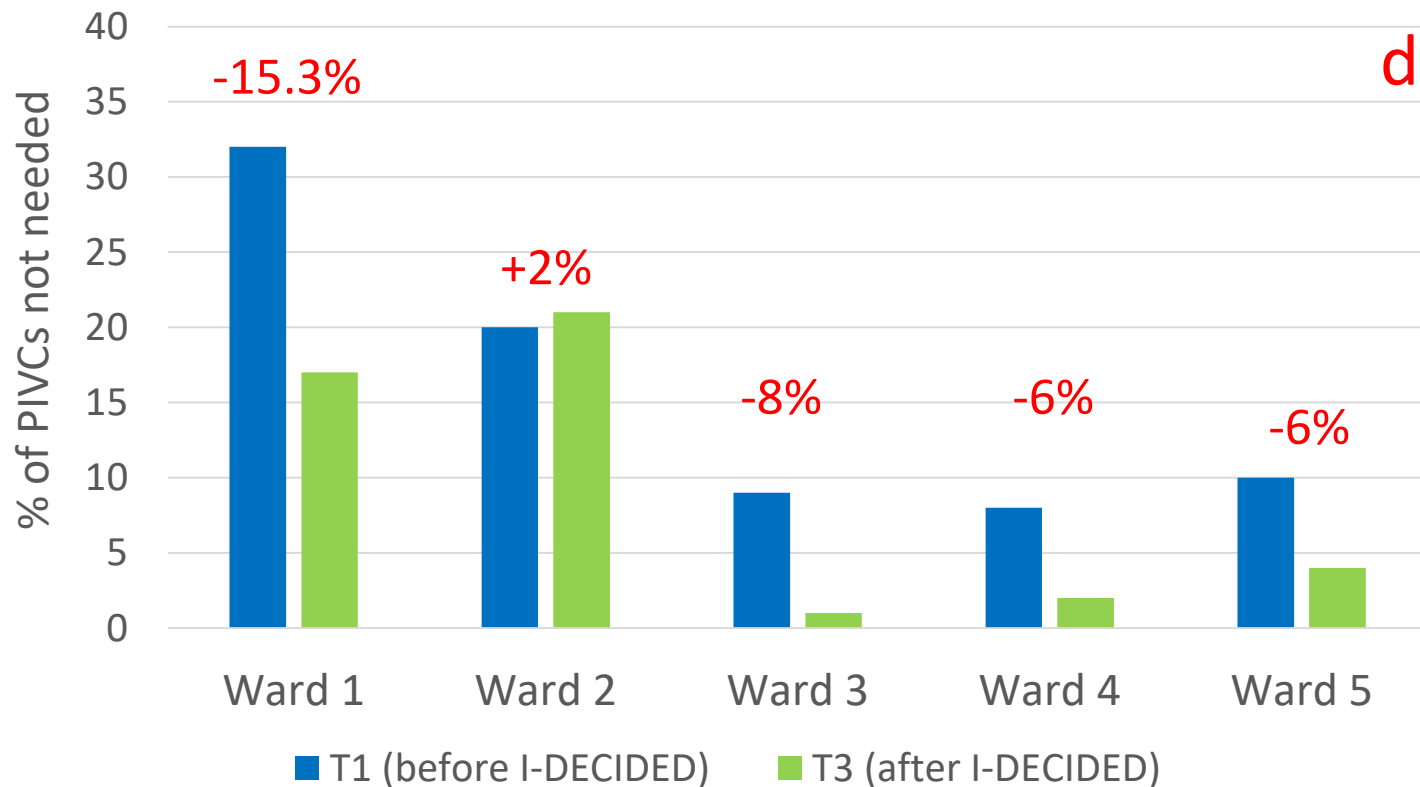


*When date of insertion was documented (n = 589, 92%)

