

Heart Failure Interactive Pathway

2020 – 2025

Preface

This pathway transformation project began in June 2019, led by a clinical team comprising Dr. Carla Plymen, Carys Barton, Dr. Simon Gordon and Dr. Afsana Safa.

The work has been supported by the Discover Now Hub (part of Imperial College Health Partners), AstraZeneca and NHSX. Prof. Nick Peters' team was also consulted on the application of diagnostic and monitoring technology.



How to use this interactive PDF guide

- 1 Click on the tabs in the navigation bar at the top of each page to move through the patient journey.
- 2 Jump to a new timeframe by clicking on one of the buttons labelled '2020', '2021' or '2022-2025' at the bottom of the page.
- 3 Or simply click on the next button (bottom right) to move through the document.



Problems

With almost 1-million people diagnosed and 200000 new cases a year, **heart failure is as common as cancer.**

Predictions show an **increase in new cases by 50%** by 2040. Despite the rise, diagnoses dropped by 25% during the pandemic.



Solutions

When identifying pathway trends and pain points, small changes significantly improve outcomes. These **incremental pathway improvements alongside prospecting new technologies** mean we influence extraordinary advancement in patient and clinician experience.

The ambition is to **develop heart failure services' referral accuracy and efficiency to improve patient experience and outcomes.** The challenge at hand is to reduce unplanned heart failure admissions to secondary care and develop a novel and transferable approach to transforming other heart failure pathways.



Achievements

- Referrals up 7%
- GP education delivered to 100 North West London GPs
- Incorrect blood tests down 70%
- Luscii app implemented with Nurse training
- Over 25 heart-failure education modules for patients
- Upgraded Nurse and GP templates
- 4 new clinic letters and 3 new referral routes

Contents

There are three timelines for each patient journey that depict what their current experience is like **today (2020)**, what it might be like **in a year's time (2021)** and in **the future across three to five years (2022-2025)**. Click on the links to see what the Heart Failure journey looks like in these scenarios, for each part of the pathway.

2020

[Normal Life](#)
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[Referral to Heart Failure Service](#)
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2021

[Normal Life](#)
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2022 – 2025

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🏠 Location: Home

Emotional State: 😞

The patient is feeling increasingly unwell, with symptoms including breathlessness.

They are unsure why they have these symptoms and are unclear what the medical problem could be.

Pain Points

- ❖ The patient is unaware of heart failure symptoms and their condition is further exacerbated by the poor lifestyle choices they continue to make.
- ❖ The patient thinks their symptoms – feeling breathless with swollen ankles – relate to their existing comorbidities, of which, on average, they have four.
- ❖ The patient doesn't present with these symptoms to their GP early enough to help prevent further decline.
- ❖ Patient data is not captured completely at the time they do present.

Statistics

77% of heart failure patients are living with 3 or more comorbidities (98% of heart failure patients have at least one other comorbidity) (BHF, 2018)

Only 20% of suspected heart failure patients in North West London have been seen by specialist heart failure services. (NWL (WISC data, 2021))

Opportunities

- ✚ Raise awareness of heart failure as a chronic condition, with breathlessness being an important symptom.



🏠 Location: GP Surgery

Emotional State: 😞

The patient decides to see their GP about being unable to walk to the shops without a shortness of breath.

The patient's GP prescribes an exercise regime and asks the patient to return for a check-up in eight weeks.

The patient returns to see the GP on the agreed date. During this second consultation, the GP suspects heart failure and orders blood tests.

Pain Points

- ❖ The GP confuses heart failure symptoms with other issues and/or heart failure does not come to mind due to the patient's other comorbidities.
- ❖ The GP is unsure what to do and/or how to triage, even if heart failure is suspected.
- ❖ The GP chooses BNP blood test instead of NT pro-BNP, as they are unaware that NT pro-BNP is more appropriate.
- ❖ The primary care electronic health record, SystmOne (S1) does not have a specific heart failure template for GPs to use.
- ❖ There is a systemic lack of guidance on best practice heart failure diagnosis and pathway.

Statistics

40% of patients who have seen their GP with heart failure symptoms were not diagnosed effectively. (BSH, 2020)

Systems

- The GP orders a BNP blood test instead of the NT pro-BNP test via SystmOne (S1).

Opportunities

- ✚ Remind GPs to consider heart failure as a diagnosis.
- ✚ Deliver further education to help GPs identify symptoms faster and with greater accuracy.
- ✚ Ensure GPs select the right blood tests.
- ✚ Reduce the number of inappropriate referrals.
- ✚ Develop a better connection to the heart failure service, with a dedicated point of contact.



🏠 Location: GP Surgery, Hospital, Clinic for Echo

Emotional State: 😞

The patient has BNP blood tests and then a follow-up appointment with their GP.

If the BNP blood tests deliver a positive result, the GP refers the patient to Enhanced Cardiology Services (ECS) via SystmOne (S1).

Depending on the levels of BNP, the patient will need to be seen within 2-6 weeks to confirm the diagnosis.

Pain Points

- ❖ Heart failure referral forms do not make patient referrals easy, and the lack of dedicated referral forms for heart failure lead to issues such as: outdated or incomplete content, multiple steps to access the right information and data duplication.
- ❖ Patients who are referred don't always turn up to their appointment with complete data.
- ❖ Sometimes a BNP test is not done at all, so the referral comes straight back to the GP.
- ❖ The patient may not be referred to the right place the first time.
- ❖ There is poor communication between teams due to the lack of a standardised messaging process.

Statistics

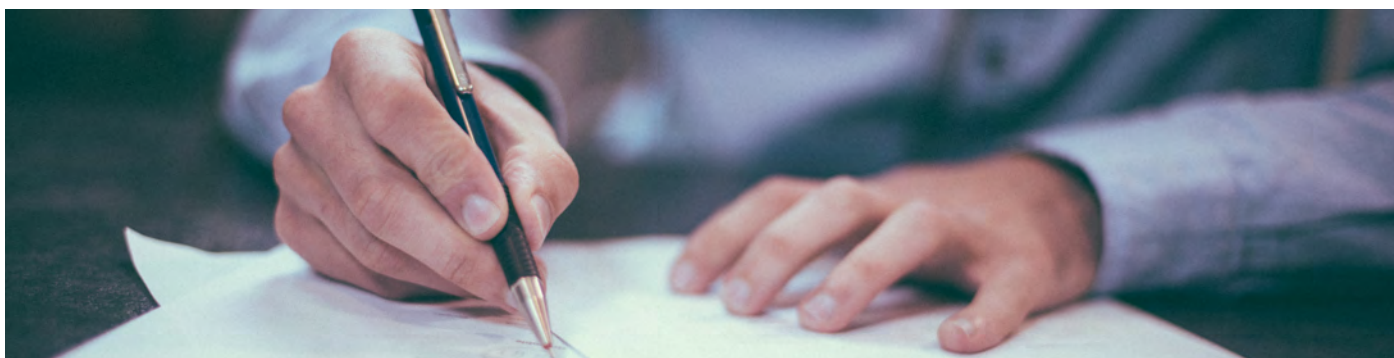
20% of referrals are not considered appropriate by the Cardiologist.

Systems

- Based on the blood test results, the GP fills in referral forms to refer the patient to Enhanced Cardiology Services (ECS).

Opportunities

- ✚ Reduce the number of inappropriate referrals through better guidance.
- ✚ Simplify and update the GP referral letter.
- ✚ Reduce the time spent on administration by Heart Failure Specialist Nurse.
- ✚ Reduce the time to the Echo, first appointment and medication optimisation.



