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Cannulation Workshop

EDTNA UK Seminar
BRS VA SIG

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What are the Challenges?

- VA & cannulation associated with significant morbidity
- Affects patient experience of HD
 - BFR, clearance alarms
 - Pain, discomfort
- VA care is poorly evidenced
- Are we really performing best practice everyday?



Aims of the Workshop

Aim: Back to Basics of Cannulation

- Based on BRS VA SIG draft Cannulation Recommendations
- 3 sections
 - Assessing AVF / AVG pre cannulation
 - Choosing the right cannulation technique
 - Planning cannulations

BACK TO BASICS
Patient assessment with
Vascular Access

Paula Debling

The purpose of assessment

- Essential component of the dialysis patient review- Renal Association (2015)
- Duty of care- education, assessment, surveillance, prompt referral
- **Access preservation**

What are the 3 main areas of concerns with vascular access?

Infection

Thrombosis

Stenosis

Fistula Assessment – Look, Listen, Feel

Look

Visually observe fistula and previous cannulation sites

- Integrity of skin overlying access
- Aneurysms
- Rashes

- Bruising
- Redness
- Signs of Infection

- Swelling
- Steal
 - Cold fingers or hand, blue/dusky fingers, reduced grip strength, sluggish cap refill, ask patient if pain or pins and needles

Feel

- Thrill
 - No pulsation / thumping

- Any lumps and bumps
- Any hard areas
 - Should feel soft and spongy

- Diameter of vein
- Length of vein
- Any areas where the vein dips away
- Tortuosity
- Collateral veins

Listen

- Normal sound



- Abnormal sound



<http://www.nrsg101.com/av-fistula.html>

Additional signs...

- **A drop in dialysis adequacy**
- **Prolonged bleeding from needle sites-
What is normal?**
- **Recirculation in access**
- **Changes in venous and arterial pressures** (measured at low blood flows at the beginning of each dialysis session)

Summary

- Infection- may lead to sepsis- ***do not cannulate***
- Aneurysms- vessel rupture, related to stenosis
- Stenosis- reduced efficiency of dialysis, vessel wall damage, clotting, limited access maturation, eventually thrombosis
- Thrombosis- failed access

Assess before cannulation – look, listen, feel
Detect signs of complications and treat pre-emptively

Cannulation Techniques

Katie Fielding

3 Cannulation Techniques

- Rope Ladder
- Buttonhole
- Area / Cluster Puncture

Rope ladder and buttonhole
prolong AVF / AVG life span

- Less complications
- Less aneurysm, stenosis
and thrombosis

Which techniques do you
use?



Case Studies

- 1) Which cannulation technique would you choose for your patient?
- 2) How would you ensure the technique is maintained through future cannulations?

Buttonhole

- Cannulate vein in same manner each time
 - Remove scab prior to cannulation
 - Enter skin in same hole
 - Same angle and direction
- Multiple tracks not BH
 - Higher infection risk
 - Area puncture



Rope Ladder

- At least 8-10cm cannulatable segment
- Cannulate progressively up the vein
- Each cannulation should be 0.5-1cm above previous cannulation
- **When you reach the top, start at the bottom again**
- The up and down approach leads to area puncture
- Arterial and venous sites should meet OR
- Be on completely separate sections (e.g. separated by bend in vein)