Average dwell
T1: 1.62 days
T3: 1.45 days

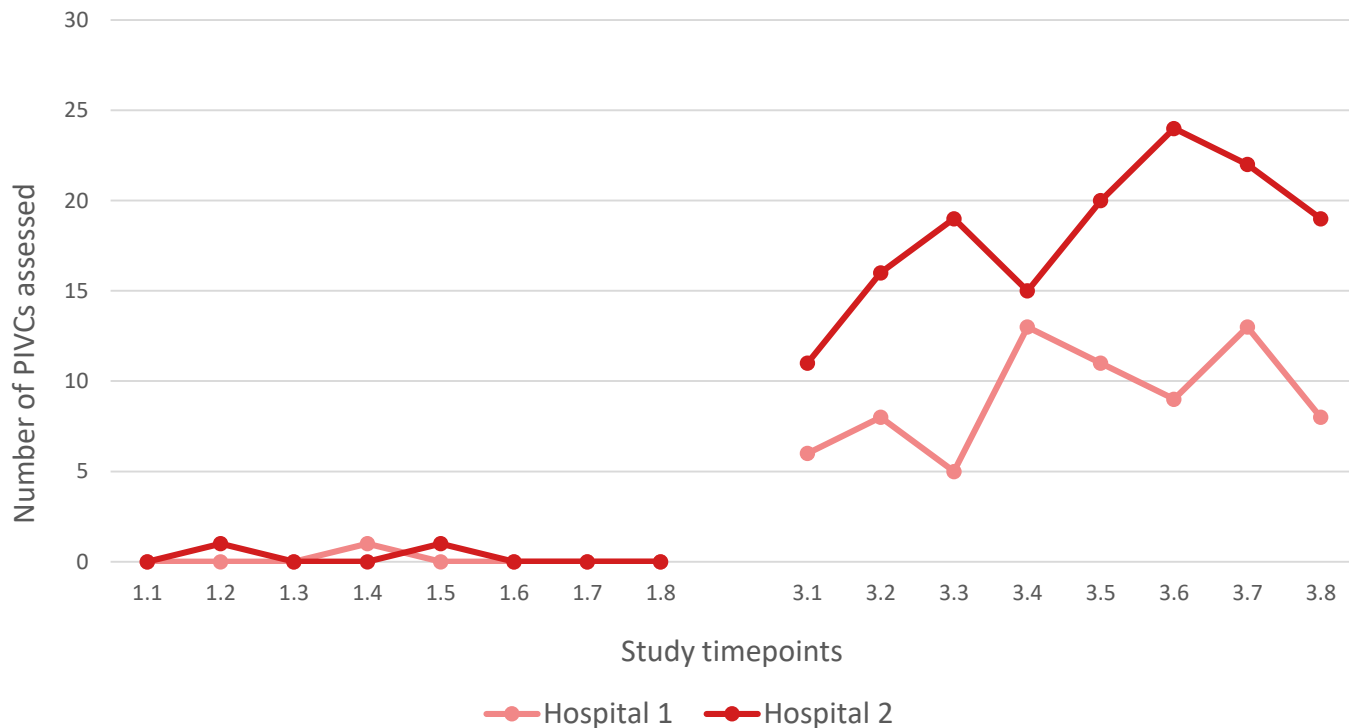
Redundancy

(% of PIVCs not needed)



Total average
redundancy
decreased from
T1 to T3:
15.6% pre
10.7% post
(- 4.9%)

Documentation of decision to continue or remove PIVC



Conclusion

- PIVC assessment is more than dwell time and phlebitis
- Nurses' awareness of need to remove idle cannulas increased
- Idle cannula rate decreased 4.9%
- Compliance with VAD form varied between wards
- Continuing IV surveillance audits are needed

If it's not needed, not working, or not tolerated, get it out!



Questions?

www.avatargroup.org.au



@avatar_grp



@avatargroup4111

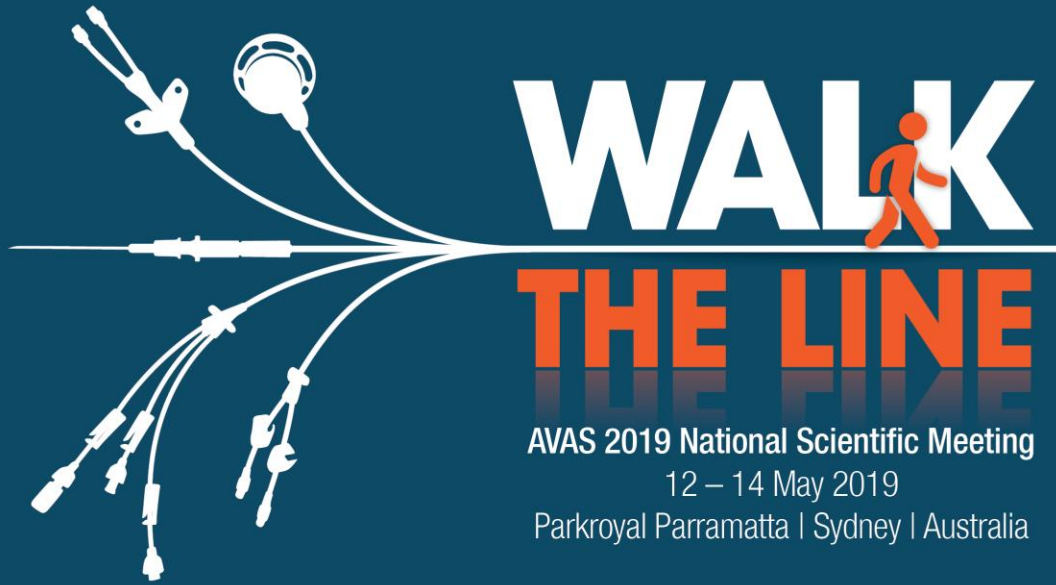


Alliance for Vascular Access Teaching and Research

MENZIES
HEALTH INSTITUTE
QUEENSLAND



Queensland, Australia



WALK THE LINE

AVAS 2019 National Scientific Meeting

12 – 14 May 2019

Parkroyal Parramatta | Sydney | Australia



Australian Vascular Access Society
Promoting safety and excellence in Vascular Access