The Collaborative Chronic Heart Failure Project: Improving the transition of care to the community for patients with Chronic Heart Failure

Project overview

In November 2015, a report to the Melbourne Health Clinical and Quality Executive Committee identified that Melbourne Health had the highest readmission rate of patients aged 65 and over of the fourteen metropolitan health services. Heart Failure was the most frequent cause of readmission (5.7% of all readmissions). In 2016, Melbourne Health was approached to participate in the Department of Health and Human Services Victorian Cardiac Clinical Care Network's *Heart Failure Model of Care Collaborative* in collaboration with Merri Health. The rationale for this was the Department's interest in exploring effective models of community based care for people with Heart Failure as they transition from acute to GP management. The Melbourne Health HARP Complex Care's Chronic Heart Failure service has been located at and operated by Merri Health in the community since 2005. The service is staffed by specialist Heart Failure Nurses employed by Merri Health and led by a Cardiologist from The Royal Melbourne Hospital.

Melbourne Health is a member of the North West Melbourne Health Collaborative together with Merri Health, cohealth and the North West Melbourne PHN. The Collaborative members have a shared commitment and common goals to move more care into primary health settings and to working together to improve patient care, outcomes and pathways for their shared communities. It also supports new and existing directions to increase capacity and sustainability at the interface of hospital services and primary healthcare. Because of this project's focus on the acute-community transition of care it was adopted as one of the Collaborative projects for 2017 and as such reported regularly to the Collaborative governance group.

Aims and objectives

To explore the care pathway for older patients with Chronic Heart Failure to

a) understand any shared demographic or clinical features that may indicate patients with higher risk of frequent admissions by exploring the differences between those patients who had a single admission and those who had multiple admissions.

b) identify potential targets for change to current systems and practice which may improve continuity of care in the transition of patients from hospital to home through consultations with Emergency Department clinicians, General Practitioners and patients and carers.

c) work collaboratively with GPs to identify points in the care pathway where transition of care could be improved to better support GPs to manage these patients in the community.

A fourth parallel component of the project was a separate QA activity (QA2016180) with a focus on the need for palliative care for patients with Chronic Heart Failure initiated and undertaken by the HARP Chronic Heart Failure team. This aimed to

a) ascertain the number of referred patients who die during participation in the HARP CHF Program and consider development of a palliative care pathway within the CHF Program.

b) determine whether a risk stratification tool and specific patient variables might assist in identification of patients who would benefit from referral to a palliative care pathway, and

c) if the above stages suggest that patients who are more likely to die during involvement with the CHF program can be identified, then (a) involve the RMH palliative care service and community palliative care in developing a referral pathway and then (b) utilise this approach prospectively (a future project).

Deliverables

1. Analysis of the demographics and clinical characteristics of patients aged 65+ who were admitted to RMH between 1 January and 30 June 2016 with a primary diagnosis of Chronic Heart Failure.
2. Analysis of the opinions of patients with CHF aged over 65 and their carers regarding their satisfaction with and identification of concerns regarding care during the transition from hospital to home including discharge planning, care coordination, medications and communication with their GP.
3. Analysis of the views of General Practitioners regarding their satisfaction or concerns regarding shared care and communication with RMH regarding their patients aged 65+ with CHF.
4. Analysis of the views of Emergency Department staff regarding issues they experience providing care and discharge planning for patients aged 65+ who present to the ED due to an exacerbation of CHF.
5. Recommendations that address the concerns identified by the data, in consultations with stakeholders, will be made with the aim of improving the transition of care for the older CHF patient group as they return from hospital to home.
6. Use of the results of the palliative care component results to inform development of a shared care CHF Palliative Care approach for MH patients.

Target audience

The North West Melbourne Health Collaborative under whose auspices the project was conducted. It comprises Melbourne Health, North West Melbourne PHN, cohealth and Merri Health.

Expected outcomes

An improved understanding of the factors that hinder or enhance continuity of care as patients transition from acute to community and palliative care, and recommendations for actions to address the issues identified.

Methodology

Project governance

Melbourne Health was funded to undertaken the project under the auspices of the North West Melbourne Health Collaborative. The project was led by Associate Professor Leeanne Grigg, Director, Cardiac, Renal and Endocrine Services at Melbourne Health. A clinical lead was appointed: Associate Professor Dominica Zentner, Cardiologist.

Approval to undertake the Collaborative Chronic Heart Failure Project as a Quality Assurance activity was obtained from the Melbourne Health Research Ethics Committee (QA2016199) as was Ethics approval to variations made to the project protocol as the project progressed.

Approval to undertake the project "Palliative pathway for HARP CHF patients – is there an unmet need?" as a Quality Assurance project was also obtained (QA2016180).

A Steering Committee was established to oversee the operations of the CHF Pathway project. A Reference Group was established to consult with representatives of departments that are involved in the management of CHF patients.

Data collection

CHF Pathway project

1. Data was extracted from the MH clinical databases on patients aged 65+ admitted with a primary diagnosis of heart failure between 1/1/2016 and 30/6/2016.
2. Fields included demographic characteristics, heart failure diagnosis, co-morbidities and hospitalisation in the twelve months prior to and twelve months after their index admission (inpatient admissions, outpatient appointments and Emergency Department presentations).
3. Discharge summaries for these 153 patients were audited to identify discharge destination, type of heart failure and the quality of information provided to the GP in the summary, including requests for GP review, follow-up and medication. When patients who had died, had no discharge summary or had been transferred to another hospital within 24 hours were excluded (n=46), 166 patients were left who had been discharged either home, or to residential care, of whom 153 had a confirmed diagnosis of CHF. This cohort of 153 patients was the subject of our analysis. One hundred and thirty of the 153 were discharged home and 23 discharged to residential aged care (Figure 1).
4. A random sample of 70 discharge summaries was audited to ascertain whether the summary had been received by the GP.

