# Appendix A

## Bradford Heart Failure Nurse Specialist Service

## Medical Therapy Protocol

TO BE REVISED.


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# Introduction

These guidelines are to be used by the Heart Failure Nurse Specialist (HFNS) under the supervision of the patient's general practitioner (GP) and the GP Specialist / cardiologist / hospital consultant.

The protocols have been devised following guidelines used by Blue (2001) within the Glasgow heart failure service and as discussed by McMurray et al (2001). They have also been discussed and agreed at a joint meeting with GP Specialist, Cardiology and Care of the Elderly consultant representation.

They include detailed protocols for the use of evidence based treatments as recommended by PACE (Promoting Action on Clinical Effectiveness in Airedale and Bradford) for patients with chronic heart failure caused by left ventricular systolic dysfunction. As outlined in the protocols, certain treatments must be discussed with the patient's GP (ACE inhibitors, spironolactone, digoxin) or the contact cardiologist / physician / GP Specialist (beta-blockers) prior to any change.

The first line of contact will usually be the patients own GP. The HFNS may then act as an intermediary if required and seek advice about treatment from the GP Specialist / identified GP in the PCT with a special interest in cardiology . If further clarification or advice is required the patients hospital consultant will be contacted.

All changes in treatment will be communicated via locally agreed method (telephone / fax / written report ) to relevant parties (GP, hospital and community personnel involved in the continued care) and recorded in the HFNS case records and patient-held cardiac record.

The protocols will receive multidisciplinary review at a minimum of 6 monthly intervals and be updated accordingly.

# Increasing Loop Diuretic

Sudden increase in weight (>1Kg above dry weight [patients stable weight with no signs of fluid overload] sustained over ⩾2 days) especially if accompanied by oedema and breathlessness – titrate as below.

↓

**Frusemide**

40mg od → 80mg od

80mg od → 80mg mane
40mg lunch

80mg mane
40mg lunch → 80mg mane
80 mg lunch

80mg mane
80mg lunch → seek advice from GP

(NB If patient on bumetanide then as above but 40mg frusemide equivalent to 1mg bumetanide)

↓

Maintain increased dose for 3 days

↓

Assess via phone call / visit

↓

If dry weight not achieved but Continuing to loose weight then Reassess in a further 3-4 days. If dry weight still not achieved Then seek advice from patients GP As first line contact.

If weight increased Seek advice from GP

If dry weight achieved - return to original dose

↓

GP and patients own consultant to receive faxed report following treatment changes

NB HFNS will only make <u>one</u> incremental change before seeking advice from

GP → Specialist GP → consultant

# Decreasing Loop Diuretic

**Signs of fluid depletion**
**ie ⩾1Kg weight loss from dry weight sustained over⩾ 2 days, increased urea⩾ 5mmols or⩾25% from baseline, postural hypotension / dizziness, thirst**

**If:**
**•Peripheral oedema**
**•Raised JVP**
**Seek advice from GP**

**If:**
**•No peripheral oedema**
**•JVP not raised**
**Titrate as below**

**Frusemide**

| | | |
|---|---|---|
| >240mg / day | → | seek advice |
| 120mg mane<br>120mg lunch | → | 120mg mane<br>80mg lunch |
| 120mg mane<br>80 mg lunch | → | 80mg mane<br>80mg lunch |
| 80mg mane<br>80mg lunch | → | 80mg mane<br>40mg lunch |
| 80mg mane<br>40mg lunch | → | 80mg od |
| 80mg od | → | 40mg od |
| 40mg OD | → | seek advice |

**Assess within 48 hours via phone or visit**

**Unacceptable response i.e. still below dry weight or now above dry weight - seek advice from GP in first instance**

**Acceptable response i.e. back to dry weight**

**Reassess 48 hours**

**Unacceptable response ie. Weight above or below dry weight**

**Seek advice from GP**

**Acceptable response -discuss possible permanent change in therapy with GP**

## Initiation and use of thiazide diuretics and metolazone

Initiation will be via GP or hospital consultant (facilitated by HF-LS).

When thiazide / metolazone is combined with loop diuretics patients urea and electrolytes (U+E's) will be checked weekly for the first 4 weeks and monthly thereafter if stable and no change in therapy or condition.

Advice will be sought if U+Es are outside normal range (see Blood chemistry monitoring – diuretics section).

