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Accidental Intravenous Catheter Dislodgement: Incidence and Perceptions of Safety at the Bedside

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Background

Purpose: The purpose of this study was to determine the incidence and types of accidental dislodgement of intravenous devices observed by nurses in the acute care setting. Intravenous access is established and maintained in more than 70–90% of acute care patients in the USA



(Helm 2015). Each intravenous access device poses risk to the patient. Dislodgement rates have been estimated at 1.8-24%, representing 5% of all intravenous catheters, with estimated events per year of greater than 5 million (Dugger, Macklin et al. 1994, Wood 1997, Wood and Bowe-Geddes 1997,

Sheppard, Ledesma et al. 1999, Schears, Liebig et al. 2000, Yamamoto, **02** – The majority of respondents were nurses (1,340), second largest Solomon et al. 2002, Moureau et.al. 2002, Moureau and Jannuccci 2003). group was nurse practitioners/physician assistants (45). All professions While intravenous devices have become a staple in administration of included in survey had representation (nurses, physicians, NP/PA, infusion therapy in acute care and home care settings, complications radiology, respiratory and other). The other category mainly consisted of those professionals working in a combination of care settings. such as accidental catheter or tubing dislodgement potentially increase the risk of morbidity and mortality (Frey 2001, 2006).

Methods

A survey was approved through IntegReview research review board with exemption for consent. The voluntary self-administered guestionnaire was an online survey using the Survey Monkey webbased program. The survey was piloted, validated and distributed to a large cohort of nurses to gain perceptions on occurrence of accidental catheter dislodgement with patients within their clinical setting. The survey was targeted to two groups of nurses, those working directly at the bedside and those nurse specialists performing replacement of dislodged devices. Data collected assessed opinions and experiences of clinicians on dislodgement, frequency of occurrence per device and impact on patient safety. Analysis of data was performed quantifying dislodgement question results from the respondents.

Results

The results of this survey and study indicate a significant percentage of **Q10** – Most respondents chose confused patients as the most common accidental dislodgement is observed with both peripheral and central reason for dislodgement 81% followed by patient removes 74% and venous devices by nurses providing direct patient care and replacement securement was loose 65%. of intravenous catheters.

Survey Result Highlights:

- 1567 respondents for 19 questions, survey distribution of 18,895
- 58% of those surveyed reported accidental dislodgement as occurring daily or often



•	Short peripheral catheters were the most common type of dislodged
	device with frequency of 96.5%

- Many factors contribute to accidental dislodgement with 23–81% respondents listing ten common factors
- The impact of dislodgement is reflected in replacement time for short PIVs of 6-20 minutes as reported in 68% of those surveyed
- Dislodgement is always considered a safety risk for 41% of clinicians and always or often in 66%

Limitations: Survey research was limited by the distribution group, the number of respondents and the anecdotal nature of the responses. Rather than pure quantitative data collection, surveys provide a snapshot in time of the opinion of the target group.

Summarized Details of Survey Results

03 – Largest percentage of years of experience was greater than 20 (49.7%).

Q4 – Age group fairly even distribution of 31-70

Q5 – Broad areas of specialty with many comments listing additional specialties such as Anesthesiology, Neonatology, and Home Health/ Infusion.

 $\mathbf{06} - 85\%$ were female

Q7 – Frequency of accidental dislodgement represented often/daily and multiple times a day with 68.38% (Daily and Often = 58.7%)

Q8 – Types of device experiencing dislodgement were all types listed. Most common short peripheral catheters at 96.5%.

Q9 – Frequency of dislodgement by type of device fell to short PIV as 58% very often and often. Other devices had greater percentage in sometimes and rarely. Pheresis catheters were strongly in rarely or never 95%.

Q11 – Quantifying time spent replacing a short PIV fell into two categories of 6-10 minutes 31% and 11-20 minutes 38%.

Q12 – Determining if dislodgement is perceived as a safety risk for sudden removal of a catheter was listed as Always in 41%, Often 25% and Sometimes 27% which supports the statement. Few respondents said rarely or never (less than 6%).

Q13 – Is dislodgement considered a significant unaddressed problem at their facility. Respondents said yes to strongly agree or agree in 50% of short PIV cases, 27% of midline, 32% in PICCs and 23% with all CVCs.

Q14 – Even with securement are catheters dislodged, respondents said yes to sometimes, often and very frequently in 69% of cases.

Q15 – Considerations for consequences of dislodgement were mainly focused on staff priorities of need to place a new device 97%, interruption of treatment 97%, loss of access site 94%

Based on the above results the majority of respondents agreed that dislodgement was a common occurrence, especially with short PIVs and one that constituted a safety hazard. The impact of dislodgement creates delays, increased time to new device insertion and difficulties finding and preserving access.

Takeaways

Survey provided a clinician view of frequency of dislodgement with vascular access devices and their perceptions of impact on treatment process and patient safety.

In your clinical experience caring for patients, how often do you see accidental dislodgement of any IV catheter? (n=1,341)



Individual Comments

These occurrences should be tracked since little research is done on this topic.

We see many problems with phlebitis and dislodgement because IVs are left in antecubital.

Often times midlines are found to have incorrect securement or dressing not intact causing dislodgement.

Education is needed for bedside nurses. 'dislodgement causes unnecessary emergency room visits.

Securement of PIVs is inconsistent.

Conclusion

The study represents the results of a survey quantifying incidence and perceptions of accidental dislodgement through critical care and vascular access specialist's perspective. Accidental dislodgement impacts the patient by increasing the risk of complications through the necessity to restart the intravenous device, the potential for blood loss and injury with the dislodgement and more serious complications of air emboli associated with central venous devices. Further research is needed quantifying incidence of catheter dislodgement, the safety risks posed by these events, and solutions for avoidance.

Which types of catheters have you seen accidentally dislodged? (check all that apply) (n=1,345)



How often does an accidental IV dislodgement occur in each of the following? (n=1,342)



In your experience, what are the most common contributors of accidental dislodgement? (check all that apply) (n=1,333)



On average, how much time is spent replacing a short peripheral catheter that was accidently dislodged? (n=1,331)



Rate the following statement: "Accidental dislodgement is considered a safety risk for patients experiencing sudden (partial or complete) removal of a catheter." (n=1,336)



What are the consequences of accidental catheter dislodgement? (check all that apply) (n=1,340)



In your experience or research, are IV catheters accidently dislodged even when securement/stabilization devices are used (stabilization device is defined as added securement, dressing i.e. StatLock, Velcro, anchor pad or similar catheter securement or dressing designed for securement)? (n=1,329)

