

New eviQ central venous access device education and resources available

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Abstract

Central venous access devices (CVADs) are a mainstay for many patients receiving mid-to-long-term intravenous therapy. Cancer Institute of NSW programs, eviQ and eviQ Education, provide free online cancer treatment protocols and resources for clinicians, patients and carers. In 2021, the complete suite of eviQ CVAD resources were updated via extensive consultation with vascular access experts and the evidence-based literature to reflect the latest evidence for CVAD management. Resources include eLearning modules, clinical procedures, complication management algorithms, assessment and documentation tools, quizzes, and patient education materials. We encourage readers to explore and promote eviQ and eviQ Education for CVADs and share these resources with nursing, interventional radiology, or medical colleagues caring for patients with a CVAD, as well as patients and carers.

The importance of CVAD education

Central venous access devices (CVADs) are critical for efficient, reliable delivery of prescribed medical therapies. In particular, CVADs are a vital resource for intensive care patients and patients with cancer or other conditions requiring frequent or prolonged periods of supportive and systemic therapies.¹ Used in all patient age groups, from neonates to the elderly, CVADs can remain in place for hours or up to several years, and are managed in diverse healthcare settings, from acute inpatient and ambulatory units to the community and the home. A functioning CVAD is a patient's lifeline, but these devices come with many risks, and, as such, it is essential that anyone involved in CVAD insertion and management understands how to eliminate harm wherever possible.

An unacceptably high number (15–66%) of CVADs fail prematurely in all patient populations,² which can result in patient harm, delayed treatment, increased morbidity and mortality, and increased healthcare expenditure.³ The pathophysiology of cancer and complications of prescribed infusion therapies further increases the risk of CVAD complications and failure, including life-threatening bloodstream infection,⁴ bleeding, thrombotic complications,⁵ as well as skin impairment and

delayed healing of CVAD wounds,⁶ such as totally implantable venous access device suture lines or catheter exit sites.

Informed and competent CVAD maintenance, surveillance, early detection, and expert management of complications is key to minimise impact on the patient and healthcare service.⁷ CVAD management is complex and incorporates repeated clinical maintenance procedures influenced by patient, clinical, therapy, and individual healthcare service factors. A plethora of multidisciplinary professionals, patients, and carers are potentially involved with CVAD care. Therefore, education and competency are a standard of practice for CVAD management and critical to reducing the risk of premature failure and removal.⁷

Available resources

The Cancer Institute of NSW programs, [eviQ](#) and [eviQ Education](#), are free, accessible, national online linked platforms for cancer treatment protocols. They also provide resources including clinical procedures, algorithms, assessment and documentation tools, education modules, and quizzes, for multidisciplinary clinicians, as well as information for patients and carers. The eviQ CVAD resources were updated in 2021; the entire review process was coordinated and managed by an expert facilitator skilled in project management from eviQ Education. A subject

matter expert in cancer and vascular access conducted extensive topic reviews to ensure the best available evidence could be incorporated into the resources. A Delphi-type review method was implemented to review the content of the resources, with numerous internal reviews by experts within eviQ and eviQ Education, followed by an external round of peer review with twenty-four adult and paediatric cancer nurses practising nationally, and continuing internal reviews until consensus was achieved.⁸ Content for [Aseptic Non-Touch Technique](#) (ANTT[®]) was reviewed and supported by the [Association for Safe Aseptic Practice](#) (ASAP). Finally, the resources were reviewed and endorsed by the Cancer Nurses Society of Australia (CNSA) and the Australian Vascular Access Society (AVAS), and supported by the Alliance for Vascular Access Teaching and Research (AVATAR), ASAP, and Intravenous Nurses New Zealand (IVNNZ).

The eviQ CVAD management course was designed to support nursing, medical and other multidisciplinary healthcare professionals caring for patients who have had, or will have, a CVAD inserted. Every clinician caring for a patient with a CVAD, whether they are involved with direct patient care for insertion or maintenance, hospital quality and safety, infection prevention, or community services, would benefit from completing this [free online course](#).

The course is delivered via an online platform and includes three modules incorporating learning objectives, didactic content, supported throughout with clinical images and diagrams, interactive activities, recall questions, and a quiz at the completion of each module. Expected timeframes for completion are included in each module.

Each module is structured around the Vessel Health and Preservation four quadrants of care⁹ in the life of a CVAD – device selection, insertion, maintenance, and removal (Figure 1). With vessel health and preservation now a priority consideration for every clinician, the device selection component instructs learners in the process for deciding which is the right device for the individual patient's needs.

Module One begins by presenting the different types of CVAD and principles of selection. The different types of CVADs, features, advantages, and disadvantages are discussed using generic terminology to facilitate translation across different settings and workplaces. Once the choice of device has been confirmed, the insertion component steps clinicians through important considerations and evidence to achieve successful insertion, first time, every time. Core principles that guide CVAD management and removal are detailed, including the patient and family, infection prevention, dressing and patency management, assessment and documentation, and finally complication assessment and management (Figure 2).

Module Two focuses on the patient and family, key participants in the healthcare team for device selection, care, maintenance, and, finally, removal of a CVAD. Education and assessment throughout the life of a CVAD is discussed via a case study – a gentleman requiring vascular access for ongoing chemotherapy for colorectal cancer (Figure 3).