Figure 1: Identification of study cohort
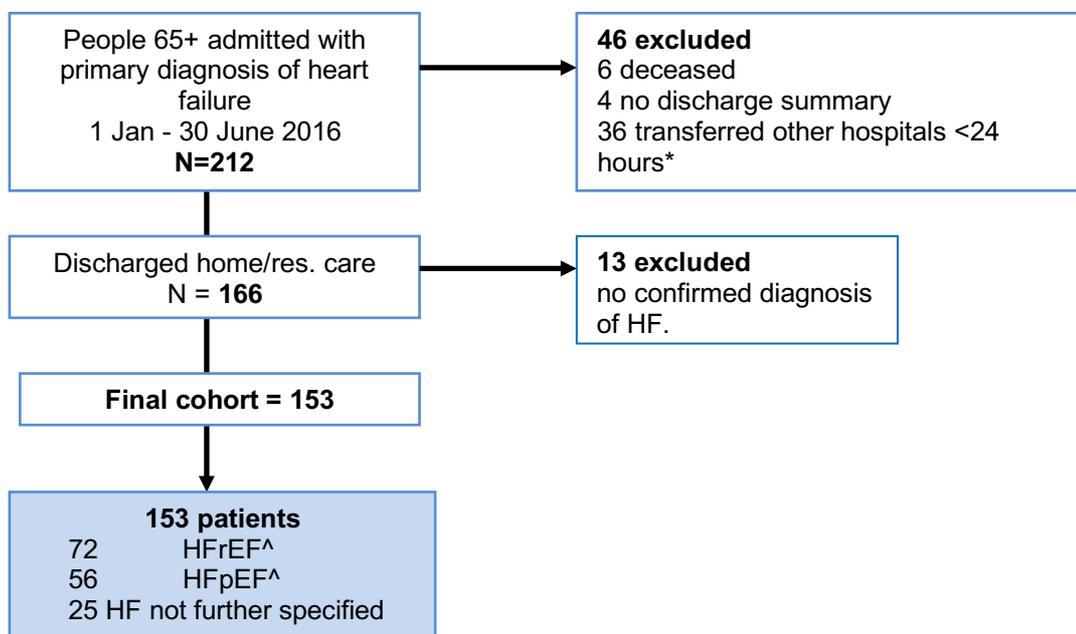
* Patients excluded as the data available was usually non informative (management postponed to transfer admission)
^ HFrEF = Heart Failure with reduced ejection fraction
^ HFpEF = Heart Failure with preserved ejection fraction

5. An audit of patient medication was conducted to assess compliance with best practice guidelines for prescribing for patients with HFrEF.

6. Seven focus groups were conducted with 53 participants: 11 GPs, 27 ED clinicians (8 doctors and 19 registered nurses) and 7 patients with CHF and 8 carers of people with CHF.

   - Two focus groups were held with ED medical and nursing staff: one with Registered Nurses (19 participants) and one with medical staff (one consultant and five registrars participated). Two interviews were also conducted with individual consultants.

   - Focus groups were conducted with 11 GPs at three different practices.

   - Three focus groups were conducted with seven CHF patients who were active patients of the HARP Complex Care Heart Failure program and eight carers of HARP patients with CHF. Separate focus groups were conducted for English, Greek and Italian speaking participants, with 8 participants in the English speaking group, 4 in the Italian group and 3 in the Greek group. Accredited interpreters were used for the Greek and Italian groups.

   The number of patients and carers we were able to recruit to the focus groups was lower than the target of 30-40 specified in the study protocol. The Project Officer phoned forty English speaking patients and carers who had not responded to the written invitation, to encourage them to attend. Most declined. In a further attempt to recruit more patient and carer participants, a request for a variation to the study protocol was submitted to the Ethics committee and approved. This enabled the HARP Heart Failure clinicians to ask patients when they attended their regular rehabilitation sessions, whether they would be willing to be interviewed by the Project Officer at the end of their sessions for about ten minutes in a private room. Only two patients agreed and were interviewed. The reason for the low response rate may be that this group of patients has a high burden of disease and medical appointments. In additional the focus groups were conducted in mid-Winter. Some invitees who initially accepted the invitation later cancelled due to illness.

Palliative Pathway for HARP CHF Patients Project

Data was extracted from HARP patient records for 204 consecutive referral episodes of CHF patients to HARP from 1 January 2014 to 30 June 2015. The final study cohort was 157 patients, with 36 excluded for a variety of reasons (see page 15 of report).

Data fields included diagnosis, comorbidities, demographic and clinical characteristic as well as hospital admissions, evidence of a conversation regarding end of life planning, referral to palliative care and mortality.

Resources

Funding of $150,000 was provided to the CHF Collaborative by the Victorian Cardiac Clinical Care Network. A project officer was appointed at RMH for 12 months to December 2017. Short term specialist expertise (Pharmacist and CHF nurse) was purchased for several days to audit discharge medications against best practice and to ascertain the Heart Failure diagnosis type from information in the discharge summary.

Stakeholder engagement

The Collaborative agencies were engaged via the Collaborative Senior Managers Committee. Updates were provided to the Chief Executives' meeting. The North West Melbourne PHN was consulted regarding GP engagement methods.

Evaluation

The project aimed to identify potential areas for improvement and strategies to achieve these. An implementation phase was not part of the study proposal.

Results

The CHF patient population

The median age of the patient cohort was 82 years (IQR 76-87) and the mean age was 81 years. We were aware that the hospital's CHF patients were elderly, but given the higher than expected age, we divided them into a younger group (65 to 75) and an older group (75 plus) to consider the possible effect of age on readmission (Table 1). The younger group comprised 34 patients (22%) and the older group 119 patients (78%). The only significant difference was marital status: 74% of the younger group were married compared to 45% of the older group (p=0. 003). There was little variation between the two groups regarding Charlson score (a measure of comorbidity load), the need for an interpreter and the SEIFA score (an ABS measure of socio-economic disadvantage based on postcode: the fourth quartile represents the highest level of disadvantage).

Identification of CHF patients at risk of readmission for CHF

Patients with a single admission were compared to those who had multiple admissions (Table 2). The only demographic variable that was linked to multiple admissions was "need for interpreter" (p=0. 033). There was a non-statistically significant trend for the variable marital status when listed as "not married" which may indicate that the person lives alone (p = 0. 306) and for socio-economic disadvantage, as indicated by being in the lowest quartile SEIFA score (p = 0. 182). There was no difference in readmission rates between patients when compared according to age grouping (65-75 or 75 and over).

The most statistically significant variable for readmission was the time from date of discharge to the first relevant Outpatient appointment (p = <0. 001) (Table 3). Relevant clinics were identified as those related to patients' CHF management which included Cardiology, Cardiomyopathy and General Medicine. The median time to first OP appointment was 34 days (IQR 16 – 81). Though 50% of patients were reviewed within approximately one month, 25% of patients had a first relevant clinic review booked for 81 days or more post discharge. The analysis identified a 50% chance of the patient being readmitted for any cause after 60 days post discharge if no Outpatient appointment had occurred within that time. The project Reference Group considered that the time to first post-discharge review would ideally be within two weeks of discharge and at most within four weeks, following a HF admission. Figure 2 displays the distribution of days from discharge to first Outpatient appointments. Figure 3 shows the incidence of readmissions against time in days to first Outpatient appointment.

