Venous Needle Dislodgement

Michael Morales, CBNT, CHT, CCNT, CCHT-A

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Overview

- Background
- Culture of Safety
- Treatment of VND
- Risk Factors and Best Practices
- Education and Tools
Background (U.S. Renal Data System, 2012)

**Incident**
- Hemodialysis (2011: 103,744)
- Peritoneal dialysis (7,438)
- Total dialysis (112,788)
- Transplant (2,855)

**Prevalent**
- Hemodialysis (2011: 395,656)
- Peritoneal dialysis (31,684)
- Transplant (185,626)
- OPTN transplant wait list (90,474)
Background (con’t)

- Research Indicates VND as Low Concern (Hurst, 2012)

- Heightened Morbidity/Mortality Without Early Detection and Treatment (Veterans Administration Central Office, 2008)

- 18.9% Seldom or Never Concerned

- 200 Venous Needles Dislodge Per Day (Hurst, 2011)
Background (con’t)

- **Consequences**
  - 2 Serious Adverse Outcomes Per Day (Hurst, 2011)
  - 2 Deaths Per Week Resulting From VND (Hurst, 2011)
  - 414 Episodes of Serious VND 10-33% Mortality Rate≈136 Deaths Linked to VND (Sandroni, 2008)
  - Lack of Exact VND Figures

The data set is made up of voluntary reports. Presentation of this data is not intended as representative of entire VND occurrence rates.
Costs

- Medical Care (Hurst, 2011)
- Lost Treatments
- Patient’s Loss of Personal Income (CMS, 2011)
- Liability Claims (Fields, 2010)
- Brand Image Damage
A Culture of Safety

- *Individual and Group*
  - Values
  - Attitudes
  - Perception
  - Competencies
  - Patterns of Behavior
A Culture of Safety

- Acknowledgment of the high-risk nature of an organization’s activities and the determination to achieve consistently safe operations.

- A blame-free environment where individuals are able to report errors or near misses without fear of reprimand or punishment.

- Encouragement of collaboration across ranks and disciplines to seek solutions to patient safety problems.

- Organizational commitment of resources to address safety concerns.
Safety Cultures

- Increasingly Informed: Safety is how we do business round here.
- Proactive: We work on the problems that we still find.
- Calculative: We have systems in place to manage all hazards.
- Reactive: Safety is important, we do a lot everytime we have an accident.
- Pathological: Who cares as long as
- Generative: Increasing Trust
Treatment

- Stop Blood Pump and Clamp Venous Line
- Call for Help, Don PPE
- Locate and Secure Dislodged Needle
- Cover Site of Dislodged Needle and Apply Pressure
- Return Blood Through Arterial Needle at Low BFR
- Treat Symptoms and Replace Volume
- Draw Labs and Assess Blood Loss
- Report and Document Event
Risk Factors and Best Practices

- **Insufficient Staff Ratios** (Mora-Bravo et al., 2008)
  - Short Handed
  - Patients Requiring Closer Attention
  - Long Breaks Leaving Double Coverage
  - Lack of Attention on Clinic Floor

- **Best Practices**
  - 4-to-1 Ratio (Van Waeleghem, 2008)
  - 2-to-1 Ratios for High-Risk Patients
  - Costs of VND Outweigh the Cost of Increased Staffing
Risk Factors and Best Practices

- **Inadequate Fixation**
  - **Ineffective Preparation of Access Site**
    - Individual Preference (Patient or Provider)
    - Excessive Sweating, Wet Access
  - **Poor Attention to Taping**
  - **Difficult Access Resulting in Compromised Fixation**
    - Sores, Thinning, Protrusions, Hairy Access, Skin Allergies
    - Elbow and Upper Arm Access
    - Deep Vessels
    - Propped Needles
Risk Factors and Best Practices

- **Best Practices** (Van Waeleghem, 2008)
  - Wash, Dry and Remove Residual Tape Residue
  - Chevron Technique
  - Consider Gentler Tape
  - Discourage Tabbing
  - Re-Tape When Necessary
  - Longer Needles High Quality Tape
  - Follow Taping Protocols
Risk Factors and Best Practices

- **Inadequate Securement of Bloodlines**
  - Lines Placed Without Slack
  - Lines Across the Body

- **Best Practice**
  - Machine on Same Side as Access
  - Anchor to Patient
  - Clips on Blood Lines
  - Slack for Movement (Van Waeleghem, 2008)
Risk Factors and Best Practices

- **50% Obstructed View of Vascular Access** (Veterans Administration Central Office, 2008)
  - Covering up With Blanket
  - Clinician Not in Visual Range

- **Best Practice** (Renal Physicians Association, 2010)
  - Patient and Clinician Education on Access Visibility
  - Keep Access Uncovered and Unobstructed
  - Routine Access Checks Every 15 Minutes
**Failed Mechanical Detection** (Hurst, VND 2012)

- Untested Machines
- Wide Alarm Windows (Van Waeleghem, 2008)
- Low Pressure Access in 50% of Dialysis Patients
- Smaller Gauge Needles=High Resistance (Polaschegg, 2010; Hurst, 2011)
- To 10 Technology Hazards-Nuisance Alarm Fatigue (ECRI, 2012)
Risk Factors and Best Practices

- **Best Practice**
  - Set tight asymmetric venous pressure limits (Van Waeleghem, 2008)
  - Educate staff on machine limitations
  - Ensure clinic policy on response to all alarms
  - Additional Measures for:
    - Access pressure <30mm/hg (Polaschegg, 2010).
    - Small bore needles
Patient Requiring Close Monitoring

- Patient's not fully conscious or very quiet (often elderly) patients who do not speak up when something is wrong.
- Patients who consistently ignore the need to keep their vascular access uncovered (e.g. by pulling a blanket over it).
- Patients with small blood leakage along the venous needle (this could be a result of proximal stenosis, central venous stenosis or a high dose of heparin).
- Patients with difficult access (such as deep angle of cannulation, difficult location of access).
- Patients with excessive hair and patients prone to sweat (such as diabetics in case of hypoglycemia).
- Patients who are allergic to standard tape used to secure venous needles.
- Patients who consistently ignore the need to keep their vascular access uncovered (e.g. by pulling a blanket over it).
- Patients who perform home dialysis alone or overnight.
Best Practices

- Enhanced Staffing Ratios
- Consistent Taping and Securement
- Blood Loss Monitors
- Employ additional precautions for patients with mental, cognitive, and neurologic impairments, and those with dementia that are at particularly high risk for VND. This might include additional staffing, blood loss monitors and other best practices mentioned throughout this paper.
Education and Tools

✓ **Staff**
  - Annual Education
  - VND as Part of Culture of Safety
  - Analysis of Risk Factors and Best Practices

✓ **Patient**
  - Access Visibility and Observation
  - Report Appropriately
Conclusion

- Overlooked Research
- All Hemodialysis Patients are at Risk
- Serious Consequence
- Increase Staff Vigilance
- Improved Staff/Patient Education
- VND Addressed in Culture of Safety
Thank You!!!
Contact

- E-mail dialysistutor@yahoo.com
- Dialysis Education Services
- 16700 Bellflower Blvd Suite B, Bellflower CA 90706
- Office 562.376.4181
References


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