The Current Status of AV Fistula Cannulation Training: Can We Do Better?

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Disclosures
• TMC LLC- Founder and shareholder

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Patients’ Perspectives on Hemodialysis Vascular Access

• Emotional impact of cannulation
  – Debilitating fear of needles, pain, and needling complications

• Wary of unfamiliar provider
  – “I often felt like a “dummy” used for practice.”
  – “Missed sticks are the fault of inexperienced dialysis staff”


Disclosures

• Lee et al. 2006
  – 5.2% annual rate of major AVF infiltration
  • Fistula thrombosis 26%
  • Prolonged CVC dependence

• Van Loon et al 2009
  – Hematoma formation predictor of CVC insertion

Moving Beyond the “Perpetual Novice”

• Problems
  – Limited learning opportunities
  – Patients don’t want new nurses training on them
  – Time constraints for education
  – Many nurses become less comfortable with cannulation over time

• Solutions
  – Ongoing cannulation education/practice-simulation
  – Requirement for all nurses/techs regardless of skill level


Cannulation Training

• Cannulation camps
  – Expensive
  – Limited training

• Simulators
  – Unrealistic
  – High-maintenance
  – No thrill, no pulse

• Practice on patients!
Cannulation Simulator Development

- Hypothesis - The perpetual novice is unable to "visualize" the fistula based on palpation alone.

Ideal Cannulation Simulator

- Teach/practice the 4 Core cannulation steps
- Affordable
- Low maintenance, fluidless
- Range of skill levels
- Alarm to prevent back-wall sticks
- Trains stenosis identification
- Palpable thrill or pulse
- No visual clues to the AVF location/depth
Ideal Cannulation Simulator

- Teach/practice the 4 Core cannulation steps
- Affordable
- Low maintenance, fluidless
- Range of skill levels
- Alarm to prevent back-wall sticks
- Trains stenosis identification
- Produces a realistic thrill
- No visual clues to the AVF location/depth

Current Status & Future Plans

- Completed development of a device that meets manufacture specifications
- Initial testing by a large dialysis company completed. Negotiating first purchase order
- Developing a prototype to train self cannulation
- Joseph Singapogu, PhD- received a NIH K-1 award to study cannulation