Northeastern University

Bouvé College *of* Health Sciences

# *The use of a novel device to reduce downstream occlusion alarms on IV smart pumps*

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## BACKGROUND

Alarm fatigue, which results from the excessive number of non-actionable alarms produced by medical devices in acute care settings, has become a well-recognized patient safety issue. Outside of the critical care setting, IV infusion pumps represent the most common source of alarm fatigue. The issue of alarm fatigue is so concerning that it is now a Joint Commission requirement for hospitals to implement policies to address unnecessary alarms.

The main goal of our project was to reduce the number of non-actionable downstream occlusion alarms. Our secondary goal was to collect feedback from the staff on clinical usefulness and patient satisfaction.

## METHODS

We collected 1-week of baseline data on IV infusion pump alarms data in a large university teaching hospital on one general medical-surgical unit and one transitional care unit, for a total of 86 beds. We then implemented the use of a novel device designed for IV catheter stabilization and patient comfort. The device is soft, flexible and allows for visualization of the IV insertion site. Education on device use was provided to all staff, who were then instructed to use the device on all hand, wrist and antecubital peripheral IV sites. A total of 250 devices were used.

## RESULTS

Comparison in alarm frequency between the baseline period and the 4 weeks of device implementation are shown on Figure 1.

A summary of the staff feedback is provided in Table 1.

**Figure 1:** IV infusion pump alarms before and after device implementation

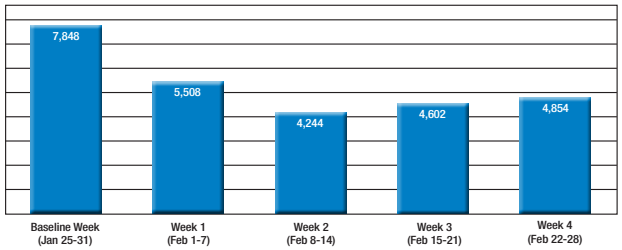



**Table 1:** Summary of staff feedback

| Question | Yes | No | NA |
|---|---|---|---|
| Reduce occlusion alarms | 37 | 0 | 0 |
| Cover/protect site adequately | 34 | 1 | 0 |
| Reduce patient tampering/dislodging | 28 | 1 | 2 |
| Reduce patient anxiety/increase comfort | 34 | 0 | 1 |
| Reduce the need for IV reinsertion | 29 | 2 | 0 |
| Increase patient satisfaction | 31 | 2 | 0 |
| Save time | 28 | 1 | 0 |

## CONCLUSIONS

Data on alarm frequency support that we were able to achieve reductions in IV infusion pump alarms of 30-46% with the use of the device as compared to baseline.

Feedback from staff support a high level of satisfaction regarding clinical usefulness and patient satisfaction.

*An electronic copy of the poster can be found at the following link:*
**https://www.dalemed.com/assets/NortheasternUniversity_HorizonsPoster.pdf**

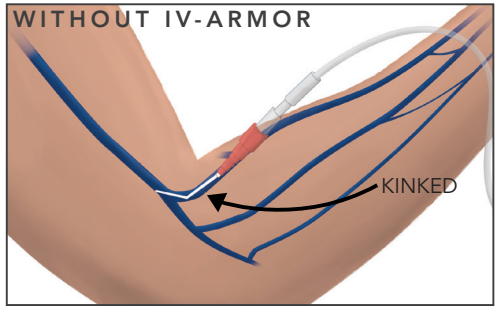
# IV-ARMOR®

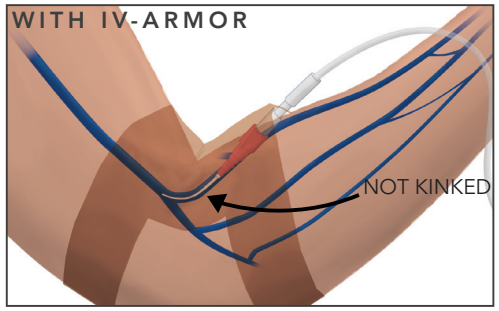
Preserve the site, Guard against occlusion

