# REDUCING COMPLICATIONS OF INTRAVENOUS THERAPY IN INFANTS AND TODDLERS

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## BACKGROUND

- Peripheral Intravenous (PIV) catheters are a common delivery method for medications during hospitalization but carry a high incidence of complications and frequently require re-insertion.
- There are several contributing factors that may increase the incidence of PIV complications in infants and toddlers:
    - Children are active making securement more difficult
    - Infants and toddlers may be unable to verbalize discomfort due to age or disease process.
    - Integrity of their skin and blood vessels may be compromised.
- For infants and toddlers, when a PIV is placed at a site of flexion (hand, foot, antecubital), stabilization is essential to minimize catheter movement inside the vessel.
- The current arm board composed of cloth, foam and cardboard does not allow insertion site visualization when taped and secured in place.
- Palmar infiltrates occur when the infiltrate or extravasation goes undetected and gravity pulls fluid into the palm, potentially causing serious injury.
- Arm boards are routinely used to immobilize extremities and minimize catheter movement.
- Assessment of the PIV site with the current arm boards obscures the palmar site and becomes a time consuming process.
- Nurses must be able to assess the site by looking, touching, and comparing to ensure safe administration of intravenous fluids and medications.
- With a range of 15.7% to 33.8% and the mean incidence of 23.9%, infiltration is the most common form of IV catheter failure.

## SUPPORTING EVIDENCE

- Recommendations from the Infusion Nursing Society state that all attempts should be made to avoid placing PIVs in areas of flexion which is extremely difficult with infants and toddlers.
- Micro movement both inside and outside the vessel wall lead to infiltration of the intravenous fluid and frequent re-insertions.
- The Centers for Disease Control (CDC) recommends evaluation of the insertion site by palpation through the dressing to discern tenderness and by visual inspection.
- If a transparent dressing is used; removal of an opaque dressing for visual assessment is recommended if tenderness is present.

## PREVIOUS INTERVENTIONS

- The Vascular Access team adopted the Cincinnati Children's Hospital's Pediatric Intravenous Extravasation Assessment System and provided education for all nursing staff.
- The Vascular Access team worked with pharmacy to identify medications that are caustic agents or vesicant; medications were classified as Green, Yellow & Red.
- The acronym TLC (Touch, Look and Compare) was introduced to be used with all site assessments.

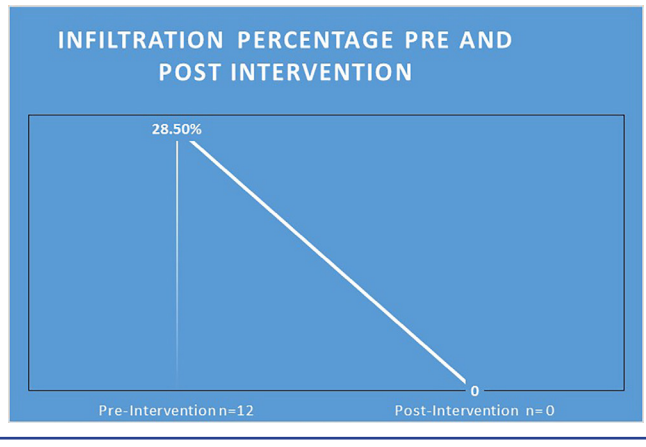
## PROPOSED INTERVENTION

- To address the ongoing concern, a pilot was conducted to test an ergonomically designed splint (TLC® Splint) that incorporated an opening that would allow nurses to palpate, visualize and compare the insertion site with the opposite extremity.
- It was postulated that the TLC Splint would allow 360° visualization to quickly identify palmar infiltrations and support improved assessment to promote patient safety.

## IMPLEMENTATION AND RESULTS

- Data were collected on the infiltrate/extravasation rates and nurse satisfaction.
- Vascular access consults were used to establish the rates of infiltrate/extravasation from 11/23/15 – 12/31/16.
- The splint clearly demonstrated support for adoption of the new product.

| Evaluation Criteria | Yes | No | N/A | Not Scored |
|---|---|---|---|---|
| 1. Instructions clear and easy to use | 68.8% | 0 | 22% | 8% |
| 2. Splint easy to apply and remove | 62.2% | 0 | 20% | 17.7% |
| 3. Splint remained secure | 77.7% | 2% | 4% | 15.5% |
| 4. Effectively immobilized extremity | 93.3% | 2% | 0 | 4% |
| 5. Provides easy visualization | 95.5% | 0 | 0 | 4% |
| 6. Facilitated hourly assessment | 88.8% | 2% | 2% | 4% |
| 7. Safety improved: No skin breakdown | 88.8% | 2% | 0 | 8% |

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