🏠 Location: GP Surgery, Hospital

Emotional State: 😞

The referral is decided and accepted by Enhanced Cardiology Services (ECS).

The patient receives a letter about a hospital appointment they will need to attend for further tests.

Pain Points

- ❖ Multiple tests are required across repeat visits to a GP surgery or hospital clinic.
- ❖ GPs do not have visibility of or contact with patient progress, and both GPs and Heart Failure Specialist Nurses are unclear on who they should make contact with when.
- ❖ GPs lack the confidence to contact the heart failure service for advice and guidance on the QOF targets.
- ❖ The SystmOne (S1) user experience and interface is overly-complicated and highly confusing.
- ❖ Patients and GPs do not fully understand what happens after this stage.

Statistics

Only 4% of patients are seen within NICE guideline timelines (between 2-6 weeks).

Systems

- 1 x Echo and ECG are performed pre-clinic.
- If the referral is accepted, the GP is not notified.
- The ECS will then refer the patient to the heart failure service team.
- If the referral is rejected, the GP will receive a task via S1 with instructions on what to do next.

Opportunities

- ✚ Reduce Heart Failure Specialist Nurse (HFSN) administration time.
- ✚ Reduce time to Echo, first appointment and medication optimisation.
- ✚ Develop a better connection to the heart failure service, with a dedicated point of contact.
- ✚ Increase visibility of patient progress along the pathway and any actions which need to be addressed by clinicians.



🏠 Location: Hospital

Emotional State: 😞

The patient has further diagnostic tests and books an appointment to see the cardiologist at the hospital for an initial assessment.

The patient has an echocardiogram and an ECG.

Pain Points

- ❖ The patient is not seen quickly enough and the time taken for a referral is longer than desired.
- ❖ The patient arrives at their first appointment without the appropriate tests complete (NT pro-BNP and Echo).

Statistics

There is a severe shortage of echocardiographers in the UK
– with only 44 individuals trained in 2016 (Cowie, 2017)

80% of patients are diagnosed with heart failure in hospital after an acute event. (BMJ, 2019)

Opportunities

- ✚ Improve the time to receive a diagnosis.
- ✚ Ensure that patients arrive at their specialist appointment with the correct tests complete.



Location: Hospital

Emotional State: 😞

The patient waits for their test results and has a face-to-face appointment with the cardiologist for a formal diagnosis.

The patient has further tests including weight, inspection of swollen legs, BP, heart rate, assessment of breathlessness and oxygen saturation.

Pain Points

- ❖ The patient may need to see a number of other clinicians – a different one for each comorbidity.
- ❖ The patient may not want to attend their appointment for reasons including Covid-19 concerns and/or language barriers.

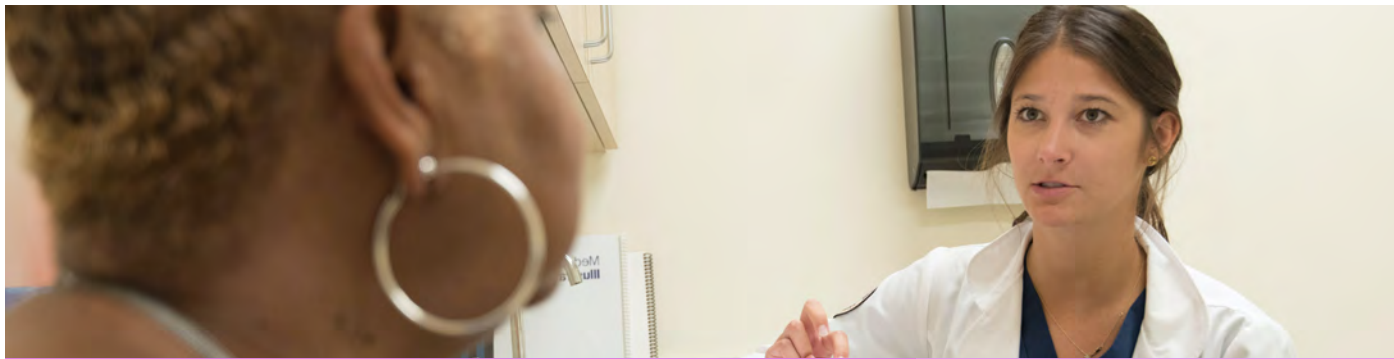
Statistics

Over 40% of patients have presented with symptoms to their GP that should have triggered an earlier assessment. (BSH, 2020)

32% of patients expressed reluctance to attend hospital appointments during the pandemic. (BHF, 2021)

Opportunities

- +
- +
- +



🏠 Location: Hospital

Emotional State: 😞

The cardiologist discusses their patient's diagnosis with them and informs them that they have heart failure with reduced ejection fraction (HFrEF).

The patient is prescribed their initial medication and given an appointment for a follow-up with a Heart Failure Specialist Nurse (HFSN).

The patient is also given a BHF booklet for further information about heart failure.

The patient is also asked to fill out heart failure questionnaires on paper (and clinicians will need to input the data manually into S1)

Pain Points

- ❖ Clinicians lack the capacity to see the patient due to Covid-19.
- ❖ Due to the shock of their heart failure diagnosis, the patient does not fully understand their diagnosis and/or are unable to fully absorb the information and instructions given to them.
- ❖ It can take several visits for patients to internalise the diagnosis and understand what it means. This can be frustrating for the patient.
- ❖ A lot of clinician time is spent manually updating SystemOne (S1) with details of the patient diagnosis.

Statistics

35% of heart failure patients express uncertainty or confusion around their diagnosis (AstraZeneca, 2019)

Mortality rates can be improved **by up to 50%** through education, self care, up-titration and optimisation of disease-modifying medical therapy.

Systems

- The cardiologist and HFSN update the patient record in S1.

Opportunities

- ✦ Redesign to improve and simplify HFSN templates on S1.
- ✦ Reduce administration time for clinicians
- ✦ Reduce paperwork and manual tasks
- ✦ Provide education to help clinicians use S1 more efficiently.
- ✦ Conduct collaborative development of patient-centric content and communications across Primary and Secondary care, for example in patient and GP care plans.
- ✦ Introduce remote patient monitoring to enable clinicians to manage patients remotely.



🏠 Location: Home

Emotional State: 😞

Suitable patients for remote monitoring (and confirms), are given bluetooth-enabled remote monitoring devices including blood pressure monitors and scales. The HFSN helps them get set up.

Via 60-minute Community Matrons appointments, housebound patients that require remote monitoring are helped in setting up their monitoring system. Releasing time for District Nurses.

HFSNs are able to refer patients who require urgent treatment directly and easily to the Rapid Response team.

The patient receives a clear and simple care plan informing them about their condition, medications, future appointments and lifestyle guidance.

Pain Points

- ❖ The patient has trouble adhering to the treatment plan.
- ❖ Patients can deteriorate quickly between Heart Failure Specialist Nurse appointments - leading to hospitalisations or death.
- ❖ HFSNs rarely have time to do enough home visits and cannot easily refer to primary care teams such as District Nurses, Rapid Response Team or Palliative Care Team.
- ❖ HFSNs have to manually upload blood test results to SystemOne (S1) so that GPs have access to this information.
- ❖ Care plans are not standardised in heart failure, so HFSNs have a different care plan template from Cardiologists, and GPs and have to start the content from scratch.
- ❖ Neither HFSNs nor GPs initiate advanced care planning conversations.
- ❖ There is a lack of integrated care, which leads to a breakdown in communications, which then impacts care (for example information is not passed from Cardiologists to CCG and GPs, and Pharmacists cannot communicate directly with GPs).
- ❖ The patient's record is not updated in S1 following clinic visits for pharmacy appointments.
- ❖ Clinic letters are manually sent to GPs in the post from TPS system, which leads to an admin burden and frequent delays.
- ❖ Discharge letters are poorly formatted and are neither patient nor GP-centric.