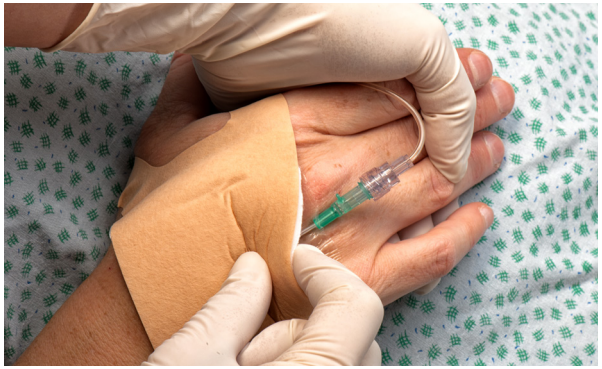
Flexible Protective Overlay

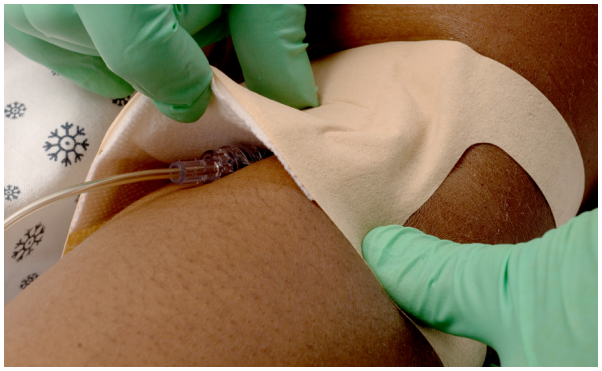
Dale's IV-ARMOR® is the ideal way to maximize IV patency while protecting the site from patient tampering. The flexible protective overlay minimizes downstream line occlusions caused by patient movement without needing a stiff immobilizing device.

IV-ARMOR reduces the introduction of infection associated with IV reinsertion.





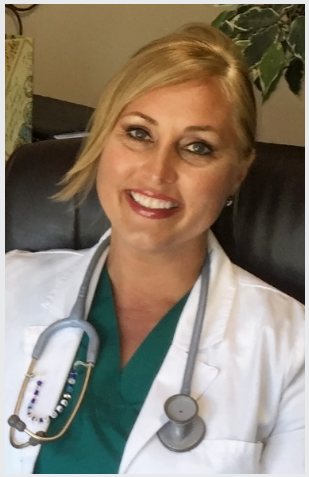
**The stretch material allows the clinician to view the site.**

- Helps maintain a continuous IV flow while protecting and preserving the IV site
- Reduces the number of IV restarts, which decreases risk of infection
- Saves nursing time and reduces alarm fatigue
- Allows for patient movement while reducing downstream occlusion alarms caused by movement
- Improves patient comfort without the need for a stiff immobilizing device
- Reduces risk of dislodgement from picking and pulling of the IV by confused patients
- Keeps IV out of site for needle phobic patients
- 3M Cavilon™ No Sting Barrier Film wipe included with each device
- Skin friendly adhesive

| ORDERING INFORMATION | | |
|---|---|---|
| **Product Number** | **Size** | **Quantity** |
| 675 | One Size Fits Most | 10/Box |

## From the Inventor

Andrea Wilborn, RN



Until now, patients requiring IV lines have to either limit their mobility or risk having an occlusion due to kinked tubing thereby causing the possibility of IV reinsertion. I designed the IV-ARMOR to be a flexible protective splinting overlay that will minimize line occlusions caused by patient movement from bending and shifting positional IVs without the need for a stiff immobilizing device. The IV-ARMOR can help prevent the need for IV reinsertion by being placed over the IV site remaining in place and still being able to easily access, visualize and assess the IV while keeping the site protected.

## CLINICIAN TESTIMONIALS

"I have come to the conclusion that the hospital and patient would benefit in having this device available for use. The cost associated with restarting an IV is much more than the cost of this product." *- Lisa, RN*

"The biggest improvement we saw on the Progressive Care Unit was with the patient satisfaction and statements. We have mostly double rooms and the IV beeping is a big dissatisfier for patients and staff. We had quite a few patients who asked for it when they saw another patient with it or had used it within the last week or two when admitted. We also found out that the staff were changing out AC IVs as soon as the patient arrived from the ED to save the IV beeping. The practice changed when we got the IV-ARMOR and they were able to keep the IV in the AC a lot longer. As a Clinical Nurse Specialist I was very excited to hear the overall satisfaction with the patients and staff both. I can't believe we didn't have something like this sooner." *- Deanna J. RN, MSN*

"Patient commented how great it was that the IV didn't beep in the AC (frequent patient). While removing, he stated the adhesive didn't hurt to come off."" *- Jeremy, MSN*

"Patient very happy. Went from alarm every 5-10 min to none. Harder to check on IV site, but worth it for the patient satisfaction." *- Susan, RN*

"Once the IV-ARMOR was placed over the IV site, the patient was a lot less anxious as she felt the IV site was "out of sight, out of mind". The use of IV-ARMOR was perfect for a phobic patient." *- Eugene, RN, BSN, CCRN, CPAN*

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