Table 1: Differences in characteristics by age at index admission

Characteristic		*< 75 years* *n = 34 (22%)*	*>=75 years* *n = 119 (78%)*	*p-value*
Gender:	Male	15 (44%)	58 (49%)	0. 634
	Female	19 (56%)	61 (51%)	
Type of HF:	Other	2 (6%)	23 (19%)	0. 076
	HFrEF	21 (62%)	51 (43%)	
	HFpEF	11 (32%)	45 (38%)	
Marital status:	Married	25 (74%)	53 (45%)	**0. 010**
	Widowed	4 (12%)	53 (45%)	
	Single	2 (6%)	8 (7%)	
	Divorced	2 (6%)	4 (3%)	
	Separated	1 (3%)	1 (1%)	
Marital status:	Married	25 (74%)	53 (45%)	**0. 003**
	Not Married	9 (26%)	66 (55%)	
Interpreter required:	No	21 (62%)	73 (61%)	0. 965
	Yes	13 (38%)	46 (39%)	
SEIFA quartile	1	8 (24%)	32 (27%)	0. 827
	2	4 (12%)	17 (14%)	
	3	13 (38%)	47 (39%)	
	4	9 (26%)	23 (19%)	
SEIFA state percentile		57 (IQR 39-77)	57 (IQR 24-67)	0. 855
Highest Troponin level		23 (IQR13-43)	27 (IQR14-71)	0. 434
Lowest eGFR		Mean 40. 28 (± SD 23. 50)	Mean 39. 60 (± SD 18. 76)	0. 870
Lowest haemoglobin		Mean115. 26 (± SD 21. 55)	Mean 111. 16 (± SD 19. 20	0. 305
Charlson score		Mean 2. 76 (± SD 1. 79)	Mean 2. 90 (± SD 1. 73	0. 693

Differences in distribution were tested using the chi-squared test for categorical variables, t-test for normal distributed variables or the Mann-Whitney test for skewed variables.

Table shows number (%), median (IQR) and mean (± SD). Statistically significant results (p < 0. 05) are bolded.

Table 2: Differences between patients with a single HF admission versus multiple admissions

Characteristic	level	Single HF admission n = 94 (61%)	Multiple HF admission* n = 59 (39%)	p-value
Age (years):	<75	22 (23%)	12 (20%)	0. 657
	>=75	72 (77%)	47 (80%)	
Gender:	Male	46 (49%)	27 (46%)	0. 702
	Female	48 (51%)	32 (54%)	
Type of HF:	Other	17 (18%)	8 (14%)	0. 679
	HFrEF	42 (45%)	30 (51%)	
	HFpEF	35 (37%)	21 (36%)	
Marital status:	Married	51 (54%)	27 (46%)	0. 848
	Widowed	32 (34%)	25 (42%)	
	Single	6 (6%)	4 (7%)	
	Divorced	4 (4%)	2 (3%)	
	Separated	1 (1%)	1 (2%)	
Marital status:	Married	51 (54%)	27 (46%)	0. 306
	Not Married	43 (46%)	32 (54%)	
Interpreter required:	No	64 (68%)	30 (51%)	**0. 033**
	Yes	30 (32%)	29 (49%)	
SEIFA quartile	1	22 (23%)	18 (31%)	0. 182
	2	12 (13%)	9 (15%)	
	3	35 (37%)	25 (42%)	
	4	25 (27%)	7 (12%)	
SEIFA state percentile		58 (IQR 39-77)	55 (IQR 21-60)	0. 132
Highest Troponin level		33 (IQR 14-85)	21 (IQR11-38)	0. 066
Lowest eGFR		Mean 39. 74 (± SD 19. 01)	Mean 39. 73 ((± SD 20. 95)	0. 998
Lowest haemoglobin		Mean 112. 02 (± SD 19. 81)	Mean 112. 02 (± SD 19. 72)	0. 999
Charlson score		Mean 2. 83 (± SD 1. 75)	Mean 2. 93 (± SD 1. 74)	0. 725

Differences in distribution were tested using the chi-squared test for categorical variables, t-test for normal distributed variables or the Mann-Whitney test for skewed variables

Table shows number (%), median (IQR) and mean (± SD)

Statistically significant results ($p < 0. 05$) are bolded.

Patients were denoted to have multiple admissions when the discharge codes I500, I501 or I509 were found in any prior or future readmissions within a one year period.

Table 3: Number of readmissions before first scheduled outpatient visit.

Characteristic	Single HF admission n = 94 (61%)	Multiple HF admission n = 59 (39%)	p-value
One or more scheduled outpatient visits	48 (51%)	32 (54%)	0. 702
Readmission(s) prior to scheduled outpatient clinic appointment	14 (15%)	17 (29%)	0. 037
• HF readmission	0	10 (17%)	<0. 001
• Non HF readmission	14 (15%)	7 (12%)	0. 596
Attended first outpatient clinic appointment	33 (69%)	19 (59%)	0. 389

For the time to first OP appointment, all times were logged before performing tests
A second HF admission is defined as code I500, I501 or I509 for all prior or future readmissions within a one year period.
N (%) or median (IQR)

Figure 2: Days from index discharge to first scheduled Outpatient appointment
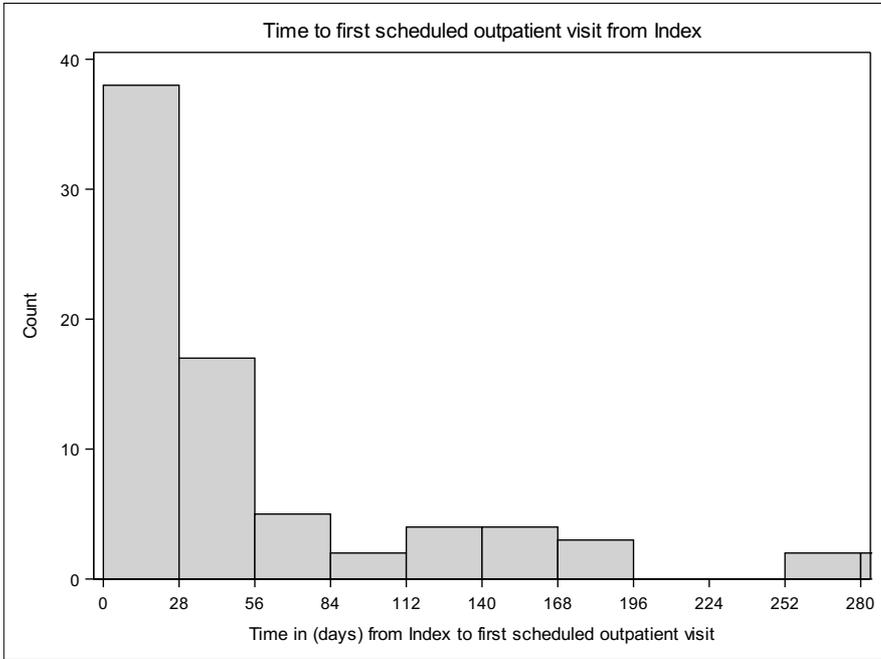