Module Three is a comprehensive module, divided into six parts: (1) core principles applicable during the maintenance phase of a CVAD, including an infection prevention maintenance bundle;

04 Removal

Removal as soon as the device is no longer required.

Aim: to prevent complications.

03 Maintenance

Including dressing management, patency management, assessment and management of complications.

Aim: to maintain CVAD function without complications.

01 Device selection

Choice of the most appropriate CVAD, for the individual patient.

Aim: insertion of one device for the length of prescribed therapy.

02 Insertion

Insertion of the right device, in the right vein, at the right time, by the right clinician for the individual patient.

Aim: appropriate and successful insertion, first time.

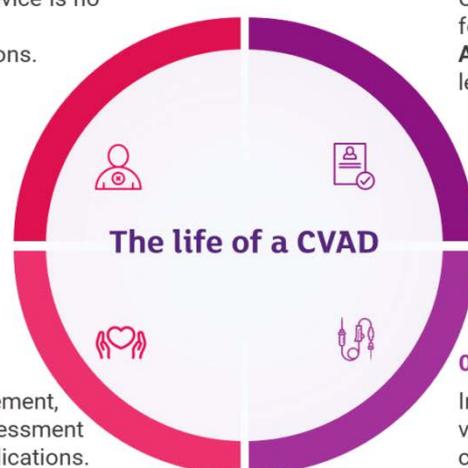


Figure 1. The life of a CVAD

(2) patient and CVAD dressing and potential complication management immediately post-insertion; (3) the latest evidence for dressing and securement; (4) core patency practices to maintain device function; (5) assessment and management of common complications; and (6) removal, which teaches clinicians how to make a timely decision on when to remove the CVAD and provides instruction on how to remove the CVAD safely to minimise the possibility of adverse outcomes, including haemorrhage, air embolus, and retained catheter (Figure 4).

This course links with key resources on the eviQ website to provide practical support and guidance for clinical practice. These resources include seven [clinical procedures](#), assessment and documentation tools, and algorithms for assessment and management of two common complications – skin impairment and occlusion. Many patients who require a CVAD return home with their device, so the eviQ Education website also provides free [CVAD resources for patients](#) and carers.

Module 1: Central venous access devices (CVADs)
1.25hrs

By the end of this module you will be able to:

- define what a CVAD is
- identify indications for CVAD insertion and factors influencing the selection process
- explain key CVAD principles including the patient, education, infection prevention, assessment, documentation and CVAD data
- describe the various types of CVADs (short-term, intermediate term and long-term) utilising standardised and generalisable terminology
- discuss the advantages and disadvantage of the different types of CVADs.

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Part 1: CVAD principles	🕒 0.5hrs
Part 2: Types of CVADs	🕒 0.5hrs
eQuiz	🕒 0.25hrs

Figure 2. Module 1: CVADs

Module 2: The patient
1.25hrs

By the end of this module you will be able to:

- discuss key practice points for CVAD patient assessment and education including frequency and documentation requirements
- outline education priorities for patients who will or who do have a CVAD inserted
- list core CVAD assessment areas and identify suitable tools guide and document assessment.

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eLearning: Patient assessment and education	🕒 1hrs
eQuiz	🕒 0.25hrs

Figure 3. Module 2: The patient

🔒 Module 3: CVAD management
3.25hrs ^

By the end of this module you will be able to:

- outline key care considerations post CVAD insertion
- describe the key principles and practices for CVAD maintenance
- discuss key dressing management principles
- discuss clinical practices and principles that impact patency management
- describe the key practice points recommendations for the prevention and management of common CVAD complications.
- outline key principles regarding CVAD removal, including indications and key practice points
- identify elements, key reasons for and frequency of CVAD documentation.

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📁 Part 1: Care post CVAD insertion	🕒 0.5hrs
📁 Part 2: CVAD maintenance principles	🕒 0.5hrs
📁 Part 3: Dressing management	🕒 0.5hrs
📁 Part 4: Patency management	🕒 0.5hrs
📁 Part 5: Complication management	🕒 0.5hrs
📁 Part 6: CVAD removal	🕒 0.5hrs
📁 eQuiz	🕒 0.25hrs

Figure 4. Module 3: CVAD management

Conclusion

This unique suite of evidence-based, standardised resources using generic terminology facilitates the translation and application of evidence into practice, from device selection through to removal, in critical care, acute, ambulatory, and homecare settings. We encourage readers to access, explore, and share eviQ and eviQ Education for clinician and patient CVAD education. To learn more, please visit the Cancer Institute NSW eviQ and eviQ Education websites.^{10,11}

Declarations/conflict of interest

KC has been employed as the Subject Matter Expert by Cancer Institute NSW to research and prepare the eviQ and eviQ Education suite of resources. KC reports consultancy payments provided to AVATAR, Griffith University by product manufacturers (3M, ICU Medical, Baxter), unrelated to this project.

GRB reports consultancy payments provided to Griffith University by product manufacturers (3M, Becton Dickinson) and education providers (Ausmed, Wolters Kluwer), unrelated to this project.

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