

NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

Technology Appraisals and Guidance Information Services

Static List Review (SLR)

Title and TA publication number of static topic:	TA49; Guidance on the use of ultrasound locating devices for placing central venous catheters
Final decision:	The guidance will remain on the 'static guidance list'

1. Publication date:	September 2002
2. Date added to static list:	September 2010
3. Date the last searches were run:	March 2010
4. Current guidance:	<p>1.1 Two-dimensional (2-D) imaging ultrasound guidance is recommended as the preferred method for insertion of central venous catheters (CVCs) into the internal jugular vein (IJV) in adults and children in elective situations.</p> <p>1.2 The use of two-dimensional (2-D) imaging ultrasound guidance should be considered in most clinical circumstances where CVC insertion is necessary either electively or in an emergency situation.</p>

	<p>1.3 It is recommended that all those involved in placing CVCs using two-dimensional (2-D) imaging ultrasound guidance should undertake appropriate training to achieve competence.</p> <p>1.4 Audio-guided Doppler ultrasound guidance is not recommended for CVC insertion.</p>
5. Research recommendations from original guidance:	<p>5.1 Good quality studies are needed:</p> <ul style="list-style-type: none"> • to investigate the possible economic and clinical implications to the NHS of nurse specialists or other healthcare practitioners carrying out routine insertion of CVCs • to evaluate the use of ultrasound-guided central venous catheterisation in small infants (i.e. those weighing less than 3 kg).
6. Current cost of technology/ technologies:	<p>In the economic model for TA49 the cost-effectiveness of 2-D ultrasound was sensitive to how often the technology was used. The base-case model, which suggested cost savings with 2-D ultrasound, assumed that each machine was used for 15 procedures per week. The cost-saving result was eradicated if the number of ultrasound procedures assumed per machine per week was less than around 11, or if the number of ultrasound procedures carried out by an individual trained practitioner was less than around 3 per month on average. NICE would be interested in any new evidence to refine these estimates.</p> <p>Note that Doppler audio ultrasound was not the focus of the modelling in TA49, because the committee considered that it was less clinically effective than 2-D ultrasound.</p>
7. Cost information from the TA (if available):	<p>The Assessment Group for TA49 estimated a per-procedure cost for 2-D ultrasound (US) for central venous access (CVA) using a decision-analytic model:</p> <p><i>“The purchase cost of these portable machines currently varies between £7000 and £15,000. The additional disposables necessary for the US guided procedure cost less than £1 per procedure. Estimates made in this report indicate that the additional cost of using US equipment for the CVA procedure is likely to be less than £10 per procedure [the base scenario assumes that a machine is used for 15 procedures each week]”.</i></p>

	Calvert, N et al (2003) The effectiveness and cost effectiveness of ultrasound locating devices for central venous access: a systematic review and economic evaluation . Health Technology Assessment 7 (12).
8. Alternative company(ies):	Diagnostic Sonar GE Ultrasound Europe Jade Medical Pie-Data Siemens Medical Systems SonoSite Ultrasound Technologies
9. Changes to the original indication:	Not applicable.
10. New relevant trials:	References from March 2010 onwards were reviewed: <ul style="list-style-type: none"> • Interest of Ultrasound Coupled to a Guidance System (GPS) for Central Venous Catheters (CVC) Insertion [in the internal jugular vein] (NCT02231528) – completed • SUBclavian Central Venous Catheters Guidance and Examination by UltraSound (SUBGEUS) (NCT01888094) – recruiting • Variation In Success of Intravenous (IV) Placement With Observation Using New Techniques (VISION) [in children 0-16 presenting to the Pediatric Emergency Department] (NCT01133652) - completed
11. Relevant NICE guidance (published or in	Central venous catheters (CVCs) are inserted for a number of reasons including haemodynamic monitoring, intravenous delivery of blood products and drugs (for example, chemotherapy and antibiotics), haemodialysis, total parenteral nutrition, cardiac pacemaker placement and management of

<p>progress)</p>	<p>perioperative fluids.</p> <p>As such there is no single NICE guideline that could incorporate recommendations on the method for inserting CVCs.</p>
<p>12. Relevant safety issues:</p>	<p>None found.</p>
<p>13. Any other additional relevant information or comments:</p>	<p>At the time TA49 was written, there was only reasonable evidence base to recommend ultrasound guidance for use during access to the internal jugular vein in elective situations in adults and children. In the last decade there have been many studies on ultrasound guidance for vascular access both for adults and children, by different routes of access for both central and peripheral veins, and arteries. Overall the majority of studies, and evidence base, have been supportive for the use of ultrasound guidance to improve initial success and reduce the frequency of complications. This is reflected in a recently published International Consensus Guideline (Lamperti et al., 2012) which also demonstrated wide acceptance in most countries that ultrasound technology is affordable. According to the International Consensus Guideline (Lamperti et al., 2012), there remains insufficient evidence to make an evidence-based recommendation about the use of 2-D imaging ultrasound for routine puncture of the internal jugular vein in neonates. Following the most recent review proposal (in 2013), Guidance Executive concluded that whilst there is evidence a positive recommendation could be given for the use of ultrasound for CVC placement in sites <u>other</u> than the internal jugular vein, there is not enough evidence to commit to a full update of the <u>guidance</u>.</p> <p>NICE have expressed interest in any new evidence to refine the per-procedure cost estimate, but it should be noted that in TA49 the 2-D ultrasound guidance method was found to be both more effective and less costly than the landmark method (the results of the Assessment Group's model suggested that the ultrasound guidance avoided 90 arterial punctures for every 1000 patients treated).</p>
<p>14. Technical Lead comments and recommendation:</p>	<p>Literature searches have revealed no new evidence on ultrasound methods for insertion of central venous catheters that would cause the original recommendations to change. The guidance should therefore remain on the static list.</p>

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Appendix 1 – explanation of options

Options	Consequence	Selected – ‘Yes/No’
The guidance will remain on the ‘static guidance list’	The guidance will remain in place, in its current form, unless NICE becomes aware of substantive information which would make it reconsider. Literature searches are carried out every 5 years to check whether any of the Appraisals on the static list should be flagged for review.	Yes
The decision to review the guidance will be deferred to specify date or trial	NICE will consider whether a review is necessary at the specified date. NICE will actively monitor the evidence available to ascertain when a consideration of a review is more suitable.	No
A full consideration of a review will be carried out through the Review Proposal Process	There is evidence that could warrant a review of the guidance. NICE will schedule a consideration of a review, including a consultation with relevant consultees and commentators.	No
The guidance will be withdrawn	The guidance is no longer relevant and an update of the existing recommendations would not add value to the NHS. NICE will schedule a consideration of a review, including a consultation with relevant consultees and commentators.	No
The guidance should be updated in an on-going	Responsibility for the updating the technology appraisal passes to the NICE Clinical Guidelines programme. Once	No

clinical guideline.	the guideline is published the technology appraisal will be withdrawn. NICE will schedule a consideration of a review, including a consultation with relevant consultees and commentators.	
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