Statistics

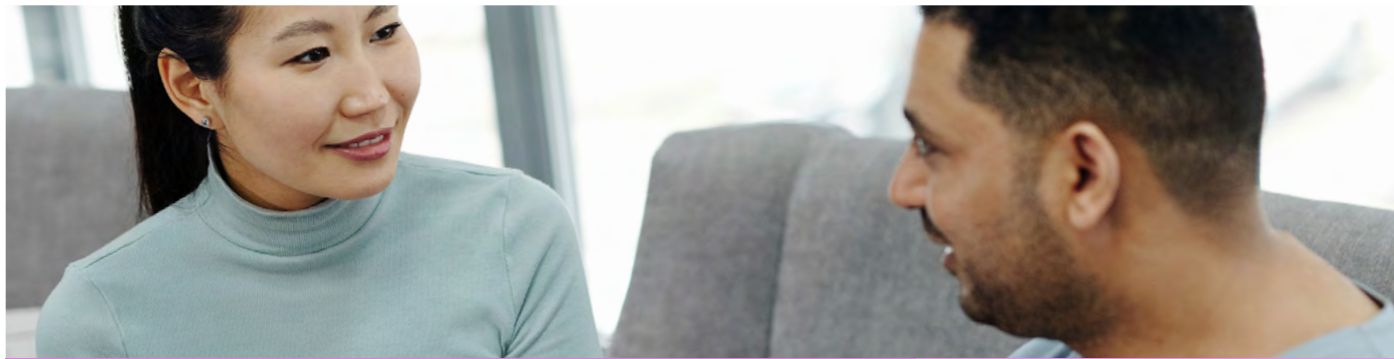
30-60%
of HFSN time could
be classed as
administration.

Systems

- A Cardiologist or HFSN creates and sends the same discharge letter to both the GP and patient.
- A HFSN manually uploads blood test results to S1.

Opportunities

- ✚ Create patient and GP-centric care plans.
- ✚ Enable HFSN to directly refer to community services.
- ✚ Integrate Pharmacists and other community resources into the pathway, for example District Nurses, Community Matrons, Palliative Care Team, Rapid Response Teams.
- ✚ Enable remote patient monitoring and uptitration pathway for patients - allowing nurses to care for more patients and to spot deterioration more quickly.
- ✚ Improve adherence with remote monitoring and more patient-centric care plans.
- ✚ Reduce the administration time for HFSNs by increase in remote monitoring, which increases availability for clinical time spent with patients.
- ✚ Encourage GPs and HFSNs to initiate advanced care planning and record when Co-ordinate My Care (CMC) is activated in SystemOne (S1).



🏠 Location: Home, Hospital

Emotional State: 😊

The patient is re-assessed by a Heart Failure Specialist Nurse (HFSN) or cardiologist to update their medication or care plan.

If the patient decompensates or becomes unstable, the patient or carer will need to call the London Ambulance Service to attend.

Pain Points

- ❖ The patient needs to understand what needs to be monitored and when.
- ❖ The patient does not always know when their medication has been changed.
- ❖ The patient does not have any further scheduled appointments in the future.
- ❖ The patient often manages multiple comorbidities and does not always realise how serious their heart failure is.
- ❖ The patient can be hospitalised for an unrelated comorbidity and A&E staff could change their heart failure medication inappropriately, based on blood test results (for example high potassium levels).
- ❖ Some patients are seen by Community Matrons who aren't aware of how to access the specialist support they might need to keep their patients stable and out of hospital.
- ❖ HFSNs do not have enough time to complete all of the home visits they would like to.

Statistics

1–2%
of the NHS budget is estimated to be spent on heart failure, with 60–70% related to the costs of hospitalisation. (Cowie, 2017)

Deferring heart failure treatment for one month, even in low-risk patients, increases the risk of death

by 1%
(Zaman, 2017)

Systems

- Pharmacist has c.3 calls with the the patient to monitor changes in drugs optimisation.

Opportunities

- + Using mobile devices used for remote monitoring to deliver heart failure education for patients.
- + Create clearer lines of communication between Primary and Secondary care.
- + Improve patient adherence to their medication by involving pharmacists more.
- + Ensure patients know who to contact when they feel unwell.

2020



🏠 Location: GP Surgery

Emotional State: 😊

The patient is contacted for a medication review, where any changes or side effects are discussed.

The patient will have blood tests every six months.

🏠 Location: GP Surgery

Pain Points

- ❖ The patient needs to visit in-person for blood tests but does not want to come in due to Covid-19.
- ❖ The patient has not been consistent in their medication adherence, or has not been entirely honest about their adherence.
- ❖ There is no capacity for GPs or Heart Failure Specialist Nurses (HFSNs) to be proactive in monitoring patients beyond fixed appointments. Patients don't always know how to get in touch and don't recognise the signs of deterioration, which can lead to unplanned hospital admissions.

Statistics

45%-60%
of reasons for GP visits are routine or for repeat prescriptions. (AstraZeneca, 2019)

Patients require on average
11-13 contacts per year
with their GP or other members of the Primary care team.

Opportunities

- ✚ Improve clinic letters by utilising better formatting and information placement.
- ✚ Increase the involvement of Pharmacists to support adherence to medication.
- ✚ Reduce in-person visits using remote appointments.

2020



🏠 Location: Home

Emotional State: 😊

The patient receives a discharge letter and care plan for heart failure.

If the patient has complex care needs, palliative care nurses introduce Co-ordinate My Care (CMC).

If the patient requires IV diuretics then the Heart Failure Specialist Nurses (HFSNs) call on the Rapid Response Team to attend.

If the patient decompensates or becomes unstable, the patient or carer calls the London Ambulance Service to attend.

Pain Points

- ❖ The patient has trouble engaging with or filling out their care plan.
- ❖ The patient discharge letter is not designed for the patient to read and understand, as it is primarily a discharge letter to the GP.
- ❖ The patient continues to make poor lifestyle choices that exacerbate their condition.
- ❖ The patient has not had a conversation about end of life with the GP or a HFSN, and does not have a plan published on CMC. The London Ambulance Service therefore cannot support the patient's wishes and their choice of place of death.
- ❖ HFSNs are unsure whether all letters are uploaded as the process to upload them across different systems is a manual one.
- ❖ Palliative care do not get involved unless the patient has complex care needs.

Statistics

Mortality from heart failure increased **by 23%** from April to July 2020, primarily due to Covid-19 impacting patient engagement and the delivery of specialist heart failure services. (ESC, 2021)

Only 6% of those dying with heart failure were referred to palliative care in 2017. (NHS, 2017)

Opportunities

- ✚ Provide the ability for patients to self-monitor using technology.
- ✚ Update the patient's CMC record as needed, and ensure their advanced care plan is in place.
- ✚ Redesign discharge letters to be more patient-centric.
- ✚ Involve the Palliative Care Team, District Nurses, Community Matrons and Rapid Response as required.



🏠 Location: Home

Emotional State: 😞

The patient is feeling increasingly unwell, with symptoms including breathlessness. They are unsure of what the medical problem could be.

The patient has access to information about living a healthy lifestyle and is aware of some heart failure symptoms.

The patient decides to contact their GP for an appointment to find out what the issue could be.

