Heart Failure Prescribing Guidelines
Dose titration schedule

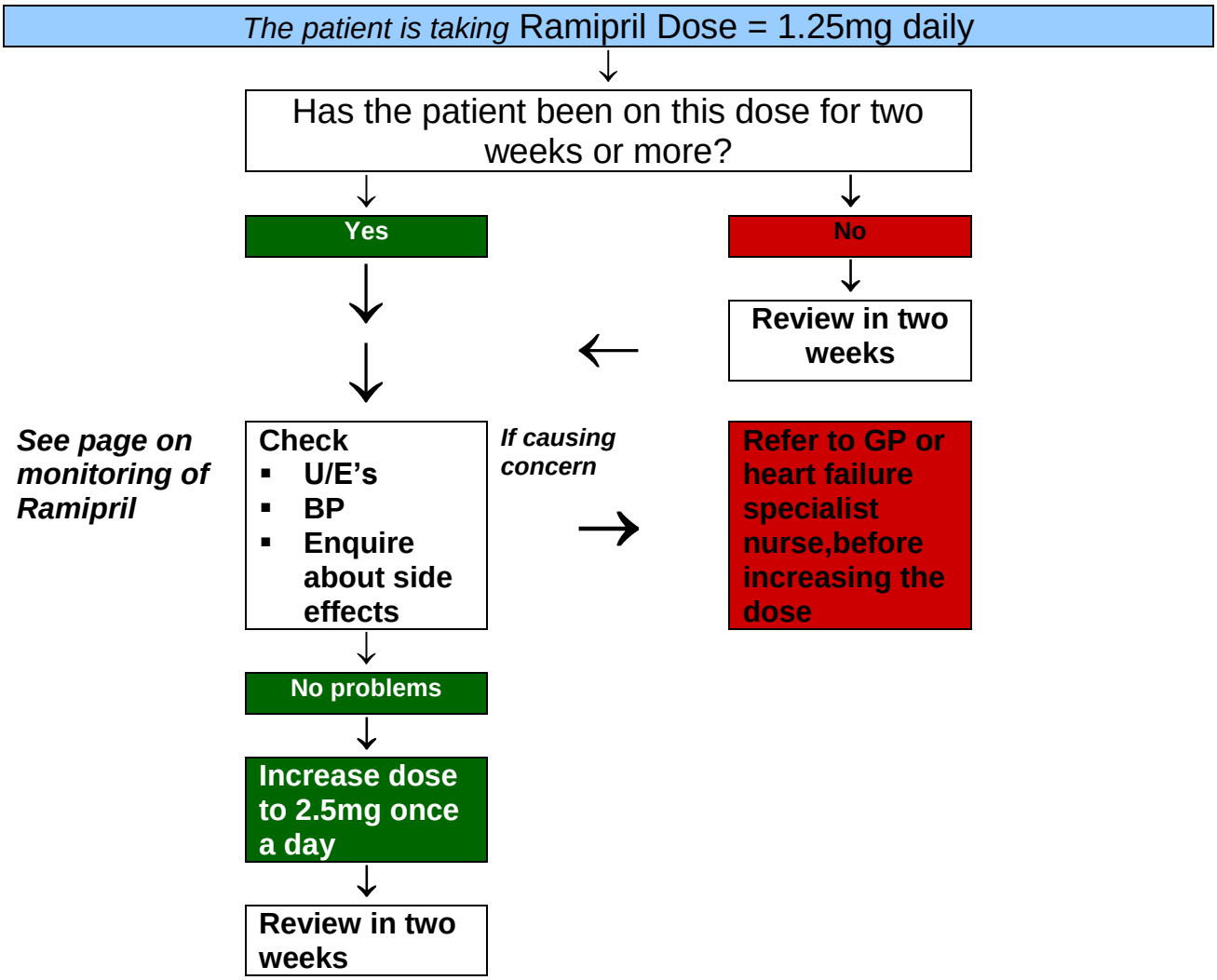
NHS Rotherham

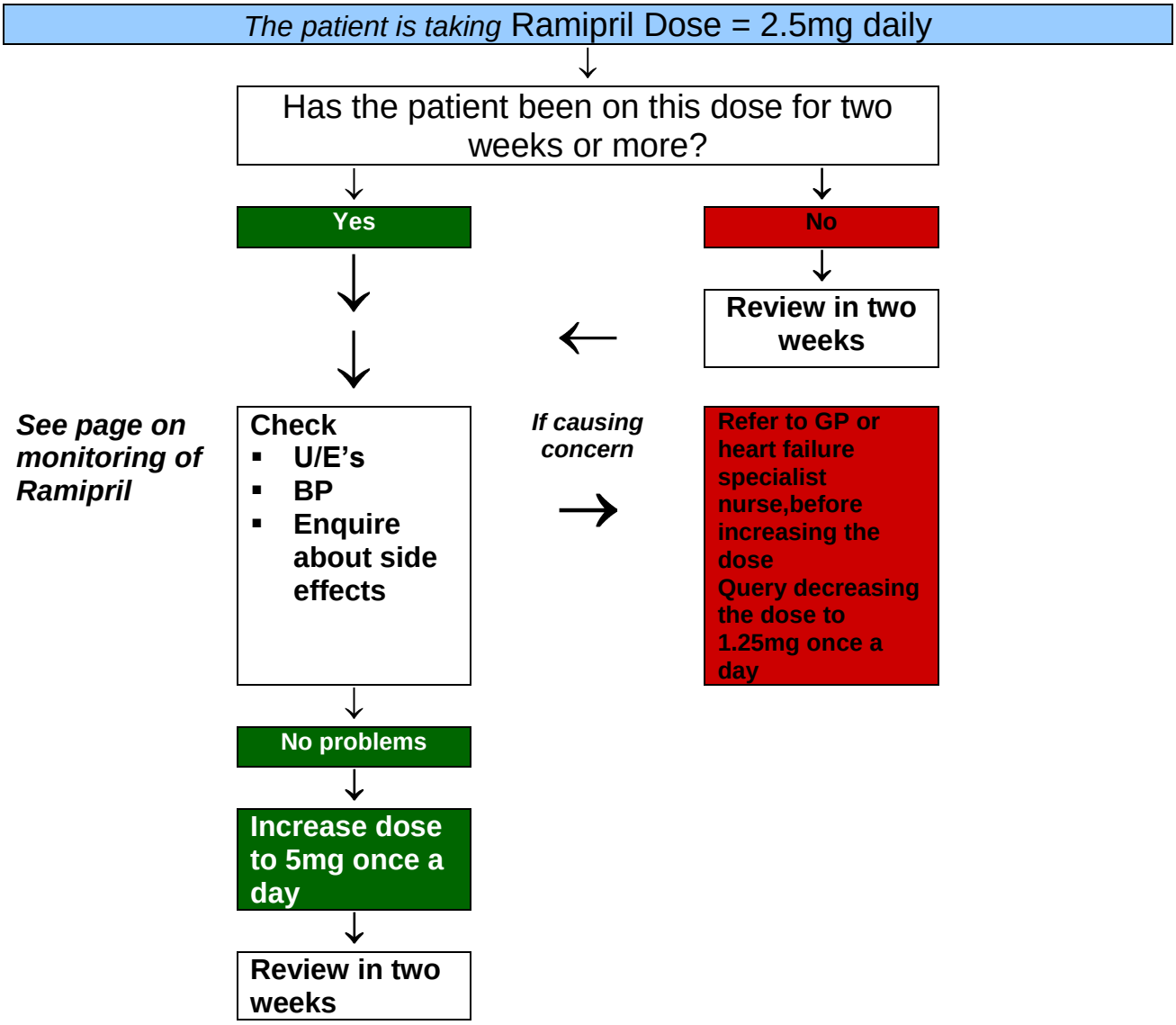
Appendix 1 A

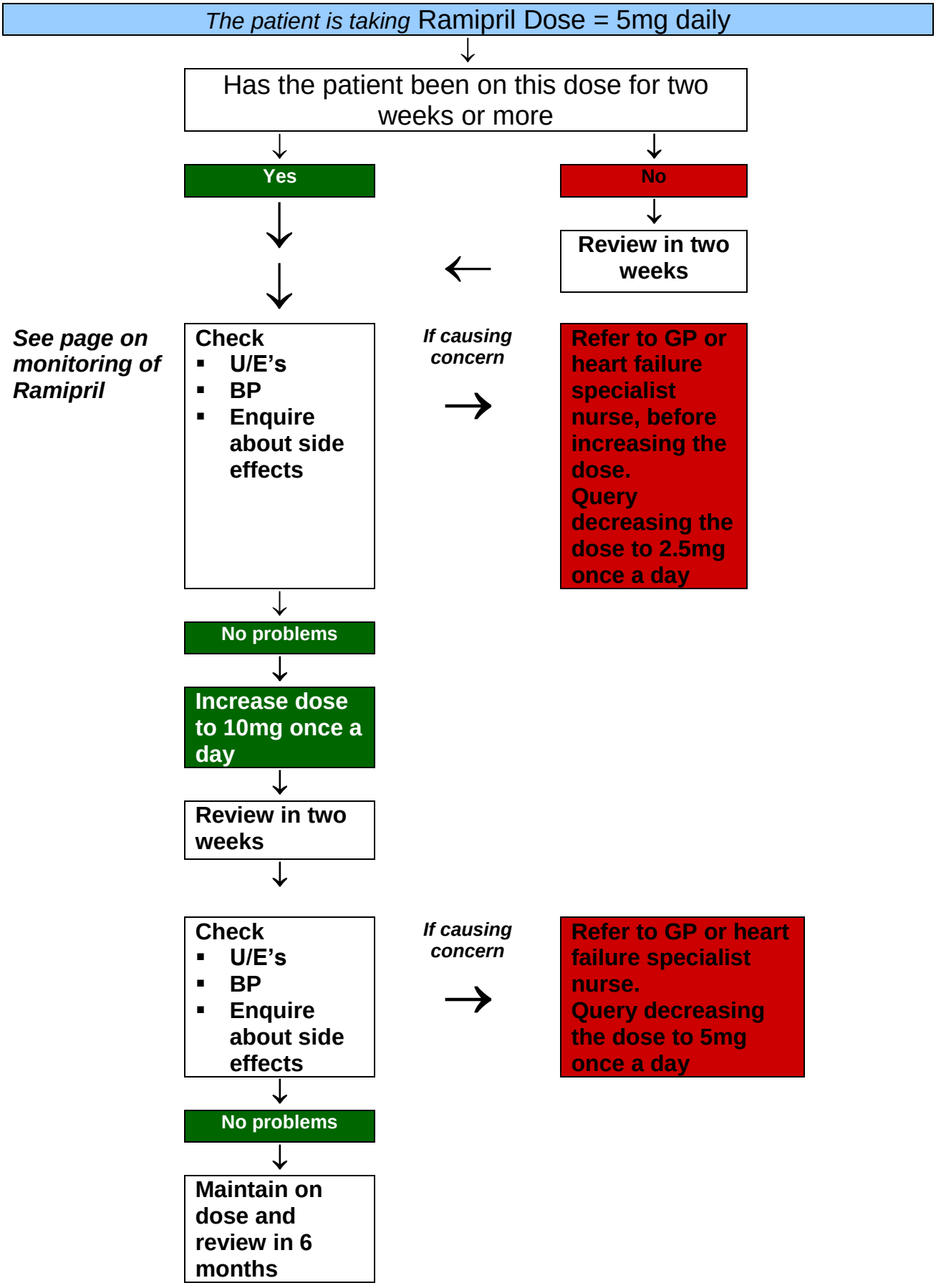
Ramipril in the Treatment of Heart Failure,

Treatment dose = 10mg once a day

Patients should have their dose titrated to 10mg daily or to the maximum tolerated dose.




The patient is taking Ramipril Dose = 2.5mg daily
Has the patient been on this dose for two weeks or more?
Yes
No
Review in two weeks
If causing concern
Refer to GP or heart failure specialist nurse,before increasing the dose
Query decreasing the dose to 1.25mg once a day
See page on monitoring of Ramipril
Check
U/E's
BP
Enquire about side effects
No problems
Increase dose to 5mg once a day
Review in two weeks


The patient is taking Ramipril Dose = 5mg daily
Has the patient been on this dose for two weeks or more
Yes
No
Review in two weeks
See page on monitoring of Ramipril
Check
U/E's
BP
Enquire about side effects
If causing concern
Refer to GP or heart failure specialist nurse, before increasing the dose.
Query decreasing the dose to 2.5mg once a day
No problems
Increase dose to 10mg once a day
Review in two weeks
Check
U/E's
BP
Enquire about side effects
If causing concern
Refer to GP or heart failure specialist nurse.
Query decreasing the dose to 5mg once a day
No problems
Maintain on dose and review in 6 months

Monitoring of Ramipril prior to increasing dose.

