



# Characteristics and Treatments of Patients with ECG Findings Significant for QRS Widening

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## BACKGROUND

- Many xenobiotics may cause QRS widening on the ECG which can result in significant morbidity and mortality.

## OBJECTIVE

- To describe the characteristics and treatment of single exposure cases of QRS prolongation on the ECG in the ToxIC Registry.

## METHODS

- Toxicology Investigators Consortium (ToxIC) Registry
- QRS widening greater than 120 msec on the ECG
- January 1 - September 1, 2014
- Limited to single substance exposures



Acknowledgment: Thank you to all the Medical Toxicology Fellows, Physicians, Pharmacists, and Staff who have entered data into the ToxIC Registry.

## RESULTS

Thirty-six (36) cases were abstracted. (N = Number of cases)

### Implicated Drugs:

Amitriptyline (9)	Flecainide (1)
Beta-blocker (1)	Heroin (2)
Bupropion (2)	Imipramine (1)
Carisoprodol (1)	Mirtazapine (1)
Crack cocaine (1)	Propofol (1)
Desipramine (1)	Propranolol (1)
Dextromethorphan (1)	Quetiapine (1)
Digoxin (1)	Unknown (1)
Diphenhydramine (5)	Venlafaxine (1)
Ethanol (4)	

## RESULTS

### Key treatments:

- Sodium bicarbonate (21)
- Lipid (5)
- Calcium (2)
- Benzodiazepines (11)
- Vasopressors (6)
- Beta-blockers (2)
- Anticonvulsants (1)
- Tris-hydroxymethyl aminomethane (1)
- Hypertonic saline (1)
- CPR (2)
- Extracorporeal membrane oxygenation (1)
- Hemodialysis (1)
- Transcutaneous pacing (1)

## LIMITATIONS

- Agents are only reported by history.
- Some treatments may not be recorded.

## CONCLUSIONS

- QRS prolongation is associated with multiple different medications and with significant cardiovascular and neurological toxicity.
- Sodium bicarbonate was used in only just over half the cases.
- Currently, there are no accepted criteria for sodium bicarbonate use.
- Future studies should be aimed at validated criteria for sodium bicarbonate treatment of QRS prolongation.

## Significant Cardiac and Neurological Signs

