OVERVIEW
The purpose of our research is to identify the best practice for IV infiltration management. Although IV infiltration is a common occurrence, extensive research on the subject is limited. We explored several medical journals, reviewed case studies and web-based articles in an effort to compile effective practices to improve patient outcomes.

WHAT IS IV INFILTRATION?
Displacement of “nonvesicant, or irritant” medications or fluids into surrounding tissues is known as extravasation.

Sources: (Dougherty, L., 2008); (Schulmeister, L., 2009); (Sauerland, C., Engelking, C., Wickham, R., & Corbi, D., 2006); (Schummer, W., et al., 2005)

DEVICE-RELATED RISKS
Metal needles, large-gauge catheters
- Smaller is better!
- Inadequately secured IV needle or catheter
- Use a transparent dressing!
- Crisscross tape after the transparent dressing is applied

Undesirable IV site location
- Avoid areas of flexion
- Avoid hard, cordlike veins
- Avoid veins of the hand
- Avoid the antecubital fossa

PATIENT-RELATED RISKS
Age
- Pediatrics
- Geriatrics
- Communication barriers
- Fragile veins

Chemotherapy patients
- Diabetes
- Hypoalbuminaemia

Sources: (Sauerland, C., Engelking, C., Wickham, R., & Corbi, D., 2006)

CLINICIAN-RELATED RISKS
Inadequate nursing knowledge pertaining to:
- Peripheral IV Insertion
- Identification of vesicant vs. non-vesicant agents
- Poor assessment skills
- Hourly assessments recommended
- Geriatric, Pediatrics and infiltration of vesicants
- Assessments every 4 hours recommended
- Patients receiving infusion of non-vesicant/irritants
- Negligence in overall nursing care planning, intervention and follow-up care

Source: (Sauerland, C., Engelking, C., Wickham, R., & Corbi, D., 2006)

RECOGNIZING INFILTRATION IN OUR PATIENTS
Infiltration
- Swelling
- Redness
- Edema
- Pain

INS Infiltration Scale
- Grade 0: No symptoms
- Grade 1: Skin blanched; edema <1” in any direction; cool to touch
- Grade 2: [same as Grade 1] to include edema 1-6” in any direction
- Grade 3: Skin blanched; translucent; gross edema >6” in any direction; cool to touch; mild to moderate pain; possible numbness
- Grade 4: Typically considered extravasation; skin discolored, bruised, swollen; circulatory impairment; moderate to severe pain

BEST EVIDENCE-BASED PRACTICES FOR TREATMENT OF IV INFILTRATION

- Remove cannula immediately
- Assess site
- Evaluate RDH and sensation in affected limb
- Assess for sensory deficit
- Measure area of infiltration
- Caudal use of warm or cold compresses

Source: (Engelking, C., 2000); (Schummer, W., et al., 2005); (Sauerland, C., Engelking, C., Wickham, R., & Corbi, D., 2006)

RECOGNIZING EXTRAVASATION IN OUR PATIENTS
- Typically classified as Grade 4 on INS Infiltration Scale
- Degree of injury is proportionate to:
  - Amount of drug infused
  - Location of peripheral IV site
  - Concentration of the drug
  - All of which can lead to:
    - Ulceration within days or weeks
    - Severe, continuous pain
    - Tissue damage and possible impairment of affected limb

Source: (Engelking, C., 2000); (Schummer, W., et al., 2005)

BEST EVIDENCE-BASED PRACTICES FOR TREATMENT OF EXTRAVASATION

Factors to consider prior to treatment:
- The individual
- Type of vesicant used
- Institution’s protocol for treatment

Systematic Approach
- Stop infusion immediately
- Determine substance and amount used
- Consider location of peripheral catheter
- Length of contact with the substance
- Cold or hot compresses?
- Use of Hot or Cold compresses?
- + Cold
  - Used to treat DNA-binding vesicant infiltration
    - Results in vesicocoection, localizing extravasation
    - Apply 15-20 mins 3-4 x daily for up to three days, or as indicated by the physician

- + Hot
  - Used to treat Non-DNA binding vesicant infiltration
    - Results in vasodilatation
    - Reduces local drug concentration
    - Decreases pain
    - Helps with reabsorption of local swelling
    - Apply via electric heating pad or covered hot water bottle for up to 24 hours, or as prescribed by the physician

Elevation of affected limb
- Antidote to cytotoxic drugs such as anthracyclines
- Helps with reabsorption of local swelling
- Usually injected around the extravasation site
- Itching and redness may occur

- Steroid Cream
  - Reduces local trauma and irritation

- Hydrocortisone
  - An enzyme that helps to reduce tissue damage

- Promotes drug absorption

- Usually injected around the extravasation site

- Itching and redness may occur

- Hyaluronidase
  - Helps with reabsorption of local swelling
  - Usually injected around the extravasation site

- Itching and redness may occur

- Dextranase
  - Reduces the size and duration of the wound
  - Must be administered within 6 hours of extravasation

- Diluted used with anthracycline cytotoxic drugs

- Surgical Intervention
  - Effective if lesion is of a certain size or there is residual pain or minimal healing
  - Flush-Out Technique
    - Infiltration of the area with a local anesthetic
    - Making a number of small stab incisions
    - Tissue is flushed out using normal saline
    - Effective if performed immediately after extravasation
    - Usually performed by a plastic surgeon

Source: (Engelking, C., 2000); (Schummer, W., et al., 2005)

PREVENTING EXTRAVASATION

- Hourly assessments
- Cover site with transparent dressing
- Stabilize equipment
- Proper site selection
- Use smallest gauge plastic cannula possible
- Prepare and organize material prior to insertion
- Vessel education for all nurses
- Pharmacy involvement
- Interdisciplinary approach

- MT [Intravenous Therapy] Teams
- The Journal of Clinical Innovations suggests MT Teams reduce the occurrences of complications associated with peripheral IVs

- Evidence is sparse pertaining to the cost effectiveness of implementing such teams.
- Based on the academic review and appraisal of a multitude of articles, case studies and random clinical trials, it is our suggestion that hospitals conduct an independent study to determine the effectiveness of MT Teams in relation to cost.

PICK YOUR Q&A

STANDARD OF PRACTICE