The information given here is incomplete please refer to the current BNF for comprehensive details.

- U/E's

  All to be within the normal range

  - Creatinine
    - Male (66 – 118 micromols/L)
    - Female (51 – 96 micromols/L)
  - Or creatinine should not have increased by more than 25% above initial levels and remain below 150mmol/l
  - Potassium 3.6 – 5.3 mmol/l
  - Sodium 134 – 143 mmol/l

- BP

  - < 120/80 Do not increase ramipril dose refer to GP or Heart Failure Specialist for advice.

  - > 160/100 Refer to GP or Heart Failure Specialist for advice.

  - For hypertensive patients continue to monitor blood pressure until the patient is stabilised at the maintenance dose of 10mg daily.

  - If the patient is also receiving a beta-blocker and the dose of this is also being titrated to the final maintenance dose, then wait until both the ramipril and beta-blocker are established at their final doses before commencing further anti-hypertensive medication

  - If the patient remains hypertensive at this dose refer for advice or consult the Rotherham PCT Hypertension Guidelines.

Side Effects

- Postural Hypotension

  - This may occur even if the measured blood pressure is not low.

  - Enquire whether the patient has had any episodes of dizziness, feeling faint, or syncope particularly on standing.

  - If you have any concerns do not increase the dose, before you have discussed the patient with their GP or the heart failure specialist nurse.

- Cough

- This can be difficult to assess. Coughing is a symptom of heart failure, and it is also a side effect of ACE inhibitors affecting up to 5% of patients. The cough associated with ACE inhibitor is usually dry and persistent. This usually occurs when the ACE inhibitor is first initiated but can occur when the dose is increased.

- Other Side Effects

- Nausea, vomiting, fatigue, headache, diarrhoea these are rarely a problem

Drug Interactions

- NSAIDS

  - Avoid if possible. Confirm with GP that it is necessary to continue this treatment. NSAID use in heart failure patients results in a deterioration of symptom control and higher admissions rate.

- Potassium Sparing Diuretics

  - Amiloride

    This drug also forms a part of the following preparations

    Amil-Co
    Burinex A
    Co-amilofruse
    Fru-Co
    Frumil
    Kalten
    Lasoride
    Moducren
    Moduret 25
    Modurectic
    Navispare

  - Triametrene

    This drug also forms a part of the following preparations

    Co-triamterizide
    Dyazide
    Dytide
    Frusene
    Kalspare

Tram-Co

The combination of a potassium-sparing diuretic and ramipril can result in an increase in serum potassium.
If your patient is co-prescribed one of the above drugs you must bring this to the attention of their GP and confirm that it is necessary to continue with this drug, before increasing the dose of ramipril.

- **Lithium**

  ACE inhibitors can affect lithium levels, resulting in increased in lithium blood levels and potential toxicity. Extra monitoring of lithium levels is necessary. Ensure lithium levels are checked before initiation and prior to dose increases.

