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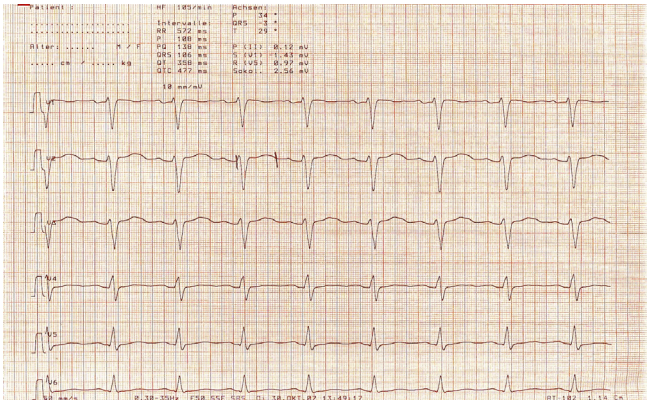
Long QT. - *What is it? How do I measure it? When does it matter?*

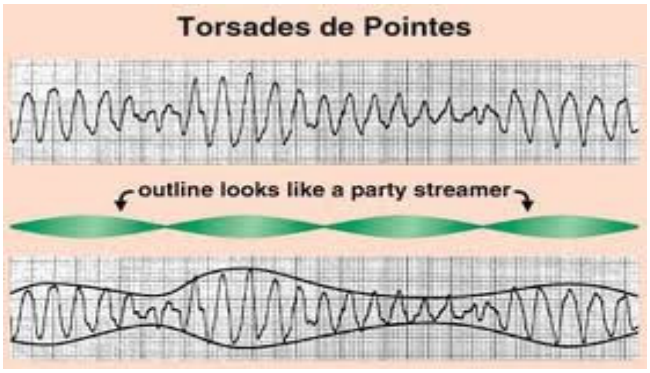
By Drs David Heaven & Fiona Stewart

The QT interval on the ECG is the time from the onset of ventricular depolarisation (the QRS complex) which leads to ventricular contraction through to the time when repolarisation is complete. The time varies according to the heart rate and is therefore reported as QTc or corrected QT interval.



A prolonged QT interval is associated with an increased risk of Torsades de Pointes ventricular tachycardia and an increased risk of sudden death.

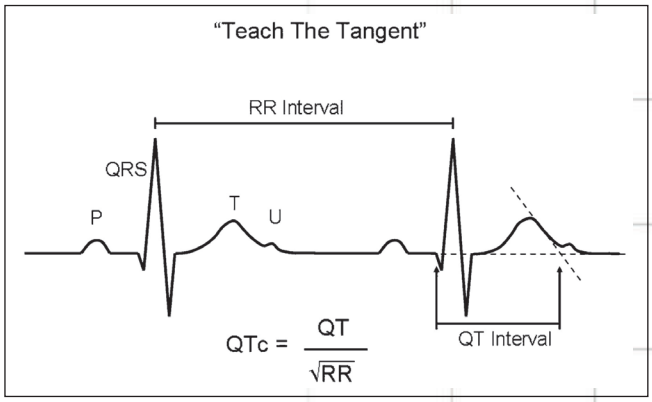
How to measure the QT interval



Do not rely on the automatic measurements from the ECG machine as these are often proven to be incorrect. A baseline ECG should be measured prior to starting medication and again once the drug has been titrated to the recommended dose for the patient. Other irregularities may also show up on the baseline ECG, such as ventricular ectopics, atrial fibrillation and ST segment changes. If you are unsure about the ECG please ask for an opinion prior to starting medication.

1. Measure the onset of the Q wave to the end of the T wave, as defined by the point where the steep down slope of the T wave crosses the baseline ("Teach the Tangent" method).
2. Divide by the square root of the preceding R to R interval to obtain the QTc (the heart rate correct QT interval).
3. Measure a beat in lead II and lead V5, and report the longer of these two. In infancy, try to obtain an ECG with a heart rate less than 120 bpm.

A QTc more than 0.45 s in males and 0.46 s in females is suspicious and requires expert review



Genetic Long QT- LQTS

There are ten identified groups of genes that cause the long QT syndrome. Whilst these are uncommon disorders they are a major cause of sudden unexplained death or collapse in the young person and are inherited in an autosomal dominant fashion. Genetic counselling and screening is available in New Zealand, with a central registry held by the Cardiac Inherited Disease Group. (www.cidg.org)

They have a useful website with information suitable to give patients on the ADHB website (google Long QT).

Drug Induced Long QTc

A number of medicines prolong the QT interval and are a particular issue when used in combination.

Psychotropic drugs are associated with an increased risk of sudden death. The rates of sudden death are lowest at lower doses and with haloperidol and up to 4.5 times higher with high doses particularly of thioridazine, risperidol and clozapine.

QT prolongation is described with high doses of citalopram (greater than 40mg) and therefore likely in escitalopram above 20mg. ECG monitoring is advised in these patients.

Sotalol and amiodarone may prolong the QT.

In patients with a prolonged QT interval or on a drug likely to prolong the QT care needs to be taken when prescribing other medication. A comprehensive list is on the ADHB website.

Commonly prescribed drugs include:

Antibiotics – macrolides (erythromycin), Sulfamethoxazole-trimethoprim (Bactrim)

Antifungals

Antihistamines – terfenadine, diphenhydramine (loratadine and cetirizine are fine)

Asthma drugs – oral ß2 agonists (not inhaled)

Adrenalin, decongestants.

Diuretics (electrolyte disturbance)

Drs David Heaven and Fiona Stewart are cardiologists at the Auckland Heart Group, Middlemore Hospital, and Auckland City Hospital respectively.
For more info on their expertise: ***www.heartgroup.co.nz***

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