UAMS Chemistry Lab TDM Guidelines

A fundamental part of proper procedure in therapeutic drug monitoring is the specimen collection protocol. The following information should be followed to ensure proper evaluation of therapeutic status.

Amikacin - Peak: Draw specimen 30 minutes after the end of a 30 minute infusion (1 hour after an intramuscular or oral dose). **Trough:** Draw specimen within 30 minutes of next dose.

Carbamazepine – Induces its own metabolism so that following the initiation of therapy, it takes 2-4 weeks to obtain a steady state. Treatment should, therefore, commence with low doses, increasing at weekly intervals for the first month. Target range 4 – 12 mg/L. There is no clinical value in quantifying the epoxide or other metabolites of carbamazapine.

Digoxin – The low therapeutic index of digoxin means that dose adjustment must be performed with caution. Results can only be interpreted correctly if samples are taken at least 6 hours post-dose to ensure that distribution of digoxin is complete. Digoxin elimination is strongly influenced by renal function. Hypokalemia and hypomagnesia may influence (increase) myocardial sensitivity to digoxin.

Gentamicin – Peak: Draw specimen 30 minutes after the end of a 30-minute infusion (1 hour after intramuscular dose). **Trough:** Draw specimen within 30 minutes of next dose.

Phenytoin – For patients being treated with fosphenytoin (CerebyxTM), it is important not to collect samples for Phenytoin analysis until at least 2 hours after the completion of intravenous infusion, or 4 hours after intramuscular injection, when conversion of the prodrug to Phenytoin can be expected to be essentially complete.

Tobramycin – Peak: Draw specimen 30 minutes after the end of a 30-minute infusion (1 hour after intramuscular dose). **Trough:** Draw specimen within 30 minutes of next dose.

Valproic acid – The anticonvulsant activity and toxicity of valproic acid show no simple relationships to its plasma concentration. Hence there is generally little clinical value in the measurement of valproic acid. The short plasma half-life results in large variations in plasma concentrations between doses.

Vancomycin – Peak: Draw specimen 1 hour after the end of a 30 minute infusion (1 hour after intramuscular). **Trough:** Draw specimen within 30 minutes of next dose.