Heart Failure Prescribing Guidelines
Dose titration schedule

NHS Rotherham

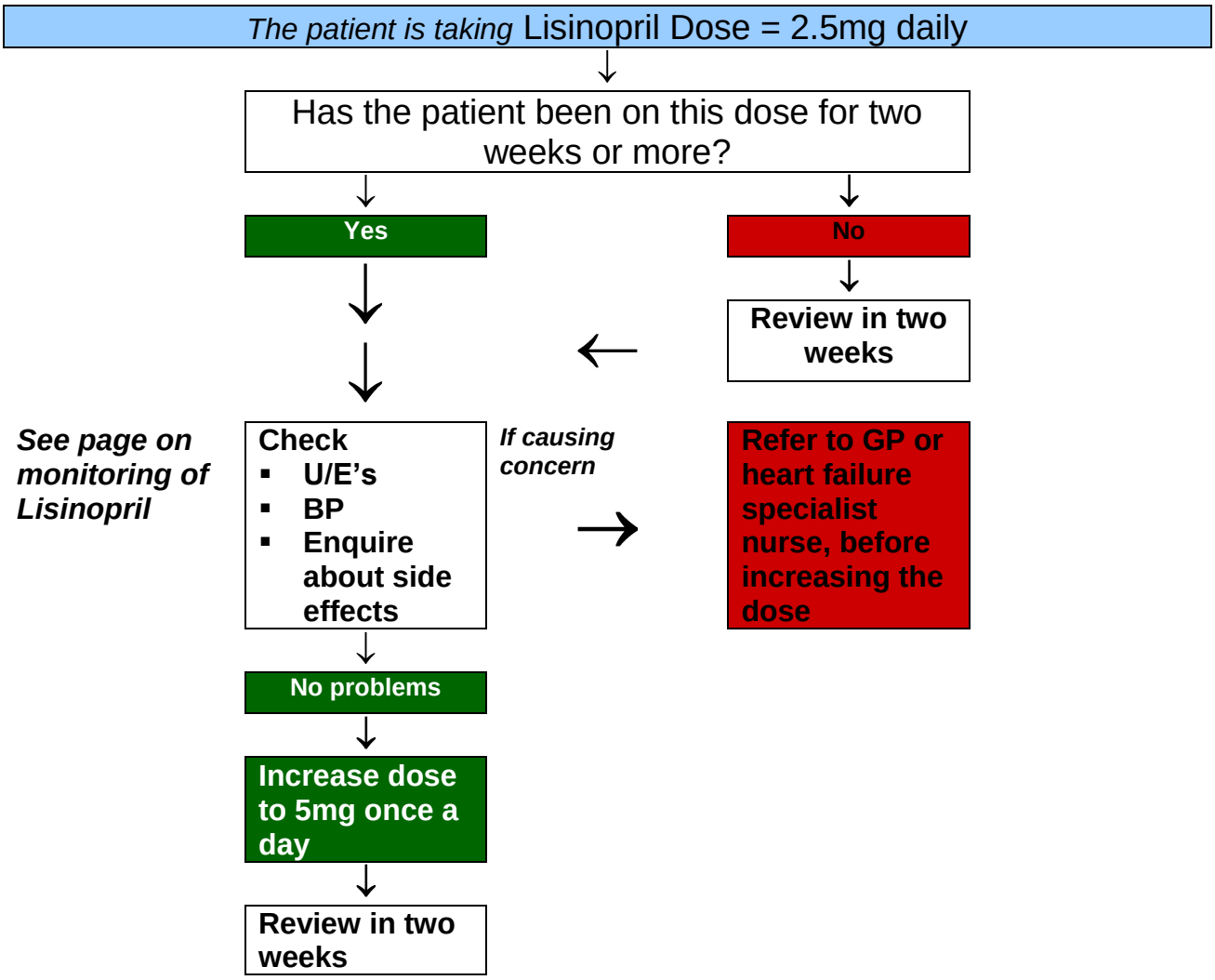
Appendix 1 B

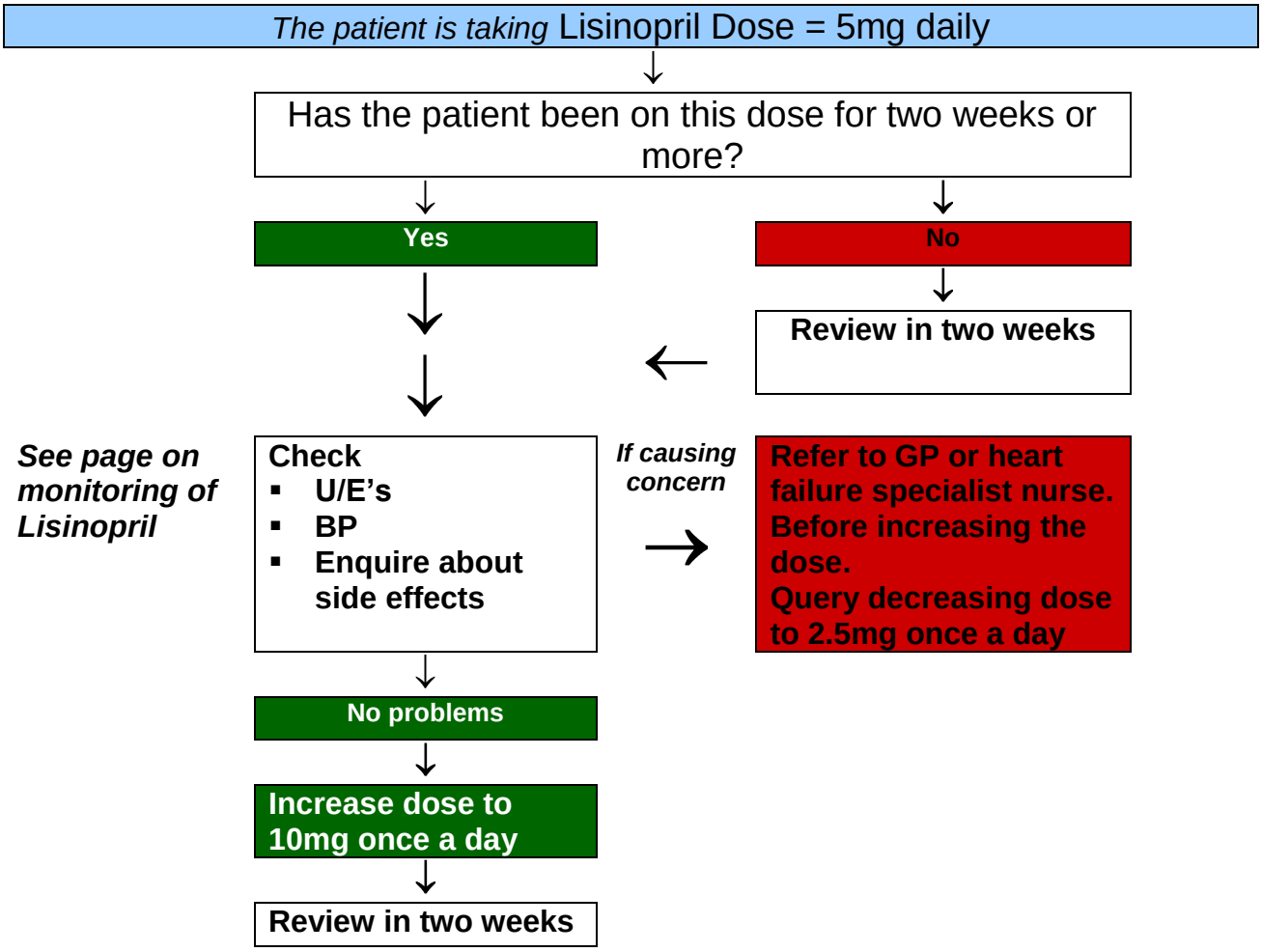
Lisinopril in the Treatment of Heart Failure

