Methods For the period April 2013 to March 2016 (2013–16), Hospital Episode Statistics (HES) data from all NHS hospitals in England were evaluated for spells in which HF was coded as the primary diagnosis. This was based on the International Statistical Classification of Diseases and Related Health Problems (ICD-10) codes: I11.0 (hypertensive heart disease with [congestive] heart failure; I25.5 (ischaemic cardiomyopathy); I42.0 (dilated cardiomyopathy); I42.9 (cardiomyopathy, unspecified); I50.0 (congestive heart failure); I50.1 (left ventricular failure); and I50.9 (heart failure, unspecified). These records were then categorised according to those with or without a secondary diagnosis of ID or iron deficiency anaemia (IDA), based on ICD-10 codes E611 (latent ID), D500 (IDA secondary to blood loss [chronic]), D508 (other IDA), and D509 (IDA unspecified).

Results In 2013–16, there were 2 02 444 hospital spells in England attributed to a primary diagnosis of HF. Of these, 28 727 spells (14.2%) had a secondary diagnosis of ID/IDA, and 1 73 717 (85.8%) did not. Spells with a secondary diagnosis of IDA/ID were more likely to be encountered in females ($p<0.0001$) and older patients ($p<0.0001$); were more likely to be unplanned (95.9% vs 86.4% – difference 9.5%: 95% CIs: 9.2%, 8%); had a longer mean length of stay (16.5 vs 13.1 days – difference 3.4 days: 95% CIs: 3.2, 3.6); and had a higher readmission rate within 30 days under the same ICD-10 code (14.2% vs 12.1% – difference 2.1%: 95%CIs: 1.8%, 2.6%). The total cost associated with all hospital admissions with a primary diagnosis of HF was £553.3 million, equivalent to £2733 per spell. HF hospital spells with a secondary diagnosis of ID/IDA were significantly more expensive than those without (cost difference: £138 per spell [95% confidence interval {CI}: £98, £178]). Unplanned spells with a secondary diagnosis of ID/IDA were even more expensive compared to those without ID/IDA (cost difference: £217 [95% CI: £181, £253]).

Conclusions In this analysis of HES data from England, about 14% of hospital spells coded with a primary diagnosis of HF included ID/IDA in the secondary position. These spells were longer, more expensive, and more likely to lead to readmission. Although probably under recognised in those admitted with HF, ID/IDA appears to be a significant comorbidity associated with poorer outcomes across the health economy.

5 THE RELATION BETWEEN LENGTH OF STAY, A&E ATTENDANCE AND READMISSION FOR HEART FAILURE PATIENTS

[1]Kate Honeyford*, [2]Derek Bell, [1]Paul Aylin, [1]Alex Bottle. *[1]Dr Foster Unit, Imperial College; [2]Imperial College*

10.1136/heartjnl-2017-311726.5

Introduction Many patients with heart failure (HF) have repeated hospitalisations, often unplanned. Hospitals are being penalised for what are considered to be preventable readmissions, but understanding of what drives high readmission rates is limited. Better understanding of the relationship between A and E attendance, the odds of admission during that attendance and overall hospital readmission rates will support hospitals to reduce overall readmissions and improve services for their HF patients.

Method Using admissions data for all acute hospitals in England (April 2010–March 2012), the index admission for each patient was defined as their first emergency admission with a primary diagnosis of HF for at least three years. A and E attendances, admissions and death within one year from index discharge were linked by patient. Hospital trusts were divided into quartiles based on their overall 30 day HF readmission rate. Logistic regression and ANOVA were used to identify any differences in A and E attendances, admissions and patient characteristics between hospital quartiles.

Results A total of 77 801 patients had their first HF admission during the study period; 66 177 (85%) were discharged alive. Table 1 gives the first outcome within 30 days of that index discharge. Overall, 23% of emergency readmissions were not through A and E. Patients who attended hospitals with readmission rates above the median were more likely to visit A and E than patients who were discharged from hospitals with lower readmission rates. Having arrived at A and E, the odds of admission was the same irrespective of hospital readmission rate, even after patient characteristics were taken into account.

