No Failure in Heart Failure

K Wong, L Howard, T Claxton, G Lutaaya, A Elawady, M Al-Riyahi, Y Mon, M Nehra, K Yi, A Mushkanny, O Sharma, C K Tee, R Awad, O Assaf, H Owusu-Yianoma, A Malik, A Agbabiaka, O Lewis, A Kitsburg, G Wong, P Chew, C Cassidy, R More, A Seed, S Wong

Blackpool Teaching Hospitals NHS Foundation Trust

Introduction

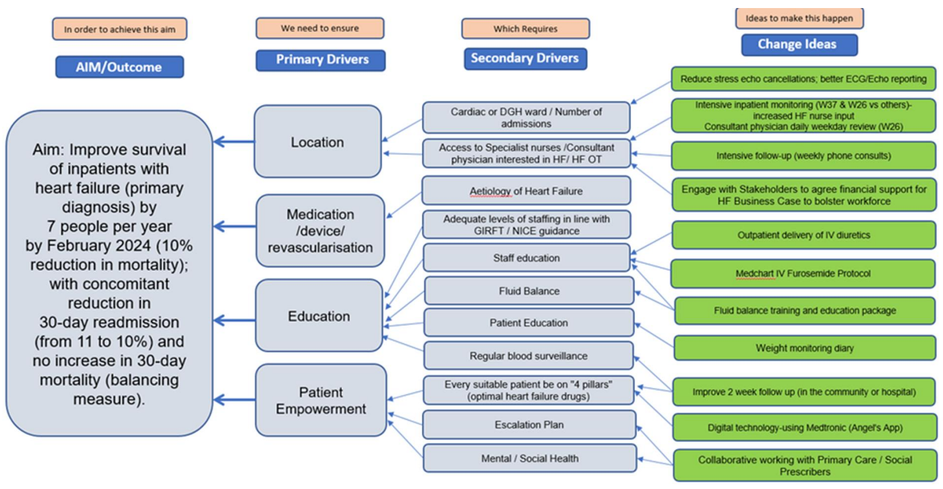
Heart failure (HF) affects 900,000 people in the UK and contributes to about 1 in 20 of all emergency hospital admissions in adults. Acute HF is associated with 7-11% mortality during the index episode and frequent readmissions. The National Institute for Health and Care Excellence (NICE) recommends follow-up within 2 weeks of discharge. Four drugs have been shown to improve survival, reduce hospitalisation and improve quality of life, including entresto, beta-blockers, mineralocorticoid receptor antagonists (MRA) and SGLT2 inhibitors (SGLT2i), based on randomised trials, meta-analysis [1] and international guidelines. This QIP aims to reduce HF hospitalisation and death, improve the sense of wellbeing in HF patients and reduce overall HF management costs.

A multi-disciplinary team was formed with expertise in healthcare management, data analysis, medicine, cardiology, nursing, medical students (strengthening collaboration with partner university), patients and public involvement and key stakeholders who contributed to the design.

Initial Assessment

Between August 2019 and January 2021, 630 patients with HF were admitted including 253 patients admitted onto cardiac wards and 377 admitted into non-cardiac wards. Fourteen (5.5%) patients died during index admission in the cardiac wards and 40 (10.6%) patients died during index admission in the non-cardiac wards (P 0.029]). [2]. Up to 58% of patients were cancelled on the day for stress echocardiography (common reasons included patient did not attend (DNA), beta blocker not stopped for 48 hours, BP>180/110).

Driver Diagram



Change Ideas

PDSA Cycle 1- To determine the effectiveness of an education intervention (16/3/21).
PDSA Cycle 2- To determine the impact of intensified phone consult/remote virtual follow up for patients with HF on number of days alive and well out of hospital (over 30 days follow up period); and compliance to daily weight recommendation (number of days, up to 30).
PDSA Cycle 3- To determine if the success of intensified follow-up can be sustained if the follow-up visits are delivered by a Registrar with an interest in HF in consultation with a HF Cardiologist and if a diary sheet can help improve compliance to weight monitoring.
PDSA Cycle 4- Collaboration with Research- Research Nurse to systematically contact patients 3 days before stress echo (rather than 1 day beforehand to recruit into 2 studies in collaboration with Oxford).
PDSA Cycle 5- IV diuretics electronic prescription
PDSA Cycle 6- fluid balance education

Results (PDSA Cycles 1-3)

