GUIDELINES FOR THEOPHYLLINE USE FOR ACUTE ASTHMA IN CHILDREN

Therapeutic Range 55-110 µmol/L
IV doses are expressed in terms of aminophylline. Note: Theophylline = 0.8 x aminophylline
Ideal body weight should be used to calculate doses.

**IV LOADING DOSE**

A. IF NO PREVIOUS THEOPHYLLINE GIVEN:
   - load with 6 mg/kg aminophylline over 20 - 30 minutes

B. IF THEOPHYLLINE HAS BEEN GIVEN WITHIN PAST 6 - 12 HOURS:
   1. Take pre-load level and dose accordingly (see guidelines below for re-bolus)
   or
   2. Give empiric loading dose of 2 - 3 mg/kg aminophylline
     (if theophylline has been given within last 6 hours, note dosage form before
dosing: -sustained release products peak 4 - 6 hours after dose and regular
release dosage forms peak 1 - 2 hours after dose [see guidelines above])

**POST-LOAD SERUM THEOPHYLLINE LEVEL**

- 30 minutes after the IV loading dose
- aim for serum concentration of about 70 µmol/L (depends on clinical condition)

**RE-BOLUS**

- generally 1.25 mg/kg gives a 11 µmol/L increase in serum level
- when re-bolusing, remember to increase the infusion rate as well

**MAINTENANCE INFUSION**

- doses may need to be reduced to compensate for hepatic dysfunction or
cardiac disease
  6 wk – 6 mo: 0.5 mg/kg/hr
  6-12 mo: 0.6 -0.7 mg/kg/hr.
  1-9 yr: 1-1.2 mg/kg/hr
  9 –12 yr & adult smokers: 0.9 mg/kg/hr.
  12 – 16 yr & Non-smoking adults: 0.7 mg/kg/hr.

**6 HOUR SERUM THEOPHYLLINE LEVEL**

- this level, along with clinical findings, indicates if the continuous infusion is maintaining therapeutic blood levels
  A. if level is < 60 µmol/L increase infusion by approximately 25%,
  or
  B. if level is > 90 µmol/L decrease infusion by approximately 25%

**SERUM THEOPHYLLINE LEVEL 24 HOURS AFTER ANY CHANGE IN DOSE**

- this level, along with clinical findings, allows calculation of clearance and half life

**DRUG INTERACTIONS**

Erythromycin and cimetidine inhibit the metabolism of theophylline, resulting in increased serum theophylline levels. Monitor for toxicity when either of these drugs are used concurrently with theophylline.

Guidelines for Theophylline Use for Acute Asthma in Children

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