Drug-induced QT Prolongation Treatment

- Acute poisoning with QT-prolonging agents can increase the risk of Torsades de Pointe (TdP)
- The risk of TdP is related to heart rate, with higher risk at slower heart rates
- A **QTc >500 ms** should be used as evidence of an increased risk of TdP regardless of heart rate

Treatment of patients at increased risk of TdP (QTc >500 ms)

1. Discontinue all drugs with QT prolonging potential.
2. Check serum potassium, magnesium, and calcium. Treat electrolyte abnormalities.
3. Potassium (K+) Replacement:
   - K+ levels <3.5 mmol/L increases the risk of TdP
   - Serum K+ levels should be replaced at least to normal range >3.5 mmol/L
   - In **cases of TdP**, target K+ level to high-normal range 4.5-5 mmol/L
   - Acutely unwell patients should receive IV K+ replacement
   - Many hospitals have protocols guiding the rate of IV K+ replacement. These protocols should be followed when available. Bolus IV K+ replacement is not recommended.
   - Example (when hospital protocol not available):
     - Peripheral venous access: KCl 10 mmol in 100 mL IV solution over 1 hour X 4 doses
     - Central venous access: KCl 40 mmol in 100 mL IV solution over 1 hour
4. Magnesium (Mg) Treatment:
   - Mg is an effective treatment for TdP and has been shown to prevent recurrence of TdP regardless of baseline Mg level
   - **TdP treatment:**
     - Magnesium sulphate 2 g (25–50 mg/kg (max 2 g) in children) IV over 1-2 min
   - Role of Mg to **prevent TdP** is less clear. American Heart Association recommends Mg treatment when there is marked QTc prolongation >500 ms. Therefore, may consider prophylactic treatment with magnesium for QTc >500 ms.
   - Example:
     - Magnesium sulphate 2 g (25–50 mg/kg (max 2 g) in children) in 100 mL IV solution over **1-2 hours** via central or peripheral venous access (note difference in rate compared to TdP treatment)
   - **NOTE: Mg will not necessarily shorten QT interval**
   - Risk of rapid IV magnesium administration is hypotension