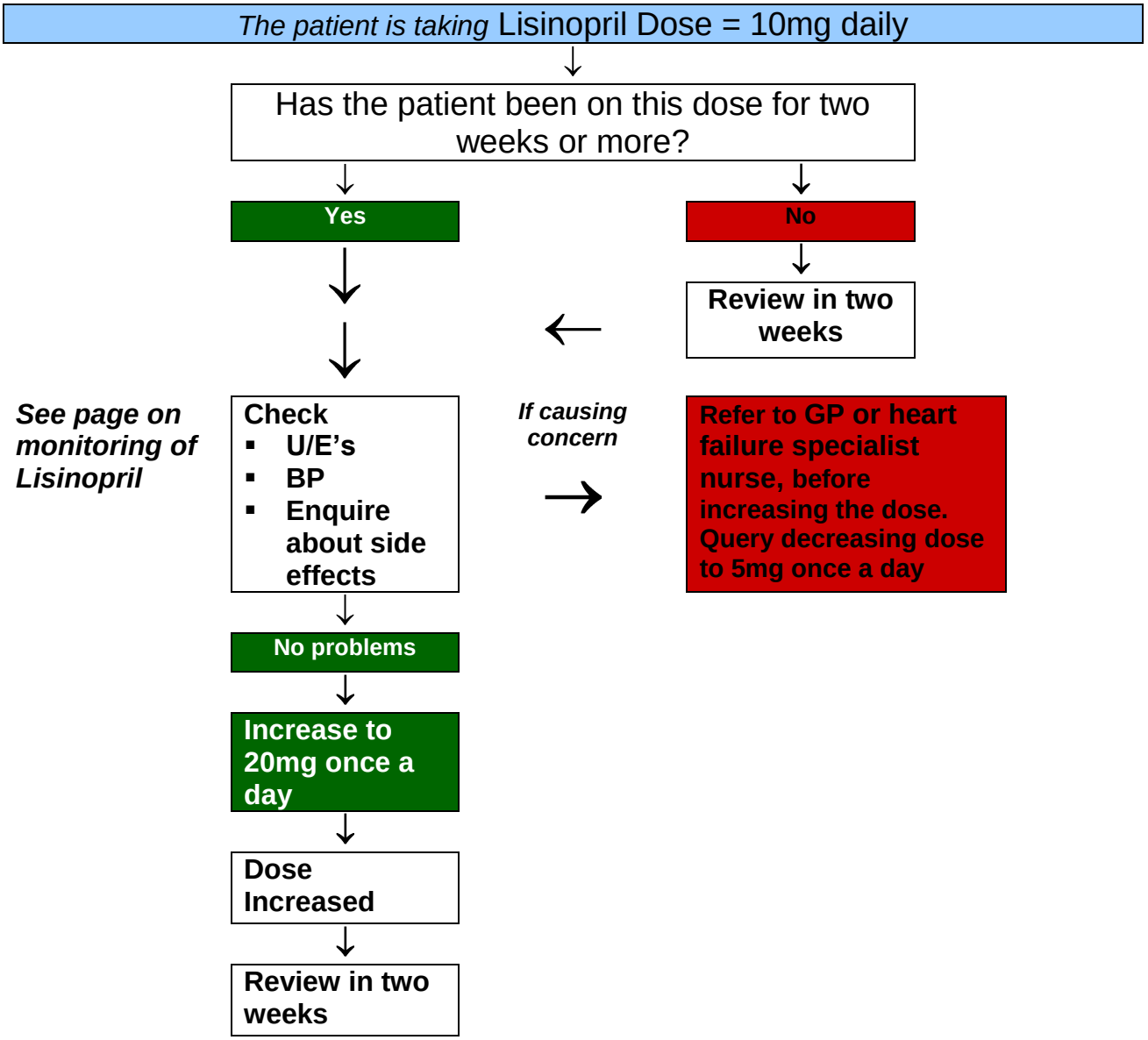
Initiation dose 2.5mg once a day

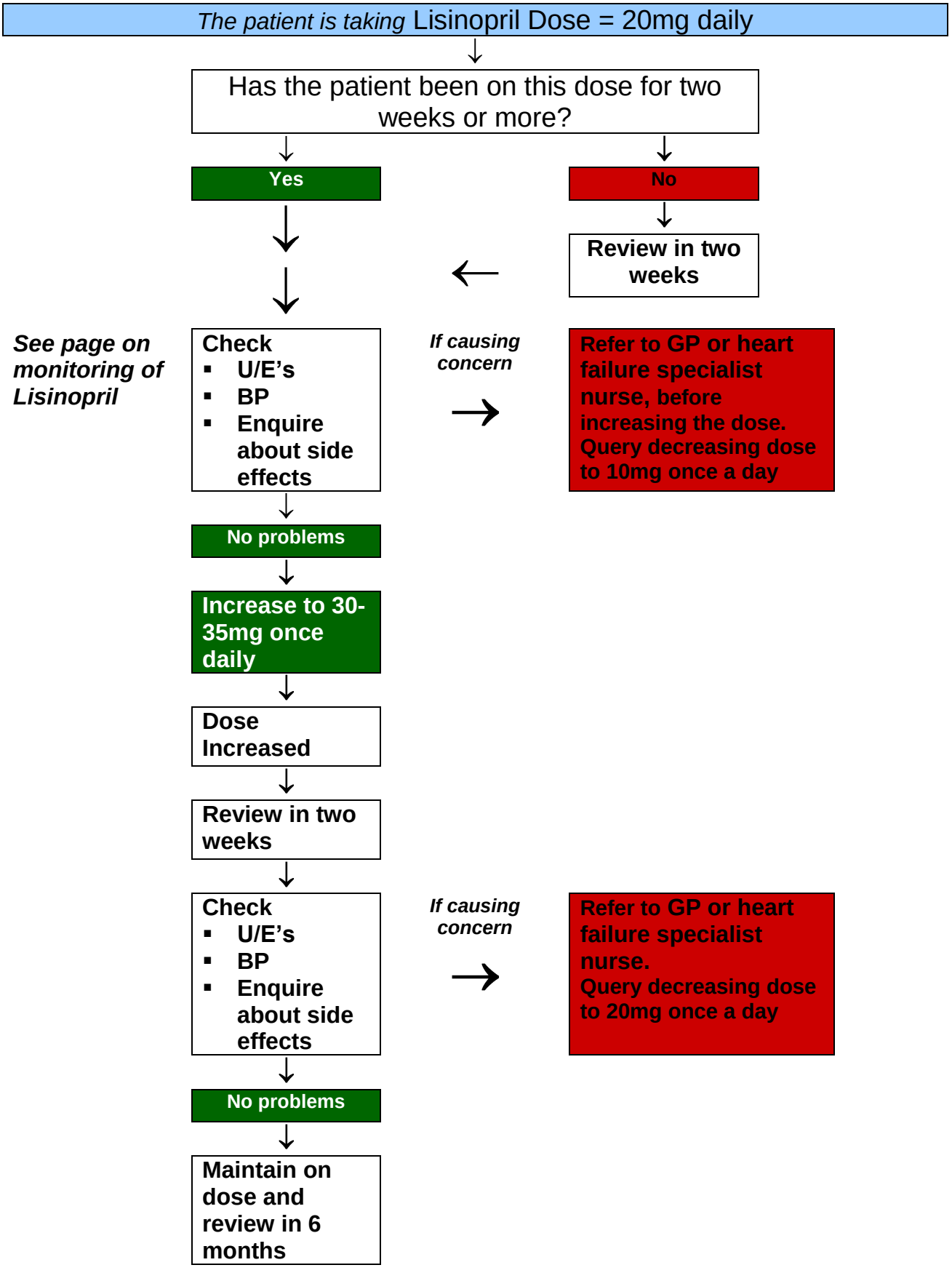
Treatment dose = 30-35mg once a day

- Patients should have their dose titrated to 30-35mg daily or to the maximum tolerated dose.




