

Comparing *Assessment and Device Selection for Vascular Access (2004)* Best Practice Guideline (BPG) to the current *Vascular Access Second Edition BPG (2021)*

This document summarizes how the recommendations in the current, *Vascular Access Second Edition BPG (2021)* compare to the *Assessment and Device Selection for Vascular Access, First Edition BPG* recommendations, published in 2004. The previous edition of the BPG categorized types of evidence by “levels of evidence” (LOE). A breakdown of what each LOE means can be found in Table 1. Tables 2, 3 and 4 summarize how the practice, education and organization/system recommendations from the First Edition BPG compare to the Second Edition BPG. It is important to note that additional areas that were addressed in the Second Edition BPG, that were not included in the First Edition BPG include the following: ultrasound-guided device insertion, vascular access specialists or specialist teams, implementation of peripheral vascular access device (PVAD) multi-component care protocols, and pain management interventions for the insertion of vascular access devices (VADs).

Table 1: Levels of Evidence

LEVEL	SOURCE OF EVIDENCE
Ia	Evidence obtained from meta-analysis ⁶ or systematic reviews of randomized controlled trials ⁶ , and/or synthesis of multiple studies primarily of quantitative research.
Ib	Evidence obtained from at least one randomized controlled trial.
IIa	Evidence obtained from at least one well-designed controlled study ⁶ without randomization.
IIb	Evidence obtained from at least one other type of well-designed quasi-experimental study ⁶ , without randomization.
III	Synthesis of multiple studies primarily of qualitative research ⁶ .
IV	Evidence obtained from well-designed non-experimental observational studies, such as analytical studies ⁶ or descriptive studies ⁶ , and/or qualitative studies.
V	Evidence obtained from expert opinion or committee reports, and/or clinical experiences of respected authorities.

Adapted from the Scottish Intercollegiate Guidelines Network (Scottish Intercollegiate Guidelines Network [SIGN], 2011) and Pati (2011).

Table 2: Practice Recommendations

Practice Recommendations from <i>Assessment and Device Selection for Vascular Access (2004)</i>	Relevant Information in <i>Vascular Access Second Edition BPG (2021)</i>
<p>1. All clients requiring vascular access, regardless of duration of therapy, require the use of a structured approach such as an algorithm to facilitate a comprehensive client assessment and the development of a vascular access care plan prior to the initiation of therapy.</p> <p>LOE: IIb</p>	<ul style="list-style-type: none"> - Good practice statement on assessment prior to VAD device insertion - Appendix G: UK Vessel Health Preservation Framework

<p>To determine the most appropriate type of VAD, the nurse needs to consider the following factors: Prescribed therapy – Level Ib; Duration of therapy – Level Ib; Physical assessment – Level IV; Client health history – Level IV; Support system/resources – Level IV; Device availability – Level IV; and Client preference – Level IV.</p>	<ul style="list-style-type: none"> - Good practice statement on assessment prior to device insertion - Appendix G: UK Vessel Health Preservation Framework - Appendix F: Overview of Types of VADs
<p>3. Nurses will discuss the options for VADs with the client and family caregivers. Device selection is a collaborative process between the nurse, client, physician and other members of the health care team, however, the nurse has a role to educate and advocate for clients in relation to the selection of appropriate devices.</p> <p>LOE: IV</p>	<ul style="list-style-type: none"> - Recommendation 1.1 - Appendix F: Overview of Types of VADs - Appendix I: Example Peripherally Inserted Central Catheter (PICC) Health Teaching Guide
<p>4. Nurses will document comprehensive information regarding assessment of infusion therapy and device recommendations. This documentation should include, as a minimum: Assessment completed and the written plan of care developed; and Client and family caregiver education.</p> <p>LOE: IV</p>	<ul style="list-style-type: none"> - Recommendation 5.1 - Appendix L: Example of a PVAD Assessment Protocol - Appendix M: List of Central Vascular Access device (CVAD) Care Guidelines

Table 3: Education Recommendations

<p>Education Recommendations from <i>Assessment and Device Selection for Vascular Access</i> (2004)</p>	<p>Relevant Information in <i>Vascular Access</i> Second Edition BPG (2021)</p>
<p>5. The principles and practice of infusion therapy should be included in the basic education of nurses in their core curriculum, be available as continuing education, be provided in orientation to new organizations and be made available through continuing professional development opportunities.</p> <p>LOE: IV</p>	<ul style="list-style-type: none"> - Recommendation 2.1 - Appendix J: Example Competency: Peripheral Ultrasound-guided Vascular Access (P-UGVA) Rating Scale