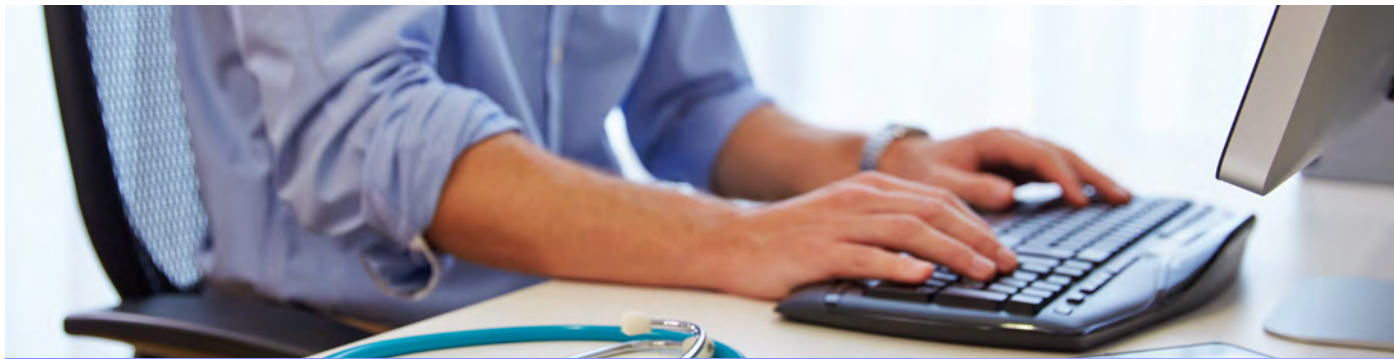
Pain Points - resolved

- ✓ The patient was previously unaware of heart failure symptoms and how poor lifestyle choices attributed to their condition - now they have more access to information about heart failure and how to live a healthier lifestyle in order to help manage their symptoms

Systems

Patients who are at risk of heart failure but are not yet coded are given:

- Healthy lifestyle and diet education
- Information on what heart failure symptoms look and feel like
- Heart failure team contact details, as required



Location: GP Surgery

Emotional State: 😊

The GP uses the dedicated heart failure template, which has guidance and information on heart failure diagnosis

The GP fills in the information that confirms that they suspect the patient has heart failure and they order the correct NT pro-BNP blood tests.

The GP can easily find the heart failure team details to ask them any questions they may have.

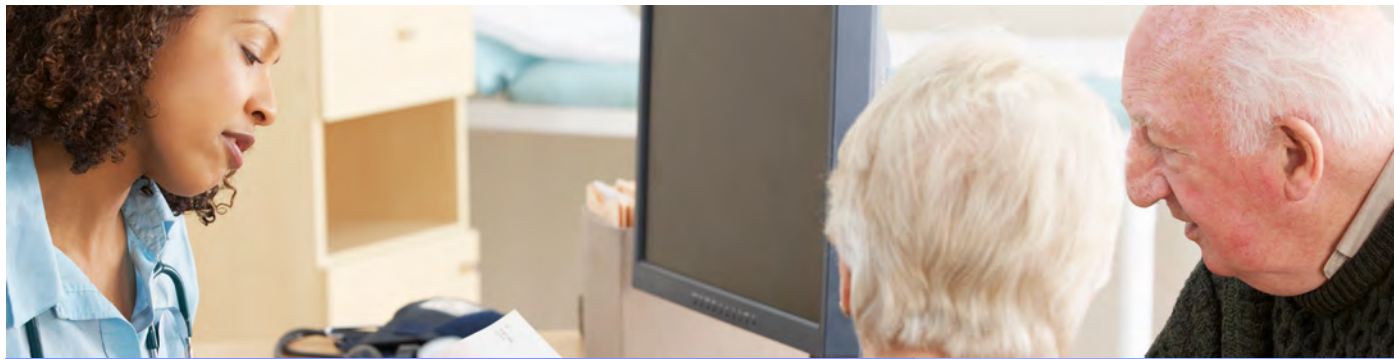
For GPs who do not use the heart failure template at this stage: the GP notes the patient's symptoms of chronic shortness of breath and looks at the Shortness Of Breath (SOB) panel on S1 to order suitable tests - one of them is NT pro-BNP and will be able to detect heart failure if it comes back positive.

Pain Points - resolved

- ✓ A dedicated heart failure template on S1 provides the GP with more information on heart failure and enables them to make referrals, as well as ordering the appropriate tests.
- ✓ The previous BNP test option has been removed and NT pro-BNP is configured on the template.
- ✓ The Chronic Shortness Of Breath (SOB) panel increases the chances for the GP to order blood tests for heart failure.
- ✓ The GP has clear contact details for the heart failure team, for any questions they may have.
- ✓ GPs are invited to regular educational seminars led by the heart failure team to boost their knowledge about heart failure and to be updated on the latest developments on the pathway.

Systems

- The GP has a dedicated heart failure template on SystmOne (S1) with guidelines on how to fill it in and further information about treating heart failure.
- The GP orders the NT pro-BNP test on S1.
- Chronic Shortness Of Breath (SOB) panel is available on S1 for GPs to use and order tests including NT pro-BNP.



🏠 Location: GP Surgery, Hospital, Clinic for Echo

Emotional State: 😊

The patient has the correct NTproBNP blood tests (not BNP) and then has a follow-up appointment with the GP.

The results are sufficiently high that the GP refers the patient to the Enhanced Cardiology Service (ECS) using the updated referral form within the Referral Wizard tool on S1, and the patient is triaged based on the blood test results.

Pain Points - resolved

- ✓ The S1 heart failure template has a Referral Wizard feature which streamlines the process of making referrals for GPs
- ✓ The heart failure referral letter has been redesigned and reformatted with clinicians to ensure the the content is up to date and easy to use
- ✓ GPs educational seminars will include time spent on going over how to use the new features and updates

Systems

- The GP referral letter is improved by removing unnecessary fields, automating the content and applying an improved layout.
- The Referral Wizard tool enables GPs to easily access the referral letter and provides a more streamlined referrals process.



🏠 Location: Hospital

Emotional State: 😊

The referral is accepted by ECS / Cardiologist and the patient is booked in for an Echo.

The patient receives a letter about the appointment with a Cardiologist within 2-6 weeks, based on their NT pro-BNP blood test results.

The patient receives a notification via their PKB (Patients Know Best) app to email or call if they have signed up for this (including a calendar invite).

If a referral is rejected, the GP is notified and tasked to complete information and/or pursue other assessments.

Pain Points - resolved

- ✓ The GP can easily find the heart failure team details to ask them any questions they may have.

Systems

- The patient record will be updated to reflect all of the completed heart failure tests.
- Notifications are sent to the patient using their patient details and dependent on their communication preferences (via email / SMS).



🏠 Location: Hospital

Emotional State: 😊

The patient sees the cardiologist at the hospital for an initial assessment with the correct tests completed beforehand.

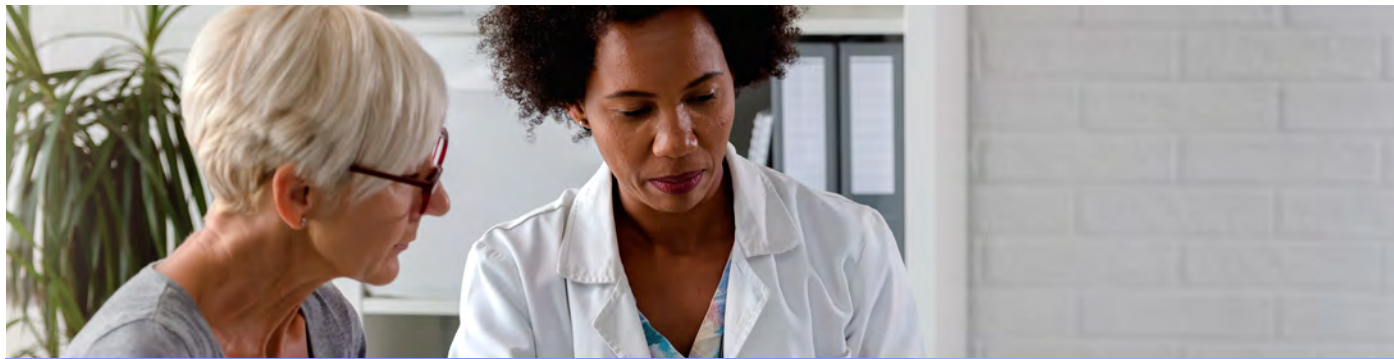
The patient has an echocardiogram and ECG.

