PHENOBARBITONE MONITORING

SAMPLE REQUIRED:
Serum (0.5 mL) or
Clotted blood (1.5 mL)

BLOOD TUBE REQUIRED:
Plain (red top) tube

Indications:

Monitoring of serum phenobarbital concentration in dogs and cats being managed for seizures.

Protocol:

- Fast the patient for 12 hours (overnight).
- Collect blood sample within one hour of the next scheduled dose (trough concentration).
- If a peak phenobarbital concentration is required, the sample should be collected 4-5 hours after dosing.
- Store sample at 4°C. If transport to the laboratory will be delayed (> 12 hours), the sample should be centrifuged and the serum separated.

Notes:

- Gel/serum separator tubes are not recommended as the gel may absorb some of the drug, artificially lowering the serum concentration.
- It is generally accepted that trough phenobarbital concentrations be assessed in most cases.
- Steady-state serum and tissue phenobarbital concentrations are achieved after 7-10 days of therapy.
- Induction of liver enzymes (ALP and to a lesser extent ALT) is common in animals receiving phenobarbital therapy.
- Side-effects of phenobarbital administration may include hepatotoxicity and blood dyscrasias. In addition to monitoring serum phenobarbital concentration, assessment of a complete blood count (CBC) and biochemistry panel is recommended every 6-12 months. If there is concern for liver dysfunction, assessment of fasting and post-prandial bile acids is also recommended.
- Hepatic microsomal enzyme induction may occur with time, decreasing the elimination half-life of the drug and potentially requiring an increase in dosage. Conversely if liver function is impaired, the elimination half-life may increase, requiring a decrease in dosage and/or change in anticonvulsant medication.

  Recommendations for when to assess phenobarbital concentration:
  - 2-4 weeks after commencement of therapy.
  - 2-4 weeks after any change in dose.
  - When seizures aren't well controlled.
  - When significant side effects develop.
  - Every 6-12 months when seizures are well controlled.