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 OR AMINOPHYLLINE GIVEN:
- load with 6 mg/kg aminophylline over 20 - 30 minutes

B. IF THEOPHYLLINE OR AMINOPHYLLINE HAS BEEN GIVEN WITHIN PAST 24 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 end of 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/h
  - **6-12 mo:** 0.6-0.7 mg/kg/h
  - **1-9 yr:** 1-1.2 mg/kg/h
  - **9 –12 yr & adult smokers:** 0.9 mg/kg/h
  - **12 – 16 yr & Non-smoking adults:** 0.7 mg/kg/h

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
Concomitant administration with CYP3A4, CYP1A2, or CYP2E1 inhibitors or inducers may affect theophylline levels
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