

## Guideline for Administration of Subcutaneous Furosemide in the Hospital Setting.

### Indications for Use

For palliative patients requiring parenteral diuretics in the hospital setting:

- with poor or no venous access
- to allow discharge from hospital when the patient has an ongoing need for parenteral diuretics

### Recommended Infusion Sites

Upper chest

Upper anterior aspect of arms

Sites are restricted in heart failure patients because of probable oedema. Also sites to be avoided are bony prominences and areas where tissue is damaged, thus decreasing absorption. If possible, use a site away from areas where tattoos are present as these may mask site reactions.

Follow BTHFT Syringe driver policy for use of syringe driver. For patients being discharged home BDCt syringe driver policy must be followed.

NB If there is very poor peripheral perfusion in the terminal stage, subcutaneous absorption may be limited and stat doses of intramuscular diuretics or alternative measures such as antimuscarinics, buccal nitrates or sedation may be needed to alleviate terminal pulmonary oedema.

### Recommended Dose

Patient's should have recent urea and electrolytes prior to commencement of Subcutaneous Furosemide and repeated as required according to clinical assessment.

Use the previous oral 24 hour requirement as a start dose and titrate up or down according to response, reviewed every 24 hours. For example, if the patient has been taking 120mg oral Furosemide in 24 hours, start on 120mg/24 hours in the syringe driver. It is important to recognise that this approach is entirely empirical as there is no published literature to help guide the clinician with this regard and this recommendation is based on clinical experience of the local team to date.

If, on review, subcutaneous administration appears to be ineffective with regard to symptom control, a clinical reassessment and judgement will be repeated and the future management plan negotiated with the patient and family as appropriate.

Drug stability – Exposure to light may cause degradation and discolouration, the solution should not be used if a yellow colour is present. Furosemide 10mg/mL in polypropylene syringes is stable at 25°C in normal light for 24 hours.

**\* Furosemide MUST NOT be mixed with any other medications.**

If required, dilution is with 0.9% Sodium Chloride. In practice the maximum dose administered is 250mg/25ml over 24 hours however a diluent may not always be necessary. Within BTHFT syringe driver policy, dilution is encouraged.

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Choose the appropriate syringe size (Usually 20ml or 30ml is recommended) for the volume to be infused. It is safe to infuse the manufactured concentration. The solution should be infused following the local syringe driver guidelines.

The patient, relatives and carers should be given an explanation of how this method of drug administration benefits the individual patient and consent, when possible, from the patient or carers if the patient is too unwell before administration is commenced.

#### Contra-indications and side effects

As listed in the BNF. In situations of symptom management/palliative care the prescribing physician will judge the best interests of the patient.

#### Advantages to the patient

It avoids the necessity of intermittent intravenous or intramuscular injections of Furosemide and the siting of a cannula. The syringe drivers used are lightweight, allow mobility and continued independence. The twenty-four hour infusion reduces intrusion into the patient's privacy. It allows the patient to be discharged from hospital (if appropriate) when there is a continuing need for parenteral therapy.

#### Current Doses of Furosemide Available

Furosemide 250mg/25ml solution for injection (equals 10mg/ml)

Furosemide 50mg/5ml solution for injection

Furosemide 20mg/2ml solution for injection

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## **References available**

To date few references are available pertaining to administration of subcutaneous Furosemide.

### Diuretic Effects of Subcutaneous Furosemide In Human Volunteer: A Randomised Pilot Study.

Arun K Vernea; Jack H Da Silva; David R Kuhl

The Annals of Pharmacology 2004

### Subcutaneous administration of drugs in the elderly: Survey of practice and systematic literature review

C Fonzo-Christe; C Vukasovic; A Wasilewski-Rosca; P Bonnabry

Palliative Medicine April 1 2005,19(3), 208-219.

### Subcutaneous Furosemide

M A Goenaga; M Millett; E Sanchez; C Gorde; JA Carrera; E Arzellus

Annals of Pharmacotherapy October 1 2004, 38 (10), p1751

### Furosemide

L.A.Trissel Handbook on Injectable Drugs 14<sup>th</sup> Edn 2007 American Society of Health-System Pharmacists.

### Management of End Stage Cardiac Failure

M J Johnson

Post Graduate Medical Journal June 2007; 83(980): 395-401

## **Bibliography**

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BMJ Books 2004

### Heart Failure and Palliative Care a team approach

Miriam Johnson and Richard Lehman 2006

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BNF – Current edition

## **Acknowledgements**

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