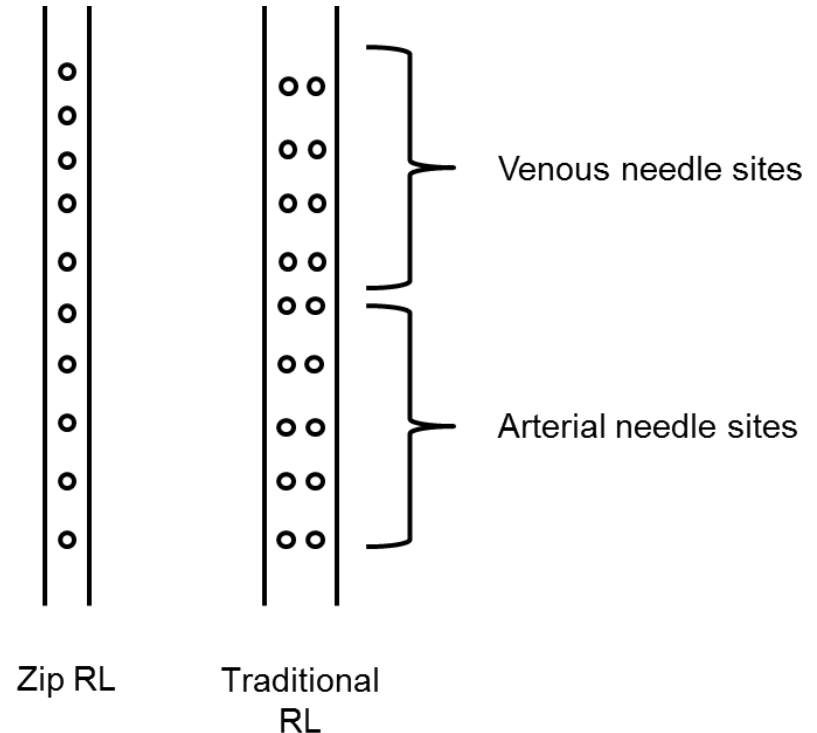
2 Types of Rope Ladder

Central RL - 'Zip'

- Vein diameter less than 9mm
- Each cannulation is above previous

Traditional RL – Side to Side

- Vein diameter 9mm or more
- Move side to side with cannulations as well as up
- Need to be careful not to degrade into area puncture



Area Puncture

- Cannulation in similar area of less than:
 - 5cm for single site
 - 8cm of both sites

How many units practice area puncture?

- 65.8% of cannulations are area puncture
- Area puncture associated with higher risk of VA failure

(Parisotto et al, 2014)



Barriers to Good Cannulation Technique

- Staff Confidence
 - Lack of Training
 - Lack of Good Assessment Pre-Cannulation
 - Harwood et al (2016) associated good pre cannulation assessment with good cannulation skills
- Patient Confidence
 - Patient Experience
- Suitability of vein
 - Lack of Planning Cannulations
- Interference from non-cannulation experts

Case Study Review

- Would you still use the same technique on the case study patient?



Planning Cannulations

Sarah Kattenhorn

Adult AVF / AVG Cannulation Technique Decision Aid

Introduction

This tool has been developed to help haemodialysis nurses and patients decide which cannulation technique is best for each individual arteriovenous fistula (AVF) or graft (AVG). This assessment will be unique and individual to each patient, but we have endeavoured to provide some guidance as to what should be considered when deciding on cannulation technique.

Question 1: Does your patient want to self-cannulate?

Yes

If your patient would like to self-cannulate, the best way to ascertain which cannulation technique is best for your patient is to discuss this with your patient.

Buttonhole technique can be used to promote self-cannulation, as it is considered an easy technique for patients to learn. However, this might not suit every patient. Some patients may prefer rope ladder or area puncture.

The decision aid tree can be used with the patient to help identify which technique will be best.

No

Please use the cannulation decision aid tree to decide which technique is best for your patient.

Your patient can still be involved in this decision and you can use the tree with the patient to help you make this decision.

The decision aid tree is there to help you identify which technique is best for your individual patient, but you will still need to apply clinical judgement. You may diverge from the tree, so consider how your clinical expertise can justify this divergence.

