

Heart Failure Diagnostic Pathway

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New Diagnostic Pathway for Heart Failure

- Why do we need a new diagnostic pathway for HF?
- What are the benefits of the pathway?
- What is the new diagnostic pathway?
- How did it perform?
- How was the service designed and the costs met?

New Diagnostic Pathway for Heart Failure

- *Why do we need a new diagnostic pathway for HF?*
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Why do we need a new diagnostic pathway for HF?

- HF can be difficult to diagnose
 - Relies on identification of signs and symptoms
 - Echocardiography is the cornerstone of diagnosis
 - New blood tests are helping to refine the diagnosis
 - BNP and NT-proBNP
- HF costs the NHS a lot of money
 - 2% of annual expenditure
- Effective therapies are available
 - Medication (ACE inhibitors, beta blockers) through to cardiac resynchronisation and transplantation

Benefits to the patient

- Find the cause of HF
 - valve disease, HOCM, and many others
- Access to life saving therapy
 - ACE inhibitors, beta-blockers, mineralocorticoid receptor blockers, cardiac resynchronisation therapy
- Contact with services
 - HF specialists, HF Nurse Liaison Service, Transplant services, Palliative care

The Old Model

Direct/ Open access echo

Suspected heart failure in primary care



Direct access echocardiography



LVSD



Result to GP



No
LVSD



ACE inhibitor



No ACE inhibitor

The Old Model

Direct/ Open access echo

**NO HF SPECIALIST
DIRECTLY INVOLVED**



No diagnosis, limited therapy

Benefits for primary care

Pros

- Allows those without HF to have HF excluded without waiting to see cardiologist
- Allows those with symptoms and evidence of cardiac disease to see cardiologist for diagnosis and management plan (including treatment)

Cons ?

- Only valuable if applied to the correct patients

Benefits for secondary care

Pros

- Allows those without HF to have HF excluded without waiting to see cardiologist
- Allows those with symptoms and evidence of cardiac disease to see cardiologist for diagnosis and management plan (including treatment)
- Frees up resources for other patients and services

Cons ?

- Only valuable if applied to the correct patients

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How should heart failure be investigated?

Suspected HF in primary care



Refer to HF diagnostic service

ECG / BNP

Recommended
by
SIGN/ ESC

If normal HF unlikely
Return to GP
without cardiological
review

If abnormal, echo and cardiology
review (aetiology, investigation
and management plan)

What is BNP?

- Peptide produced in LV wall
- Plasma levels high in HF
- Very high negative predictive value
- Caution
 - raised in renal dysfunction, pulmonary embolism, acute ischaemia, hypertension/ LVH
 - plasma levels can be normal if treated HF
- recommended by SIGN

Appendix 1:

West of Scotland Suspected NEW Heart Failure Patient Diagnostic Pathway

○=GP or cardiac physiologist ○=cardiologist *=standard letter **=info from referral form

Patient has reasonable clinical suspicion of heart failure + one of the following at time of referral

- New onset breathlessness
- Ankle oedema
- Dyspnoea on exertion/rest
- Orthopnoea
- Fatigue/tiredness (with 1 of the above)

NB symptoms may not be present at diagnostic appointment if on trial of diuretic.

Pre-referral
History including previous cardiac history and examination to exclude red flag signs and symptoms.
Tests required:
Full blood count (for anaemia), TFTs
U&Es (for creatinine)
CXR

If none of these but clinical suspicion of heart failure, please refer to cardiology clinic

RED FLAG SYMPTOMS:

- Paroxysmal nocturnal dyspnoea
- Lung crepitations

Symptoms severe enough for admission

YES

NO

Consider hospital admission

Relevant signs and/or symptoms

ECG

No ECG abnormalities or other indications for echo (see below)

Perform BNP (B-Type Natriuretic Peptide) test

ECG shows BBB, Q wave, LVH, AF
OR male+ankle oedema**
OR previous MI**

No relevant symptoms or signs

Check symptoms/signs on referral form**

Abnormal BNP
F (no ankle oedema**) >110pg/ml
F (+ankle oedema**) >55pg/ml
M (no ankle oedema**) >70pg/ml

