Aminophylline should only be prescribed following discussion with a Senior Respiratory Physician. See overleaf for prescribing guidelines.

**LOADING DOSE:** 5 mg / kg over 20 minutes

No loading dose if already taking theophylline or aminophylline

**ADMINISTRATION RECORD**

<table>
<thead>
<tr>
<th>Patient</th>
<th>Dose</th>
<th>40kg</th>
<th>50kg</th>
<th>60kg</th>
<th>70kg</th>
<th>80kg</th>
<th>90kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elderly or Heart Failure</td>
<td>0.3 mg/kg/hour</td>
<td>12</td>
<td>15</td>
<td>18</td>
<td>21</td>
<td>24</td>
<td>27</td>
</tr>
<tr>
<td>Non-Smoking Adult</td>
<td>0.5 mg/kg/hour</td>
<td>20</td>
<td>25</td>
<td>30</td>
<td>35</td>
<td>40</td>
<td>45</td>
</tr>
<tr>
<td>Smoking Adult</td>
<td>0.7 mg/kg/hour</td>
<td>28</td>
<td>35</td>
<td>42</td>
<td>49</td>
<td>56</td>
<td>63</td>
</tr>
</tbody>
</table>

Initial maintenance infusion rate in mL/hour.

Use ideal body weight for obese patients.

**THEOPHYLLINE LEVEL**

Date and time taken:

<table>
<thead>
<tr>
<th>Level: mg/L</th>
</tr>
</thead>
</table>

* Delete as required
**PRESCRIBING INFORMATION FOR THE ADMINISTRATION OF AMINOPHYLLINE**

1. **Patients already taking oral theophylline or aminophylline**
   A loading dose must **NOT** be given.

2. **Patients NOT already taking oral theophylline or aminophylline**
   A loading dose should be given
   \[
   \text{Loading dose} = 5\text{mg/kg} \quad (\text{as an IV infusion in 100mL sodium chloride 0.9\% or glucose 5\% over 20 minutes}). \quad \text{Maximum infusion rate} = 25\text{mg/minute}
   \]

3. **Maintenance Infusion**
   Aminophylline 1g in 1L of Sodium Chloride 0.9\% (preferred choice) or Glucose 5\%.
   The initial rate of infusion (mL/hour) can be calculated using the table overleaf.

4. **Drug Interactions**
   Theophylline is metabolised by the liver. Therefore drugs that inhibit or induce hepatic enzymes will affect theophylline clearance.
   **CIPROFLOXACIN, ERYTHROMYCIN AND CLARITHROMYCIN** decrease theophylline clearance and can therefore lead to toxicity
   - the rate of aminophylline infusion should be **HALVED**
   There are many other drugs that interact with theophylline -  *Please refer to the BNF.*

5. **Measuring Theophylline Levels**
   The therapeutic range for theophylline is: 10 - 20 mg/L
   Theophylline (**not aminophylline**) is measured, as this is the active constituent of the drug.
   **When should the level be checked first?**
   - If a loading dose has been given: 6 hours after starting the infusion.
   - If toxicity is a risk: 6 hours after starting the infusion.
   - All other patients: 12-18 hours after starting the infusion.
   Repeat levels **MUST** be taken **every 24 hours whilst IV aminophylline is prescribed.**
   Assuming that the patient has achieved a steady state serum theophylline concentration, infusion rates may be adjusted using the equation:
   \[
   \text{New Infusion Rate} = 15 \times \frac{\text{Current Infusion Rate}}{\text{Current Theophylline Level (mg/L)}}
   \]

6. **Converting from IV to Oral**
   - When converting from aminophylline to theophylline, a conversion factor is necessary.
     Aminophylline contains 80\% theophylline, therefore the conversion factor = 0.8.
   - When converting to oral aminophylline, there is no need for a conversion factor.
   - Give the first oral dose as the rate of aminophylline infusion is reduced to zero over 8-12 hours.
   - A 6 – 8 hour post-dose level **MUST** be taken after 2 days.

**Example**
For a 60kg patient, the rate of aminophylline infusion = 30mL/hour
Total daily dose = 720mg of aminophylline (of which 80\% is theophylline)
Therefore dose of theophylline = 720mg x 0.8 = 576mg
Give the nearest practical dose = Uniphyllin Continus® 300mg bd

Consult the netFormulary or eBNF for aminophylline / theophylline preparations available.