If patient is showing signs of fluid depletion on combined therapy then thiazide / metolazone would be reduced / discontinued initially ( following discussion with GP) followed by reduction in loop diuretic as per protocol if required.

# Initiation and use of spironolactone

Therapy should only be commenced after discussion with patient's GP and cardiologist

Indication - Patients who remain symptomatic (NHYA classification III or IV) despite treatment with an ACE inhibitor and diuretic(s) and where indicated a beta blocker

- K+ supplements and K+ sparing diuretics should be discontinued 2 weeks prior to spironolactone being commenced.
- Loop diuretics should be used as an alternative during this time
- Cautions and contra-indications will be assessed

Baseline U+Es will be checked prior to initiation

If:
- Creat >200 µmol
- Urea >11.2 mmol
- K >4.5 mmol

Seek specialist advice

If:
- Creat <200 µmol
- Urea<11.2 mmol
- K<4.5 mmol

Commence therapy at 25mg od (lower if concern)
Target dose 25-50mg od

U+Es will be checked 1 week after initiation

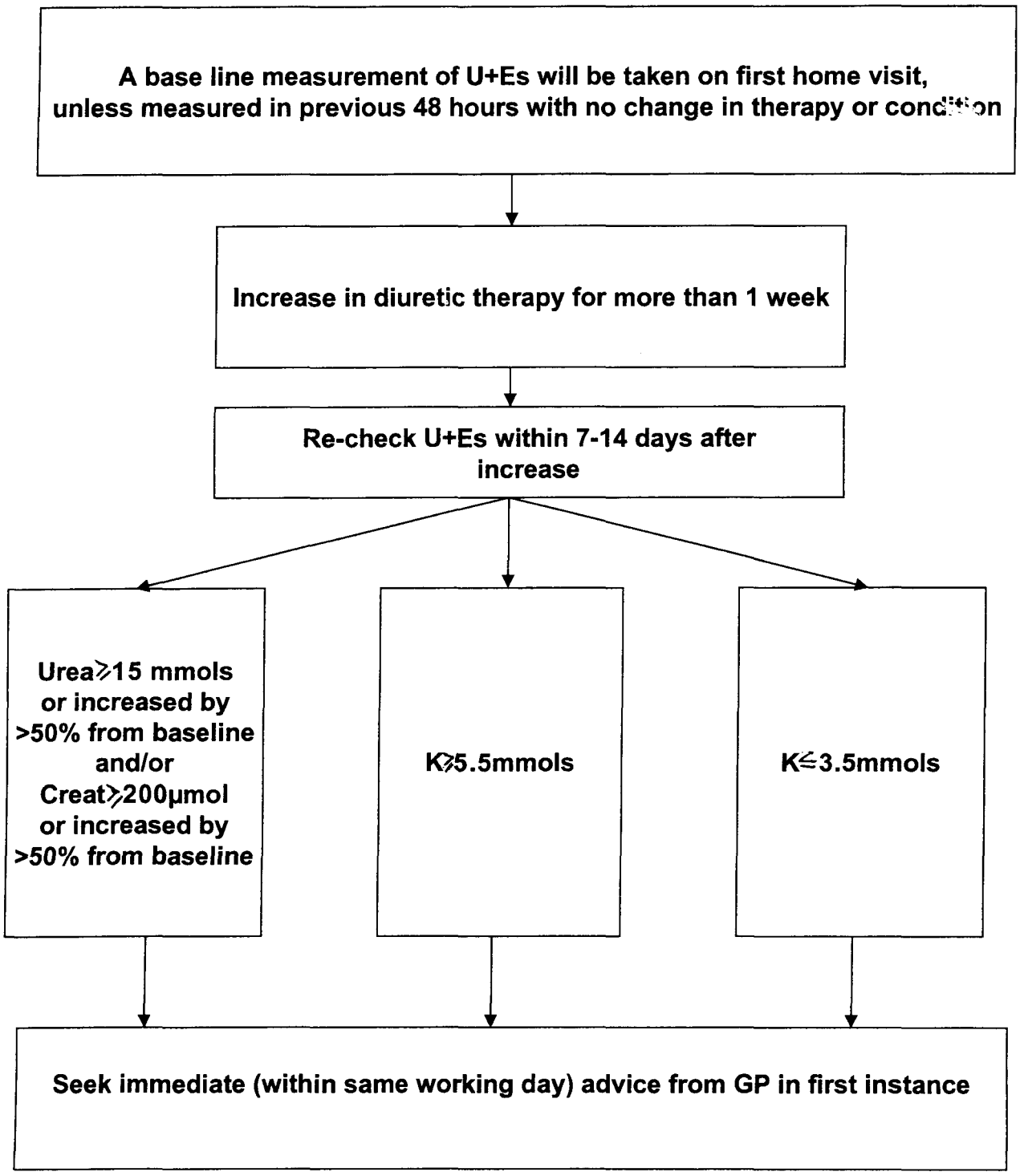
If:
- Creat ≥250µmol / increase by 25% from baseline
- Urea ≥18mmol / increase by 50% from baseline
- K ≥5.5mmol
- Diarrhoea / vomiting or any other cause of sodium and water loss

