



## **Venous Needle Dislodgement**

Cleveland Clinic

### **Contact Information**

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<b>Category:</b>	Venous Needle Dislodgement
<b>Type of Facility:</b>	Hospital-based hybrid unit (inpatient and outpatient)
<b>Number of Patients:</b>	30 - 40 treatments per day
<b>Number of FTE:</b>	30

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## **Background**

The Cleveland Clinic is a hospital-based hybrid unit providing both inpatient and outpatient hemodialysis. The unit cares for high-acuity patients, frequently with altered mental status, with a higher than average risk for Venous Needle Dislodgement (VND). While the unit viewed VND as something that should be avoided, they were not actively working to prevent its occurrence. In December 2009 and again in January 2010, Cleveland Clinic experienced separate VND incidents, one of which led to a Code Blue situation and subsequent hospital ICU admission.

To address the risk of VND, the dialysis staff composed of Martin Lascano, M.D. and Michael Andersen, R.N., management (Nancy Buchler, R.N. and Melissa Nelson) and the Risk Management Department (Victoria Cash) developed and implemented a strategy for actively preventing VND.

In February 2010, they introduced a quality improvement project aiming to reduce VND rates, with a goal of zero undetected VND episodes. A review of internal data showed 3 undetected VND episodes during the prior 3 months (2 class IV hemorrhages), incidence of 1 VND per 538 HD treatments.

## **Policies and activities implemented**

As part of the quality improvement, the Cleveland Clinic implemented the following VND-prevention techniques:

- Standardized cleaning and disinfection procedures of the arteriovenous (AV) access and surrounding skin.
- Unique anchoring needle taping (silk or plastic) technique, and a standard protocol for anchoring the blood lines to the patient.



- Set the lower limit of the venous pressure alarm as close as possible to the current venous pressure.
- Ensured that AV access and needles were visible at all times
- Used a fiber optic blood detection device (Redsense Alarm, Redsense Medical AB, Halmstad, Sweden) for all patients with AV access. The device has a single-use sensor patch placed over the venous needle site where it will absorb blood if VND occurs, emitting an audible alarm
- Modified staffing levels (pre-project nurse/dialysis technician:patient ratio of 3:1 → new ratio 2:1) with the addition of a quality control nurse, and ensuring adequate staff-to-patient ratios to allow routine AV access monitoring during HD.

All staff were trained in VND prevention during a one-month time frame. Each staff member was required to attend a 1 hour in-service presentation on the risks of VND in the hospital-based dialysis population. After the presentation, staff members were required to demonstrate each step of the newly designed protocols. Each staff member was then observed three times for proper implementation of the complete procedure. Competency certificates were awarded as staff completed the requirements.

Risk management personnel participated in the creation of the new protocols, development of educational materials and technical support.

Patients were also educated about the risks of VND and reminded to keep their access visible at all times.

### **Outcomes**

Between February 15 and December 31, 2010 there were zero undetected VND episodes and the overall occurrence dropped from 13 in 2009 to 4 in 2010 (incidence 1 VND per 1750 treatments, relative risk reduction of 70%).

Findings from the quality improvement effort were presented as a poster session at the American Society of Nephrology's Kidney Week in November 2011. [Lascano M, Andersen M. Venous Needle Dislodgement Prevention in Hospital Based Hemodialysis. Poster session presented at Kidney Week 2011. American Society of Nephrology. 2011 Nov 8-13; Philadelphia, PA. (Abstract Number: 24941; Poster Board: FR-PO1697)].

### **Recommendations**

Dr. Lascano recommends utilizing a three-prong approach for implementing a patient safety improvement project.

1. Examine the evidence base: Research how others have dealt with the problem, common practices, and innovations.

## Keeping Kidney Patients Safe

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2. Solicit staff input: There must be consensus among the staff about how to solve the problem. A group-derived solution allows ownership and helps unify the purpose. This cannot be just one person's view of how the problem should be solved.

3. Obtain physician buy-in: As in any "change of practice" there must be validation from the people at the top that this is important to them and they expect that everyone will follow through on implementation.