Figure 4 shows the outpatient review arrangements for this cohort post discharge. These were identified from notes in the discharge summary regarding plans for Outpatient review (e. g. "review Cardiology OP 4/52") and by identifying those patients in the cohort who did not have an Outpatient appointment in the 12 months after their index discharge. Of the total cohort (n = 153), there was an almost equal division of those referred back to RMH outpatients (n = 59, 38%) for ongoing care, and those that did not have an Outpatient appointment either scheduled or attended (n=63, 41%). This number includes 8 patients whose discharge summary included a note regarding follow-up Outpatients' appointments but who did not attend an appointment. We do not know if the reason for this was that the appointment was not scheduled, the appointment was cancelled or the patient did not attend and the appointment was not rescheduled.

Twenty-seven patients attended a private specialist for post-discharge care, 22 of whom were Cardiologists. Five patients attended other specialists, most commonly Renal specialists. Four patients were transferred for Outpatient care to another hospital where most of their care was delivered.

Of those who did not have an Outpatient review post discharge, 46 had a request for a GP review within a week listed in their discharge summary. Of this group, 18 people lived in residential aged care and/or were receiving palliative or end of life care. A lack of routine outpatient clinic appointment in this group appears reasonable.

Figure 3: Readmissions/representations before first scheduled Outpatient appointment

Figure 4: Outpatient appointments and follow-up post index discharge
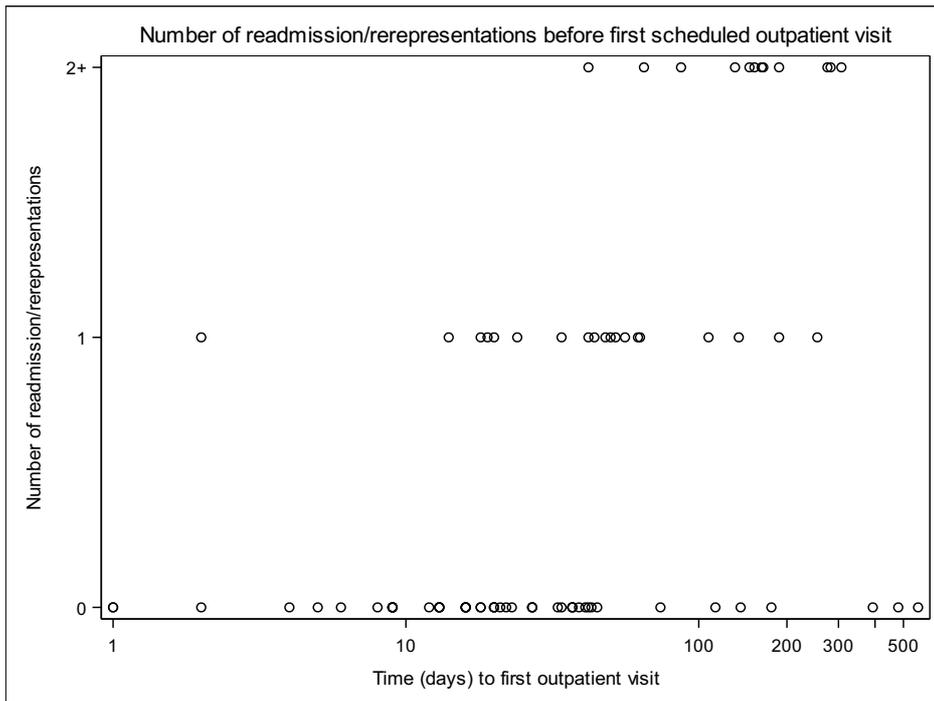
Stakeholder issues

<u>Patients and carers</u>

Unfortunately, the small number of patients and carers whose views we canvassed may have limited the quality of information obtained from the patient and carer interviews. However, thematic analysis would suggest likely saturation.

As these were current HARP patients and their carers they reported being well-supported by their specialist CHF nurses/care coordinators and well educated in managing their symptoms and responding to HF exacerbations. Patients were linked into a regular GP and local pharmacist. Some patients said they may delay going to hospital because they knew if they attended the ED they were likely to be admitted. Most felt confident and safe going to the ED, knowing they would receive the care they needed. Areas of concern included difficulties on the part of carers obtaining information about the treatment plan during the inpatient admission and, if multiple services were being provided in-home, some frustration with coordination of in-home services and poor communication between services.

Attending the focus groups had the unexpected benefit of connecting participants to others living with or caring for someone with CHF. Participants remarked that they enjoyed hearing the experiences of others in a similar situation. Some had never spoken to anyone else with CHF.

We asked the English speaking patients to complete the PROMIS Physical Function – Short Form 10a to assess how their Heart Failure affected their physical functioning. Only four patients completed the form. Their scores ranged from 31 to 42 out of a possible total score of 50. Participants completed the questionnaire quickly in a few minutes each and found the task easy. The HARP CHF program has not previously used this questionnaire. The response cohort is too small for analysis, but the feasibility of using the tool in this population appears reasonable, and it may be utilised in the future.

<u>ED clinicians</u>

ED clinicians understood of the challenges of living with CHF or caring for someone with the condition. They regarded multiple ED presentations by this group as legitimate ("*these patients can't breathe so they come to the ED*"). Issues clinicians raised were:

- Uncertainty regarding the effectiveness of a "safety net" for this patient group post discharge, particularly the time to first review. ED clinicians who request a review appointment for the patient are not informed of the time to appointment.
- Difficulties in accessing recent clinical information about the patient including current medications and recent results and details of recent admissions to inform ED management.
- There was agreement at all focus groups regarding the benefits of a CHF Management Plan which could be shared between the patient and carer, GP, hospital specialists and Emergency Department clinicians.
- Concern about the transfer of patients from residential aged care facilities to the ED against their documented wishes. This issue is being addressed by the PRoACT project, a pilot project conducted by RMH and six neighbouring residential aged care facilities which has been underway for approximately 12 months. It aims to improve shared care and provide support for residential aged care staff to care for residents in place and reduce

inappropriate transfers from residential aged care to hospital through use of Hospital in the Home and Residential In-reach services.