Table 4: Organization and Policy Recommendations

Organization and Policy Recommendations from <i>Assessment and Device Selection for Vascular Access (2004)</i>	Relevant Information in second edition BPG (2021)
<p>6. Health care organizations should have access to infusion therapy nursing expertise to support optimal vascular access outcomes.</p> <p>LOE: III</p>	<ul style="list-style-type: none"> - Recommendation 3.1
<p>7. Health care organizations must have quality improvement systems in place to monitor client outcomes. This should include an interdisciplinary process that will monitor quality indicators related to vascular access and infusion therapy, the provision of timely feedback for improved client outcomes, and systems for reporting and capturing data to support practice improvements.</p> <p>LOE: IV</p>	<ul style="list-style-type: none"> - This recommendation was not based on evidence; however, this edition of the BPG provides quality improvement details in the evaluation and monitoring chart (Best Practice Guideline Evaluation section).
<p>8. In order to support continuity of client care within and between organizations, all clients with a vascular access device and/or their caregivers need to have available comprehensive information about the device, which should include, as a minimum:</p> <ul style="list-style-type: none"> - Details of therapy; - Type of vascular access device, including number of lumens; - Date of insertion; - Tip location, for all central vascular access devices; - Delivery system in use; - Client education plan; - Client specific instructions; - Details of any complications experienced; and - Appropriate resources, as required. <p>LOE: IV</p>	<ul style="list-style-type: none"> - Recommendation 1.1 - Appendix I: Example PICC Health Teaching Guide
<p>9. Nursing best practice guidelines can be successfully implemented only where there are adequate planning, resources, organizational and</p>	<ul style="list-style-type: none"> - This recommendation was not based on evidence; however, this edition of the BPG provides implementation resources,

<p>administrative support, as well as appropriate facilitation. Organizations may wish to develop a plan for implementation that includes:</p> <ul style="list-style-type: none"> - An assessment of organizational readiness and barriers to education; - Involvement of all members (whether in a direct or indirect supportive function) who will contribute to the implementation process; - Dedication of a qualified individual to provide the support needed for the education and implementation process; - Ongoing opportunities for discussion and education to reinforce the importance of best practices; and - Opportunities for reflection on personal and organizational experience in implementing guidelines. 	<p>such as a description of the <i>Leading Change Toolkit™</i> (Appendix Q).</p>
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Comparing *Care and Maintenance to Reduce Vascular Access Complications (2005)*, Best Practice Guideline (BPG) to the *Vascular Access Second Edition BPG (2021)*

This document summarizes how the recommendations in the current, *Vascular Access Second Edition BPG (2021)* compare to the *Care and Maintenance to Reduce Vascular Access Complications BPG* recommendations, published in 2005. The previous edition of the BPG categorized types of evidence by “levels of evidence” (LOE). A breakdown of what each LOE means can be found in Table 1. Tables 2, 3 and 4 summarize how the practice, education and organization/system recommendations from the First Edition BPG compare to the Second Edition BPG. It is important to note that additional areas that were addressed in the Second Edition BPG, that were not included in the First Edition BPG include the following: implementation of a multi-component PVAD care protocol that includes a daily review, and use of vascular access specialists or specialist teams.

Table 1: Levels of Evidence

LEVEL	SOURCE OF EVIDENCE
Ia	Evidence obtained from meta-analysis ⁶ or systematic reviews of randomized controlled trials ⁶ , and/or synthesis of multiple studies primarily of quantitative research.
Ib	Evidence obtained from at least one randomized controlled trial.
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Adapted from the Scottish Intercollegiate Guidelines Network (Scottish Intercollegiate Guidelines Network [SIGN], 2011) and Pati (2011).

Table 2: Practice Recommendations

Practice Recommendation from <i>Care and Maintenance to Reduce Vascular Access Complications (2005)</i>	Relevant Information in <i>Vascular Access Second edition BPG (2021)</i>
1.0 Nurses will select a peripheral insertion site appropriate for the required therapy and with the least risk of complication. LOE: IV	<ul style="list-style-type: none"> - Good practice statement on assessment - Appendix F: Overview of Types of VADs - Appendix G: UK Vessel Health Preservation Framework
2.0 Nurses will prevent the spread of infection by following routine practices and Prevention Control using additional precautions.	<ul style="list-style-type: none"> - Guiding principles and frameworks - Appendix M: List of Central Vascular Access Device (CVAD) Care Guidelines

