

New oral and subcutaneous dexamethasone conversion guidance - information for health care professionals

1. Background

St Catherine's Hospice's established clinical practice when switching between oral¹ and subcutaneous dexamethasone² has been to use the same dose for both routes. From October 2014, the injectable pharmaceutical formulation used to date, dexamethasone 4mg in 1ml, 1ml ampoules (Aspen Pharmacare), has been discontinued. There is no other 4mg/ml dexamethasone product.

In the absence of published official national guidance, Medicines Information (UKMi)³ has strongly advised organisations to review and revise local protocols and guidelines to mitigate any confusion caused by this change that may lead to dosage errors.

St Catherine's Medicines Management Group (MMG) guidelines for prescribing injectable dexamethasone take into account:

- Injectable formulations remaining on the market.
- Pharmacokinetics of dexamethasone in oral and injectable formulations.
- Clinical practice adopted and endorsed by other palliative care organisations.

This will be reviewed if national guidance is published.

2. Rationale for dose conversion and choice of product

Until now, clinical practice locally has used a conversion ratio of 1:1 when switching between oral and subcutaneous dexamethasone e.g. 4mg oral to 4mg sc. However, published studies show that the bioavailability of dexamethasone from oral tablets is highly variable. One study demonstrates a mean bioavailability of 78% (+/- 12%)⁴ while another study concludes 63.4% with a range of 54 to 74%⁵.

Assuming reduced (albeit variable) dexamethasone bioavailability from tablet formulations, MMG has devised a conversion chart based on an oral dose of 4mg dexamethasone equivalent to 3.3mg sc dexamethasone. This approach is endorsed by palliativedrugs.com⁶ and is accepted practice in some other palliative care organisations already.

Most importantly, as with any dose conversion, titration to desired clinical effect is the best guide to required therapeutic dose.

The Hameln brand of dexamethasone 3.3mg/ml; 1ml ampoule (pack size 10) product is preferred on the basis of presentation, storage requirements and cost (£1.20/1ml ampoule).

An oral and subcutaneous dose conversion table constitutes Appendix 1 of this information sheet.

3. Notes & references

1. All mention of oral in this guidance refers to solid dose tablets. For advice on dose conversion from other formulations dexamethasone oral solution, please contact the pharmacy.
2. All mention of dexamethasone in this guidance refers to dexamethasone base.
3. In use product safety assessment report for dexamethasone injection (version 2). UKMi 24th October 2014. ([Dexamethasone report version 20oct2014 final.pdf](#))
4. Duggan et al. *Clin Pharmacol & Ther* 1975 Aug;18(2):205-9.
5. Toth et al. *Ther Drug Monit* 1999;21:532-5.
6. Private communication: Sarah Charlesworth, Specialist Pharmacist Palliative Care Information and Website Management, palliativedrugs.com.

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Oral dexamethasone tablet dose	Subcutaneous dexamethasone dose when using the 3.3mg/ml injection	Volume of 3.3mg/ml injection equivalent to the subcutaneous dose
0.5mg	0.4125mg	0.125ml
1.0mg	0.825mg	0.25ml
2.0mg	1.65mg	0.5ml
3.0mg	2.475mg	0.75ml
4.0mg	3.3mg	1.0ml
5.0mg	4.125mg	1.25ml
6.0mg	4.95mg	1.5ml
7.0mg	5.775mg	1.75ml
8.0mg	6.6mg	2.0ml
10.0mg	8.25mg	2.5ml
12.0mg	9.9mg	3.0ml

For other dose conversions, please use the following formula:

- **Oral to subcutaneous dose and volume conversion**

Oral dose(mg) X 0.825 = subcutaneous dose (mg).

Volume of 3.3mg/ml injection (ml) = subcutaneous dose divided by 3.3.

- **Subcutaneous to oral dose conversion**

Subcutaneous dose (mg) divided by 0.825 = oral dose (mg).

Important notes

- As with all route and dose conversions, titration to desired clinical effect is the best guide to required therapeutic dose.
- The dexamethasone 3.3mg/ml injection here refers to the Hameln brand.
- 'Dexamethasone' here refers to the drug base.

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