

# Extravasation Management of Non- Chemotherapeutic Agents



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Dallas, TX • November 2-4, 2012

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## Objectives



- Review non-chemotherapeutic agents that can cause extravasation
- Explain non-chemotherapeutic vesicant-specific extravasation management strategies for the infusion nurse

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## Definitions



- Extravasation
  - The inadvertent administration of a vesicant into the surrounding tissue instead of the intended vascular pathway
- Vesicant
  - Agents that have the potential to cause varying degrees of localized tissue damage when they leak into or are inadvertently administered into the tissue

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## Damage



- Direct cellular injury
- Non-physiological pH (<4.1 - >9.0)
- Inherent caustic properties
- Highly ionized
- Hyperosmolar
- Vasoconstriction

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## Known Vesicants



- Antibiotics
- Electrolyte Solutions
- Vasopressors
- Radiocontrast media
- Glucose/Dextrose
- Others
  - Mannitol/Urea, Phenytoin, Aminophylline, Promethazine

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- Some extravasation injuries may be due to the vehicle rather than the medication involved

- Propylene glycol
- Ethanol

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Understanding the  
**TREATMENTS**

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**Treatments**



- Elevation
- Temperature
- Vesicant specific
- Injury based

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**Elevation**



- Reduces edema
- Movement should be encouraged
- For 48 hours

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## Cold



- Vasoconstriction
  - Localizes the drug
  - Prevents spreading to adjacent tissues
- Relieves pain
- Apply 15 – 20 minutes at least four times daily

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## Warm



- Vasodilation
  - Increases blood flow to the area
  - Helps distribute the vesicant promoting its absorption
- Enhancing resolution of pain
- Apply for 15 – 20 minutes at least four times daily
- Do NOT use moist heat

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## Hyaluronidase



- Enzyme that breaks down hyaluronic acid and helps to reduce or prevent tissue damage by allowing rapid diffusion of the extravasated fluid and by restoring tissue permeability enhancing drug reabsorption from tissue

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## Hyaluronidase



- Hylenex (recombinant) or Amphadase (bovine): 150 unit/1mL
- Do not further dilute
- Must be given promptly
- May be mixed with 1% procaine

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## Hyaluronidase



- Inject 30 units (0.2mL) per injection (5 injections) around the leading edge of the extravasation site using a 25-gauge needle or smaller
- Change the needle after each injection
- Swelling is usually significantly decreased within 15-30 min following administration

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## Hyalurondidase



- ADRs
  - Injection site reactions, allergic reactions, anaphylactic-like reactions, angioedema, urticaria
  - Effects due to the rapid absorption of medication(s) extravasated

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## Phentolamine



- Alpha-adrenergic blocker, leading to a reduction in local vasoconstriction and ischemia

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## Phentolamine



- 5 - 10mg diluted in 10mL of NS and injected SQ around the area after catheter removal
- Best done immediately, but at least within 12 hrs
- Normal skin color should return to the blanched area within 1 hour

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## Phentolamine



- ADRs
  - Arrhythmia, flushing, hypertension, hypotension, orthostatic hypotension, tachycardia, bradycardia, dizziness, HA, pruritus, N/V/D, injection site pain, paresthesia, weakness, nasal congestion, pulmonary hypertension

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Initiating the  
**TREATMENTS**

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**Disclaimer**

The recommendations that follow are based on case reports and theoretical principles that attempt to reduce the extent of tissue injury once extravasation has occurred. Treatment of extravasation injury with certain techniques is controversial and there are NO well-designed, controlled clinical trials proving efficacy or safety.

Therapy should be based on individual cases and clinical judgment

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*"The best treatment is prevention"*

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## Recommendations



- Policy and procedure development
  - General recommendations
  - Drug specific recommendations
  - Documentation requirements
  - Physician notification requirements
  - Patient education

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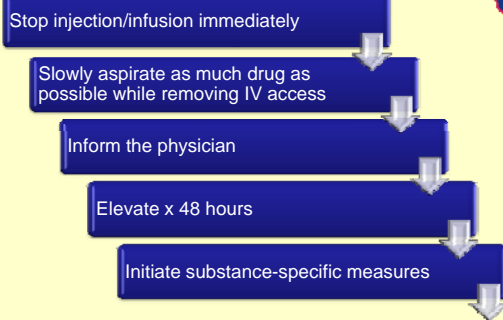
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## Initial Treatment



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- Antibiotics
- Aminophylline
- Contrast media
- Dextrose/Glucose
- Electrolytes
- Mannitol
- Phenytoin
- Parenteral nutrition



Hyaluronidase

Monitor

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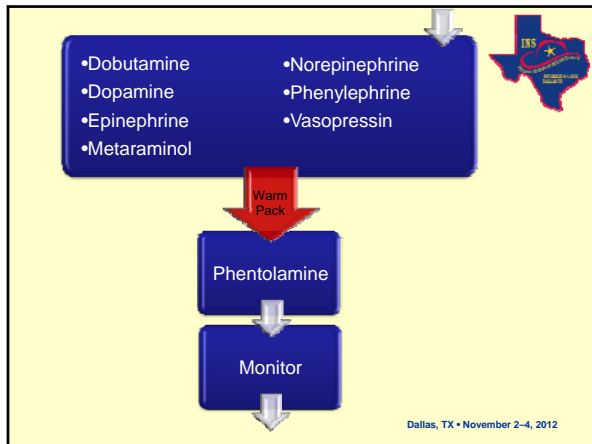
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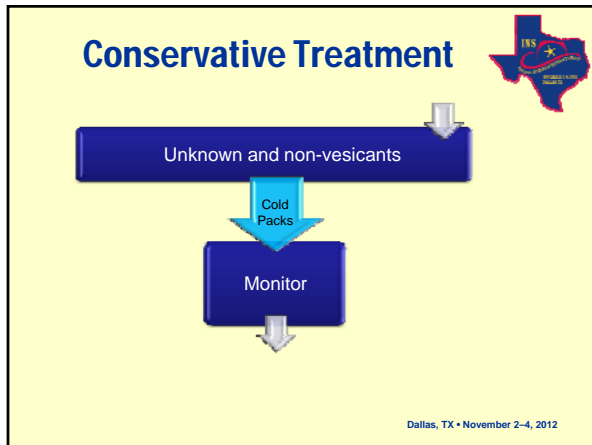
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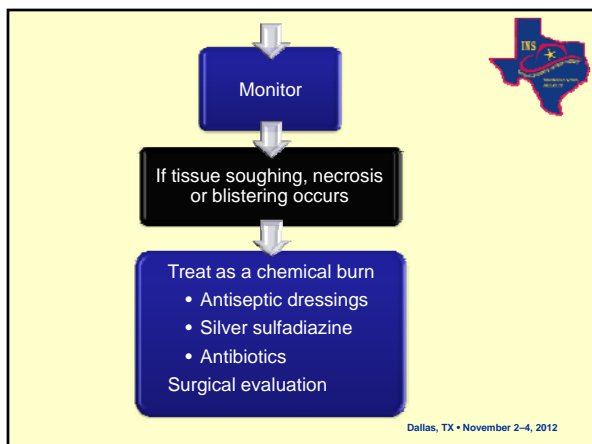
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## Shortages / Alternatives



- Phentolamine
  - Terbutaline
    - 1mg mixed in 10mL of NS and injected SQ around the area
  - Nitroglycerin ointment
    - 1-2" ribbon spread over affected area

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## Conclusions



- Prompt recognition and treatment
- Standardization
- Consistency in monitoring

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