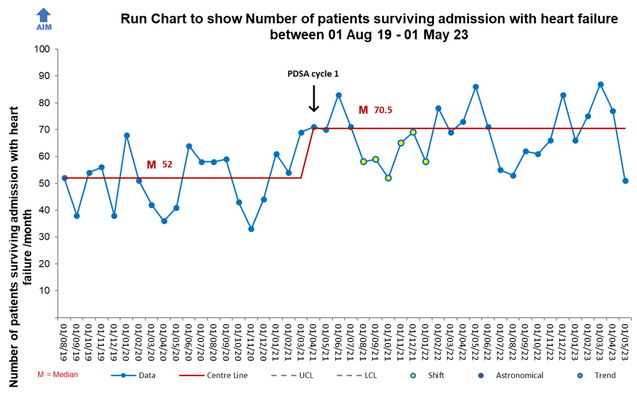
PDSA Cycle 1- Before the educational intervention 0/9 (0%) were on SGLT2i. After the educational intervention 21/64 (32.8%) were on SGLT2i.

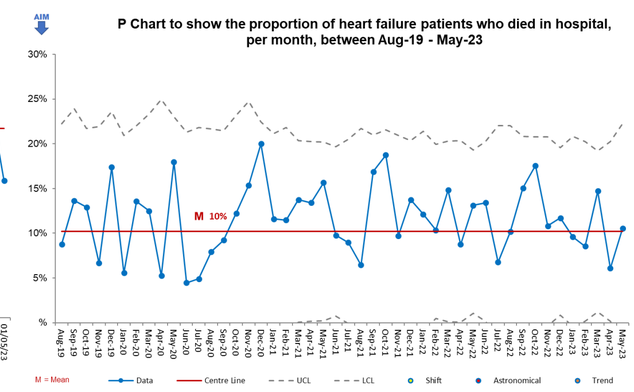
PDSA Cycle 2- The median number of days patients reported feeling well and out of hospital was higher in the intensive group (28) than in the standard group (24), which represents a 16.6% improvement.

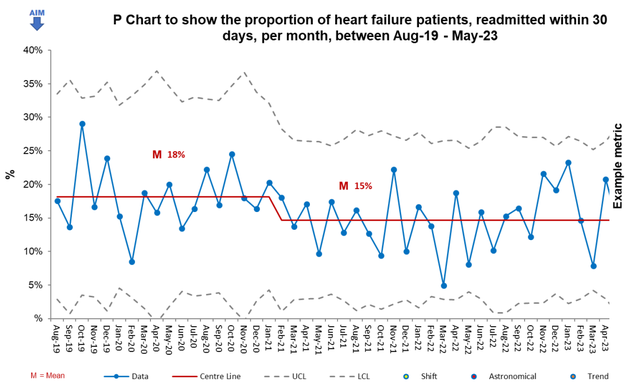
	Routine	Intensive
Days with weight recorded	15 [4, 30]	30 [28, 30]

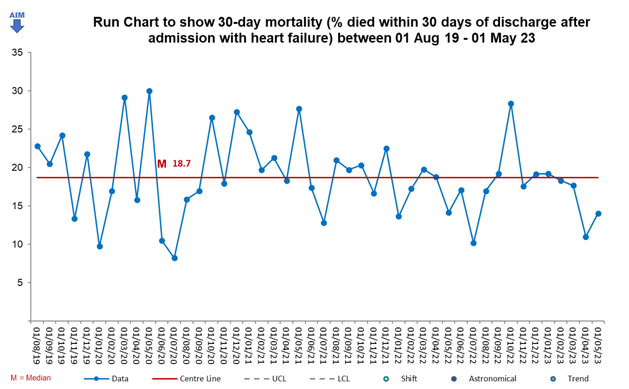
PDSA Cycle 3 showed such intensive follow-up (up to weekly phone consults) can be delivered by Physician/Registrar, in consultation with Consultant Cardiologist.
The combined data of PDSA cycles 2 and 3 were presented at the British Cardiovascular Society (BCS) 2023 [3].

