

Investigating the safety and utility of implanted arm ports compared to implanted chest ports

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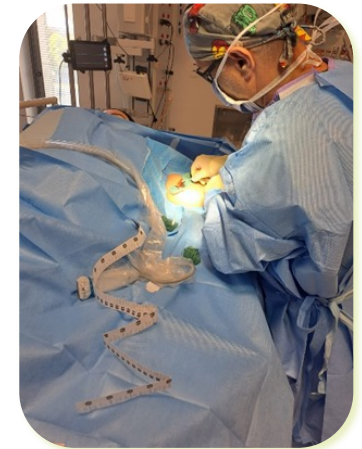


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Disclosures

- Member of CNSA VAD-IT SPN
- UoW MPhil Student

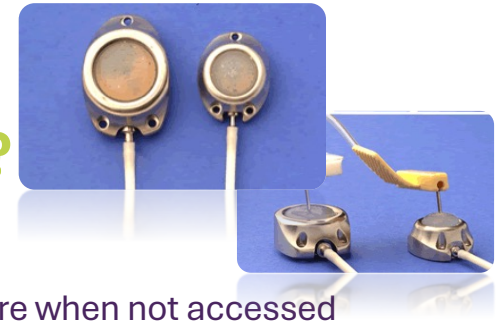
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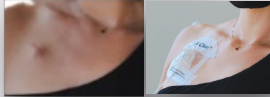
Nil other disclosures

Introduction and context

What is a Totally Implanted Venous Access Device (TIVAD)?

- Gold standard venous access device for medium to long term intravenous access
- Prevalent in systemic anticancer therapy
- Provides a non-external device which promotes improved quality of life due to the internal nature when not accessed



Device type	Characteristics	Clinical insertion setting	Clinician inserting	Example
Peripherally Inserted Central Catheter (PICC)	• External device • Inserted through a peripheral vein in the upper extremity, terminating in the same central veins as TIVADs	• Fluoroscopy • Bedside using ecg tip location and point of care ultrasound	Multidisciplinary: • Medical officers • Nurses • Some allied health clinicians	 <i>Image sourced from SNE Wound Care</i>
Central (Chest) • Most prevalent • Traditionally favoured	• Centrally located • Shorter pathway to target vessel • Insertion method is more complex • Access port site in a more infection prone region	• Operating Theater • Interventional radiology suite	Medical officers: • Surgeons • Interventional radiologists Other physicians	 <i>Images sourced from PICC Line vs. Port: Making The Best Choice For You</i>
Peripheral (Arm) • Gaining popularity	• Insertion and removal utilises similar procedural techniques to Peripherally Inserted Central Catheters (PICCs) – may be appropriate for some nursing cohorts • May be more accessible, cost effective and safer	• Interventional radiology suites • Inpatient - bedside • Outpatient - chairside	• Multidisciplinary – however, <u>very few nurse inserters globally</u>	 <i>Images sourced from Cystic Fibrosis Online</i>

What kicked this off?



Hypothesis synthesis

- Nurse led vascular access models of care have been demonstrated to improve patient and health service outcomes (Ruegg et al., 2020, Sakai et.al., 2024)
- Nurse insertion of PICCs at the bedside using intracavity electrocardiogram tip location technology are common in many health services now
- Reduced need for radiation for tip confirmation
- Reduced cost associated with procedural suites
- Non inferior safety profiles have been clearly proven



Therefore, the hypothesis is...

A minor extension of nursing scope to insert arm ports could:

- Improve accessibility
- Improve cost, human resourcing and infrastructure efficiencies
- Provide an equivalent/non inferior safety profile
- Lower device failure rates

Research question formation

Population	Intervention	Comparison	Outcomes
Adult cancer patients requiring intravenous access through a TIVAD	Peripherally located TIVAD (PICC port, Arm port)	Centrally located TIVAD (Chest port)	<u>Adverse events:</u> Infection Thrombosis Migration Malposition Catheter fracture Respiratory/Cardiac Complications <u>Consumer satisfaction:</u> Pain Aesthetics <u>Service delivery impacts:</u> Time to procedure Cost to health service Patient flow benefits or detractors

“In adults with cancer requiring a totally implanted venous access device, do peripherally implanted devices have comparable outcomes compared to centrally inserted implanted devices?”

