ADMINISTRATION OF SUBCUTANEOUS FUROSEMIDE FOR PALLIATIVE PATIENTS IN COMMUNITY SETTINGS IN BRADFORD, AIREDALE, WHARFEDALE AND CRAVEN GUIDELINE

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			Review Date	30/09/2023
Target Audience:	Heart Failure patients who - have had a limited response to oral diuretics - are unable to take oral diuretics - Palliative for symptom control		**Equality Impact Analysis:**	
People Authorised To Use This Guideline:	Heart Failure Nurse Specialists Community Advanced Nurse Practitioners / Matrons Community Collaborative Care Teams District Nursing Teams		**Training Requirement To Use This Guideline:**	Registered Nurse Education session to support S/C Diuretic use from HFNS

GUIDELINE CHECKED FOR:	**Yes/No**
Corporate Issues:	
Clinical Governance Issues:	
People Governance Issues:	
Risks Identified With Using This Guideline:	
Risk Counter Measures:	

GUIDELINE REVIEW HISTORY

Version No:	Review Date:	Reviewer:	Changes Made:
1	27/02/2020	Comm Q&S	Spelling corrections
1	02/09/2020	Aalae Alkhalil Senior Pharmacist, AGH	Grammatical changes Use of document S/C unlicensed route Addition to side effects
1	18/09/2020	D&TC	Hyperlinks added Grammatical changes to volumes Amalgamation of side effects

Table of Contents

1 INTRODUCTION

Airedale NHS Foundation Trust fully recognises that the obligation to implement guidance should not override any individual clinician to practice in a particular way if that variation can be fully justified in accordance with Bolam Principles. Such variation in clinical practice might be both reasonable and justified at an individual patient level in line with best professional judgement. In this context, clinical guidelines do not have the force of law. However, the Trust will expect clear documentation of the reasons for such a decision and for this variation. In addition, any decision by an individual patient to refuse treatment in line with best practice must be respected, escalated to the consultant and fully documented in the appropriate records of care/treatment

This document provides guidance for the use of subcutaneous (SC) furosemide for patients with distressing symptoms associated with end stage heart failure such as breathlessness and peripheral oedema.

2 ADVANTAGES TO THE PATIENT

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

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 community staff to plan care around the timing of the infusion change. It allows the patient to be discharged from hospital when there is a continuing need for parenteral therapy.

3 INDICATIONS FOR USE (NOT ALL SYMPTOMS MAY BE PRESENT)

Patients with NYHA III/IV category with distressing and debilitating symptoms:

- Increased dyspnoea at rest or paroxysmal nocturnal dyspnoea (PND)
- Increased cough, productive white phlegm
- Increased peripheral oedema
- Ascites
- Failing to respond to increased oral diuretics

For **palliative patients** requiring parenteral diuretics and:

- their preferred place of care* is own home, nursing home, hospice or residential home
- poor or no venous access
- to allow discharge from hospital when the patient has an ongoing need for parenteral diuretics
- for symptom control - SC diuretics offers these patients more participation and choice in treatment decisions regarding their preferred place of care

*This assumes that this is an appropriate option and hospital admission would not confer additional benefit at the patient's stage of illness, or the patient refuses admission after due discussion of the options.

4 RECOMMENDED INFUSION SITES

The recommended infusion sites are:

- Upper chest
- Upper anterior aspect of arms

Sites are restricted in heart failure patients due to gross oedema. The abdomen is not recommended where abdominal ascites is present therefore recommended infusion sites must be used. 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. Monitor for signs of inflammation / infection / rash and hardening of skin at entry site which can be quite painful if treatment is prolonged.

Cannula can be left insitu for 72 hours or longer if no redness
CommunityDiureticPathway(VIPScore)

Follow BDCT / Syringe Driver Policy for use of syringe driver.

**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.

5 RECOMMENDED DOSE

Initiating health professional may feel it is appropriate to check 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.

Oral furosemide has a lower bioavailability than subcutaneous furosemide and the absorption may be even less in heart failure due to gastro-intestinal oedema.

* 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. It may be necessary to liaise with the Cardiologist / Palliative Care Consultant for appropriate treatment regime.
S/C is an unlicensed route.

eg: If the patient has been taking oral furosemide 120mg morning, 80mg mid-day daily, start on 200mg/24 hours in the syringe driver.

Furosemide 200mg SC infusion
50mg/5mL ampoules x 4 = 200mg in 20mLs to infuse over 24 hours

5.1 Current Strengths of Furosemide Ampoules Available:

Furosemide 250mg/25mL solution for injection (equals 10mg/mL)
Furosemide 50mg/5mL solution for injection
Furosemide 20mg/2mL solution for injection

- Choose the appropriate luer lock syringe size (usually 20mL or 30mL is recommended) for the volume to be infused
- Infusion can be given neat.
- Furosemide may precipitate solutions of low pH and therefore dextrose solutions are not suitable infusion fluids for furosemide injection. If appropriate a diluent may be used of sodium chloride 0.9% injection.
- The solution should be infused following the guidelines for the local syringe driver.
- The syringe driver should be stored in a locked box whilst infusing (ANHSFT only).
- Drug stability – Exposure to light may cause degradation and discolouration, the solution should not be used if a yellow colour is present.