- Clinicians expressed a preference that advance care planning discussions be initiated by the GP when the patient is well and at home, rather than introduced when the patient is unwell and in the pressured environment of the Emergency Department.

General Practitioners

GPs were generally satisfied with written communications they received from the hospital – discharge summaries and letters post Outpatient appointments. They noted improved delivery of discharge summaries in recent years. (Summaries are now electronically transmitted to practices using Argus GP software system) Some GPs requested more specificity in requests made of them in the discharge summaries such as the timeframe to review medication.

Several GPs expressed a preference for a phone call from the hospital specialist regarding complex cases as a phone call can be more candid and ". . *is worth a hundred letters.* " All reported being frustrated by the difficulty in contacting hospital doctors by phone if they needed to discuss a patient. They said that as they were usually unsuccessful in their attempts to contact the relevant physician, they consequently rarely tried to call. One GP when asked if he would call a consultant at RMH replied *"That's one rabbit hole I wouldn't go down and waste half a day. "*

All the GPs expressed dissatisfaction with the current requirement of RMH pathology to fax a request for patients' pathology results, despite phoning to request results. *"If the hospital asks us to review blood test results, why don't they send us the results?"* They felt that being asked to fax when they telephoned was time-consuming and inconvenient, particularly if the patient was present with them at the time of their phone call. This issue has been raised with the Pathology Department and will be addressed by the upgrade to the AusLab associated with the introduction of the AusLab system in November- December 2017. More information about the new system is provided on page 18-19.

GPs preferred to send patients whose condition was deteriorating to the ED, rather than try to arrange for an Outpatient appointment to be brought forward as they were unaware of a process to do this and the likelihood of success. A well-publicised process for GPs to arrange rapid access to review in an Outpatient clinic may reduce (in hours) ED presentations.
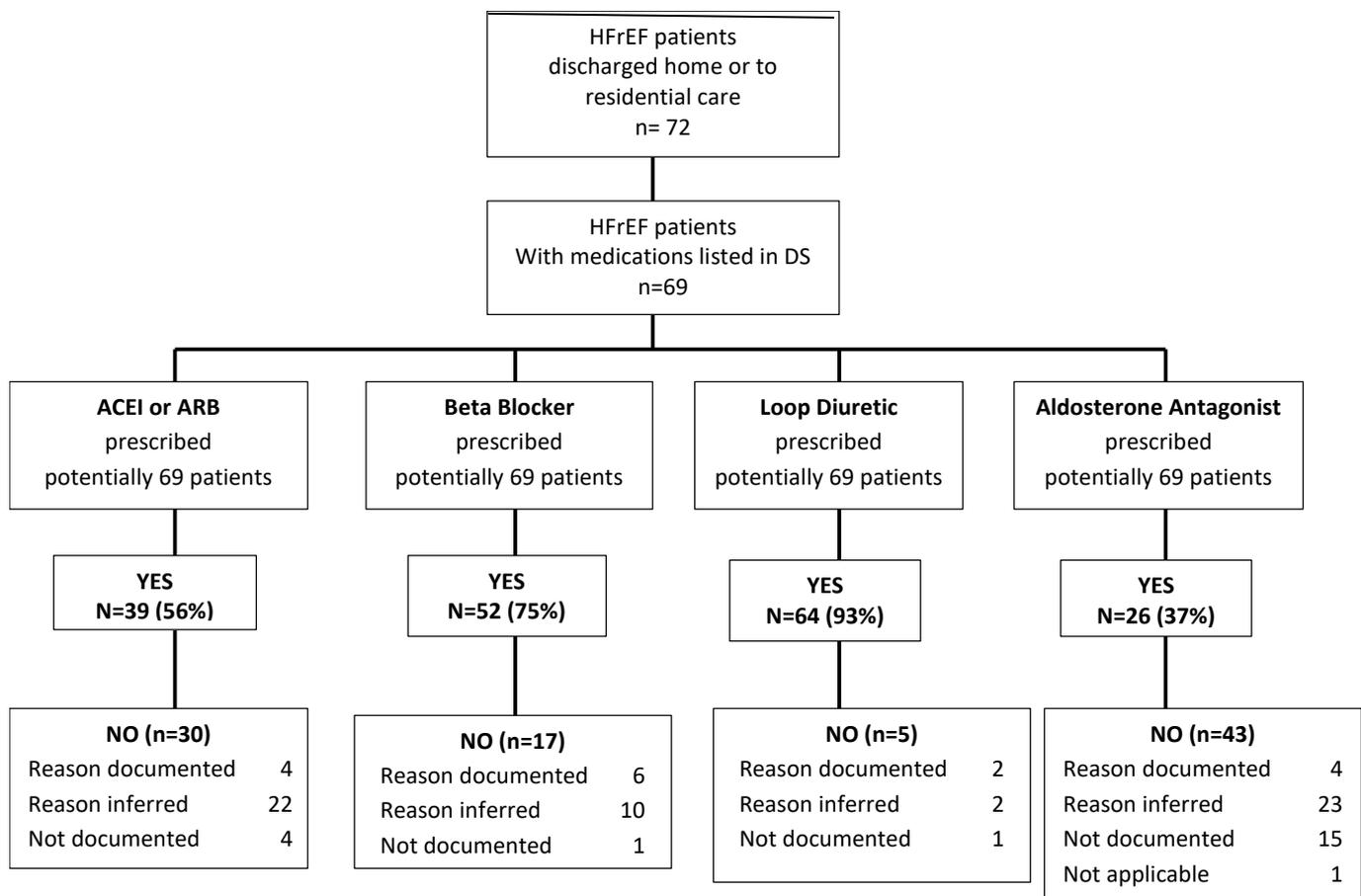
Audit of discharge summaries

Discharge summaries for the 153 patients with a confirmed diagnosis of Heart Failure who were discharged home were audited to identify the percentage of patients for whom a GP review was requested and the actions requested of the GP regarding management of the patient's Heart Failure. GP review was requested for 117 patients (76%). The time to GP review recommended was usually within one week of discharge. Table 4 shows the actions requested of the GP for all patients and those for HFrEF patients.