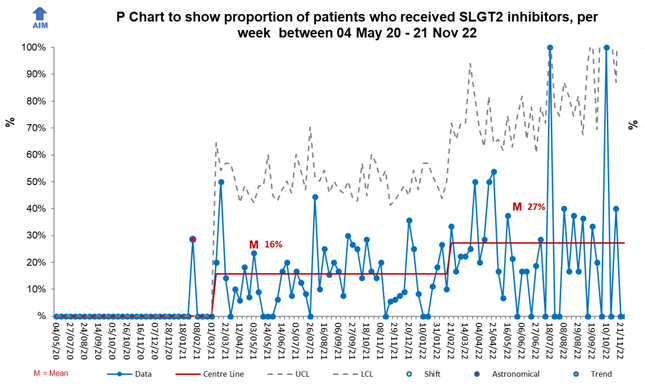
Results

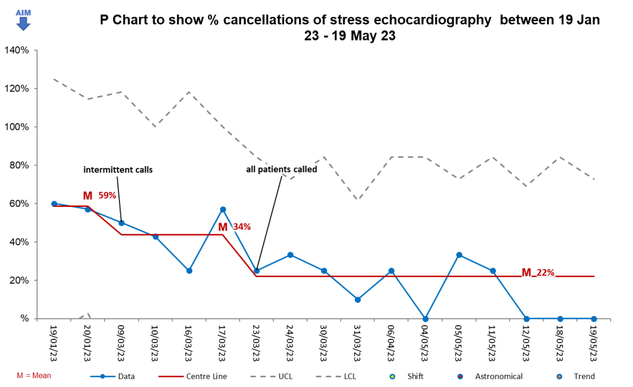






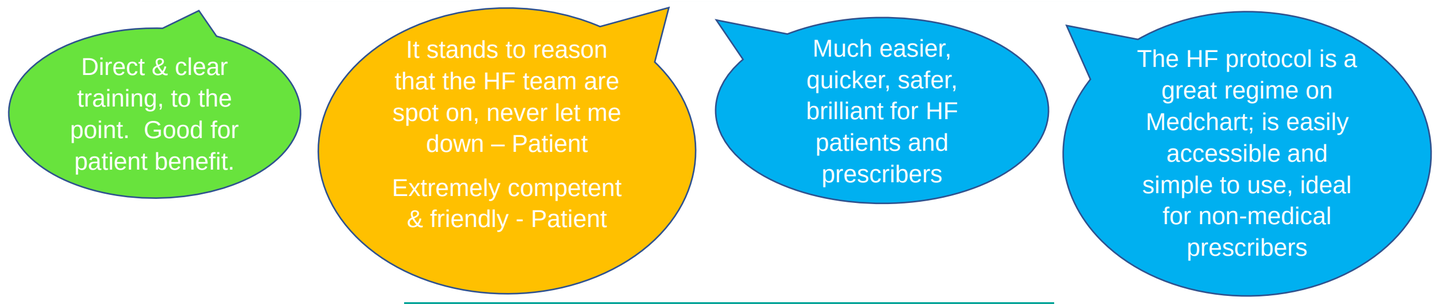






- No. of patients surviving HF improves from 52 to 70 month since PDSA cycle 1.
- We are beginning to see a drop in inpatient death (January to May 2023 mortality figures are all lower compared with the corresponding months in 2022). But we need to wait until February 2024 to assess if sustainable and whether we achieve our ambitious aim of 10% reduction in mortality.
- 30-day readmission drops from 18 to 15%.
- There is no increase in 30 day mortality (balancing measure)-median 18.7%. In fact, during the last 4 months, 30-day mortality was lower than median.
- Use of SGLT2 inhibitors (a drug that improves prognosis) has increased substantially and sustainably.
- PDSA cycle 4- Stress echo cancellations drop from 58% to below 10%.

Qualitative & Patient Feedback (PDSA Cycles 5-6)



Lessons Learned

- Small changes can lead to meaningful difference in care and outcome –more people surviving admission with HF.
- Quick wins were achieved in PDSA cycles 1,4,5.
- PDSA Cycles 2 and 3 were more labour intensive but offered the opportunity to collaborate with other departments/university. We are now testing in PDSA Cycle 7 effectiveness of training Geriatricians with special interest in HF. (We plan to complete the mortality data collection by March 2024).
- PDSA Cycle 6 is ongoing, the fluid balance learning package was developed and dissemination commenced. This will be an ongoing project that will require more HF Specialist Nurses to enable delivery with further ideas such as train the trainer & linking in with Learning & Development. Patients appreciate HF Specialist Nurse input
- It is good to have Patient Public Involvement in QI as well as Research.

Sustainability & Spread

- Business case to enable an administrator to telephone patients 3 days before stress echo.
- Ongoing QI work - (1) to test whether IV diuretic delivery in outpatient setting for acute HF is safe and effective long-term. It appears effective and cost-effective, improving patient mental wellbeing and hope in the short-term in a pilot randomised trial [4-6]. (2) further evaluate the impact of electronic prescribing of IV diuretics and fluid balance training in more general wards as well as Cardiac wards. (3) to better understand why patients admitted to general wards are at higher risk of death, and to test whether we can reduce the gap in survival between cardiac and general wards by development of Physician (Consultant/Registrars) with special interest in HF. (4) to improve echocardiographic reporting of pulmonary hypertension via an education intervention. (5) to improve ECG reporting- "GIRFT" (Human vs Machine reporting/"AI")

Acknowledgements

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Caring • Safe • Respectful

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