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Helping to solve the Achilles heel of dialysis – vascular access

The UK Kidney Association (UKKA) released the updated **Clinical Practice Guideline: Vascular Access for Haemodialysis** in April 2023. This comprehensive document provides evidence-based recommendations for healthcare professionals involved in the care of patients requiring haemodialysis.

Below is the information relating to cannulation:

Cannulation		
3.12	We recommend an assessment before every cannulation, using a "look, feel and listen" approach performed by an appropriately trained cannulator	1C
3.13	We suggest patients who self-cannulate assess their access before every cannulation using a "look, feel and listen" approach, within the limits of their abilities and with understanding of potential problems	2D
3.14	We recommend rope ladder or buttonhole cannulation for fistulas, and rope ladder cannulation for grafts, in preference to area puncture wherever possible	1C
3.15	We recommend unit policies to measure and minimize cannulation complications, which may include ultrasound assisted cannulation or single needle haemodialysis for new or difficult AV access	1C
3.16	We recommend high quality cannulation training, giving staff time to develop their skill through supervised practice, supported by theory teaching and competency assessment, before performing cannulation unsupervised	1D

The guideline also details the following rationale for recommending both rope ladder and buttonhole cannulation for fistulas.

"Recently, effort has been focused on whether buttonhole or rope ladder is the optimum technique for cannulation of fistulas, with divergent views favouring buttonhole (75), or restricting buttonhole to difficult fistulas (76,77). Randomised controlled trials that compare buttonhole and rope ladder demonstrate varying results with flaws in the study design (78). These studies have been focused on in -centre cannulation performed by healthcare professionals. As there is a belief that buttonhole is beneficial for patients who cannulate themselves, making the cannulation procedure easier and safer, Huang performed a pilot randomised controlled trial to compare the two techniques in the home dialysis population. They were unable to complete the study due to patient preference for buttonhole (79), though it was unclear whether this was driven by patient or healthcare provider preference.

Therefore, there is no current consensus or definitive study to determine whether buttonhole or rope ladder is optimal: with no universally optimum technique, the selection between rope ladder and buttonhole cannulation should be individualised.

The BRS and VASBI needling recommendations (72) provide further detail and advice on how to do this, but in particular, provider preference should not be the sole driver of needling practice. Neither, of course, should provider inexperience be limiting, and units should therefore allow sufficient training resource to establish and maintain expertise in all cannulation types"

72. British Renal Society and Vascular Society of Great Britain and Ireland (2018) *Clinical Practice Recommendations for Needling of Arteriovenous Fistulae and Grafts for Haemodialysis*
75. Ren, C., Han, X., Huang, B., Yuan, L., Cao, Y., & Yang, X. (2016). Efficacy of buttonhole cannulation (BH) in hemodialysis patients with arteriovenous fistula: A meta-analysis. *International Journal of Clinical and Experimental Medicine, 9*(8), 15363-15370
76. Grudzinski, A., Mendelssohn, D., Pierratos, A., & Nesrallah, G. (2013). A systematic review of buttonhole cannulation practices and outcomes. Seminars in Dialysis, 26(4), 465-475. Harwood, L. and Wilson, B. (2018) 'Reaching Consensus on Outcomes for Successful Cannulation of an Arteriovenous Fistula: Patient and Healthcare Provider Perspectives' *Nephrology Nursing Journal* 45(4), 327-336
77. Wong, B., Muneer, M., Wiebe, N., Storie, D., Shurraw, S., Pannu, N., Pauly, R. P. (2014). Buttonhole versus rope-ladder cannulation of arteriovenous fistulas for hemodialysis: a systematic review. *American Journal of Kidney Diseases, 64*(6), 918-936
78. Fielding C.A., Hadfield A., White K., Waters D., James C., Buchanan H., Fluck R.J. and Selby N.M. (2021) 'A narrative systematic review of randomised controlled trials that compare cannulation techniques for haemodialysis' *Journal of Vascular Access*

Continued overleaf....

