



Shifting the Standard of Care in IV Dislodgement Prevention

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Accidental dislodgement of IV catheters is a widespread but often unrecognized issue in vascular access device (VAD) care. Approximately 70 percent to 90 percent of hospitalized patients in the U.S. receive IV therapy at some point during their stay, and current literature estimates overall catheter failure rates as high as 50 percent.¹ Of the factors contributing to catheter failure, dislodgement is the most common. One reliable study lists dislodgement as the reason for restarts in the majority of catheter failures.² Given the prevalence of both IV therapy and catheter failure as a result of dislodgement, this issue has huge implications for both patient safety and healthcare costs.

Dislodgement typically results in a delay in the administration of necessary treatment, a time-consuming IV restart and a potentially more invasive procedure that can lead to greater stress and anxiety for the patient. Vessel health and issues of preservation are also impacted, as dislodgement can damage veins and cause loss of peripheral IV site integrity, along with increasing the risk of complications like phlebitis, infiltration and infection. The most serious risks of IV dislodgement include hemorrhage, air embolism and bloodstream infection that may result in more serious illness for the patient and even death.

Dislodgement also contributes to rising healthcare costs. Accidental dislodgement events are estimated to affect more than 75 million catheters per year.^{1,3-4} That translates to an annual estimated cost of more than \$1.8 billion. Significant healthcare savings can be realized if even a small percentage of dislodgement is reduced.

Hiding in Plain Sight

According to a recent clinical survey, led by this author, dislodgement is seen in virtually every setting, in every device, and by every type of provider. The survey, sponsored by Linear Health Sciences and published in the *Journal of the Association for Vascular Access (JAVA)*, was conducted to assess clinical perceptions of the incidence and risks of IV dislodgement. Of the 1,561 nurses and vascular access specialists surveyed, 68 percent reported that accidental dislodgement occurs “often,” “daily,” or “multiple times daily” in their institutions. Almost all respondents (>95 percent) considered IV dislodgement a patient safety risk.⁴

Awareness of this issue seems to vary among clinicians. Moreover, a lack of auditing and documentation procedures to track accidental dislodgement makes it difficult to identify the true incidence and solutions to

improve outcomes. For the vascular access community to effectively address IV dislodgement, we first need to bring transparency to this “accepted but unacceptable” issue — which includes highlighting the prevalence and causes of dislodgement — as well the clinical and economic consequences.¹

Once this problem and its associated complications are more widely acknowledged, solutions can be applied to reduce the incidence of accidental dislodgement.

Step 1: Focus on Securement

Multiple factors contribute to IV dislodgement. Respondents in the clinical survey identified the top three causes as: confused patient (80 percent), patient physically removes catheter (74 percent), and loose IV catheter tape or securement (65 percent).⁴ Taking steps to secure catheters with consistent practices is the first way clinicians can address this issue.

Without proper catheter securement or stabilization, perspiration, hair growth and skin oils can easily cause a dressing to lose its adhesive qualities. This is especially true for peripheral IV (PIV) catheters, which are placed in the hands or arms. These areas see a lot of movement from normal patient activity, thereby increasing the chances for dislodgement. According to the clinical survey, PIV catheters are the most commonly dislodged device.⁴

Securement techniques and dressings are used in order to stabilize the device and hold the catheter in place, whether it’s a PIV or central venous catheter (CVC). The most basic securement methods are either sterile tape and a transparent dressing placed on top of the IV to stabilize the catheter and protect the insertion site. A standard transparent dressing is a flat film dressing that is applied over the catheter insertion site. Other dressings have a built-in securement method that can provide more stability than a normal transparent dressing. However, these methods are sometimes not strong enough to secure the catheter and can frequently result in dislodgement, particularly if done incorrectly or inconsistently.

Research shows that engineered stabilization devices, as well as subcutaneous securement (primarily for CVCs), provide better securement and stabilization.⁵⁻⁹ These devices may also afford better control of the catheter and connected tubing than tape or transparent dressings. These engineered technologies include adhesive-based anchoring devices, as well as devices that allow the catheter and/or tubing to be positioned and held in place either by a molded technology or a Velcro-type surface. In fact, the

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Infusion Nurses Standards of Practice recommend the use of engineered stabilization devices for better outcomes with all types of VADs.⁵

The move toward a “clinically indicated” PIV catheter replacement strategy has brought even more attention to the importance of securement. Until recently, PIV catheters were replaced every 72 to 96 hours. However, based on numerous randomized trials, the Infusion Nurses Standards of Practice and the Centers for Disease Control and Prevention (CDC) now support the replacement of well-functioning catheters only when clinically indicated.^{5,10-11} This shift has extended catheter dwell times, with many institutions leaving catheters in place for a week or more. As a result, there is greater focus on the need for more consistent securement and dressing practices.