Pain Points - resolved

- ✓ The dedicated heart failure template on S1 for the GP enables them to make appropriate referrals, as well as ordering the appropriate tests - therefore reducing the time to referral.
- ✓ The previous BNP test option has been removed and NT pro-BNP is configured on the template so the patient is only seen by the cardiologist when they have had all the appropriate tests before their appointment.

Systems

- The test results are updated into SystemOne (S1) for GPs and Heart Failure Specialist Nurses (HFSN) to view and access as needed.



🏠 Location: Hospital

Emotional State: 😐

The patient waits for their test results and books a face-to-face appointment with the cardiologist for a formal diagnosis.

The patient has further tests including weight, inspection of swollen legs, BP, heart rate, assessment of breathlessness and oxygen saturation.

The patient is given the option to have a video call instead of a face-to-face appointment.

If the patient is new, their results for the first assessment and diagnosis will be delivered face-to-face.

Pain Points - resolved

- ✓ Remote solutions such as video calls and consultations will give patients flexibility to attend appointments if they do not wish to do so in-person

Systems

- Patients are given the option to have video calls instead of in-person appointments
- All test results are updated into SystemOne (S1) for GPs and Heart Failure Specialist Nurses to access as needed.

2021



🏠 Location: Hospital

😊 Emotional State:

The cardiologist discusses their patient's diagnosis with them and informs them that they have heart failure with reduced ejection fraction (HFrEF).

The patient is prescribed initial medication and given an appointment for a follow-up with a HFSN.

The patient is also given a BHF failure booklet for further information about heart failure.

The cardiologist identifies suitable patients for remote patient monitoring. If suitable, the patient is given the option to join a remote care pathway and an information leaflet about the service will be provided.

Prior to onboarding onto the remote monitoring system, the patient will be asked to fill out a heart failure and PAM questionnaire online using a mobile device.

Pain Points - resolved

- ✓ Remote monitoring and uptitration technology enables clinicians to manage patients remotely and efficiently.
- ✓ Online questionnaires via a mobile device reduces paperwork for clinicians and provide a better experience for patients.

Systems

- All diagnostic details are updated in S1 for information for GPs and HFSNs.
- Remote monitoring status is updated in S1 to inform clinicians whether patient is on the remote patient monitoring pathway.
- The patient is provided with remote monitoring devices (including scales and blood pressure cuff), alongside education materials.
- Online questionnaire data is easily updated into S1.
- The HFSN sends a task to the GP or practice admin to open a new heart failure template to code the patient with appropriately. The GP attends a relevant MDT if needed.
- The patient's HFrEF is coded in S1.



Remote patient monitoring

Patients are selected for remote patient monitoring and uptitration programme

The criteria for remote patient monitoring includes:

- ~ Patients who have had appointments cancelled during pandemic
- ~ New referrals who have been triaged by a heart failure specialist
- ~ Symptomatic patients who require optimisation of evidence-based pharmacological therapy
- ~ Patients who are able to engage with a telephone and/or virtual review

The exclusion criteria for remote patient monitoring includes:

- ~ Patients who are unable to manage the devices, a smartphone, or other routes to access the remote monitoring app effectively
- ~ Patients decompensating who require prioritisation for face-to-face review
- ~ Stable, optimised patients who can be discharged to GP care



🏠 Location: Home

Emotional State: 😊

For housebound patients, Community Matrons help them set up their remote monitoring system via 60-minute appointments that help relieve District Nurses who have less time.

If the patient is suitable for remote patient monitoring (and confirms), the patient is given bluetooth-enabled remote monitoring devices including blood pressure monitors and scales. The HFSN helps them get set up.

The patient receives a clear and simple care plan informing them about their condition, medications, next appointments and guidance on lifestyle choices.

The patient is asked about advanced and end of life care planning options, and is guided by a nurse to start the advanced care planning conversation.

Pain Points - resolved

- ✓ Patient-centric care plans have been created so that patients find it easier to understand their condition, medication and treatment required to address issues they may have, for example, medication adherence. Patients will also be able to easily find contact details for their heart failure team.
- ✓ Clinician-specific care plans have been created so that they will not need to create the content from scratch every time - patient data is pulled from S1 so that they can easily create a care plan.
- ✓ Advanced care planning is featured in S1 so that clinicians are visually reminded to initiate conversations with the patient. The GP is alerted by the HFSN via S1 to continue the advanced care plan conversation when a HFSN sets up a new record.
- ✓ Pharmacists are given S1 to enable patient records to be updated when required

Systems

- Using the Referral Wizard tool, HFSNs are able to make direct referrals to community services as appropriate, for example Rapid Response, District Nurses, Community Matrons and Palliative Care.
- HFSN set up a Coordinate My Care (end of life care planning) record, which auto-alerts the GP to complete this with the patient.
- HFSNs use new care plan templates on S1 which are automatically populated to create distinct GP and patient versions.
- The care plan will also be given out to the patient's family (via email or preferred method) and all healthcare professionals, including carers, who are involved in their care.
- The patient's vital signs are recorded by the system and any irregularities are flagged and tasked to clinicians as needed.
- Data from the app is integrated with SystmOne (S1).



Remote patient monitoring

- ⚡ District Nurses or Community Matrons could help set up housebound patients at home with the remote patient monitoring technology, if needed.

2021



🏠 Location: Home

Emotional State: 😊

The patient does not adhere to medication and does not enter information into the monitoring system. They are sent a prompt via their device (a message notification) to remind them to input their details.

The patient's symptoms start worsening and this is spotted quickly by a nurse via an alert on the remote monitoring dashboard. As it is late on a Friday, the patient receives a call and a home visit from the Rapid Response Team, which saves a weekend hospital admission. The remote monitoring system alerts HFSNs when the patient shows signs that they require IV diuretic treatment (and may need to attend an ambulatory unit for treatment)

For patients who require IV diuretic treatment or have low iron levels, the HFSN will organise for them visit the ambulatory unit for treatment. The aim the unit is to reduce hospital admissions, avoid unplanned admissions and facilitate earlier discharge. The patient is given contact details if they require further support.

Pain Points - resolved

- ✓ The remote monitoring / uptitration system will enable the patient to understand what is being monitored and why the information is important for their treatment.
- ✓ Education modules are provided via their mobile device so that they can access information easily to learn more about managing their condition.
- ✓ HFSN time is used more efficiently since their admin and face-to-face appointments are reduced.
- ✓ Clearer lines of communication are established with pharmacists to manage medication optimisation.
- ✓ Ambulatory clinics aim to treat patients who need IV diuretic treatment and have low iron levels - thereby managing symptoms earlier and shortening admissions, preventing unplanned admissions and allowing for earlier discharge, whilst saving resources and improving the patient experience.