Research methodology

Databases included

PubMed/Medline: Biomedical focus
Embase: Biomedical focus
CINAHL: Nursing and allied health perspectives
Cochrane Library: RCTs or Meta-Analyses

Key words

Cancer*/Neoplasm* AND Vascular Access/TIVAD/Implanted Port/PortaCath/Arm port/PICC port AND complications/adverse events/satisfaction/outcomes/infection/malposition/catheter dysfunction/pain/wait time

Inclusion Criteria	Exclusion criteria
• Publication date between 2016-2025 • PICC-Port/Arm Port/Brachial Port • Central port/Chest port	• Paediatric • Non-cancer • Studies with no reference to TIVADs • Studies not available in English language • Studies not available in full text format

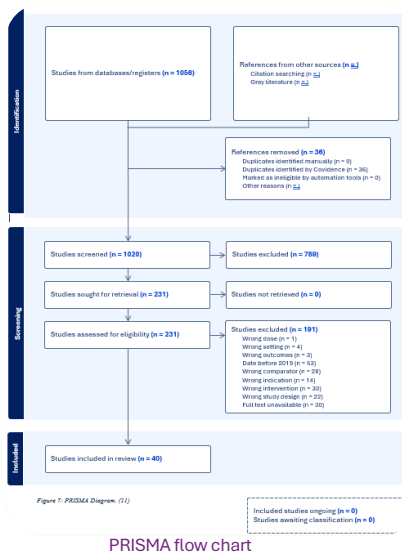
Search results imported into Covidence platform (1020 results after duplicates removed)

Screened at Ti/Ab level (231 included)

Screened at Full Text level (40 remained) – PRISMA flow chart generated

Themes extracted using Covidence template

Generated CSV file to organise themes in Microsoft Excel



Clinician	Device location	Sample size			
PICC team - un	PICC port	Breast - 418			
Anesthesia	Chest port	801 - solid and f			
Anesthetics	Male(N)	Female(N)	Male %	Female %	Insertion meth
Doctor	0	209	0%	100%	. The PICC-POR
	481	301	67%	42%	SC vein
	339	361	50%	53%	Surgical
	178	32	85%	15%	
Migration	Malfunction	Occlusion	Other physiolog	Art puncture	
6			skin dehis - 2, extrav - 6		100% ECG tip location
	4 Pinch off 3, SVC		48 Skin erosion - 3	23	53% Us + Blind
			3 (catheter), Lymph leakage :		100% Standardised pr
3 - guidewire mi			attributed to ver Arrythmia - 4 bli 18 - blind		

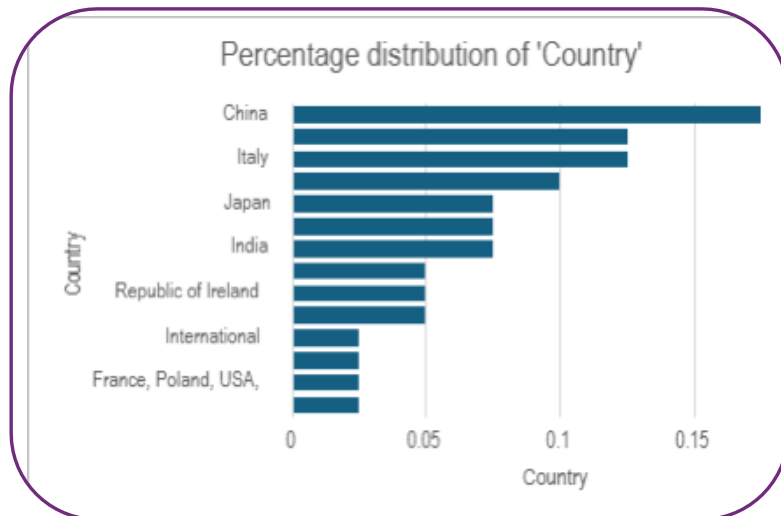
Themes extracted in Microsoft Excel format