An audit of discharge medications was conducted by a pharmacist, to ascertain compliance with best practice prescribing for patients with HFrEF Heart Failure. Results are shown in Figure 5.

Table 4: Discharge summary: actions requested of GP in discharge summary

	All	%	HFrEF	%
Total patients	**153**		**72**	
Actions requested				
GP review	117	76%	55	76%
Review blood tests	36	24%	49	68%
Titrate medication	34	22%	38	53%
Daily weights	42	27%	21	29%
Restrict fluids	45	29%	24	33%
Monitor BP and HR	19	12%	7	10%

Figure 5: Discharge Medication Audit Results

Some patients' discharge summaries did not have medications listed under the appropriate section but had medication plans listed in other areas. The auditor found it difficult to ascertain full medication lists for these patients which could be problematic for GPs. Three patients did not have medications listed in their discharge summary.

The reasons why medications were not prescribed in line with best practice guidelines were often not explicitly stated in the discharge summaries. However, the auditor judged that clinicians reading the summaries would usually be able to infer the reasons for non-prescription from the clinical information provided in the summary.

There were 21 instances of non-documentation of the reasons for non-prescription, in some of multiple medications, in 16 patients (23%).

For patients with HFrEF whose discharge summaries included documented reasons for non-prescription of an ACEI, ARB or Beta Blocker, the reasons were clear and summaries often included future plans. However the majority of people with HFrEF who were not prescribed ACEI/ARB or Beta Blockers did not have clearly documented reasons. The reason had to be interpreted from the other information in the summary. No patients were prescribed an oral NSAID on discharge. One patient was discharged with a topical NSAID. There were two examples of a NSAID being appropriately intentionally ceased (these had been prescribed prior to admission).

Our recommendation is that the relevant clinical units consider the potential benefits of providing guidelines to RMOs regarding the minimum required content of discharge summaries for patients with CHF including:
1. Type of heart failure
2. Discharge medications
3. Contraindications to medicines (if present) and
4. The 'final' aim of up-titration e. g.
   Aim: titrate to full dose BISOPROLOL 10 mg.
   OR
   Aim: In view of age and frailty, and postural drop, maximum tolerated dose of BISOPROLOL is the final up titration aim.

Echocardiogram results

Echocardiogram results were included in 97 (63%) discharge summaries (Table 5). Of the 56 patients with no Echocardiogram results included in their discharge summary, 13 (23%) had ~~an appointment for~~ a scheduled appointment for an Outpatient Echocardiogram documented in their discharge summary. Of those patients with HFrEF (systolic) Heart Failure, 82% had had their diagnosis confirmed by Echocardiogram, in line with evidence based guidelines. An echocardiogram result was not available for any of the 25 patients where clinician review of the discharge summary (by a heart failure nurse or cardiologist or both) was unable to classify patients as having either HFrEF or HFpEF. It is possible that some of these patients may not have had Heart Failure or that the lack of clarity reflected clinician uncertainty regarding diagnosis.

Table 5: Echocardiogram results and booked appointment details included in discharge summary, by type of Heart Failure

Type of Heart Failure	Included	%	Not included	%	Total	OP Echo booked post discharge	Final number (%) who would have had an echocardiogram
HFrEF	59	82%	13	18%	72	2	61 (85%)
HFpEF	38	68%	18	32%	56	4	40 (71%)
Not further specified	0	0	25	100%	25	7	7 (28%)
Total	97		56		153	13	108 (71%)

Receipt of discharge summaries by GP

We audited a random sample of 70 patients to evaluate receipt of discharge summaries by the GPs (Table 6). Two patients did not have a discharge summary and a further two did not have a GP nominated in the discharge summary. Of the remaining 66 summaries, three patients were not known to the nominated practice and four GPs could not be contacted despite numerous attempts by phone and fax. Nine practices contacted responded that the patient's files were not readily available (patient deceased or had left the practice, the GP had left the practice or the records had been archived). Of the 50 GPs contacted who could also access the patients' records, 42 (84%) had received the discharge summary and 8 (16%) had not.

Table 6: Audit - GP receipt of discharge summaries

	Number summaries	%
Patients randomly selected	70	
Excluded: no DS		2	
Excluded: GP not entered on DS		2	
Total patients excluded	4	
No. summaries audited	**66**	
Patient not known to GP		3	
GP not contactable*		4	
Records not available #		9	
Total not contacted/records unavailable		**16**	23%
No. practices able confirm whether DS received		50	
Of the 50 GPs contacted with patient records available			
GP received DS		42	84%
GP did not receive DS		8	16%
Total			100%

* At least 6 attempts were made to contact GPs by phone, fax, email
\# Practice closed, GP moved, patient left practice, patient deceased,
   patient file not readily accessible

Table 7 shows the involvement of this cohort of patients in the HARP Complex Care Program. Sixty-one of the 153 (40%) patients had one or more HARP episodes of care. Of these, 33 (21%) had an episode of care in the HARP CHF program.

Table 7: Number patients with HARP episode (referred during prior, index or subsequent admissions)

	CHF HARP	Other HARP	Total
HARP patient at time of index admission	4	4	8
Referred to HARP during index admission	16	8	24
Completed HARP episode prior to index admission	10	14	24
Referred to HARP during subsequent admission	3	2	5
Total patients with HARP episode	33	28	61

CHF Palliative Care Pathway

The study population consisted of 204 consecutive referrals to HARP CHF 1st January 2014 and 30th June 2015. Of these, 36 were excluded for a variety of reasons:

- 27 patients for whom the referral did not proceed
- 8 patients who were in the administrative data set, but as part of a research project and
- One patient who was originally accepted into the program but then refused to participate with any component.

This left a final cohort of 157 patients (there were 10 patients with multiple admissions (total n = 21)).

(a) Patient mortality during participation in the HARP CHF Program

Figure 1 summarises the analysis to 12 months from the referral date, which revealed that 44 (28%) of patients died within this time period (limitation: death known to HARP staff or RMH).