**** Furosemide SHOULD NOT be mixed with any other medications****

Plan to maintain on current regime and only reduce dose if clinically appropriate response allows. If SC dose is reduced please consider / introduce oral dose alongside, for example:

SC Furosemide dose	Oral dose to commence
100mg	0mg
80mg	40mg
60mg	80mg

The dose should be reviewed by initiating healthcare prescribing professional and adjusted accordingly. Guidance can also be sought from the Acute Hospital Cardiologist, switchboard to bleep or contacting Palliative Care Consultant.

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.

5.2 Contra-indications and side effects

As listed in the BNF. In situations of symptom management/palliative care the prescribing physician will consider the best interests of the patient and will inform them of the possible side effects prior to starting the treatment at home.

The risk of side effects will vary between patients and this treatment would only be given in the community setting if the MDT and patient agreed it would be safe to do so.

Stop if the patient becomes anuric

5.3 Observe for signs of dehydration

- dizziness
- blurred vision
- excessive thirst
- diarrhoea / constipation
- vomiting
- increased fatigue / increased weakness
- increased lethargy

5.4 Observe for signs of decompensated heart failure

(Consider may have some signs already)

- increased breathlessness at rest
- increased cough, productive – white phlegm
- evidence of increased peripheral oedema – ankles/thighs/sacral pad/abdomen

Ensure syringe driver is infusing appropriately. Monitor VIP Score. Ensure oral fluid intake is limited to 1.5-2 litres (or less) as directed daily.

If any concerns with above symptoms please contact the appropriate prescribing physician.

5.5 Monitoring

Record BP, Pulse, Weight if clinically indicated
Obtain venous blood samples if directed (but not routinely)

It may not be appropriate to carry out blood tests / observations on patients in the palliative stage of heart failure as the results are unlikely to affect treatment decisions which are purely aimed at symptom control.

5.6 Treatment Goals

It is hoped that

1) The infusion will initiate an increase in diuresis as absorption will be more effective.
2) Patient less dyspnoeic on exertion, symptomatic improvement in breathing
3) Reduction in peripheral oedema
4) Weight reduction, attainment of a target / goal weight (if appropriate to undertake)
5) Maintain stable renal function if appropriate
   (K+>3.5<5.5mmols, Na>125mmols/l, Creatinine <300µmol/l or increases by no more than 50%)

6 SUPPORT

The patient, relatives and carers should be given an explanation of how this method of drug administration benefits the individual patient and consent.

If the syringe driver does not appear to be working, the carers/patient should be advised to contact the District Nurse Team through Single Point of access number or their GP (in normal hours).

The Healthcare Prescribing Professional will review the patient at appropriate intervals during the duration of the infusion and work closely with the District Nursing Team involved in delivering the diuretic infusion.

All treatment / care delivery and health professional input will be documented on SystmOne. The patient will be given an explanatory leaflet relevant to local area.

6.1 For further advice contact:

Airedale

Heart Failure Nurse Specialist
(if known to service):
01535 294555 (answer machine available)
Monday – Friday 8.00 am – 5.00 pm

Manorlands: 01535 642308

Airedale Hospital Cardiology Consultant /Registrar on call (via switchboard):
01535 652511

Single Point Access (SPA)
24 hour availability: 01274 256131

Patient own GP Practice

NHS Helpline: 111

Bradford:

Named Heart Failure Nurse Specialist
(if known to service)

Marie Curie Hospice: 01274 337000

Bradford Teaching Hospital Cardiology Consultant / Registrar on call
(via switchboard): 01274 552200

Single Point Access (SPA)
24 hour availability: 01274 256131

Patient own GP Practice

NHS Helpline: 111

7 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

Furosemide
L.A.Trissel Handbook on Injectable Drugs 14th Ed 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

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

Subcutaneous Furosemide in advanced heart failure: has clinical practice run ahead of the evidence base?
J M Beattie, M J Johnson
British Medical Journal Supportive and Palliative Care 2012, 2, 5-6

8 BIBLIOGRAPHY

Improving Outcomes In Chronic Heart Failure
Simon Stewart, Linda Blue
BMJ Books 2004

Heart Failure and Palliative Care a team approach
Miriam Johnson and Richard Lehman 2006

The Royal Marsden Manual of Clinical Nursing Procedures Fifth Edition

BNF – Current edition

9 ACKNOWLEDGEMENTS

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10 PROCEDURAL DOCUMENT DEVELOPMENT CHECKLIST

Prior to submitting any document for initial ratification or following a review, the following checklist must be completed and appended by the author to the document. Please remember when writing a procedural document you need to be as specific as possible and not leave any area open for misinterpretation.

TITLE OF DOCUMENT:	✓or X	Comments
Front page – title, document reference table		
Is the title clear and unambiguous?		
Is it clear whether the document is a guideline, policy, or SOP?		
Has the correct document template been used?		
Is the document reference table completed?		
Is the review date identified?		
Is the frequency of review identified? If so, is it acceptable?		
Contents page and associated trust documents		
Are the contents page and page numbers accurate?		
Are all associated trust documents hyperlinked?		
Introduction		
Are the intention, purpose and scope of the document made clear?		
Are all relevant, supporting policies, local and national guidelines and SOPs listed?		
Has an equality impact assessment been completed?	N/A	
Definitions		
Are all terms clearly defined?		
Duties		
Are all roles and responsibilities made clear?	N/A	
Developing a new procedural document		
Have any training needs been identified?		
If so, have Education & Training / practice development been consulted?	N/A	