Discussion: Demographics

Geography

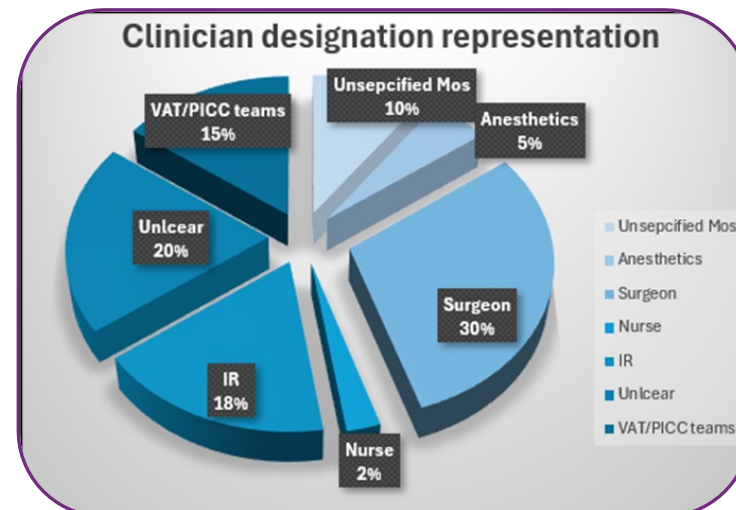
- Regions
- Clinical settings



Percentage distribution of countries included in the literature

Populations

- cancer types
- device types
- clinicians



Percentage of clinical designation represented in the literature

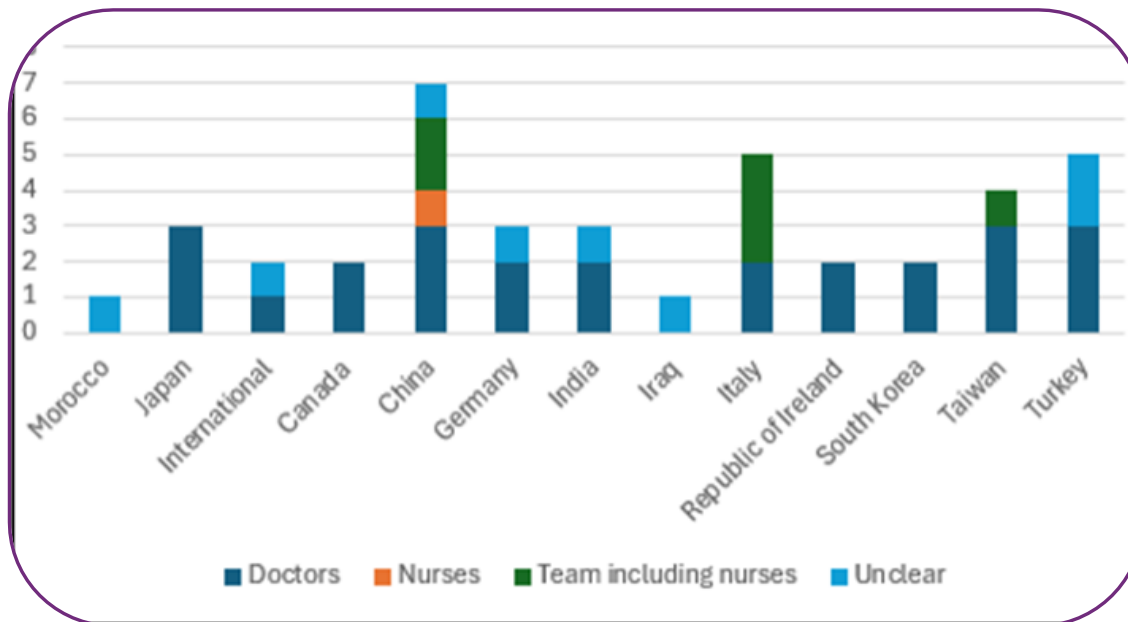


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Discussion: Demographics

Geographical distribution of clinical designation



Only 2% of inserters are nurses

Only 3 countries reported nurse inserters

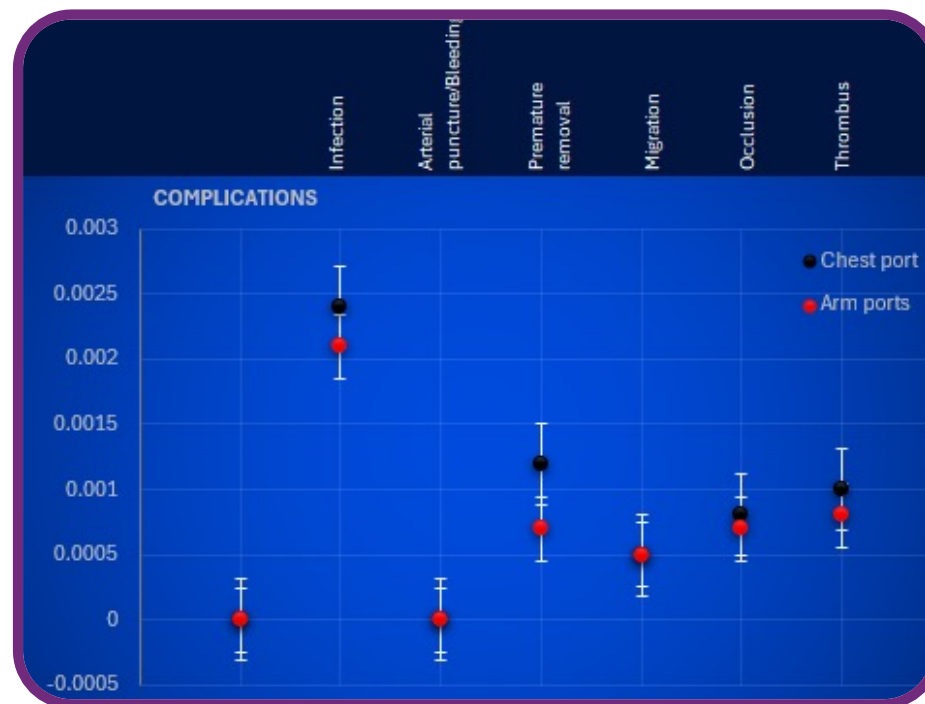
Discussion: Complications

- Infection
- Arterial puncture/bleeding (in periprocedural period)
- Premature removal
- Migration
- Occlusion
- Thrombus

Of interest, arm ports had:

- Lower rates of thrombus
- Lower rates of occlusion
- Lower rates of infection
- Lower rates of premature removal

In general, lower overall complications



Discussion: Consumer voice



Very low numbers of papers included the consumer perspective



Pain included in three papers
Aesthetics included in three papers
Quality of life included in one paper



Significant opportunity exists to engage with consumer cohort to develop nurse led insertion team



Summary

Both methods are safe

Gaps exist in the literature

Nurses are underrepresented as inserters

Consumer voices are underrepresented

Health services may benefit

Conclusion and research directions

Study 1: Systematic Review – Patient cohorts that benefit from PICC-Ports

Study 2: Theoretical domains framework – Barriers and facilitators associated with adopting nurse led models to insert PICC-Ports

Study 3: International qualitative/focus group cohort study: What is the stakeholder (clinician and consumer) lived experiences of nurse led PICC-Port models of care?

Study 4: International quantitative cohort study: What are the outcomes of existing international nurse led arm port placement models of care?



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