

# GUIDELINE FOR THE USE OF SUBCUTANEOUS FUROSEMIDE IN PATIENTS WITH HEART FAILURE

## Background

Patients with heart failure are often prescribed diuretics as part of their drug treatment. If they become more symptomatic (e.g. increasing oedema, weight and/or breathlessness) while taking oral diuretics, treatment with parenteral (normally intravenous) furosemide may be helpful. In the past this has usually necessitated admission to an acute hospital. Giving furosemide via the subcutaneous (s/c) route may be an alternative way of managing these patients, especially when admission to hospital may be deemed inappropriate, for instance at the end of life. It may also allow discharge from hospital for those patients require ongoing treatment with parenteral diuretics.

Furosemide has been shown to work when given subcutaneously to healthy volunteers <sup>1</sup>. In one survey, it was used by up to 69% of centres caring for an elderly population, but its effectiveness was not examined <sup>2</sup>. In theory, the dose used subcutaneously should be the same as the dose used intravenously, unless there is a reaction at the site of administration that prevents absorption. It was as well tolerated locally when given subcutaneously as normal saline <sup>1</sup>. Some practitioners have given it 20mg (2ml) s/c prn, whilst others have infused it <sup>3</sup>. The subcutaneous route is unlicensed but should be seen as a legitimate aspect of clinical practice <sup>4</sup>.

## Suggested schedule

1. Consult with cardiology, medical or palliative medicine consultant or SpR to discuss suitability of initiation of treatment. Liaise with GP and district nursing services.
2. Start with the same dose s/c as the patient was previously taking orally, or you would be using if the patient was going to have intravenous furosemide.
3. Administer the dose by continuous subcutaneous infusion via a **Graseby MS26** (24 hour) syringe driver. It may be infused over 24 hours or alternatively over 6 to 8 hours (which more closely follows the pattern when giving intravenous furosemide). Furosemide is formulated as 10mg/ml solution. It should be mixed with water for injection. The maximum dose given by one syringe driver will depend on the size and make of syringe used, being 48mm of whatever syringe is used. If a larger dose is required, two syringe drivers may be used concurrently. There is limited data on drug compatibility so it is not recommended to mix furosemide with other drugs at present.
4. Monitor clinical symptoms and signs (breathlessness, weight, oedema) as normally. Measuring serum urea and electrolytes if appropriate (e.g. if worsening renal function would not change your management, consider not measuring). Adjust the dosage accordingly. Hospital at home may be an appropriate service if close monitoring is needed.

5. In patients who are dying and who are drinking less, reducing the dose of diuretic in line with fluid status may be appropriate.
6. Avoid using oedematous areas as infusion sites due to possible reduced absorption, and monitor the site as you would for any other subcutaneous infusion.
7. For further advice, please contact your local clinical nurse specialist in heart failure or LOROS (0116 2318415).

## References

1. Verma AK, da Silva JH, Kuhl DR. Diuretic effects of subcutaneous furosemide in human volunteers: a randomized pilot study. *The Annals of Pharmacotherapy* 2004 April; **38**: 544-549
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3. Palliativedrugs.com website bulletin board, search term "furosemide"  
<http://www.palliativedrugs.com/pdi.html> accessed 21/04/06
4. The use of drugs beyond licence in palliative care and pain management.  
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