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BRS VASCULAR ACCESS Special Interest Group

BRS British Renal Society Multi-professional working

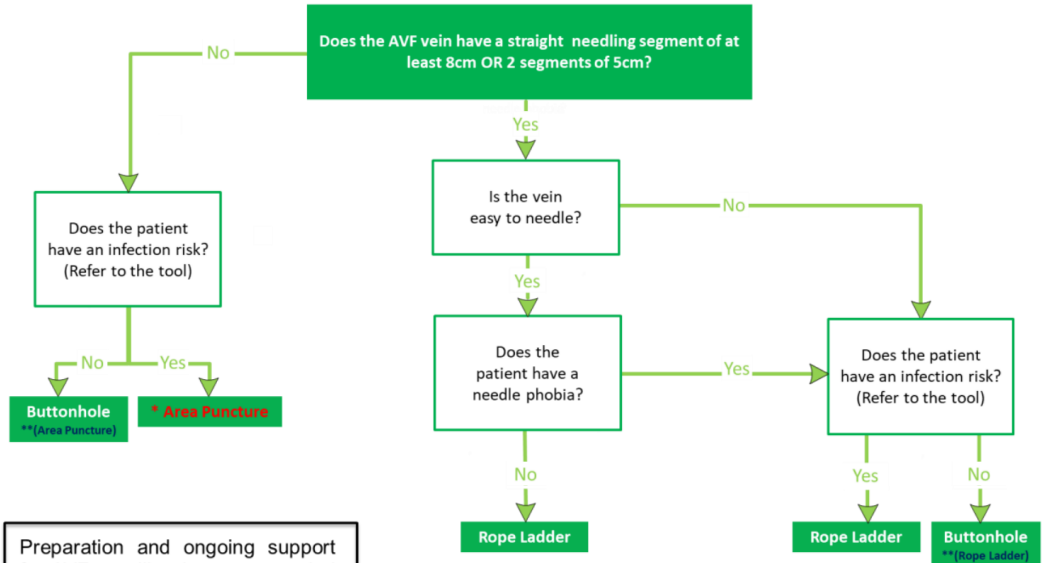
Vascular Access Society of Britain and Ireland VASBI

Appendix 4 – Needling Decision Making Model

NEEDLING DECISION MAKING MODEL

This tool has been developed to help haemodialysis nurses and patients decide which needling technique is best for each individual arteriovenous fistula (AVF). However, this assessment will be unique and individual to each patient, so you will still need to apply clinical judgement. You may diverge from the decision making aid, so consider how your clinical expertise can justify this divergence. In particular, patient's who self needle their AVF may prefer to use buttonhole needling technique, although this will still be related to personal consideration.

Arteriovenous grafts (AVG) are not included in this model. AVG always have a long, straight needling segment, so should automatically undergo rope ladder needling.



Preparation and ongoing support for AVF needling is recommended in all age groups. Coping techniques such as relaxation, distraction and play therapy should be considered.

* BRS and VASBI do **not** recommend area puncture. If this assessment results in area puncture, please refer to the 'Area Puncture Action Chart.'

** If your unit does not use buttonhole, then you will need defer to the technique in brackets in the relevant box.

Infection Risk Screening Tool

Criteria present: (Please tick)	Yes	No
Metallic Heart Valve		
Pacemaker		
Previous MSSA/MRSA bacteraemia		
Previous endocarditis		
Significant structural valvular heart disease		
MSSA / MRSA positive		
Mupirocin resistant MSSA		
Skin disorders causing itching or skin breakdown around cannulation sites		
Poor adherence to hygiene protocols		
Clinical Judgement/Other Considerations:		
On the basis of the above, this patient is / is not (delete as applicable) suitable for using buttonhole needling technique.		

If you would like training support on buttonhole cannulation, please contact Xtra-MED:
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