The patient is taking Lisinopril Dose = 5mg daily
Has the patient been on this dose for two weeks or more?
Yes
No
Review in two weeks
See page on monitoring of Lisinopril
Check
U/E's
BP
Enquire about side effects
If causing concern
Refer to GP or heart failure specialist nurse. Before increasing the dose.
Query decreasing dose to 2.5mg once a day
No problems
Increase dose to 10mg once a day
Review in two weeks


The patient is taking Lisinopril Dose = 10mg daily
Has the patient been on this dose for two weeks or more?
Yes
No
Review in two weeks
If causing concern
Refer to GP or heart failure specialist nurse, before increasing the dose. Query decreasing dose to 5mg once a day
See page on monitoring of Lisinopril
Check
U/E's
BP
Enquire about side effects
No problems
Increase to 20mg once a day
Dose Increased
Review in two weeks


The patient is taking Lisinopril Dose = 20mg daily
Has the patient been on this dose for two weeks or more?
Yes
No
Review in two weeks
See page on monitoring of Lisinopril
Check
U/E's
BP
Enquire about side effects
If causing concern
Refer to GP or heart failure specialist nurse, before increasing the dose. Query decreasing dose to 10mg once a day
No problems
Increase to 30-35mg once daily
Dose Increased
Review in two weeks
Check
U/E's
BP
Enquire about side effects
If causing concern
Refer to GP or heart failure specialist nurse.
Query decreasing dose to 20mg once a day
No problems
Maintain on dose and review in 6 months

Monitoring of Lisinopril prior to increasing dose.

The information given here is incomplete please refer to the current BNF for comprehensive details.

- U/E's

  All to be within the normal range

  - Creatinine
    - Male (66 – 118 micromols/L)
    - Female (51 – 96 micromols/L)
  - Or creatinine should not have increased by more than 25% above initial levels and remain below 150mmo\\l
  - Potassium 3.6 – 5.3 mmol/l
  - Sodium 134 – 143 mmol/l

- BP

  - < 120/80 Do not increase lisinopril dose refer to GP or Heart Failure Specialist for advice.

  - > 160/100 Refer to GP or Heart Failure Specialist for advice.

  - For hypertensive patients continue to monitor blood pressure until the patient is stabilised at the maintenance dose 30 – 35mg daily.

  - If the patient is also receiving a beta-blocker and the dose of this is also being titrated to the final maintenance dose, then wait until both the lisinopril and beta-blocker are established at their final doses before commencing further anti-hypertensive medication.

  - If the patient remains hypertensive at this dose refer for advice or consult the Rotherham PCT Hypertension Guidelines.

Side Effects

- Postural Hypotension

  - This may occur even if the blood pressure when measured is not low

  - Enquire whether the patient has had any episodes of dizziness, feeling faint, or syncope particularly on standing.

  - If you have any concerns do not increase the dose, before you have discussed the patient with their GP or the heart failure specialist nurse.

- Cough

- This can be difficult to assess. Coughing is a symptom of heart failure, and it is also a side effect of ACE inhibitors affecting up to 5% of patients. The cough associated with ACE inhibitor is usually dry and persistent. This usually occurs when the ACE inhibitor is first initiated but can occur when the dose is increased.

- Other Side Effects

- Nausea, vomiting, fatigue, headache, diarrhoea, these are rarely a problem

Drug Interactions

- NSAIDS

  - Avoid if possible. Confirm with GP that it is necessary to continue this treatment. NSAID use in heart failure patients results in a deterioration of symptom control and higher admissions rate.

- Potassium Sparing Diuretics

  - Amiloride

    This drug also forms a part of the following preparations

    Amil-Co
    Burinex A
    Co-amilofruse
    Fru-Co
    Frumil
    Kalten
    Lasoride
    Moducren
    Moduret 25
    Modurectic
    Navispare

  - Triametrene

    This drug also forms a part of the following preparations

    Co-triamterizide
    Dyazide
    Dytide
    Frusene

Kalspare
Tram-Co

The combination of a potassium-sparing diuretic and lisinopril can result in an increase in serum potassium.
If your patient is co-prescribed one of the above drugs you must bring this to the attention of their GP and confirm that it is necessary to continue with this drug, before increasing the dose of lisinopril.

- **Lithium**

  ACE inhibitors can affect lithium levels, resulting in increased in lithium blood levels and potential toxicity. Extra monitoring of lithium levels is necessary. Ensure lithium levels are checked before initiation and prior to dose increases.