Figure 6 Mortality for CHF HARP patients within 12 months from referral date
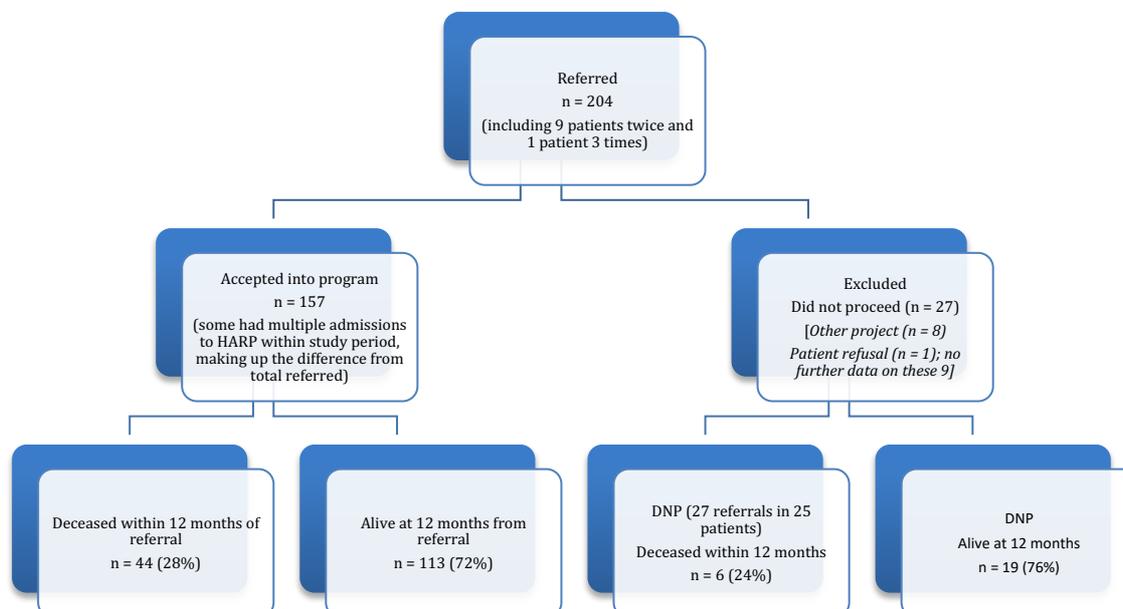
(b) Mortality risk stratification – does it work for our patients?

The patients seen through HARP CHF are older than those in whom the mortality stratification tool utilised was derived (Peacock, European Heart Journal 2013; 34:1404-1413). It was unclear therefore, whether this mortality risk score would work in our cohort who had a median age of 81 (75 – 86) years.

The MAGGIC mortality risk score was calculated, where possible (n = 133, 85%). Calculation was limited by missing data in the remaining 15%, with the score being compiled from 13 variables (age, gender, presence of diabetes, presence of COPD, whether HF diagnosed in last 12 months, current smoker, NYHA class, whether beta blockers prescribed, whether ACEI/ARB prescribed, BMI, systolic blood pressure, creatinine and ejection fraction).

- A MAGGIC score was available in 32 (72. 7%) of deceased and 101 (89. 4%) of the live at 12 months patients.

- The overall MAGGIC score in the entire cohort was 28 (25 – 32). Comparison of the deceased within 12 months to the live at 12 months subgroups revealed a significant difference in the scores (32 (28 – 34) vs 28 (24 – 31. 5) (p < 0. 001))

Additional variables that differed between the subgroups on univariate analysis were
- Program referral for HF (100% in mortality group, 84. 1% in survival group, p = 0. 005)
- A lower SBP at admission into HARP (p = 0. 026)*
- A lower DBP at admission into HARP (p = 0. 042)*
- Lower use of ACEI/ARB (likely influenced by above factor) (p = 0. 001)*
- More likely to have a lower eGFR (p = 0. 004)*
- Pleasingly, they were also more likely to have evidence of an 'end of life' conversation noted in file (p = 0. 003) and more likely to have been referred to palliative care (p < 0. 001)
    - * Please note that these variables are also encapsulated by the MAGGIC score.

A very important outcome of this project is recognition that the HARP CHF program refers small numbers of patients to palliative care. If referred however, most were accepted by palliative care (75%). This is important, as it has afforded staff an opportunity to reflect on their referral rates, and consider the need to increase this for this elderly patient group.

Outcomes:
- This data has been presented and discussed at:
    - RMH Clinical Operations Group meeting (December 2017)
    - The final VCCN MOCC meeting (December 2017).
- This data partly informed the brief of the MOCC Heart Failure - Palliative Care, a shared care approach working party which concluded its activities in December 2017 and has organised four Victorian Health services to undertake a PEPA (Program of Experience in the Palliative Approach) in 2018.
- Has been discussed by A/Prof Dominica Zentner with A/Prof Brian Lee (Head, Palliative Care at Melbourne Health) with the aim of:
    - Undertaking further statistical analysis in 2018 (in particular multivariable analysis and exploration of whether a threshold at which risk increases or the relative risk of changes in variables can be ascertained) in order to
        - understand how this data may alter the referral timing in elderly patients with HF and
        - how to best support transition for MH patients into a shared care community based model.

Heart Failure-Palliative Care, a shared care approach'
The DHHS Victorian Cardiac Clinical Care Network through the Model of Care Collaborative, Heart Failure, supported a working party ('Heart Failure-Palliative Care, a shared care approach') over the last 6 months of 2017. This was chaired by A/Prof D Zentner. This has been an excellent forum within which staff from these two clinical care areas was able to meet, recognise a shared goal of improving patient care through better symptom management in the home, and consequently:
1. Create some simple resources drawing on a combination of clinical experience and resources available elsewhere (The UK and Queensland have some excellent documents around late care of heart failure patients including a 'who/when to refer' document)

2. Seek to actively create relationships between community based heart failure nurses and community based palliative care in order to support sharing of skills and knowledge and begin to work towards a shared care model by

3. Facilitating four Victorian Health Services to undertake a PEPA placement in 2018 (as described above).

The assistance of the Victorian Heart Foundation as Secretariat to this group is gratefully acknowledged.

Discussion

Elderly patients with Heart Failure represent a significant risk for readmission and a number of shared concerns regarding transition of care were identified by this project.

1. Shared concerns

All the parties consulted in this project agreed on the value of having a shared Heart Failure management plan to contain current medications, recent test results, General Practitioner details, the patient's normal weight, key contacts and an exacerbation management plan. This could be a paper record held by the patient or carer. Participants also suggested the possibility of a smart phone app or a shared electronic record. The record would need to be compatible with the Melbourne Health Electronic Content Management System and proposed Electronic Medical Record.

GPs were generally satisfied with the quality of written communication from the hospital but found the challenges of contacting hospital specialists by phone time consuming and usually unsuccessful. GPs considered that a phone call could be more candid and enable patient management issues to be more readily addressed. One possible response to this need may be the availability of a liaison nurse to provide the first point of contact for GPs with concerns or queries regarding their patients and to coordinate responses. GPs expressed dissatisfaction with the ease of access to Pathology results from Melbourne Health.