Systems

- GP Pharmacists have access to SystmOne (S1), where they are able to monitor changes to drug optimisation and adherence. They can refer the patient back to HFSNs or the hospital pharmacist if they think drugs need further optimisation or changing.
- HFSNs will work with pharmacists to help facilitate medication modification, using S1 tasking to communicate.
- Rapid Referral guidance is available on S1, including guidance on out of hours GPs for complex patients so that the Rapid Response Team has advice out of hours.
- HFSNs review the remote patient monitoring dashboard to check for deterioration and progress.
- The remote patient monitoring triage settings will alert the right teams. Out of hours alerts for very high risk patients are automatically sent to the Rapid Response Team.
- HF Ambulatory Clinic is managed by the Heart Failure Team operating Mon-Fri 9-5pm with a max capacity of 8 patients per day.

2021



🏠 Location: Home

Emotional State: 😊

The patient is contacted for a medication review from the heart failure team regarding any changes and side effects.

The patient's review meetings are conducted remotely, in which vital signs from the remote patient monitoring dashboard are discussed.

The patient's blood tests are performed remotely every six months.

Pain Points - resolved

- ✓ Improved clinic letters for follow-up assessments provide patients with information that is better laid out and easier to understand.
- ✓ Providing pharmacists with an adherence questionnaire to give to patients online / via mobile device will help provide an idea of how patients are managing their medication and whether they may require further support.
- ✓ Remote blood tests reduces in-person visits and frees up clinician time - the patient receives the blood tests at home by post, follows the instructions and returns the test by booking the courier (included in the service).

Systems

- GPs receive a SystmOne (S1) alert to complete the Co-ordinate My Care (CMC) record.
- Follow-up appointments with the patient are alternated between Heart Failure Specialist Nurses (HFSNs) and GPs.
- HFSNs can have video calls or online chat conversations with patients instead of phone calls or in-person meetings.
- GP Pharmacists conduct regular adherence questionnaire reviews to see how the patient is managing their medications.

2021



🏠 Location: Home

Emotional State: 😊

The patient receives an updated care plan, which includes their discharge summary.

When the patient needs to be offboarded, they are taken off the remote patient monitoring system by the Community Matron.

If the patient's condition worsens, they are seen by the Palliative Care Team.

If the patient is stable and would like to self-monitor and continue to use the devices and app, they are able to do so. The HFSNs will confirm the patient's 'self-care' status upon discharging them back to their GP's care.

If the patient deteriorates on the self-care program, they are advised to contact their GP or A&E.

Pain Points - resolved

- ✓ Improved clinic letters for follow-up assessments provide patients with information that is better laid out and easier to understand.
- ✓ A self-care program enables patients to be more proactive to book in follow-up appointments, knowing that they can easily get in touch with their heart failure team if they need to - with the aim of reducing unplanned hospital admissions.

Systems

- The GP can easily contact their PCN-designated HFSN with any heart failure or patient-specific questions.
- When the patient is offboarded from the remote patient monitoring system, SystmOne (S1) is updated so that the heart failure team and GPs will be able to see the patient's status.
- A new discharge and care plan template is used, which includes personalised patient information
- HFSNs use Referral Wizard in S1 to refer deteriorating patients to a community Palliative Care Team.
- Patients are asked about their overall experience of using the remote patient monitoring system, which is embedded within the remote patient monitoring app.



2022 – 2025



🏠 Location: Home

Emotional State: 😐

The patient suffers from other comorbidities and is feeling increasingly unwell, with symptoms that include breathlessness.

The patient has access to educational materials about living a healthy lifestyle and is fully aware of heart failure symptoms. The patient finds the heart failure team details easily and contacts them directly.

In some cases, the patient may receive a call from their GP to come in for a check-up. This is because the GP and/or the heart failure service has noticed that the patient is at high risk for heart failure, based on the combination of drugs they are on alongside their comorbidities.

Pain Points - resolved

- ✓ The patient previously did not present early enough to the GP to help prevent further decline - now the patient can easily find contact details for the heart failure team to be able to speak to them directly if they have questions or concerns.
- ✓ The patient is proactively contacted if they are at risk.

Systems

- GP and the heart failure team have access to data that will be able to alert them for patients at high risk for heart failure.



🏠 Location: Home

Emotional State: 😊

The GP uses a smart stethoscope as part of the screening assessment (and also for routine appointments) to listen to the patient's heart and receives guidance that the patient is likely to have heart failure.

The recommendation is that they should be examined by a Cardiologist within two weeks.

The GP or other community non-heart failure specialist uses a hand-held ultrasound machine to take an echocardiogram. AI software produces a report that is included in the referral to specialist heart failure services, with the most urgent referrals being prioritised based on this report.

The GP confirms the patient referral to the heart failure team and for a Cardiologist appointment to be automatically booked for the patient.

The patient receives a calendar invite for this hospital appointment and confirms to attend on their mobile phone. The GP also arranges the appropriate blood tests for the patient in the meantime

Pain Points - resolved

- ✓ With advanced tools such as a smart stethoscope and AI supported, handled echo devices, this enables GPs to make faster and more accurate assessments and diagnoses.
- ✓ More information is provided from the point of GP assessment so that less inappropriate referrals are made.

Systems

- Smart stethoscope, echo and blood test data is integrated with S1 so that this information can be accessed by secondary care as well.
- Routine advice is provided to local GPs and other relevant services for diagnosed or suspected heart failure patients. This is performed within 24 hours, through a dedicated heart failure service advice line via SystemOne (S1) secure email.



🏠 Location: GP Surgery, Hospital, Clinic for Echo

Emotional State: 😊

The patient goes to the clinic / hospital for their NT pro-BNP tests and receives a communication (email / letter) regarding an appointment with a cardiologist based on the test results and smart stethoscope data. The GP also receives an update on the results.

If a referral is rejected, the GP is notified and tasked to complete the required information and/or pursue other assessments.

Pain Points - resolved

- ✓ Time spent waiting along the pathway (for echo / medication optimisation etc) is reduced by introducing better education and communication channels.

Systems

- Smart stethoscope data can interoperate with S1 data, as well as with other clinical systems.
- Transparency of data is easily available between GPs and the heart failure team, for example clinicians are able to view ECG data and access smart stethoscope data to listen to heart sounds.
- The patient is triaged through a single point of access (SPA) using S1. If the referral does not meet the agreed criteria, there is the option to return it (via Referral Wizard on S1) with a request for further information.



🏠 Location: Hospital

Emotional State: 😊

The referral is accepted by the heart failure team and based on the cardiologist's assessment, the patient is given a heart failure remote monitoring system to use at home.

If the patient uses devices to monitor other conditions, for example diabetes, the device will be integrated providing a streamlined set of data for clinicians to view.

The patient's vital signs are monitored and alert tolerances are set for nurses and cardiologists.

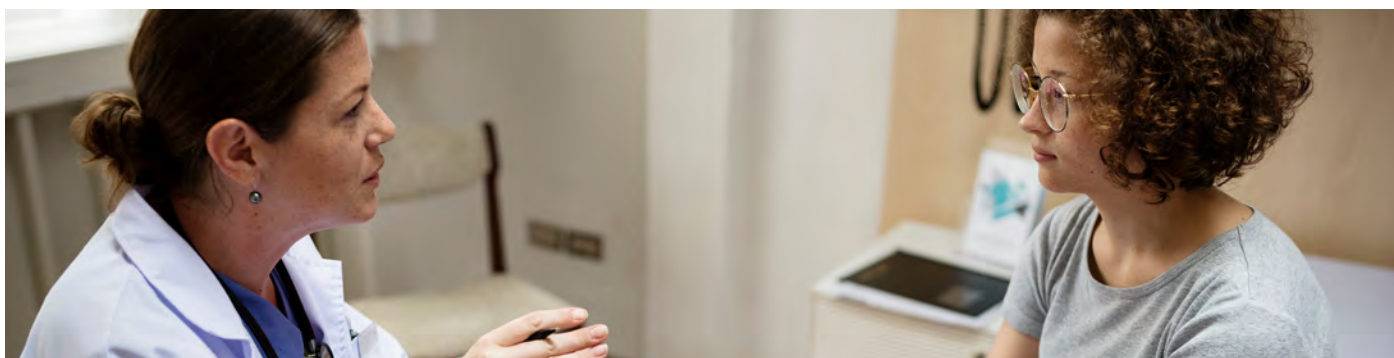
The cardiologist will also receive an alert from the stethoscope data (taken at GP presentation) that a new potential high risk heart failure patient has been identified and will be coming in.