Stop therapy and contact GP
Spironolactone or loop diuretics may need decreasing

If:
- Creat <250umol / no increase by 25% from baseline
- Urea <18mmol / no increase by 50% from baseline
- K <5.5mmol
- No diarrhoea/vomiting

Continue treatment and monitor U+Es 4,8+12 weeks; 6,9+12 months; 6 monthly thereafter, stopping / reducing treatment as per protocol if necessary

## Blood Chemistry Monitoring - diuretics



## Other Blood monitoring

| Test | Responsibility | Time scale |
|---|---|---|
| Full blood count | Heart failure nurse while under their care.<br>Long term -CHD lead/support team or district nurse | Annually unless clinically indicated |
| Urea and creatinine<br>+<br>Electrolytes | Heart failure nurse while under their care.<br>Long term -CHD lead/support team or district nurse | As per protocols initially then 6 monthly |
| Glucose | Heart failure nurse first sample.<br>Long term -CHD lead/support team or district nurse | Annually |
| Serum cholesterol | Heart failure nurse while under their care.<br>Long term -CHD lead support team or district nurse | Annually once statin therapy stable |
| Liver enzymes, bilirubin | Heart failure nurse while under their care.<br>Long term -CHD lead/support team or district nurse. | Annually unless clinically indicated |
| Albumin | Heart failure nurse while under their care. Long term CHD lead/support team or district nurse | As clinically indicated |
| Thyroid function | Heart failure nurse while under their care. Long term CHD lead/support team or district nurse | As clinically indicated |
| Digoxin levels | Heart failure nurse while under their care. Long term CHD lead/support team or district nurse | As clinically indicated |

# Initiation and use of Ace Inhibitors

Initiation will be via GP or hospital consultant
Cautions and contraindications (history of angio-oedema, significant renovascular disease / aortic stenosis ) will be checked

| | Starting dose | Incremental rise | Target dose |
|---|---|---|---|
| **Preferred options** | | | |
| Ramipril | 2.5mg od | 2.5mg | 10mg od |
| Lisinopril | 2.5-5mg od | 2.5mg | 30mg od |
| **Some alternatives** | | | |
| Captopril | 6.25mg tds | 2nd dose 12.5mg tds then in 12.5mg increments | 50-100mg tds |
| Enalapril | 2.5mg bd | 2.5mg | 10-20mg bd |

BP and U+Es will be checked within 10 days following each increase
There will be a minimum of 7 days between each increase

If:
- Symptomatic hypotension
- Asymptomatic hypotension (systolic BP <90mmg)
- Creat ≥200 µmol or >50% from baseline
- urea ≥15 mmols or >50% from baseline
- K >5mmol

Seek specialist advice

If:
- No symptomatic hypotension
- No asymptomatic hypotension
- No renal impairment

Continue up titration until target dose achieved

NB at any time during initiation of ACE in all patients ACE will be stopped and advice sought from GP if:
- K rises to ≥ 6mmol
- Urea rises to ≥15mmol
- creat rises to ≥200µmol

## Initiation and use of Angiotensin II receptor antagonists

**To be used only if patient is truly intolerant of an ACE inhibitor due to persistent cough.**

**Prior to initiation and on increasing U+Es and blood pressure will be checked (see ACE inhibitor protocol for values)**

**Preferred choice of drug is Valsartan (only AII antagonist at present with data in heart failure). The starting dose is 80mg od (40mg in those over 75 years or with other cautions). This can be increased to 160 od (80mg for those with hepatic impairment) after 4 weeks.**

**Alternatives that may be seen are Candesartan, Irbesartan and Losartan.**

# Initiation and Use of Beta Blockers

To be commenced under specialist supervision only*

Patients whose heart failure is stable (no admission into hospital in the last month, no alteration in therapy in last 2 weeks) and who are taking maximum standard therapy (ACE and possibly digoxin) will be referred to specialist* for initiation.