Adult Cannulation Technique Decision Aid Tree

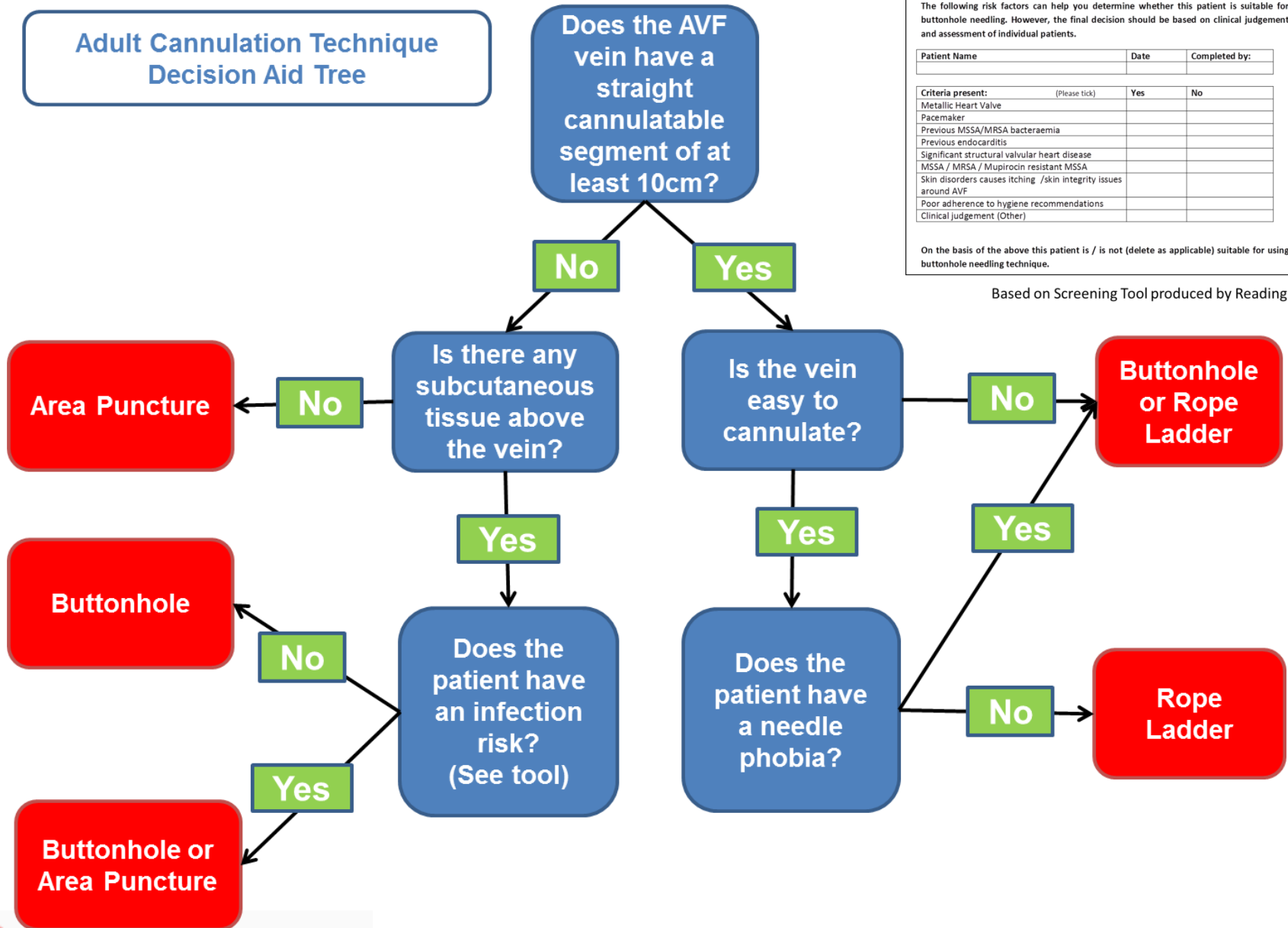
Criteria/checklist for use of buttonhole technique in AV fistulae

The following risk factors can help you determine whether this patient is suitable for buttonhole needling. However, the final decision should be based on clinical judgement and assessment of individual patients.

Patient Name	Date	Completed by:	
Criteria present:	(Please tick)	Yes	No
Metallic Heart Valve			
Pacemaker			
Previous MSSA/MRSA bacteraemia			
Previous endocarditis			
Significant structural valvular heart disease			
MSSA / MRSA / Mupirocin resistant MSSA			
Skin disorders causes itching /skin integrity issues around AVF			
Poor adherence to hygiene recommendations			
Clinical judgement (Other)			

On the basis of the above this patient is / is not (delete as applicable) suitable for using buttonhole needling technique.

Based on Screening Tool produced by Reading Renal Unit



The goal should be to
cannulate all fistula and graft
safely without causing damage
to the patients lifeline!

Patient engagement and involvement/Shared Care

- Early patient engagement is critical
- Ideally preparation's should start before starting haemodialysis
- Patients who have an increased awareness and are engaged with clinical staff can be expected to have better outcomes for the survival of their fistula

Nurses Responsibility

- Competent in assessing the fistula
- Competent in techniques and opting for the correct technique for individual fistula
- Competent in managing complications
- Competent in patient education

Discussion

- Every fistula is individual
- Should there be a universal care plan?
Including theatre notes and photographs?
- How often should this be updated?
- Should there be a universal RAG rating system to assess fistulas?
- Regular competency updates?

Summary

- Assess AV fistula / graft prior to cannulation
 - Look, listen, feel
- Think about the cannulation technique you use
 - Are you really doing rope ladder
 - What is most suitable for the AVF/G
- How will continue to use that technique
 - Plan your cannulations

What are the Challenges?

- Are we really performing best practice everyday?
- How will you change your practice?