Pain Points - resolved

- ✓ When the patient referral has been received by the heart failure team, the patient will be added to a heart failure "digital pathway journey" - so clinicians can see the patient journey from start to finish - including where they are in the process, their test results, how long they've been waiting for and the outstanding actions required. This solves the lack of visibility across the pathway between primary and secondary care, whilst providing clarity for whom is responsible for the patient at any time.

Systems

- A digital view of the patient journey is integrated with S1 so that clinicians have full visibility of data and actions
- Cardiologist can access a live dashboard for patients, with a list of triaged patients at high risk to monitor closely.



🏠 Location: Hospital

Emotional State: 😊

The patient has their initial tests conducted and attends the cardiologist hospital appointment that was automatically booked for them.

If not already conducted by a GP or other community based healthcare professional, the patient has an echocardiogram and an ECG test. The waiting time for the echocardiogram is reduced since artificial intelligence (AI) software is used to automatically review and determine heart failure type results for whether the patient needs to be coded for HFrEF or HFpEF.

The cardiologist views all patient data on a single platform, assesses the patient and conducts further tests if required.

If available, the cardiologist will take into account the patient's remote monitoring data to confirm findings, for example weight, inspection of swollen legs, blood pressure, heart rate, assessment of breathlessness, oxygen sats.

The cardiologist confirms the diagnosis based on the results. On the same day, the patient sees a HFSN to start their medication and treatment plan.

Pain Points - resolved

- ✓ By using the AI software, cardiologists may be able to shorten the time to diagnosis and treatment for patients
- ✓ With the patient's heart failure "digital pathway journey" where clinicians can see the patient journey from start to finish - they can see what tests are yet to be completed for the patient and how long they have been waiting for so that they can prioritise accordingly and send any actions to the right people.

Systems

- Due to AI detection, the patient is treated earlier, saving 3-7 days before seeing a cardiologist. They may not even need the blood test, and do not have to wait for results if they do.
- Rapid heart failure diagnostics and assessment is available through integrated information sharing. Streamlined services and appointments mean patients can start heart failure treatment on the same day they receive their results.
- For all new heart failure patients, the system will use S1 to task GPs to follow up with their patient within one month of being seen by a nurse.
- Data regarding treatment for comorbidities is shared with GPs, HFSNs and patients, which reduces the frequency of appointments and number of clinicians that the patient needs to see.
- A digital view of the patient journey is integrated with S1 so that clinicians have full visibility of data and actions.



🏠 Location: Home

Emotional State: 😊

A video call appointment is made with the patient to ensure that they fully understand their diagnosis, medication and treatment plan.

This will be conducted even if the patient has already spoken about the diagnosis with the HFSN in a hospital about, as the patient may require more time to absorb this information. Additionally, once the patient is at home and more relaxed, they may have more questions to ask.

The patient receives further education and guidance on understanding their diagnosis. If the patient is suitable remote patient monitoring and confirms this option, they will be sent their monitoring devices and instructions on how to get setup with the monitoring app. Further instructions are provided if patients opt in for remote blood tests during their remote monitoring / uptitration treatment.

The patient is asked to fill out a heart failure and PAM questionnaire online.

All newly diagnosed heart failure patients will have an extended consultation of 30 minutes.

Pain Points - resolved

- ✓ Remote monitoring and uptitration technology including blood tests enables clinicians to manage patients completely remotely.
- ✓ Online questionnaires via a mobile device reduces paperwork for clinicians and provide a better experience for patients.

Systems

- A digital view of the patient journey is integrated with remote patient monitoring systems so that clinicians know where patients are in their treatment journey, including the latest data from remote monitoring.
- Smart stethoscope data and AI software can identify a cohort who may need to be monitored more closely, under a different set of measurement alert and tolerances.
- Online questionnaire data is easily updated into S1.



Remote patient monitoring

Patients are selected for remote patient monitoring and uptitration programme

The criteria for remote patient monitoring includes:

- Patients who have had appointments cancelled during pandemic
- New referrals who have been triaged by a heart failure specialist
- Symptomatic patients who require optimisation of evidence-based pharmacological therapy
- Patients who are able to engage with a telephone and/or virtual review

The exclusion criteria for remote patient monitoring includes:

- Patients who are unable to manage the devices, a smartphone, or other routes to access the remote monitoring app effectively
- Patients decompensating who require prioritisation for face-to-face review
- Stable, optimised patients who can be discharged to GP care



 Location: Home

Emotional State: 

Prescribed medication is delivered via post to the patient's home. A HFSN and the patient have a video call to talk through drug dosage and optimisation alongside their remote patient monitoring set-up.

For blood tests at home:

The patient receives the blood tests at home by post, follows the instructions and returns the test by booking the courier (included in the service). The patient receives confirmation by text that the blood test has been received and will be analysed.

The patient receives health tips and an educational plan that will help them make and maintain better lifestyle choices.

An advanced care plan (for example CMC) is introduced for the patient, with guidance from HFSNs on how to complete it.

Pain Points - resolved

- ✓ Using a remote monitoring and uptitration system enables clinicians to view and manage patient progress and status easily.
- ✓ The system also provides the patient with personalised health tips and connect them with psychological / mental health support throughout the process.

Systems

- S1 alerts the clinicians when the patient requires relevant medications / treatment. Communications will be sent out to the patient via phone and/or email and tasks will be sent to their GP or HFSN.
- All communication about the patient is automated through S1, saving time for GPs and HFSNs.
- Psychological support is available via local community services and will be offered to patients.
- Remote blood tests system is arranged whereby the tests are sent directly to the patient's home and picked up by a courier to return to a testing centre for analysis. Results are also sent to the GP and patient.
- Remote blood test data will sync with the patient records on clinical systems, so both the patient and the clinicians will be able to view results.



Remote patient monitoring

- District Nurses or Community Matrons could help set up housebound patients at home with the remote patient monitoring technology, if needed.
- The remote monitoring app will notify the patient when their blood tests are due and a test will be automatically ordered to their home. Clinicians will also be notified of this action and any updates from the results will be fed back into the remote monitoring system.

2022 – 2025



🏠 Location: Home

Emotional State: 😊

HFSNs have access to the patient's history and medication.

If the patient's medication is not optimised within three months this will show from feedback in the remote monitoring system, and clinicians will be alerted to change the medication as required.

Follow-ups with the patient are held alternately with the GP and HFSNs, with Cardiologists and Pharmacists included where necessary. These appointments are automatically booked in advance, based on parameters entered by the HFSN into S1.

Remote blood tests can be completed by the patient at home, sent by post. The heart failure team can view results when the patient sends them for analysis.

