

# Assessment over assumption.

The latest evidence on choosing the right PIVC



By: Jocelyn Hill  
RN, MN, CVAA(c), VA-BC™  
ICU Medical Consultant

## Every patient presents a different context—and evidence suggests device decisions should too.

Peripheral intravenous catheters (PIVCs) are among the most used and common devices in healthcare.<sup>1</sup> Yet despite their frequent use, selection often relies on product availability or organizational defaults rather than careful individualized patient assessment. One size rarely fits all—and vascular access is no exception.

Over the past decade, clinicians have become more deliberate about larger vascular access decisions, such as choosing between peripheral and central lines or short- versus long-term devices.<sup>2,3</sup> When it comes to PIVCs, however, decisions often focus narrowly on catheter length or gauge, without fully considering the patient's overall context.

Recent work by an international panel of vascular access experts, using a structured modified Delphi process, offers clarity. By combining real-world experience with a careful review of emerging evidence, the panel identified broad consensus at 80% that patient assessment, clinician capability and therapy requirements are likely more influential determinants of PIVC success than catheter design alone.<sup>4</sup>

In other words, using more advanced or complex devices than necessary does not automatically improve outcomes.

### The risks of “set-and-forget” standardization

**Standardization can help—but only when paired with assessment.** Standardization of products can simplify supply

management, training and workflow. But when defaults replace judgment, patients may receive devices that do not meet their specific needs.

PIVCs are used across a wide range of settings—from brief emergency department (ED) visits to prolonged inpatient therapies for medically complex patients. Expecting a single catheter design to perform equally well in every scenario ignores both clinical experience and emerging evidence: Context matters.

For short, anticipated dwell times, differences between catheter technologies may be less influential on overall outcomes than insertion technique, vessel selection and maintenance practices. As therapy duration or patient complexity increases, other factors outweigh the device itself. These include inserter skill, vein and site selection, catheter size, securement and ongoing monitoring.

In higher-acuity patients or those requiring longer therapy, integrated PIVC designs may offer benefits and in selected patients requiring longer dwell times, difficult access management or therapies unsuitable for repeated short PIVC replacement, alternative devices such as midline catheters may warrant consideration.

**Takeaway:** The greatest improvements come from strong clinical processes—not simply introducing new products. Even the most advanced catheter cannot compensate for gaps in insertion skill, maintenance practices or accountability.

## Evidence and expert consensus

The Delphi panel reached broad consensus that clinician-related factors—including assessment, insertion skill, vein and site selection, appropriate sizing, securement and adherence to best practices—are likely more influential on PIVC outcomes than device features alone.

Technology can enhance care, but only when paired with skilled clinicians and robust institutional processes. Data-driven vascular access algorithms help match devices to patients most likely to benefit, while supporting training, competency and process accountability.

**Shift the question:** Instead of asking, “Which product should we standardize?” clinicians should ask, “What does this patient need, and how are we prepared to deliver it safely and effectively?”

## The value of the modified Delphi panel

The structured Delphi process brings together diverse expert perspectives to provide guidance where high-quality trials are limited. By integrating real-world experience with emerging evidence, the panel produced practical, consensus-based recommendations that are immediately relevant to clinical practice.

This work contributes to the literature by clarifying factors that influence PIVC success, highlighting the importance of clinician skill and patient context over device features, and offering guidance for future research, guidelines and institutional protocols.

## Toward thoughtful, evidence-informed decisions

Peripheral IV therapy deserves the same clinical deliberation as other vascular access choices. Selecting a device isn’t about using the newest or most advanced option—it’s about evaluating the patient’s needs, the clinical context, and ensuring that skilled care and consistent processes support each decision.

The panel’s findings underscore a simple but powerful message: Improving PIVC outcomes starts with people, assessment and intentional decision-making—not products alone. Clinicians and organizations have an opportunity to reflect on current practices, strengthen processes and ensure every device is chosen with purpose.

**In short:** Thoughtful, evidence-informed device selection, rather than habit, drives safer vascular access and better patient outcomes by aligning clinical decisions with patient needs, comfort, minimizing repeat insertion burden and preserving future vascular access options.

## Anticipated dwell time and PIVC decision-making

| Therapy duration      | Clinical context                                    | Consensus                                                                                                                           |
|-----------------------|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Short duration        | ED, procedures, brief admissions                    | Design differences appear minimal; insertion technique, site selection and securement have the greatest impact.                     |
| Intermediate duration | Inpatient therapy, evolving plans of care           | Multiple factors outweigh device design alone; education, assessment, appropriate length/gauge and ongoing evaluation are critical. |
| Extended/high acuity  | Prolonged therapy, critical illness, limited access | Advanced designs may offer benefits; alternative devices such as midlines should be actively considered.                            |

**Figure 1.** Conceptual summary of expert consensus themes related to anticipated dwell time and PIVC decision-making. Full results forthcoming in peer-reviewed publication.

Disclaimer: ICU Medical, Inc. sponsored this study, supporting meeting logistics and compensating panelists for their time.

## References

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