Intravenous phenytoin for status epilepticus in adults
Local Guidance

Note: the following guidance reflects BNF dosing and administration information. Product information may vary. It is recommended to follow the guideline below for all phenytoin brands.

Indication: Status epilepticus

Products: Vials contain 250mg phenytoin sodium in 5ml

Contra-indications: hypersensitivity to phenytoin, sinus bradycardia, sino-atrial block, second or third degree AV block, Stokes-Adams syndrome

**PHENYTOIN LOADING DOSE**
(for patients not already taking phenytoin)

**Dose:** 20mg/kg given via intravenous infusion (for patients not already taking phenytoin).

For patients already taking phenytoin, seek advice for loading dose calculations

<table>
<thead>
<tr>
<th>Table 1: Loading dose of phenytoin sodium</th>
<th>Loading dose (mg)</th>
<th>Volume (mL) of phenytoin sodium 250mg in 5mL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight (kg)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35-37</td>
<td>700</td>
<td>14</td>
</tr>
<tr>
<td>38-42</td>
<td>800</td>
<td>16</td>
</tr>
<tr>
<td>43-47</td>
<td>900</td>
<td>18</td>
</tr>
<tr>
<td>48-52</td>
<td>1000</td>
<td>20</td>
</tr>
<tr>
<td>53-57</td>
<td>1100</td>
<td>22</td>
</tr>
<tr>
<td>58-62</td>
<td>1200</td>
<td>24</td>
</tr>
<tr>
<td>63-67</td>
<td>1300</td>
<td>26</td>
</tr>
<tr>
<td>68-72</td>
<td>1400</td>
<td>28</td>
</tr>
<tr>
<td>73-77</td>
<td>1500</td>
<td>30</td>
</tr>
<tr>
<td>78-82</td>
<td>1600</td>
<td>32</td>
</tr>
<tr>
<td>83-87</td>
<td>1700</td>
<td>34</td>
</tr>
<tr>
<td>88-92</td>
<td>1800</td>
<td>36</td>
</tr>
<tr>
<td>93-97</td>
<td>1900</td>
<td>38</td>
</tr>
<tr>
<td>&gt;98</td>
<td>2000</td>
<td>40</td>
</tr>
</tbody>
</table>

For obese patients (BMI > 30 kg/m²) use adjusted body weight to calculate the loading dose:

Adjusted body weight = IBW + [1.33 x (actual body weight - IBW)]

Ideal body weight (IBW) for males (kg) = 50 + (2.3 x [height in inches - 60])
Ideal body weight (IBW) for females (kg) = 45.5 + (2.3 x [height in inches - 60])

*Note this is specific to IV phenytoin only*

**How to prepare:**

Dilute in 250ml sodium chloride 0.9% only

After dilution phenytoin must be infused immediately and the infusion completed within an hour.
PHENYTOIN LOADING DOSE (continued)

How to administer:

Before and after the infusion of phenytoin the needle or the catheter must be flushed by an injection of sodium chloride 0.9%.

The maximum rate of administration is 50mg per minute:
- For doses under 1g: Infuse over 20 minutes via large vein
- For doses 1 - 2g: Infuse over 40 minutes via large vein

Use a 0.22 micron filter with the infusion pump during the administration of diluted intravenous phenytoin. If the ward does not stock 0.22 micron filters, they are stocked in pharmacy departments, or you can find the nearest area that does by going to

http://pharminfo03/Reports/Pages/Report.aspx?ItemPath=%2fJAC%2fStock+Availability%2fDrugs+on+Ward+Profiles++like+BDRG

and searching 'filter', or contact your ward pharmacist or the out-of-hours pharmacist.

The product should be inspected visually for particulate matter and discoloration prior to administration.

Monitoring:

Monitor BP, ECG, O₂ saturation and respiratory rate.

Signs of phenytoin toxicity:
The initial symptoms are symptoms: nystagmus, ataxia and dysarthria. Additional symptoms may include: lethargy, slurred speech, nausea, vomiting, diplopia, dizziness and tremor. The patient may become comatose and hypotensive.

PHENYTOIN MAINTENANCE DOSE

Dose:

Initially 100mg every 6-8 hours given IV (usually start with 100mg three times daily).

Dose may be lower in patients with low albumin levels or patients who are receiving other medicines which interact with phenytoin. Contact your pharmacist for advice about interactions between medications.

How to prepare and administer: Best practice is to administer as an IV bolus over 3-5 minutes but can be administered as an infusion.
Therapeutic drug monitoring:

Target phenytoin level is 10-20mg/L

When do I take the level?

**After loading dose:** Phenytoin levels should be taken between 6-24 hours after loading dose has been given. Level will be a guide to assess whether the therapeutic range has been achieved or whether the level exceed the target range.

**After maintenance dose:** Phenytoin levels should be taken 2-3 weeks after treatment is initiated or dose has been changed. A trough level is required before the morning dose of phenytoin.

Levels may need to be taken more frequently in malnourished patients, patients with liver impairment or patient taking medicines which interact with phenytoin.

The pharmacokinetics of phenytoin means that a small dose increase can produce a large increase in phenytoin levels.

If a dose increase is required then doses should be changed in small increments only to avoid toxicity. Contact pharmacist or neurologist for advice regarding adjusting phenytoin doses.

Converting to oral phenytoin:

Convert to oral preparation when patient is able to tolerate feeds. Give total daily dose as a single dose.

Formulations of phenytoin are not bioequivalent:

- 100mg injection (phenytoin sodium) = 100mg capsule (phenytoin sodium)
- 100mg injection (phenytoin sodium) = 92mg liquid (phenytoin base)
- 100mg capsule (phenytoin sodium) = 92mg liquid (phenytoin base)

Contact pharmacy for advice regarding dose conversion between preparations.

Phenytoin suspension interacts with enteral feeds. Stop enteral feeds for two hours before and two hours after giving phenytoin suspension to enhance absorption of phenytoin.

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References and Provenance

- BNF - January 2017 online version
- Summary of product characteristics for Epanutin Ready Mixed Parenteral. Revision of text 29 July 2016
- Summary of product characteristics for Phenytoin Hikma 05-Dec-2014
- Injectable medicines guide (Medusa) 17 Jan 2017
- UKCPA: Drug Dosing in Extremes of Body Weight in Critically Ill Patients. September 2013
- Patient Safety Alert NHS/PSA/W/2016/010

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