Heart Failure Prescribing Guidelines
Dose titration schedule

NHS Rotherham

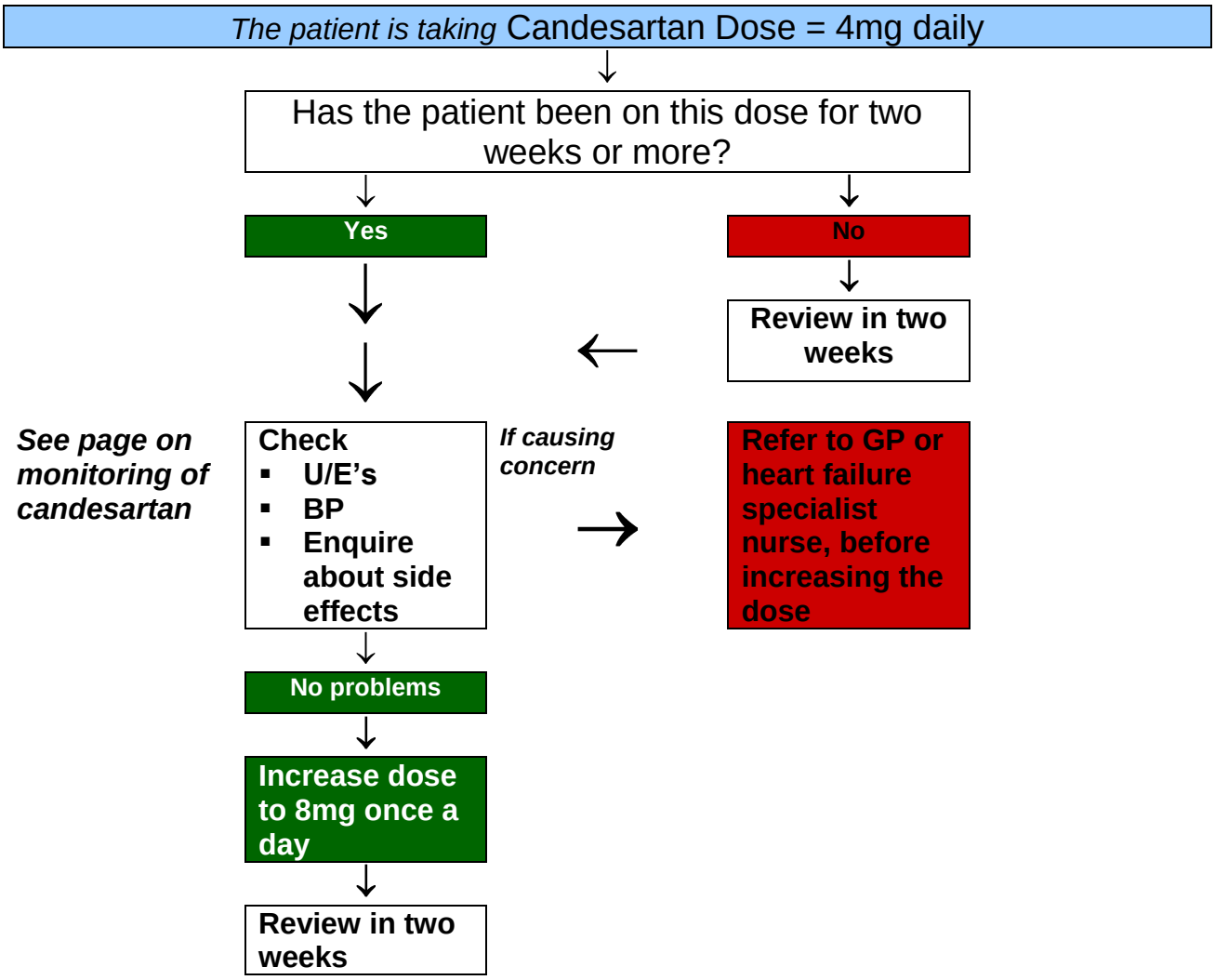
Appendix 1 C

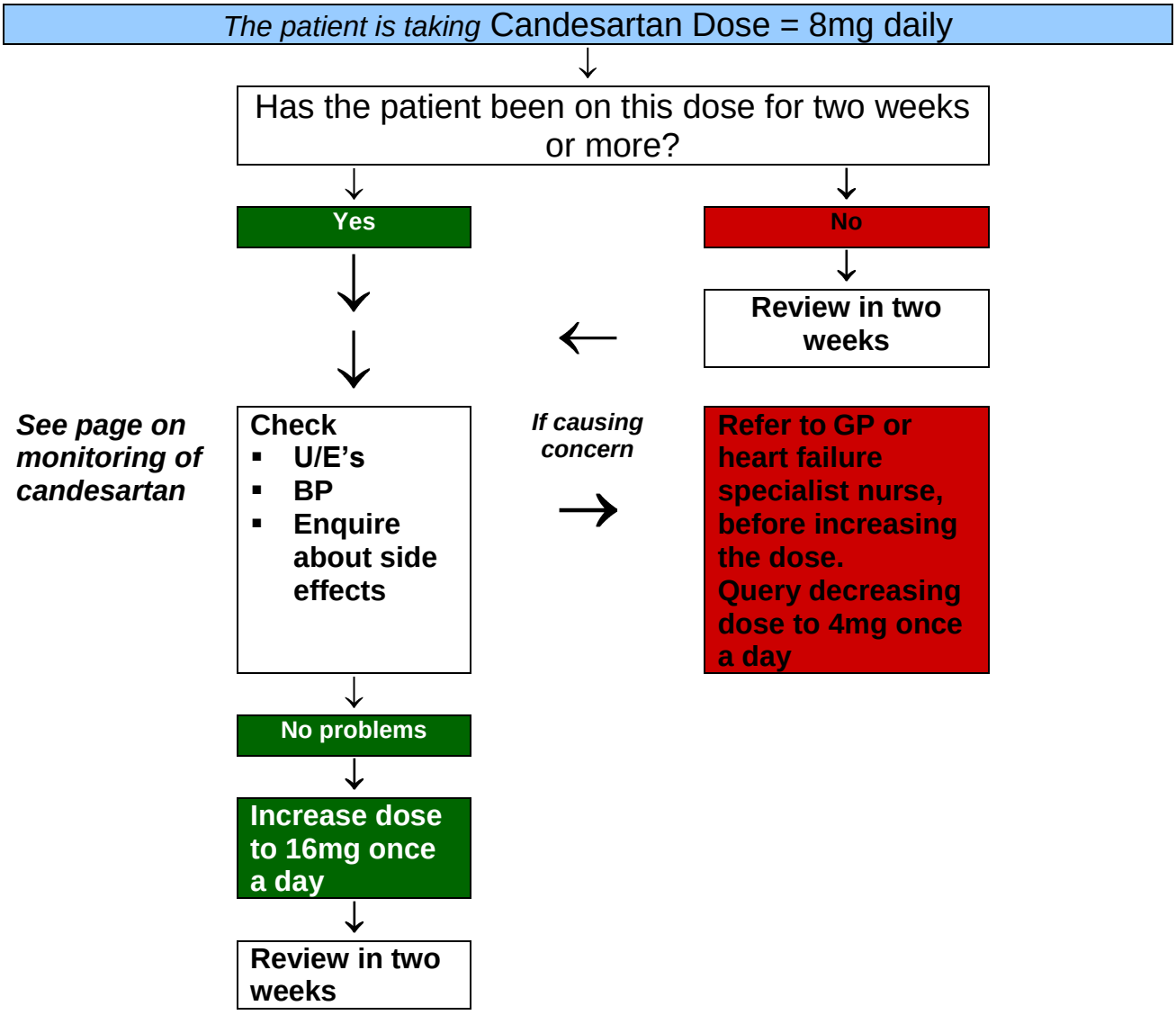
Candesartan in the Treatment of Heart Failure