Step 2: Standardize Policies and Procedures

While securement devices can certainly help, their use does not always prevent dislodgement. This is because of lack of standardization in practice usage, application, assessment and management of catheter securement and dressings. In any given institution, there is a great deal of variety in IV insertion and securement methods, as well as management of the tubing during the course a patient’s treatment. For instance, patients are often disconnected from continuous infusions to allow for easier bathroom access. The disconnection process is not always done correctly, or even in an aseptic manner. This lack of standardization can lead to dislodgement and even other complications, such as infection.

A key practice for ensuring catheter safety is for institutions to adopt a set of policies and procedures, including a standardized approach for the insertion and securement of all types of catheters. The approach should also include a clear process for disconnecting patients from their IVs in a way that covers sterile connections and maintains infection prevention principles. To reduce accidental dislodgement, there needs to be a consistent process, including education, in which every clinician within the facility is trained to insert, secure and manage catheters in the same way.

Step 3: Technologies to Prevent Dislodgement

Unfortunately, proper securement and standardized policies cannot address the one variable over which clinicians have the least control: patients themselves. Based on the clinical survey results, patient behavior accounts for two of the top three causes of dislodgement. Catheters that are correctly secured can nonetheless become dislodged when greater forces are exerted upon the catheter than the securement method was designed to withstand. These forces can be intentional or accidental. They can result from patients rolling over in bed or catching their lines on bed rails, transfers of patients to/from different beds, fidgeting pediatric patients, or disoriented patients pulling out lines.

A new group of technologies, known as set protection devices, has been specifically created to address this type of dislodgement. Using a safety release valve embedded in the tubing, the technology is designed to allow for a disconnection of the tubing when undue pressure or pull is placed on it. The safety release valve breaks away and

seals off both sides of the tubing. This technology shuts off medication flow and preserves the catheter, while also allowing both the catheter and tubing to be protected in an aseptic manner. By preserving the entire IV set, this technology acts as a safeguard against patient or staff accidental dislodgements. While not yet commercially available, set protection devices may eventually offer hospitals and their patients a way to help prevent dislodgement and its potentially serious consequences.


Step 4: The Importance of (Re)Education

Perhaps the most crucial best practice involves education and training on the frequency and impact of dislodgement, and the steps that can be taken to minimize the risk. Effective education will raise awareness about the incidence of dislodgement, as well as ensure proper securement techniques are employed, policies and procedures are followed, and sterile supplies and technologies are used correctly. Education must also emphasize consistent practices that follow the institution’s policies for insertion, securement and management of IV catheters. The importance of education cannot be overstated, as it ties all other practices together.

In addition, education must be continuous and ongoing to remain effective. This not only accounts for the staff turnover that is inevitable in any institution, but also because infection prevention research shows the effects of education are temporary.¹²⁻¹⁴ Typically, practices begin to degrade after a period of two to three months post-education, and outcomes suffer as a result.¹⁴ Education must be done repeatedly to maintain good outcomes. To be most effective, institutions must offer a variety of educational opportunities on different platforms (e.g. computer-based as well as in-person, hands-on training) to reach and engage everyone.

Looking Ahead: Better Auditing, More Research

Clinicians need answers to direct best practices. Effective auditing and documentation will be the foundation of better vascular access device care in the future, as it will increase awareness and identify causes that lead to dislodgement. Monitoring complications and causes for catheter failure are necessary for any improvement in outcomes.

There is a lack of high-level research establishing methods to protect patients and guide management of VAD sites. The Alliance for Vascular Access Teaching and Research (AVATAR) has begun to bridge this gap with the first IV securement and dressing research in over 20 years.^{6,15-17} However, we must focus greater research attention on dislodgement in terms of frequency, causes and impact on safety to continually improve clinical outcomes, reduce healthcare costs, and — most importantly — protect our patients. 

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