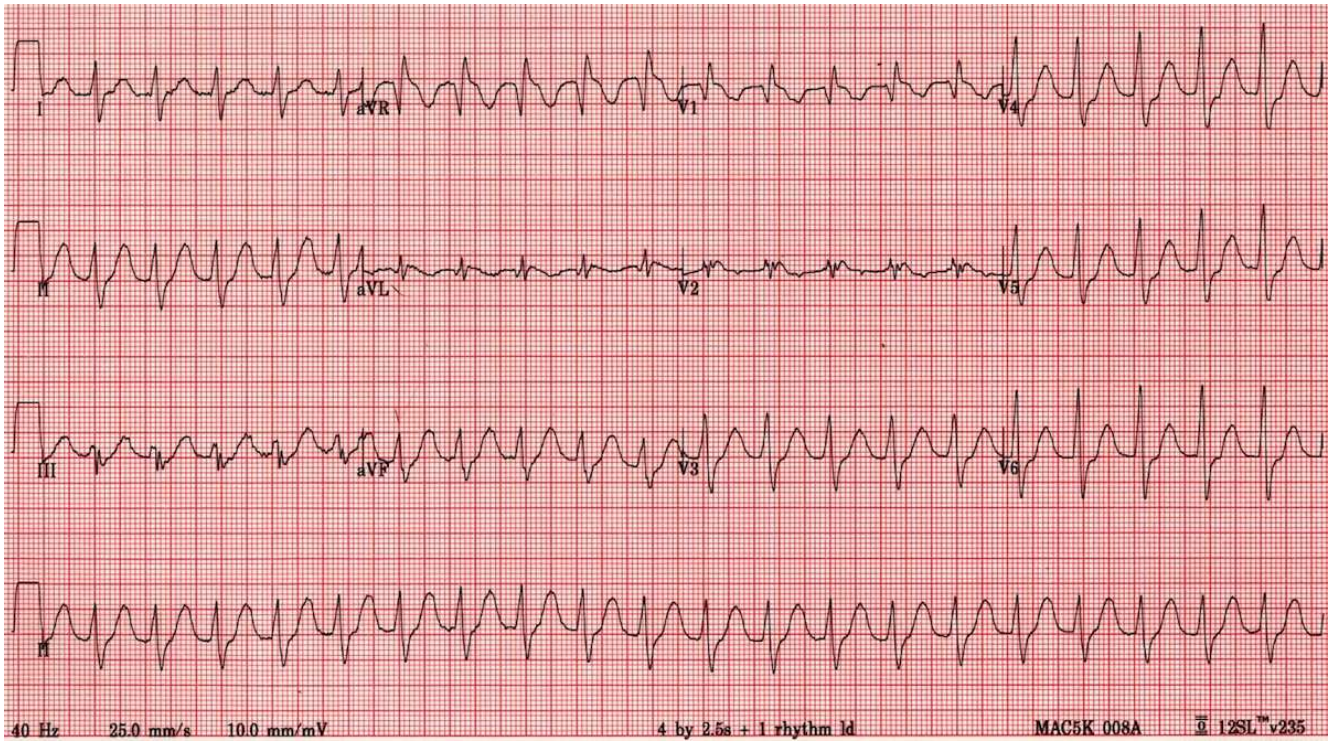
VAQ 2009.1.7 (ECG)

A 35 year old man is brought to your emergency department following two seizures.
His observations are:

GCS	8	
BP	75/40	mmHg supine



Describe and interpret his ECG (100%)

This ECG shows a regular broad complex tachycardia with widened QRS and abnormal terminal R in aVR. In the context of a hypotensive, seizing young patient with impaired consciousness, this is strongly suspicious for sodium channel blockade from overdose of agents such as TCAs (e.g. amitriptyline), antihistamines, sotalol, or cocaine.

ECG
Rate – tachycardia 120
Rhythm – sinus rhythm (P waves seen in V2)
Axis – normal

Waves
P – uninterpretable
Q – in aVR/V1
R – 'R prime' in aVR (or 'dominant R in aVR')
S – nil diagnostic
T – unremarkable
U – not seen

Intervals
PR – prolonged – approx 210ms
QRS – prolonged – approx 160ms
ST – no diagnostic changes
QTc – visually prolonged (over half RR interval) – check with nomogram

Interpretation
ECG findings of broad complex tachycardia with R prime in aVR strongly imply sodium channel blocker toxicity in this patient requiring immediate resuscitation and administration of sodium bicarbonate.

Common sodium channel blockers are:
TCAs (e.g. amitryptiline)
sotalol
antihistamines (e.g. diphenhydramine)
cocaine