Cautions and contra-indications will be checked.

Patients who do not meet these criteria but may benefit from therapy will be referred to the cardiologist for review

| | Starting dose | | Incremental rises | | | Maintenance dose |
|---|---|---|---|---|---|---|
| Week | 1 | 2 | 3 | 5 | 8 | 12 |
| Bisoprolol (od) | 1.25mg | 2.5mg | 3.75mg | 5.0mg | 7.5mg | 10mg |
| Week | 1 | | 4 | 6 | | 8 |
| Carvedilol (bd) | 3.125mg | | 6.25mg | 12.5mg | | 25mg (patients >85Kg - 50mg) |

NB Intervals given are a minimum level and progression may be slower if necessary

Patients will be assessed within 4 days (phone or visit)

If:
- Decrease in heart rate <50bpm
- Symptomatic hypotension
- Asymptomatic hypotension (BP<90systolic)
- Evidence of respiratory problem but no weight gain

Seek advice from initiating physician

NB Beta blockers will not be stopped without prior consent

If:
- No decrease in heart rate
- No symptomatic hypotension
- No asymptomatic hypotension

Continue up titration

If significant weight gain and shortness of breath see diuretic protocol

Improvement - continue up titration

No improvement - seek advice from specialist*

* Specialist supervision = Specialist GP / Cardiologist / General Physician / Care of the Elderly Physician

# Digoxin

Therapy will be initiated by patients GP or under consultant advice facilitated by HFNS. Cautions and contraindications will be assessed.

Consider patients:
•in sinus rhythm with symptomatically severe heart failure
( NYHA class III or IV) despite optimal therapy (diuretics and ACEI) ;
recurrent hospital admissions for heart failure
•in atrial fibrillation who are not suitable for beta-blockers

Check digoxin levels if:
•digoxin toxicity is suspected (nausea + vomiting, headache, confusion, visual symptoms, arrhythmias -AV block, VT, AV junctional rhythms, atrial tachycardia)
(NB patient with signs of toxicity can show levels within normal limits)
•patient is commenced on other drugs which are known to
alter levels e.g. erythromycin, amiodarone
•patient has poor or worsening renal function

Blood potassium concentrations should be monitored and hypokalaemia avoided.

## Non-heart failure medications

Patients with heart failure are usually elderly and have concomitant cardiovascular and non-cardiovascular problems for which they receive treatment. A number of commonly used drugs may lead to clinical deterioration of heart failure.

The HFNS will assess for medications that may exacerbate heart failure or interact with usual medication in particular:

- 'over the counter' drugs especially NSAIDs, high dose aspirin, St John's Wort, liquorice and some herbal and homeopathic remedies

- most calcium channel antagonists (except amlodipine, felodipine which should be used only for angina or uncontrolled hypertension).

- corticosteriods – by causing sodium and water retention

- tricyclic antidepressant drugs – may depress cardiac function and have pro-arrhythmic effect.

- care with patients on lithium as levels can be affected by changes in diuretic doses. For patients on lithium the levels should be checked each time U+Es are done.

- Erythromycin and some antifungal agents – prolongation of QT interval; may precipitate ventricular arrythmias

- Terfenadine and other anti histamines – blockade of potassium channel and prolongation of QT interval; may precipitate ventricular arrhythmias especially if given with erythromycin and antifungal agents eg ketoconazole and mibefradil

- ensure side effects / interactions of any new drugs are checked in BNF prior to commencement

## Advice for patients

The HFNS will be giving advice to patients and their carers about several aspects of heart failure including medication and lifestyle as detailed below. The BHF booklet 'Medicines for the Heart' will be used to supplement any information given.

### Diuretic therapy

- Timing need not be fixed for loop diuretics (eg could postpone morning dose until after shopping trip), however it is better to avoid taking after 4-6pm as this can lead to nocturia.
- There is little advantage in moving the time of dosing for thiazides and metazolone as they are long acting.
- Report dizziness / light-headedness as this may indicate overtreatment.
- Advise caution in hot weather (risk of dehydration) and ensure adequate fluid intake.
- Report diarrhoea and/or vomiting (more than 2 episodes in 24 hours) to HFNS / GP / practice nurse
- Report sudden, sustained weight loss / gain (more than 1kg over 3 days) to HFNS / GP / practice nurse.
- Report other symptoms of fluid overload ie increasing breathlessness, frothy sputum, peripheral oedema, to HFNS / GP / practice nurse asap.

