Lipid resuscitation therapy (LRT)
Intralipid® / LipidRescue™ Therapy

Indication
- Administration of a lipid emulsion with the intent of reducing the clinical manifestations of toxicity from excessive doses of lipid-soluble cardiotoxic medications
- May be considered for patients with hemodynamic, or other instability (e.g., intractable seizures), not responsive to standard resuscitation measures (e.g. fluid replacement, inotropes, and pressors, etc.)

Initial Focus
- Airway management: ventilate with 100% oxygen
- Seizure suppression: benzodiazepines are preferred
- Basic and Advanced Cardiac Life Support (BLS/ACLS): may require prolonged effort

20% Lipid Emulsion Infusion (values in parenthesis are for a 70 kg patient)

<table>
<thead>
<tr>
<th>Indication for ILE</th>
<th>Bolus 1.5 mL/kg (lean body mass) intravenously over 2-3 minutes (~100 mL)*</th>
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</thead>
<tbody>
<tr>
<td>Response?</td>
<td>NO</td>
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- May repeat bolus 1.5 mL/kg (lean body mass) intravenously over 2-3 minutes every 5 minutes up to TWO times for persistent cardiovascular collapse
  - (arrest or pre-arrest: asystolic patients, those with pulseless electrical activity, severe hypotension etc.)

  If response to bolus(es), follow with continuous infusion at 0.25 mL/kg/min (~18 mL/min; adjust by roller clamp)
  - (or if patient weight >70 kg infuse 250 mL over 15-20 min)
  - Continue infusion for at least 15 mins after attaining circulatory stability
  - If there is an initial response to the bolus followed by the re-emergence of hemodynamic instability, the bolus could be repeated
  - When possible, lipid resuscitation therapy should be terminated after 1 h, or less, if the patient’s clinical status permits.
  - Recommended upper dose limit: 12 mL/kg lipid

If no response to boluses, discontinue lipid emulsion and consider alternative therapies

Monitoring
- Blood pressure, heart rate, and other available hemodynamic parameters should be recorded at least every 15 min during the infusion
  - In cases where the patient’s stability is dependent on continued lipid infusion, further treatment decisions should be made in collaboration with the Toxicologist on call.

*May be infused via peripheral or central line; in-line filter NOT required; any method of infusion acceptable (manual, IV roller clamp, pump)

Avoid:
- vasopressin, calcium channel blockers, β-blockers, or local anesthetics
- propofol in patients with cardiovascular instability

Contraindications: Hypersensitivity to fat emulsion and severe egg or legume (soybean) allergies
Reported possible complications: Laboratory interference, fat overload syndrome, pancreatitis, ARDS
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Supplemental Information

*Administration notes can be found on the Canadian Antidote Guide website or app:
  - Note that dosing recommendations may be slightly different from different sources

Why avoid vasopressin, calcium channel blockers, β-blockers, or local anesthetics?
  - toxin-induced cardiovascular collapse is different from other causes of cardiac arrest, therefore raising peripheral vascular resistance with vasopressors (e.g. vasopressin) can impair cardiac output and impede resuscitation
  - CCB and BB reduce cardiovascular contractility and should be avoided when there is cardiovascular instability
  - the recommendation to avoid local anesthetics is in the context of treatment for local anesthetic toxicity

What about propofol?
  - should not be used when there are signs of cardiovascular instability since it has cardiovascular depressant effects and decreases systemic vascular resistance
  - the lipid content of propofol is too low (10% lipid emulsion) to provide benefit as a form of lipid rescue

How long does lab interference last?
  - since the half-life of triglycerides is short (approximately 15 minutes), laboratory interference should dissipate after a few hours
  - reports of laboratory interference from lipemia range from 1-25 hours post lipid emulsion dose
  - notifying the lab that the patient received lipid emulsion will help the lab process and report the samples as accurately as possible

Prolonging the duration of lipid infusion
  - this decision should only be made in consultation with the Poison Centre Toxicologist on call
  - in cases where the patient’s stability is dependent on continued lipid infusion, longer periods of treatment may be appropriate
  - if additional lipid infusion is required to maintain patient stability, a reduction in rate to 0.025 mL/kg/min (i.e., 1/10 the initial rate) may be sufficient, and reduce the potential for adverse effects from prolonged high lipid infusion rates

References:


