Heart Failure Test Bed Project (104657)

Listening to the messages from Heart Failure patients – 'Smart with Your Heart'

FINAL EVALUATION REPORT –

Executive Summary

September 2020

Executive Summary

Our project – Listening to the messages from heart failure patients – Smart with your Heart is part of the NHS Test Beds wave 2 programme. Its aims were to use a combination of market ready digital tools to improve patient care. It is a collaboration of 2 NHS organisations, 2 University departments, 3 digital partners and a patient led patient charity – Pumping Marvellous Foundation.

We planned to use: Flo (interactive text messaging), Recap Health (a bespoke patient education system) and I-Navigator (a digital platform to refer to third sector and voluntary organisations).

We aimed to use these products in a heart failure pathway. We chose patients admitted or recently admitted to hospital with heart failure as we believed they had a 50% readmission rate to hospital at 6 months.

Aims and Objectives

Our aim was to try and reduce this 'revolving door' readmission rate to hospital using digital tools within our heart failure pathway.

Our project has 5 main objectives:

1. Earlier detection of patients with deteriorating health in the community – and help to facilitate appropriate sources of help outside of the hospital – to reduce readmission rates after an index admission with heart failure

2. Educate and empower patients through personal education material delivered via Recap Health

3. Engagement with third sector and voluntary organisations to help in a timely way with problems that the NHS is less well equipped to help with e.g. financial and anxiety issues, loneliness etc. – to reduce readmissions prompted by the impact of psychosocial issues on physical health

4. Enhance access to care using a Tele Health Co-ordinator(THC) to facilitate access to care

5. Experience – provide a good or better health care experience than patients expected or were used to

Project in context of NHS and local Priorities

Locally priorities were to:

- Improve patient experience

- Deliver better or equivalent care for reduced costs

- Reduce hospital utilisation

We aimed to review 230 heart failure patients and enrol 200 of them in this service evaluation.

We used multiple data sources to evaluate the project including: routinely collected service data in hospital, in GP surgeries, in the community heart failure nurse service, quality of life measures, patient activation measures, patient satisfaction surveys, health economic modelling.

The data was analysed by collaborators from:

- Staffordshire University
- University of East Anglia
- An independent experienced qualitative researcher

Project

We enrolled 103 patients in a 9 month period due to a number of delays and challenges.

90 of these patients used at least Flo, 76 patients used at least Recap Health (61 used both), 17 patients used I Navigator (8 patients used all 3).

Evaluation

NHS improvement recommends using the Donabedin model (2005) as a means to evaluate the quality of care that 'underpins measurements of improvement'.

The 4 components of the model are:

1. Outcomes – what did the project demonstrate?
2. Process – did we do what we said we would do to make the outcomes happen?
3. Structure – was there a structure in place to ensure the process occurred?
4. Balance – what are the unintended consequences or limitations of our project?

1. **Outcomes**

All Cause Readmissions

In comparison to a usual care hospitalised group (and a usual care < 75 yr. age group):

- Our project significantly reduces readmissions to hospital at 3 and 6 months post discharge.
- Our project significantly reduces readmissions to A and E at 30 days, 3 and 6 months following hospital discharge.

These results are significant in the whole groups or if comparisons are for patients who have survived to the end of the time periods of interest.

The table below demonstrates the actual and relative risk reduction for patients who potentially had 6 months of follow up. The Usual Care group are all patients leaving hospital with a discharge coding for heart failure as the primary diagnosis. The < 75 years old portion of this group are the Usual care < 75 years group.

Hospital admissions	All cause readmissions at 6 months as a percentage of index readmission numbers %	Relative risk reduction of Project active in comparison to other groups
Project active n=58	52	
Usual Care n=537	90	-42%
Usual care <75 yrs. n=127	94	-45%

A and E admissions	Actual all cause readmissions at 6 months as a percentage of index readmission numbers	Relative risk Relative risk reduction of Project active in comparison to other groups reduction
Project active n=58	34%	
Usual Care n=537	99%	-66%
Usual care <75 yrs. n=127	100%	-66%

There is a 52% and 56% relative risk reduction in hospitalisations at 6 months if all, or only patients living for at least 6 months from discharge are considered respectively . Similar results are seen in A and E admissions

Cost savings – approached in 2 ways

    1. **Readmission reduction and crude cost savings**

We have assumed that 1 hospital readmission (including preceding A and E attendance) costs approximately £3000.

If the relative risk reductions are extrapolated to each of the following groups then savings would be:

- All the < 75 years usual care group – saving £342,000 per year
- All usual care group – saving £1,500,000 per year
- To the NHS 80,000 patients hospitalised with heart failure - £50,000,000 per year

The cost of the intervention for a single service is approximately £54,000 for digital licences and 1 Tele Health Co-ordinator per 200 patients. Increased uptake by more clinical groups in the health economy would add to costs of scale savings.

Locally reducing readmissions by approximately 88 less than our current total in 1 year (or 44 admissions for each 6 months) would mean a relative risk reduction at 6 months in the usual care group of just 13% in comparison to our current 42-56% reductions.

    2. **Health Economic Modelling, cost efficiency, cost effectiveness and return on investment**

The Smart with your heart independent health economic evaluation project was cost-efficient and cost-effective. It shows a return on investment of £1.20 to £3 for each £1 invested in it. If these figures were more generalised and applied to the 1 tenth of the £900,000,000 invested nationally in acute heart failure yearly then this would equate to a net £ 108,000,000 to £270,000,000 'saving' with a £90,000,000 investment.

Interestingly the model was more dependent on the cost of GP services to remain cost-effective than readmissions. Some of the costs 'saved' from readmissions could therefore be invested in community services to maintain cost-effectiveness/efficiency in the future.

Patient Experience

Our data demonstrates positive experiences in project patients. It demonstrates improved experiences of the heart failure pathway in patients previously known to the heart failure service (and now on our project). There is a positive patient response to the digital products and to Tele Health Co-ordinators.

Education and self-empowerment of patients

Our data demonstrates that patients are more confident with their heart failure management with our project

Earlier detection of deterioration

Patients who texted 'red' or 'worse' were more likely to be readmitted into hospital especially at 6 months.

2. Structure

We employed 2 Tele health Co-ordinators. There was additional training for the Community Heart Failure team and an additional Community HF nurse was recruited on the basis of patients scoring 'RED/Feeling Worse' and needing access to clinic. GPs and community teams knew of the projects aims.

3. Process

Of the 103 patients – 90 were at least using Flo, 76 were at least using Recap Health (61 on both), 17 on I Navigator (8 on all 3 products).

We can demonstrate improved patient knowledge and motivation in managing their own health.

We can demonstrate that patients answering 'red' or 'worse' are at greater risk of readmission. This is reflected when they no longer have access to the Tele health Co-ordinator to facilitate their care.

4. Balance

Patient population

Demographics and Digital products

Patients were referred into the project by the hospital Heart Failure Nurses. Patients in our project have a mean age of 66 compared to the usual care group at 78 years old. We have used patients in the usual care group who are < 75 years old as a convenience comparator group (as this group have a similar mean age and sex distribution to the project active group). It is unclear whether there was any referral bias into the project, but the project patients referred to us were all approached to be on the project.

The reasons for 103 out of a total of 232 patients approached were eventually enrolled on the project reflects the fact that patients had to have access to both an email account and a mobile phone with texting capabilities or live in the locality served by the hospital (excluding 58% of ineligible patients). Additionally a change in registration process for the project

meant that there was a significant reduction in 'drop out' rate once patients were home. Lessons learned would mean that the initial 'drop out' rate would be less in future iterations of the project.

We accept that our project active group is smaller than we would have wished for – but it remains a relatively large size for a telehealth initiative aiming to reduce all cause readmissions.

Baseline outcomes and processes for Usual Care

The admissions and readmission rates for the usual care group have worsened in the life time of the project (admissions greater than proportional increases in general medical admissions readmissions at 6 months of 90% rather than 50%). It is not clear how these unexpected increases in background rates contributed to the project's success. It was equally surprising that only 30% of hospitalised patients with a primary diagnosis of heart failure were referred to the community heart failure nurses.

These issues are not able to be dealt with within the project, but are opportunities to improve the heart failure pathway in other ways.

GP surgeries review patients discharged from hospital 15 times more than the recommended review frequency for chronic stable heart failure patients. It is unclear whether the numerical increase in the frequency that project patients are seen is clinically (although not statistically) significant.

Digital Products

It is unfortunate that we did not get to test social prescribing starting within secondary care for heart failure patients.

We will be able to test out the impact of social prescribing as it is a national priority that it is set up and active in our communities. We still feel that access to social prescribing for patients leaving the hospital may reduce anxiety, depression and financial issues sooner than by referring into community services.

Conclusions

Our project reduces all cause readmissions at reduced costs. It is cost effective and cost efficient and has an increased return on investment of £1.20 for every £1 spent within 3 months of hospital discharge. Similar relative risk reductions could save NHS between £50-100,000,000

It would be useful to hone the model further in our area and to use our results to set up a multi-platform, multi-centre research trial to see whether our success locally can be replicated nationally.