

GUIDELINES FOR THEOPHYLLINE USE FOR ACUTE ASTHMA IN CHILDREN

Therapeutic Range 55-110 $\mu\text{mol/L}$

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 $\mu\text{mol/L}$ (depends on clinical condition)

RE-BOLUS

- generally 1.25 mg/kg gives a 11 $\mu\text{mol/L}$ 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
- or**
- A. if level is < 60 $\mu\text{mol/L}$ increase infusion by approximately 25%,
 - B. if level is > 90 $\mu\text{mol/L}$ 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.

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