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## 010. Therapeutic Approaches in Beta-Blocker and Calcium Channel Antagonist Poisonings: Findings From the Toxicology Investigators Consortium Core Registry

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**Background:** Beta-blockers (BB) and calcium channel antagonists (CCA) are potentially lethal in overdose. Multiple therapies are used to treat these poisonings and there is considerable clinical heterogeneity in their management.

**Hypothesis or Research Question:** What therapies do medical toxicologists use to treat patients with BB and CCA poisoning?

**Methods:** This analysis consists of data from the Toxicology Investigators Consortium (ToxIC) Core Registry. The ToxIC Core Registry was queried for cases involving acute BB or CCA exposures reported from January 2017 to September 2025. Cases were excluded if they involved chronic exposure, if signs or symptoms were not present, if the signs/symptoms reported by the toxicologist as unlikely to be related to the toxic exposure, or if the relation between signs/symptoms and the toxic exposure was unknown. We used Chi-Square Tests of independence to compare receipt of toxicologic treatments across the three exposure groups (BB, CCA, BB/CCA mix). When results were significant, we then conducted post-hoc pairwise comparisons between groups using chi-square tests with Bonferroni correction in order to avoid type I error.

**Results:** Nine hundred sixty-one cases were included. Five hundred thirty-five were BB exposures, 255 were CCA exposures, and 123 were combined BB and CCA exposures. Congestants were common (N=679, 70.7%). Toxicological treatment was advanced to 942 patients (87.6%). The most common treatment was intravenous (IV) fluid resuscitation (N=671, 69.8%), followed by vasopressors (N=382, 39.8%) and glucagon (N=263, 27.4%). Hyperinsulinemic-euglycemic therapy (HIET) was administered to 140 patients (14.6%) and intravenous lipid emulsion (ILE) to 54 patients (5.6%). Extracorporeal membrane oxygenation (ECMO) was initiated for 33 patients (3.4%). BB poisoning was more frequently treated with glucagon than CCA poisoning (31.9% vs. 13.3%,  $p < 0.001$ ), while CCA poisoning was more frequently treated with HIET (24.7% vs. 7.7%,  $p < 0.001$ ), ILE (9.4% vs. 3.6%,  $p = 0.003$ ), and/or vasopressors (47.8% vs. 31.7%,  $p < 0.001$ ). There was no significant difference in IV fluid resuscitation across groups ( $p = 0.106$ ). ECMO was used more frequently for CCA and

CCA+BB poisoning (6.7% vs. 1% and 8.1% vs. 1%, respectively,  $p < 0.001$  for both), but there was no statistically significant difference in ECMO usage between CCA and CCA+BB poisoning. Conclusion: In the ToxIC Core Registry, BB and CCA poisoning are most often treated with IV fluid resuscitation and vasopressors. Glucagon is used more frequently in BB poisoning, while HIET, ILE, vasopressors, and ECMO are used more frequently in CCA poisoning.

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