LOE: IV	
<p>3.0 Nurses will consider the following factors when performing catheter site care using aseptic technique:</p> <ul style="list-style-type: none"> - Catheter material (composition); - Antiseptic solution; and - Client's tolerance (skin integrity, allergies, pain, sensitivity and skin reaction). 	<ul style="list-style-type: none"> - Not specifically addressed, but aseptic technique is included in guiding principles and frameworks - Appendix M: List of Central Vascular Access Device (CVAD) Care Guidelines
LOE: IV	
<p>4.0 Nurses will not use the central venous access device (CVAD) until tip placement has been confirmed.</p>	<ul style="list-style-type: none"> - Good practice statement on assessment - DOE of Recommendation 6.1 - Appendix M: List of Central Vascular Access Device (CVAD) Care Guidelines
LOE: IV	
<p>5.0 Nurses will consider the following factors when selecting and changing VAD dressings:</p> <ul style="list-style-type: none"> - Type of dressing; - Frequency of dressing changes; and - Client's choice, tolerance and lifestyle. 	<ul style="list-style-type: none"> - Recommendation 5.1 - Appendix M: List of Central Vascular Access Device (CVAD) Care Guidelines
<p>6.0 Nurses must stabilize the VAD in order to:</p> <ul style="list-style-type: none"> - Promoted assessment and monitoring of the vascular access site; - Facilitate delivery of prescribed therapy; and - Prevent dislodgement, migration, or catheter damage. 	<ul style="list-style-type: none"> - Recommendation 5.1 - Appendix M: List of Central Vascular Access Device (CVAD) Care Guidelines
LOE: III	
<p>7.0 Nurses will maintain catheter patency using flushing and locking techniques.</p>	<ul style="list-style-type: none"> - Appendix M: List of Central Vascular Access Device (CVAD) Care Guidelines
LOE: IV	
<p>8.0 Nurses will know what client factors, device characteristics and infusate factors can contribute to catheter occlusion in order to ensure catheter patency for the duration of the therapy</p>	<ul style="list-style-type: none"> - Good practice statement on assessment - Appendix H: List of Vesicant Medications - Appendix G: UK Vessel Health Preservation Framework
LOE: IV	
<p>9.0 Nurses will assess and evaluate vascular access devices for occlusion in order to facilitate treatment and improve client outcomes.</p>	<ul style="list-style-type: none"> - Recommendation 5.1
LOE: IV	

10.0 Nurses will minimize accessing the central venous access device (CVAD) in IV order to reduce the risk of infection and nosocomial blood loss. LOE: IV	<ul style="list-style-type: none"> - Appendix M: List of Central Vascular Access Device (CVAD) Care Guidelines
11.0 Nurses will change all add-on devices a minimum of every 72 hours. LOE: IV	<ul style="list-style-type: none"> - Add-on devices are not specifically addressed in this BPG; however, they are included in other guidelines (Appendix M: List of CVAD Care Guidelines)
12.0 Nurses will document the condition of vascular access devices including: <ul style="list-style-type: none"> - The insertion process; - Site assessment; and - Functionality. LOE: III	<ul style="list-style-type: none"> - Good practice statement on assessment - Recommendation 5.1 - Appendix L: Example of a PVAD Assessment Protocol
13.0 Nurses will help clients to attain the highest level of independence through client education. LOE: IV	<ul style="list-style-type: none"> - Recommendation 1.1 - Appendix I: Example Peripherally Inserted Central Catheter (PICC) Health Teaching Guide

Table 3: Education Recommendations

Education Recommendation from <i>Care and Maintenance to Reduce Vascular Access Complications</i> (2005)	Relevant Information in <i>Vascular Access</i> Second edition BPG (2021)
14.0 The principles and practice of infusion therapy should be included in the basic education curriculum, be available as continuing education, be provided in orientation to new employees and be made available through continuing professional development opportunities. LOE: IV	<ul style="list-style-type: none"> - Recommendation 2.1 - Appendix J: Peripheral Ultrasound-guided Vascular Access (P-UGVA) Rating Scale
15.0 Schools of Nursing will include RNAO best practice guidelines Assessment and Device Selection for Vascular Access and Care and Maintenance to Reduce Vascular Access Complications as reference material for core curricula.	<ul style="list-style-type: none"> - This recommendation was not based on evidence; however, Recommendation 2.1 speaks to practical education of staff.

LOE: IV	
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Table 4: Organization and Policy Recommendations

Organization and Policy Recommendation from <i>Care and Maintenance to Reduce Vascular Access Complications (2005)</i>	Relevant Information in <i>Vascular Access Second edition BPG (2021)</i>
16.0 Health care organizations will have policies that address components of vascular access therapy in order to ensure positive client outcomes.	- This recommendation was not based on evidence; however, Recommendations 3.1 and 4.1 speak to organizational policies.
17.0 Health care organizations, in collaboration with their infection control teams, will monitor complications of infusion therapy and use data to employ risk reduction strategies	- This recommendation was not based on evidence; however, this edition of the BPG provides quality improvement details in the evaluation and monitoring chart (Best Practice Guideline Evaluation section).
18.0 Health care organizations will implement the use of safety engineered devices and equipment to reduce the nurse's risk of sharps injuries that can lead to blood borne diseases. The organization's risk management program will monitor assessment of these practices and incidents.	- Guiding principles and frameworks
19.0 Health care organizations have access to infusion therapy nursing expertise to support optimal vascular access outcomes.	- Recommendation 3.1
20.0 Nursing best practice guidelines can be successfully implemented only where there are adequate planning, resources, organizational and administrative support, as well as appropriate facilitation. Organizations may wish to develop a plan for implementation that includes: <ul style="list-style-type: none"> - An assessment of organizational readiness and barriers to education; - Involvement of all members (whether in a direct or indirect supportive function) who will contribute to the implementation process; - Dedication of a qualified individual to provide the support needed for the education and implementation process; - Ongoing opportunities for discussion and education to reinforce the importance of best practices; and 	- This recommendation was not based on evidence; however, this edition of the BPG provides implementation resources, such as a description of the <i>Leading Change Toolkit™</i> (Appendix Q).

<ul style="list-style-type: none">- Opportunities for reflection on personal and organizational experience in implementing guidelines.	
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