



High Dose Insulin Therapy for Calcium Channel Blocker Poisoning: Quick Treatment Tips

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Calcium channel blocker poisoning involves complex physiological changes and significant case-to-case variability; it is best treated by a multidisciplinary team with appropriate knowledge and experience in cardiovascular critical care support and in poisoning treatment.

High dose insulin therapy requires intensive monitoring and clinical response. High dose insulin therapy is not FDA-approved for treatment of cardiogenic shock from calcium channel blocker poisoning and optimal dosing and practice has not been defined by clinical trials.

Blood Glucose Assessment and Maintenance

- Calcium channel blocker poisoning is often manifest by insulin resistance and hyperglycemia.
- Check blood glucose concentration: if < 200 g/dL, administer 0.25 g/kg IV dextrose.
- Begin infusion of D10 to D15 crystalloid to provide 0.25 g/kg/hr dextrose.
- Monitor blood glucose concentration every 20 minutes for the first hour after any insulin dose change, then hourly, with a goal of blood glucose concentration > 100 mg/dL.
- Adjust dextrose infusion concentration and rate, and provide bolus dosing, as necessary for maintenance of blood glucose.
Administration of concentrated dextrose via central venous catheter may be preferred to limit fluid volume.
- Be aware that supplemental dextrose may be necessary even after cessation of insulin infusion.

Insulin Infusion

- Administer regular insulin bolus of 1 U/kg IV push.
- Begin insulin infusion (10 U/ml in 0.9% saline) at rate of 1 U/kg/hr.
- Increase insulin infusion by 1 U/kg/hr every 15 minutes to achieve desired response (typical dose 2 U/kg/hr, some suggest doses as high as 10 U/kg/hr):
 - Urine output > 0.5 mL/kg/hr
 - Preserved mental status
 - Decreasing or stable plasma lactate concentration
 - Good cardiac contractility on bedside ultrasonography
 - Note that some bradycardia and hypotension may be permissible if tissue perfusion is good

Further Monitoring

- Maintain serum K^+ concentration > 3.0 mmol/L and < 4.5 mmol/L
- Control acidosis and other serum electrolyte concentrations

The specialists, and consulting toxicologists, at The Poison Control Center may be able to provide more nuanced information to assist clinicians trying to make patient care decisions.

This information has been downloaded from The Poison Control Center at The Children's Hospital of Philadelphia's website and anyone using this information is subject to the Terms of Use on that website including Additional Terms of Use for Medical Information.

24-hour hotline
1-800-222-1222

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Selected References for More In-Depth Information:

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