



# Poison HOTLINE

1-800-222-1222

October 2023

*Did you know .....*

**Intravenous Lipid Emulsion (ILE) therapy has been effective in treating severe systemic (CNS and/or cardiovascular) effects from local anesthetic toxicity when standard resuscitative efforts have failed.**

ILE is sometimes referred to as lipid rescue or more simply "Intralipid" (lipid emulsion). While the exact mechanism by which the ILE causes its beneficial effects on the heart is unknown, one possibility includes the sequestration of lipophilic local anesthetics from the plasma and tissue (i.e. "lipid sink" theory).

Adverse effects of ILE administration include acute respiratory distress syndrome (ARDS), hypoxia, pancreatitis and laboratory interference.

It is recommended ILE only be considered after consultation with a medical toxicologist. Health care providers can contact the IPCC at **1-800-222-1222** for a toxicology consult 24/7 and for guidance on when and how to administer Intravenous Lipid Emulsion.

## Lidocaine

Lidocaine is a topical and local anesthetic. It is also a class 1b antiarrhythmic. Toxicity from lidocaine can occur from the administration of a solution that was meant to be diluted, increasing an infusion rate too fast, or from dosing/administration errors during procedures such as nerve blocks. Toxicity can also occur from patches that are used topically but not removed before applying another patch.

Local anesthetics bind with sodium channels in nerve fibers blocking sodium current responsible for nerve conduction. This increases the threshold for conduction and reversibly slowing or blocking impulse generation. In therapeutic concentrations the result is local anesthesia. In high concentrations lidocaine can cause CNS and cardiovascular toxicity. There have also been reports of lidocaine-induced methemoglobinemia.

Subcutaneous injection for local anesthesia reaches peak levels around 10-60 minutes after administration. Mitigating factors include vascularity of the tissue and whether a vasoconstrictor such as epinephrine has added to injection.

Systemic toxicity occurs when brain levels exceed a certain threshold. Toxic levels can occur with a single large subcutaneous injection as well as a rapid IV infusion of a smaller dose. Toxicity can also be achieved by the accumulation of the drug with repeated doses.

Mild toxicity includes drowsiness, headache, paresthesia, confusion, tremor. Severe toxicity can cause cardiac and CNS toxicity. CNS generally precede cardiovascular toxicity.

Treatment is primarily symptomatic/supportive care, as well as discontinuing the lidocaine. As always, the IPCC is available 24 hours a day for consultation and recommendations.

*Thomas Esslinger RN, CSPI  
Certified Specialist in Poison Information*

**POISON  
HELP**   
1-800-222-1222

The logo for Poison Help features the words "POISON" and "HELP" in a bold, blue, sans-serif font. To the right of the text is a stylized graphic of a person running, also in blue. Below the text and graphic is the phone number "1-800-222-1222" in the same blue, sans-serif font.

*Hotline Editor: Dan McCabe, MD & Josh Trebach, MD*

Post and share this edition of **Poison Hotline** with your colleagues. Send comments or questions to Poison Hotline, 712-234-8775 (fax) or [Tammy.Noble@unitypoint.org](mailto:Tammy.Noble@unitypoint.org). To subscribe or unsubscribe from this distribution list, contact the IPCC education office at 712-279-3717. Read past issues of **Poison Hotline** at [www.iowapoisson.org](http://www.iowapoisson.org).