The key difference between high- and low-readmitting hospitals appeared to be the length of stay of the index HF admission, with high-readmitting trusts having a higher proportion of patients discharged with no overnight stay these patients have the highest readmission rate.

Abstract 5 Table 1

Readmission Quartile and number of patients	Died without readmission	Readmitted – not through A and E	Visited A and E	A and E admission rate
1	359 (2.6%)	594 (4.4%)	2114	77.5%
13 628			(15.5%)	(1638)
2	439 (2.5%)	1233 (7.0%)	2637	76.3%
17 748			(14.9%)	(2013)
3	403 (2.1%)	869 (4.5%)	3807	76.5%
19 167			(19.9%)	(2914)
4	377 (2.4%)	823 (5.3%)	3241	77.0%
15 631			(20.7%)	(2496)
Totals	**1578 (2.4%)**	**3519 (5.3%)**	**11 799**	**76.8%**
			(17.8%)	**(9061)**

Table 1 First outcome of heart failure patients within 30 days of their index discharge. Readmission quartile is based on the HF readmission rate of the index hospital.

Conclusions and Implications For patients with HF, high hospital-level readmission rates are partly driven by same-day index discharges, with their subsequent greater likelihood of attending A and E, and more admissions via the GP or clinic, and not by admitting a higher proportion of A and E attenders. This suggests that patients who are same-day discharges are not inappropriate attenders but potentially prematurely sent home.

6 PROGNOSTIC VALUE OF MALNUTRITION SCREENING TOOLS IN PATIENTS WITH CHRONIC HEART FAILURE

Shirley Sze*, Pierpaolo Pellicori, Alan Rigby, Syed Kazmi, Andrew Clark. *Department of Cardiology, Castle Hill Hospital*

10.1136/heartjnl-2017-311726.6

Background Malnutrition is a common clinical feature in patients with acute heart failure (AHF), but its prevalence and

clinical impact on morbidity and mortality of patients with chronic HF (CHF) remains to be determined.

Purpose To evaluate the prevalence, clinical associations and prognostic value of three different malnutrition indices in a large cohort of patients referred to a community HF clinic with suspected HF.

Methods Consecutive referrals were analysed. HF was defined as signs or symptoms and evidence of cardiac dysfunction, either a reduced left ventricular ejection fraction at echocardiography (LVEF, <50%) or raised NTproBNP (>125 ng/L). Patients were screened for malnutrition using three common malnutrition indices: the geriatric nutritional risk index (GNRI), the controlling nutritional status (CONUT) score and the prognostic nutritional index (PNI).

Results Of the 5012 patients who attended between 2000 and 2016, HF was confirmed in 3386 (61% males, median age 75 (interquartile range (IQR): 67–81) years, median NTproBNP 1573 (IQR: 702–2799) ng/L). Of these, 1198 (35%) and 1458 (43%) patients had HF with reduced (HeFREF, LVEF<40%) and normal (HeFNEF, LVEF 50%) ejection fraction, respectively. According to the GNRI (91%), CONUT score (>4) and PNI (38%), 6.7%, 10.0% and 7.5% patients were moderately to severely malnourished, respectively.

Compared to those with normal nutritional status, malnourished patients were older, had lower body mass index (BMI), worse symptoms and renal function; they were also more likely to have atrial fibrillation, anaemia and reduced mobility.

During a median follow-up of 1573 days (interquartile range: 702–2799 days), 1723 (50.9%) patients died. In multivariable models, indices of malnutrition were powerful predictors of mortality. In a multivariable model that included all the malnutrition indices, only GNRI was independently associated with increased risk of mortality (Hazard ratio (95% confidence interval): 1.25 (1.12–1.39), p<0.001 for worsening malnutrition category of GNRI).

Conclusion Moderate or severe malnutrition is highly prevalent amongst patients with CHF and is strongly related to mortality.