There were shared concerns regarding the adequacy of the safety net for these HF patients post discharge, particularly the time to the first outpatient review. Our data showed that time from discharge to first Outpatient review post was the most significant factor impacting readmission risk. This may be alleviated by improved advice to units regarding time to first available appointments and specification by physicians when they request post-discharge review appointments of the timeframe required.

There is considerable variation in the content of discharge summaries. Not all summaries specified the type of Heart Failure or recorded discharge medications or reasons why medications were not prescribed. GPs felt that more specificity in the requests made of them regarding patient management would be useful.

2. Shared positives

Patients and carers felt confident to attend the Emergency Department when they were having an exacerbation and ED clinicians acknowledged the challenges these patients face and their legitimate need to attend the ED.

Patients were generally satisfied with the communication between the hospital and their GP and considered that their treating clinicians were "on the same page".

Patients and carers understood their medications and consulted their local pharmacists about new medications and interactions.

Prescribing of medication for patients with HEFrEF was generally in accordance with best practice guidelines.

Patients who participated in the focus groups were well informed about their condition and management and well supported by the HARP specialist nurses. The HARP patient cohort is a small sub-set of the overall Heart Failure cohort. It would be informative to canvass the views of the non-HARP Heart Failure patients, particularly those who are newly diagnosed and learning to self-manage their condition.

3. Focus for improvement and work underway

- **Timely access to specialist review** within 2-4 weeks of discharge to reduce the risk of readmission. This will entail the need for more information about clinic booking and time to next available appointment to be available to referrers, including ED staff. The Department of General Medicine has offered to enable rapid access to specialist outpatient review for Heart Failure patients in the three General Medicine Outpatient clinics conducted each fortnight. They propose a system whereby GPs would fax a request to the General Medicine Department and an appointment would be arranged within two weeks. This will be promoted to General Practitioners with the assistance of the North West Melbourne PHN.

  Access to General Medical Outpatients would be offered for patients discharged from the General Medical Units, including the Acute Medical Unit (AMU). For Cardiology patients, an existing pathway exists through both the Cardiomyopathy Nurse and the Cardiology Liaison Nurse.

- **Essential content of discharge summaries** for patients with Heart Failure: we propose to have discussions with the relevant clinical units regarding the potential benefits of providing advice to RMOs regarding the minimum required content of discharge summaries for patients with CHF; including the type of heart failure, contraindications to medicines (if present) and the "final" aim of up titration, for example.
  Aim: titrate to full dose BISOPROLOL 10 mg
  OR
  Aim: In view of age and frailty, and postural drop, maximum tolerated dose of BISOPROLOL is the final up titration aim.

- **Streamlined access to Pathology results**: Melbourne Health Pathology upgraded to the AusLab Pathology system in November 2017. The Pathology Department will continue to send results by fax on request, but GPs will need to "opt in" to this function. The new system provides more rapid and secure access via the AUSCARE clinical viewer which enables results to be downloaded into local practice software such as Genie, Medical Director, etc. GPs with an AUSCARE user account will be able to see a patient's results across the precinct (RMH, Peter Mac and The Royal Women's Hospital) and view the long term trend of their patients' results.

AUSCARE can be interfaced with the General Practices' software using HealthLink. This enables results to be downloaded directly into their Practice Software. If a GP is not automatically receiving results of tests they have ordered, they can contact the Pathology Department on 9342 8000 who will attend to the matter. Once resolved the GP will receive a call to confirm the results are downloading correctly into their local practice application.

- **Telephone communication between General Practitioners and RMH Physicians**: The Department of General Medicine has recently established a Complex Discharge Planning Liaison Nurse role. Some initial consideration has been given to whether the Liaison Nurse role could, in time, provide a first point of contact for GPs wishing to contact hospital physicians regarding their patients with Heart Failure. This function is currently been provided by the Cardiomyopathy Liaison Nurse in the Cardiology Department. Details of how GPs may access the Liaison nurse (or nurses) would need to be included in the discharge summaries.

Limitations

As has been noted repeatedly in the literature, this cohort has a high rate of admissions for a wide variety of other conditions. It is unknown whether the proposed interventions would impact on this aspect of (re)hospitalisation in this population.

Patient and carer participants were all actively engaged in the HARP Heart Failure program and may not be representative of other CHF patients and carers. HARP participants receive a higher level of support post-discharge, more intensive Heart Failure education, service coordination and community-based rehabilitation and have ready access to specialist nurse advice.

Recommendations

1. Facilitate rapid access to Outpatient review in the three General Medicine Outpatient clinics held per fortnight. These would be available for patients requiring review for symptoms or assessment for up titration of medicine or review post urgent post- discharge test results. GPs would be able to access this service by faxing a request to the secretary of the Department of General Medicine. Details will be disseminated to GPs with the assistance of the North West Melbourne PHN.

   Specify first appointment date to requesting doctor, GP and patient/carer at discharge and inform the GPs in the discharge summary how to access a (more) rapid specialist review if required for their patient via the General Medicine clinic as outlined above.

2. Promote *Melbourne Health Pathways* CHF guidelines by automatic placement of web address into all HF discharge summaries. This could also be applied to letters sent to GPs after Outpatient consultations at the clinicians' discretion.

3. Discuss with the relevant clinical units the potential benefits of providing advice to RMOs regarding a minimum required content of discharge summaries for patients with CHF; including the type of heart failure, contraindications to medicines (if present) and the 'final' aim of up titration, for example e. g.
   Aim: titrate to full dose BISOPROLOL 10 mg

OR

Aim: In view of age and frailty, and postural drop, maximum tolerated dose of BISOPROLOL is the final up titration aim.

4. Improve GPs' ease of access to Pathology results from MH in consultation with Pathology Department, including potential for automated copy to be emailed to the nominated GP, in consultation with GP Liaison Unit.

5. Consider the feasibility of a Shared CHF Management Plan. The format remains undetermined at this stage – paper and patient held, electronic or possibly an app. The method for updating and sharing would need to be determined as part of the feasibility process. It is unclear how this would dovetail into any future Electronic Medical Record. Consider exploring whether other health services have something in place.

6. In view of the recent appointment of a General Medicine Complex Discharge Planning Nurse, consider the potential for this role to offer liaison with General Practitioners regarding coordination of the management of older General Medicine patients with Heart Failure as they transition between acute and community care.