Cannulation mapping: how does it help dialysis staff?

Cannulation mapping:
How does it help dialysis staff?

- Introduction
- Definition
- Who cannulates the access
- Cannulation mapping
- Critical components
- Tools for evaluation
- Site marking
- Real time guidance?
- Patient education
- Communication
- Summary

Functional vascular access

(Definition of a vascular access: Access capable of delivering flow adequate to provide prescribed dose of HD)

Dialysis prescription in US is 350–450 ml/min

- Venous side
- Arterial side

350–500 ml/min
350–500 ml/min

Needle stick segment (NSS)

What is cannulation?

Insertion of a needle into the vessel to allow blood to be suctioned out by the dialyzer pump and returned into the blood vessel

Who cannulate AV access?

Dialysis unit staff comprise of RN/LPN and technicians

Majority of the cannulators are performed by technicians

- Prerequisite
  - High school diploma
  - Optional MA,CNA
  - None

- What training?
  - Didactic
  - No simulation
  - On site

What are they expected to cannulate?

AVF
What is cannulation mapping?
Any guidance that facilitates reliable cannulation

How can this be achieved?

- Marking & documentation
- Realtime guidance
- Off site
- On site

1. Nature of the conduit
2. Flow direction
3. Cannulation segments
4. Depth of the vein
5. Instruction to cannulate

How to evaluate, document and communicate?
Collect required information for successful cannulation
- Volume flow
- Direction of flow
- Diameter of the NAS
- Length of NAS
- Depth from skin
- Tissue incorporation

Duplex Doppler Ultra Sound (CDDUS) maturation evaluation

Needle access forms with the information and permission for needle access

Marking and pictorial depiction

CDDUS provides an Objective evaluation
Inflow, outflow size & depth
Flow volume

Needle access instruction form

Document & Communicate
Real time US mapping
Getting cannulators to see real time US and site marking

Real time mapping
Advantages
1. Assess direction of flow
2. Size, length and depth of cannulation segment
3. Cannulate deep veins
4. Less risk of infiltration
5. Decreased # puncture attempts

Disadvantages
1. Cost of equipment
2. Personnel training

Cost savings with hospitalization, loss of access, need for catheters, less need for superficialization. Patient safety benefit.

Summary
- Morphology of the needle access segment of Any AV access can be varied and elusive
- Existing training pathway for cannulation personnel is inadequate to produce expert cannulators
- Any cannulation mapping is of value to increase cannulation success and patient safety
- US is an excellent tool for cannulation mapping
- Real time of site US is useful to provide cannulation guidance
- Availability of real time US guidance in dialysis units is a cost saving measure that could significantly impact patient safety and satisfaction

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