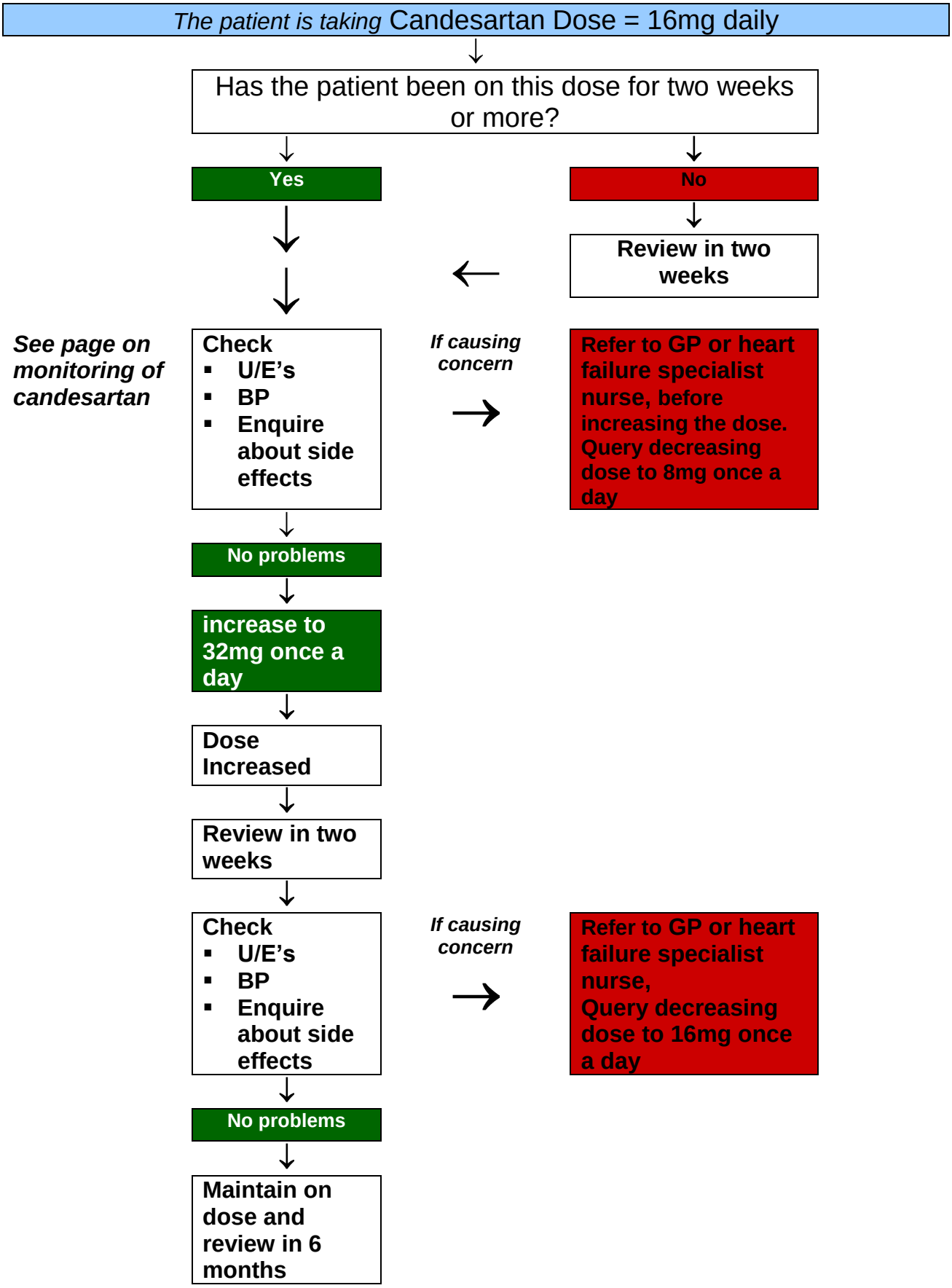
Initiation dose 4mg once a day

Treatment dose = 32mg once a day

Patients should have their dose titrated to 32mg daily or to the maximum tolerated dose.




The patient is taking Candesartan Dose = 8mg daily
Has the patient been on this dose for two weeks or more?
Yes
No
Review in two weeks
If causing concern
See page on monitoring of candesartan
Check
U/E's
BP
Enquire about side effects
Refer to GP or heart failure specialist nurse, before increasing the dose.
Query decreasing dose to 4mg once a day
No problems
Increase dose to 16mg once a day
Review in two weeks


The patient is taking Candesartan Dose = 16mg daily
Has the patient been on this dose for two weeks or more?
Yes
No
Review in two weeks
See page on monitoring of candesartan
Check
U/E's
BP
Enquire about side effects
If causing concern
Refer to GP or heart failure specialist nurse, before increasing the dose. Query decreasing dose to 8mg once a day
No problems
increase to 32mg once a day
Dose Increased
Review in two weeks
Check
U/E's
BP
Enquire about side effects
If causing concern
Refer to GP or heart failure specialist nurse, Query decreasing dose to 16mg once a day
No problems
Maintain on dose and review in 6 months

Monitoring of Candesartan prior to increasing dose.

The information given here is incomplete please refer to the current BNF for comprehensive details.

- U/E's

- Creatinine
  - Male (66 – 118 micromols/L)
  - Female (51 – 96 micromols/L)
- Or creatinine should not have increased by more than 25% above initial levels and remain below 150mmol/l
- Potassium 3.6 – 5.3 mmol/l
- Sodium 134 – 143 mmol/l

- BP

  - < 120/80 Do not increase candesartan dose refer to GP or Heart Failure Specialist nurse

  - > 160/100 Refer to GP or Heart Failure Specialist for advice

  - If the patient is also receiving a beta-blocker and the dose of this is also being titrated to the final maintenance dose, then wait until both the candesartan and beta-blocker are established at their final doses before commencing further anti-hypertensive medication

  - If the patient remains hypertensive at this dose refer for advice or consult the Rotherham PCT Hypertension Guidelines.

Side Effects

- Postural Hypotension

- This may occur even if the measured blood pressure is not low

- Enquire whether the patient has had any episodes of dizziness, feeling faint, or syncope particularly on standing.

- If you have any concerns do not increase the dose, before you have discussed the patient with their GP or the heart failure specialist nurse.

- Cough

- This can be difficult to assess. Coughing is a symptom of heart failure, and is not associated with AR2AS.

- Other Side Effects

- Nausea, vomiting, fatigue, headache, diarrhoea these are rarely a problem

Drug Interactions

- NSAIDS

- Avoid if possible. Confirm with GP that it is necessary to continue this treatment. NSAID use in heart failure patients results in a deterioration of symptom control and higher admissions rate.

- Potassium Sparing Diuretics

- Amiloride

  This drug also forms a part of the following preparations

  Amil-Co
  Burinex A
  Co-amilofruse
  Fru-Co
  Frumil
  Kalten
  Lasoride
  Moducren
  Moduret 25
  Modurectic
  Navispare

- Triametrene

  This drug also forms a part of the following preparations

  Co-triamterzide
  Dyazide
  Dytide
  Frusene
  Kalspare
  Tram-Co

The combination of a potassium-sparing diuretic and candesartan can result in an increase in serum potassium.
If your patient is co-prescribed one of the above drugs you must bring this to the attention of their GP and confirm that it is necessary to continue with this drug, before increasing the dose of candesartan.

- **Lithium**

  ACE inhibitors can affect lithium levels, resulting in increased in lithium blood levels and potential toxicity. Extra monitoring of lithium levels is necessary. Ensure lithium levels are checked before initiation and prior to dose increases.