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Administration of QTc Prolonging Medications in Emergency Department Patients with Prolonged QTc

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QTc prolongation is associated with fatal arrhythmias including torsades de pointes (TdP) and sudden cardiac death.

Many medications given in the ED prolong QTc, thus recognition of QTc prolongation may alter medication choice.
Methods

Retrospective chart review of all ED patients who received an ECG for any reason during the 5 month period of June 2009 – October 2009 at a large volume, tertiary care center.

Inclusion Criteria: Patients with a computer generated QTc ≥ 460 ms.

Exclusion Criteria: Bradycardia (HR < 60 bpm)
Tachycardia (HR > 100 bpm)
QRS > 120 ms
Non-sinus or paced rhythm
Patients who left without being seen or against medical advice

ED electronic medical records were reviewed for medications administered in the ED. QTc prolonging medications were defined as those listed by the Arizona Center for Education and Research on Therapeutics (AzCERT) and were classified as Class 1 (causes TdP), Class 2 (prolong QTc and reported to cause TdP), and Class 3 (prolong QTc and could cause TdP) as defined by AzCERT

Statistical Analysis - Data is expressed as proportion ± 95% confidence intervals. Data was compared among groups using a Chi-squared test.
RESULTS

11,359 Patients

- 8957 pts (80%) Normal QTc
- 2402 pts (20%) QTc ≥ 460 ms

1318 pts (55%) Excluded
1084 pts (45%) Eligible

- 615 pts (57%) QTc 460-479
- 274 pts (25%) QTc 480-499
- 195 pts (18%) QTc 500+

% of all pts: 5.4% 2.4% 1.7%

Excluded Patients
- QRS > 120 ms 559 pts
- Tachycardia 581 pts
- Bradycardia 151 pts
- Non-sinus rhythm 239 pts
- Paced rhythm 182 pts
- LWBS or AMA 27 pts
Drug Classes Administered

# Patients Receiving Med
Medications Received

- Any Med
- Class 3
- Class 2
- Class 1
- >1 Med

Proportion Present

- 460-479 ms
- 480-499 ms
- 500+ ms

*p<0.01
Patient Disposition

Discharge

Admit Without Telemetry

Admit With Telemetry

Proportion Present

460-479 ms
480-499 ms
500+ ms
Conclusion

- Administration of QTc prolonging medications is common in ED patients with prolonged QTc
- Patients with the most prolonged QTc were at highest risk of receiving multiple QTc prolonging medications
- Further studies needed to determine if the administration of QTc prolonging medications in patients with prolonged QTc increases the risk of cardiac dysrhythmias