### Ace-inhibitor therapy

- Report any dizziness // blackouts / light-headedness to HFNS / GP / practice nurse.
- Report angioedema to HFNS / GP / practice nurse.
- Stress importance of having biochemistry and blood pressure checked during titration and at least annually thereafter.
- Advise to take first dose at night.
- Advise of other possible side effects ie persistant dry cough, rash, GI symptoms, upper respiratory symptoms (sinusitis, rhinitis, sore throat)

### Angiotension II receptor antagonists

- Same advice as above with the exception of warning about cough

## Beta blockers

- Advise that beta-blocker should help heart failure in long term therefore no immediate symptomatic improvement expected.
- Advise patient they may experience initial, temporary worsening of heart failure symptoms eg weight gain, ↑breathlessness, ↑oedema and to report to HFNS / GP / practice nurse so that other medication (particularly diuretic) may be altered .
- Advise to report any other side effects in particular problems with dizziness / light-headedness / syncope or bronchospasm and fatigue, which could indicate hypotension or bradycardia.
- Advise on other common, potential side-effects ie cold peripheries, impotence, sleep disturbances

## Spironolactone

- Advise to report any illness or circumstances that may cause fluid depletion eg. diarrhoea and / or vomiting, excessive perspiring, reduced / no fluid intake to HFNS / GP / practice nurse.
- Advise to report any postural dizziness / light-headedness / syncope, significant and sustained weight loss ( 1kg over 3 days), confusion, cramps, muscle weakness (*may indicate fluid depletion / electrolyte imbalance*) to HFNS / GP / practice nurse
- Advise of other common, potential side effects ie impotence, GI disturbance, gynaecomastia, menstrual irregularities
- Reiterate importance of having blood chemistry regularly checked.

## Digoxin

- Advise of any side effects that may indicate digoxin toxicity ie nausea and vomiting, anorexia, yellow tint to vision (xanthopsia), confusion, falls (esp. in elderly) and to report to HFNS / GP / practice nurse.
- Importance of having levels checked if certain other medications are commenced in particular amiodarone, erythromycin

## 'Over the counter' drugs

- Advise to inform HFNS / GP / practice nurse / pharmacist prior to taking any 'over the counter' drugs as they may worsen heart failure especially NSAIDs, larger doses of aspirin, St John's Wort (may interact with digoxin and warfarin), some herbal and homeopathic remedies

## Immunisation

All patients should be advised to have a once-only pneumococcal immunisation and annual influenza immunisation.

## Lifestyle advice

### Diet

- Patients will be advised to reduce their salt intake from added salt and processed food.
- A cardioprotective diet will also be advised with emphasis placed on eating 5 portions of fruit or vegetables a day and oily fish 2-3 times per week. NB. specialist dietetic advice will be sought as necessary for those patients who are underweight ( BMI <20), cachexic or overweight (BMI >25), or with special dietary needs eg renal diet.
- Some patients may benefit from a fluid restriction (1-1.5L on discussion with medical staff) and this will be explained and encouraged where appropriate.

### Alcohol

- Patients will be advised that an excessive intake of alcohol can exacerbate their symptoms so they should stay within recommended limits (14 units/week for women, 21 units / week for men, with at least 2 alcohol free days/ week).
- Patients will also be advised to avoid binge drinking.
- Patients with alcohol related dilated cardiopymopathy will be advised to abstain from alcohol.

### Exercise

- Patients with heart failure can benefit from exercise.
- Exercise will be discussed and patients will be advised to take-up or continue with some form of aerobic exercise within their capabilities eg walking, swimming
- The ultimate aim is to take 30 minutes aerobic exercise 5x per week, however any increase in activity will beneficial.
- The importance of safety will be stressed with patients advised to exercise to the point of being 'comfortably out of breath' ( ie. breathless but still able to speak in sentences).
- For those with angina advice about management of chest pain and use of GTN spray will be given
- Referral to heart failure exercise programme will be made as appropriate once classes in progress

### Smoking

- Basic smoking cessation advice and information will be available for patients who smoke.
- They will be assessed regarding their stage of change and readiness to try and stop.
- Referral to specialist smoking cessation service will be made as appropriate for those patients wishing to make a quit attempt.