

Guidelines for the administration of Phenytoin

Intensive Care Unit Raigmore Hospital

Directions for administration

- Phenytoin injection should be injected slowly and directly into a large vein through a large-gauge needle or intravenous catheter at a rate not exceeding 50 mg/minute in adults.
- Each administration should be followed by an injection of 0.9% sodium chloride through the same needle or catheter to avoid local venous irritation due to the alkalinity of the solution (pH 12)
- Unless necessary do not dilute phenytoin as precipitation may occur. Phenytoin may be administered neat via a central venous catheter.
- If **peripheral administration or dilution** is required, then the final concentration of Phenytoin in the solution should not exceed 10mg/ml. The recommended diluent is 0.9% sodium chloride.
- Administration should commence immediately after the mixture has been prepared and must be completed within 1 hour.
- An in-line filter (0.22-0.50 micron) **must** be used for peripheral administration. The in-line filter is attached to the end of the syringe or iv administration set. In-line filters are **not** required for neat administration of Phenytoin via the central venous route.
- If prolonged peripheral administration is required, the insertion of a peripherally inserted central catheter (PICC) should be considered.
- ECG monitoring is recommended. Rapid administration may result in hypotension. In patients with cardiovascular disease, parenteral administration may result in atrial and ventricular conduction depression, ventricular fibrillation or reduced cardiac output.
- Severe complications are most commonly encountered in elderly or gravely ill patients. In these patients, the drug should be administered at a rate not exceeding 25mg/minute, and if necessary, at a slow rate of 5-10mg/minute.

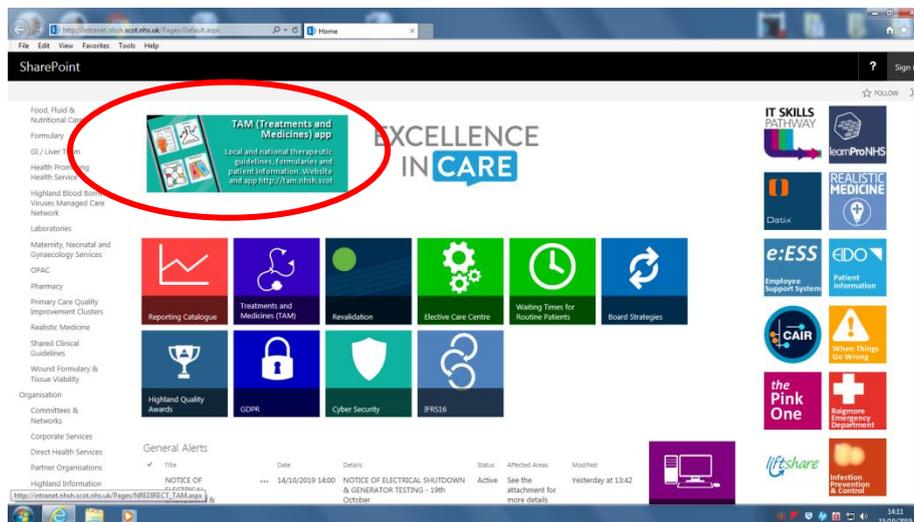
Plasma-drug concentration monitoring

- Plasma level monitoring is required and levels are analysed by the Biochemistry Department.
- Phenytoin is approximately **90% protein bound** and the reported laboratory level **requires to be corrected** against the patient's albumin level.
- To calculate the adjusted phenytoin use either of the appropriate formulas below or use the Treatments and Medicines (TAM) app

$$\text{Corrected phenytoin concentration} = \frac{\text{Measured phenytoin concentration}}{(0.9 \times \text{Albumin} / 42^*) + 0.1}$$

*Midpoint of reference range for serum albumin

Aim to maintain therapeutic range of 10 to 20mg/l



Updated 16.10.19

Mairi Mascarenhas Clinical Educator ICU