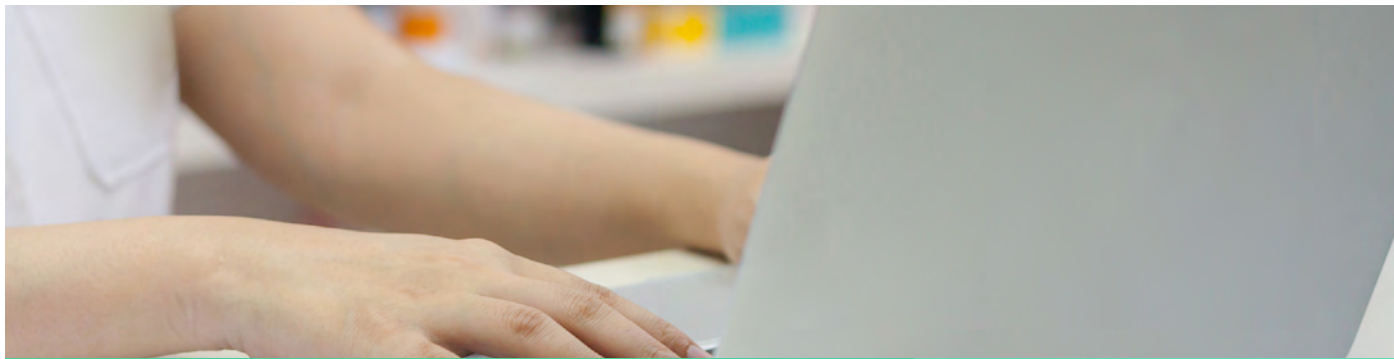
For patients who require IV diuretic treatment or have low iron levels, they will be asked to visit the ambulatory unit for treatment - in order to reduce hospital admissions, avoid unplanned admissions and facilitate earlier discharge.

Pain Points - resolved

- ✓ Using the patient's digital pathway journey enables clinicians to easily manage appointments between themselves (between GPs and HFSNs and also cardiologists and pharmacists where required).
- ✓ Ambulatory clinics aim to treat patients who need IV diuretic treatment and have low iron levels - thereby managing symptoms earlier and shortening admissions, preventing unplanned admissions and allowing for earlier discharge, whilst saving resources and improving the patient experience.

Systems

- A digital view of the patient journey is integrated with S1 so that clinicians have full visibility of data and actions
- A named HFSN will be assigned to each of the heart failure GP networks. These posts will build strong relationships with GPs to facilitate joint working and management of heart failure patients. The HFSNs will be required to attend GP network meetings and MDTs, as well as provide teaching and training to Primary care where the need is identified.
- On a case-by-case basis, HFSNs will provide nurse-led training to upskill primary care practice nurses and other community services, such as District Nurses, Community Matrons and Rapid Response Teams.
- Remote blood test data will sync with the patient records on clinical systems, so both the patient and the clinicians will be able to view results.
- HF Ambulatory Clinic is managed by the Heart Failure Team operating Mon-Fri 9-5pm with a max capacity of 8 patients per day.



🏠 Location: Home

Emotional State: 😊

Upon reviewing the patient's medication and asking them to fill out the adherence questionnaire, the GP Pharmacist notices that the patient's adherence is low and uses S1 to send a task to the GP prompting them to contact the patient.

Alternatively, the HFSN is alerted about the patient, but due to an out of hours alert or home-bound patient, an immediate referral is made to the Rapid Response Team, District Nurses or Community Matrons.

Blood tests are conducted remotely every six months.

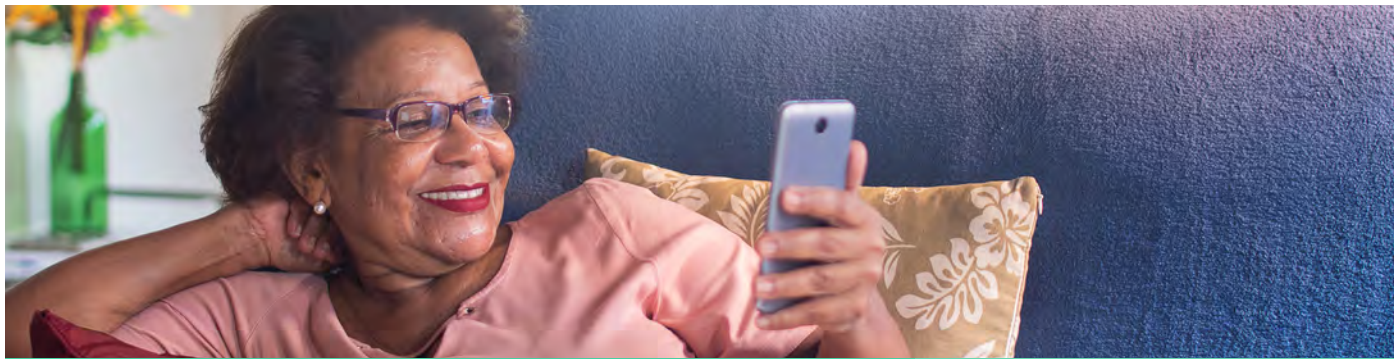
Pain Points - resolved

- ✓ Using the patient's digital pathway journey enables clinicians to easily manage appointments between themselves (between GPs and HFSNs and also cardiologists and pharmacists where required).
- ✓ Providing pharmacists with an adherence questionnaire to give to patients online / via mobile device will help provide an idea of how patients are managing their medication and whether they may require further support.
- ✓ Remote blood tests reduces in-person visits and frees up clinician time - the patient receives the blood tests at home by post, follows the instructions and returns the test by booking the courier (included in the service).

Systems

- The patients are reviewed regularly through regular MDTs or a core group of GPs, Pharmacists, HFSNs and other Secondary care heart failure specialists (e.g. Rapid Response, District Nurses) meeting together. They discuss wider heart failure related topics.
- A digital view of the patient journey is integrated with S1 so that clinicians have full visibility of data and actions - information from the patient adherence questionnaire, alongside their remote patient monitoring data.
- Remote blood test data will sync with the patient records on clinical systems, so both the patient and the clinicians will be able to view results.

2022 – 2025



🏠 Location: Home

Emotional State: 😊

The patient is discharged back to GP care, but they can still input data into the remote monitoring app and access the educational materials.

The patient has a greater piece of mind as they know that they will receive alerts if they may need to see the a clinician if their symptoms deteriorate over a period of time.

In case of an emergency re-admission, the London Ambulance Service has access to advanced care planning information for the patient, meaning they have a better end of life experience and are able to die how they want to.

Pain Points - resolved

- ✓ A self-care program enables patients to be more proactive to book in follow-up appointments, knowing that they can easily get in touch with their heart failure team if they need to - with the aim of reducing unplanned hospital admissions.

Systems

- Healthcare assistants in GP surgeries may also review a heart failure remote patient monitoring dashboard and flag any at risk patients to the GP for a follow-up call or appointment. This will depend on protocol design and the ability of individual GP surgeries to handle some additional monitoring overheads, and how this may be impacted by QOF.



Partners



NHS Imperial healthcare Trust:
The entire Heart Failure team is
involved in implementing
the new pathway



**North West London
Clinical Commissioning Group**

NWL NHS CCG: NWL CCG
are the programme's overall
NHS sponsors



NHSx are providing the
funding to trial the remote
uptitration technology



DiscoverNOW is the health data
research hub that initiated the
project. Access is provided to NWL's
longitudinal dataset for impact
measurement



Luscii are providing
remote uptitration technology
to support the new
pathway design



Eko

Eko DUO is providing
technology for an Imperial run study
to evaluate the benefit of a digital
stethoscope and ECG which gives HF
risk assessment in 15 seconds





For more information, please contact the
Heart Failure Team at imperial.hfu@nhs.net