Normal BNP

Return to GP for review of issues*

CHF diagnostic service

Obtain echocardiogram

Cardiologist to identify underlying cause and any appropriate intervention

Confirmed left ventricular systolic dysfunction (LVSD)

GP for management as per local guidelines*

No LVSD

Personalised management plan

Personalised management plan

RETURN to GP
Confirm heart failure extremely unlikely – other cause of symptoms should be sought*

If HF still considered likely try response to furosemide.

If improvement refer to cardiology clinic

If no improvement, HF very unlikely.

Primary care pre-referral

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Pre-referral

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Full blood count (for anaemia),
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CXR



RED FLAG SYMPTOMS/SIGNS:

- Paroxysmal nocturnal dyspnoea
- Lung crepitations



Symptoms severe enough for admission

Admit



YES



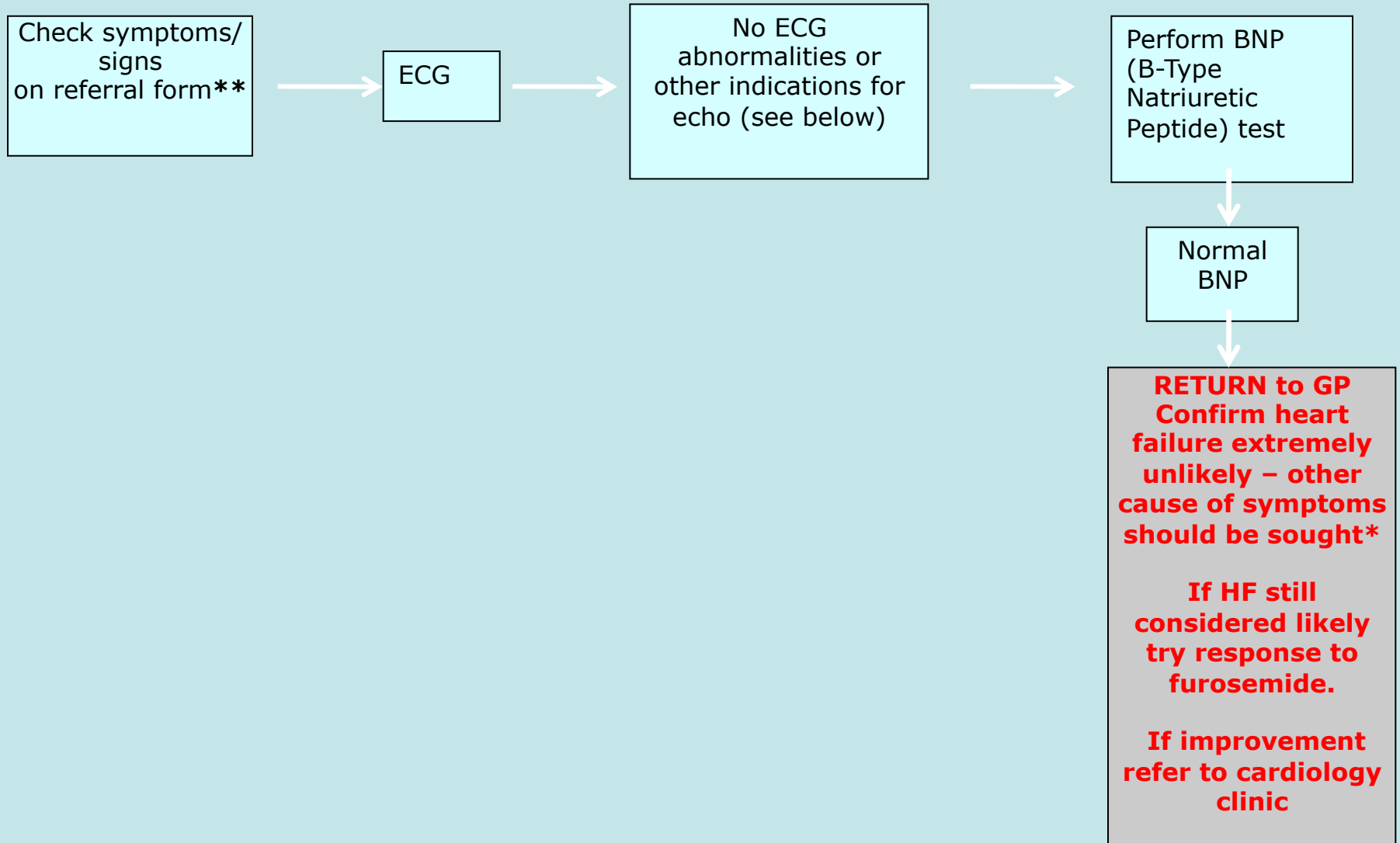
NO



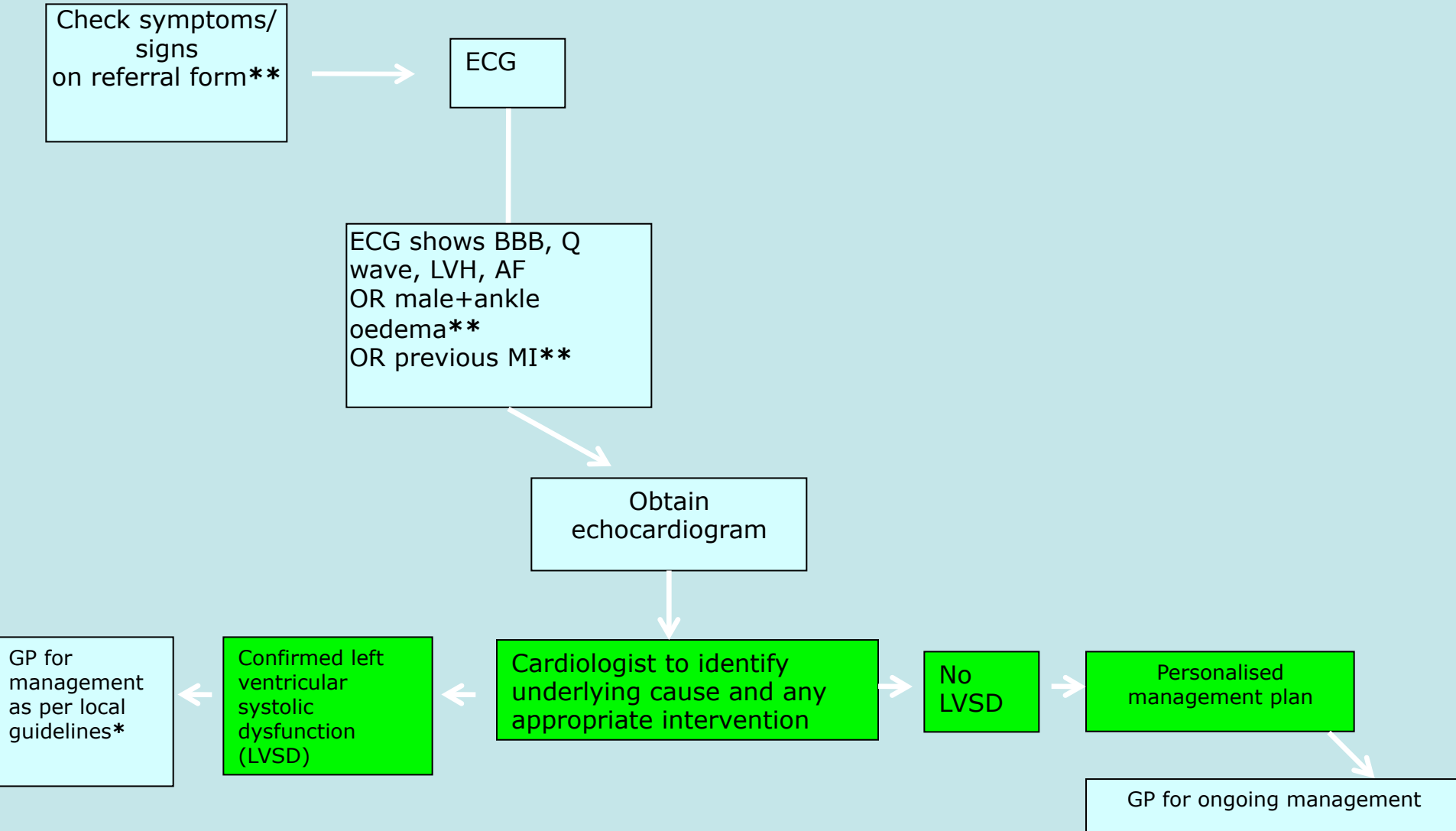
CHF diagnostic service