7 IMPLANTABLE CARDIAC DEVICE GENERATOR CHANGE PATHWAYS: AN OPPORTUNITY FOR OPTIMISING DEVICE PRESCRIPTION

[1]Helena Bolam*, [2]Daniel Thompson, [2]James Waller, [2]Neil Andrews, [2]Senthil Kirubakaran, [2]Paul Kalra, [2]Geraint Morton. [1]*Queen Alexandra Hospital*; [2]*QA Hospital*

10.1136/heartjnl-2017-311726.7

Introduction Implantation of cardiac devices including permanent pacemakers (PPM), cardiac resynchronisation therapy with defibrillators (CRT-D) or without (CRT-P) is increasingly common. Follow up, including arranging generator change, is frequently carried out by cardiac physiologists, with minimal physician input. Many patients clinical status will change during the lifetime of the device. Generator change is an opportunity to review the original device prescription. We report the impact of introducing routine screening prior to generator change into an established comprehensive device programme.

Methods Two pathways were implemented. Patients with a PPM due generator change were screened by cardiac physiologists using a proforma assessing symptoms, QRS duration and right ventricular (RV) pacing burden. Those with heart failure symptoms, in particular breathlessness, and a prolonged native QRS or >40% RV pacing had an echocardiogram and multidisciplinary team (MDT) discussion within 2 weeks. If device upgrade was potentially indicated the patient was reviewed in clinic prior to generator change.

The goal was to discuss all patients with an ICD/CRT-D due generator change at MDT. Those with changes in clinical status that may affect the appropriateness of ongoing defibrillator therapy were reviewed in clinic.

Results The first 11 months, October 2015 to August 2016, following implementation of these pathways were studied. 189 consecutive patients (145 PPM, 20 CRT-P and 24 CRT-D/ICD), mean age of 77, were included.

The pathways resulted in a change in the type of device therapy in 8 patients; 6/145 (4%) of those due PPM and 2/24 (8%) due CRT-D/ICD generator change (table 1).

145 (100%) of PPM patients were proforma screened. 139/145 PPM patients (96%) went on to have PPM generator change. 17 (12%), identified as potential candidates for upgrade to CRT, had echocardiography. 5 (3%) of these had severe LV impairment and underwent physician and MDT review. 4 patients (3%) were ultimately upgraded to CRT devices. CRT was not appropriate in 1 patient. In 2 (1%) patients ongoing device therapy of any kind was felt to be inappropriate (1 potential upgrade and 1 PPM box change) and no procedure was undertaken.

10/24 (42%) patients due a CRT-D/ICD generator change were reviewed at MDT. Of these 2 (20% of those reviewed) went on to have their devices downgraded from CRT-D to CRT-P after informed discussion.

Conclusions Physiologist-led device follow up can be effectively extended to include robust screening of patients to ensure they get the most appropriate device at the time of generator change. Excellent rates of PPM screening were achieved whereas ICD screening needs to be improved.

Relatively few patients had their destination device changed as a result of these pathways. However there is significant morbidity associated with receiving inappropriate device therapy, justifying implementation of a simple screening process to improve care.

Abstract 7 Table 1 Outcomes for patients due implantable cardiac device generator change after the implementation of routine screening

Outcomes	Number of patients
Type of device unchanged	181
Upgrade from PPM to CRT-P	2
Upgrade from PPM to CRT-D	2
Downgrade from CRT-D to CRT-P	2
Device therapy withdrawn	2

8 THE HF-CGM STUDY: AN ANALYSIS OF CARDIOGONIOMETRIC AXES IN PATIENTSWITH CARDIAC RESYNCHRONISATION THERAPY

[1]Oliver I Brown*, [2]Theodora Nikolaidou, [2]Gowan Beddoes, [2]Angela Hoye, [2]Andrew L Clark. [1]*Hull York Medical School*; [2]*Hull and East Yorkshire Hospital NHS trust*

10.1136/heartjnl-2017-311726.8

Introduction The HF-CGM study is a proof-of-principle study to investigate whether cardiogoniometry (CGM), a three-