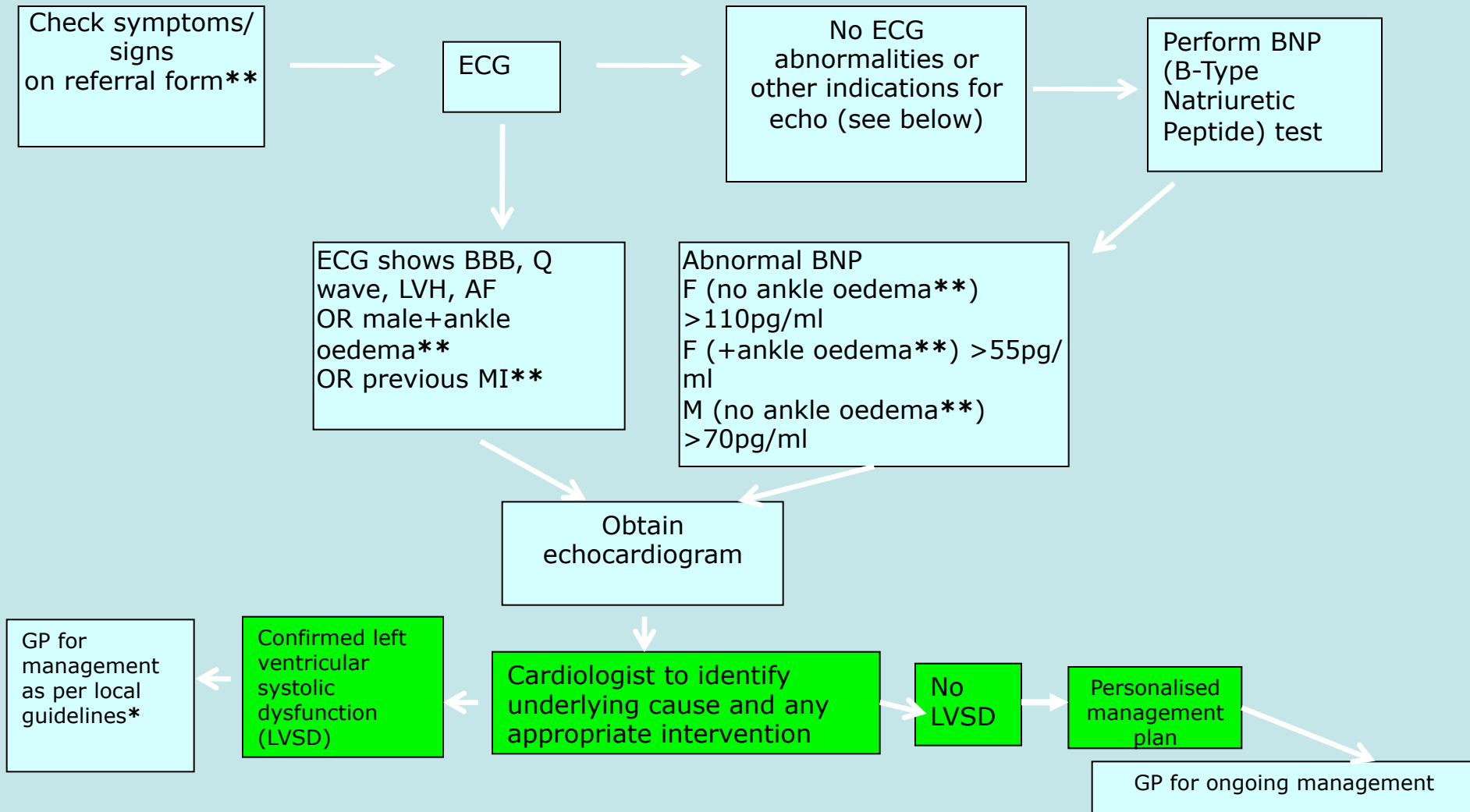
Normal ECG



Abnormal ECG



Normal ECG, Raised BNP



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Results

- Western Infirmary, Victoria Infirmary, Glasgow Royal Infirmary, Southern General Hospital, Stobhill Hospital, Royal Alexandra Hospital
- April 2011 to March 2012 (Victoria April 2010 to March 2012)
- 848 referrals
- 53 “Did not attend”
- 1 admitted to hospital before entering the pathway

Abnormal ECG

- 323 ECG and Echo
- 49 Confirmed LVSD,
 - 3 Echo review and management plan,
 - 35 echo review and cardiology appointment,
 - 11 referred back to GP,
 - 13 referred to HFNLS

Normal ECG, Normal BNP

- 278 normal ECG and BNP
- 8 cardiology appointment
- 270 referred back to GP

Normal ECG, Abnormal BNP

- 197 ECG normal, abnormal BNP and Echo performed
- 16 confirmed LVSD
- 1 admitted to hospital
- 3 echo reviewed and management plan made
- 11 echo reviewed and cardiology appointment made
- 2 referred back To GP
- 1 referred to HFNLS

“Savings”

- 794 potential echocardiograms
- 794 cardiology appointments?
- 520 performed
- “saving” of 274 echocardiograms

Pick up rate

- 794 attenders
- 65 had LVSD
- 8% of attenders

Is it safe?

- During a median follow up of 286 days there were no re-attendances at outpatients or admissions for HF in those identified as not having LVSD by the pathway during the pilot

Planning

- Devised to ensure all HF patients were quickly diagnosed seen by a specialist and given an appropriate management plan
- Direct access echo service is over subscribed, does not involve a specialist, no access to therapy or services
- Using BNP as a rule out a number of echos could be avoided
- Original pathway constructed by HD MCN lead clinician and 2 consultant cardiologist (HF specialists – IF and MCP)
 - Modelled on National Patient Pathways centre for change and innovation pathway
- Pathway then reviewed by HF sub group and physiologists

Planning

- Changes to draft pathway made
 - Physiologists checking symptoms
 - Patients without LVSD management
- Costs for BNP tests to be funded on a recurring basis by the HD MCN (£36,000 pa)
- Savings to be made by the reduction in echos carried out
- Possible additional savings
 - patients being on the correct management plan earlier and reduction in future admissions

Planning

- BNP testing discussed with biochemistry.
 - Near patient testing ruled out, labs give a 2 hour maximum wait guarantee
- Patient consultation over whether they would prefer:
 - 2 hour wait and same day echo OR
 - to return with a new appointment

Planning

- Lower grade physiologists trained to do phlebotomy work for BNP tests.
- GP education evenings run to launch the service.
- Audit and report made on the outcomes of initial pilot
- Roll out timetable and training needs identified at all other sites
- HFDP rolled out to all sites.

Summary

- The new pathway reduces the time to diagnosis or rule out of HF
- Potential cost savings
- Reduction in the number of echos performed
- Patients with HF reviewed by specialists
- Appears safe
- Requires planning – stakeholders, support staff, labs, training

**Thank you
and
questions**