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Factors influencing palliative care referral for hospitalised patients with heart failure: an exploratory, randomised, multi-institutional survey of hospitalists and cardiologists

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ABSTRACT

Objective To identify factors influencing cardiologists' and hospitalists' decisions regarding palliative care referral among hospitalised patients with advanced heart failure.

Design An exploratory, randomised vignette-based survey.

Setting Cardiology and hospitalist divisions at three Michigan State institutions and the Society of Hospital Medicine's Michigan Chapter.

Participants 145 hospitalists and 64 cardiologists.

Outcome measures Primary outcomes included participants' reports of their likelihood of referring a standardised patient with an acute heart failure exacerbation with multiple prior hospital admissions and acute renal failure to palliative care (scale of 0%–100%) after the initial stem and after being cued with three randomised vignette modifiers, including the presence versus the absence of continuity with an outpatient cardiologist; the presence versus the absence of documented advance care planning; and the patient voicing that he is accepting of his severe illness versus wanting everything done. Adjusted generalised linear models and predictive margins were used to evaluate the impact of each randomised modifier on referral decisions. An interaction term evaluated the effect of provider specialty on outcomes. Secondary outcomes included participants' reports of their general practices around palliative care delivery to hospitalised patients with heart failure.

Results Response rate was 31.3%. Predictive margins from generalised linear models demonstrated a statistically significantly higher likelihood of referral to inpatient palliative care if the patient lacked an outpatient cardiologist (mean difference: 6.3% (95% CI 1.8% to 10.8%)); had prior advance care planning documentation (mean difference: 9.7% (95% CI 4.4% to 15.0%)); and was accepting of illness severity (mean difference: 29.6% (95% CI 24.8% to 34.4%)). No interaction effect was noted based on provider specialty. Most hospitalists and cardiologists were unaware of palliative care guidelines for patients with heart failure (74.3% vs 70.3%, p=0.71).

Strengths and limitations of the study

► First such study to compare and contrast factors influencing hospitalist and cardiologist decision-making in palliative care referral for hospitalised patients with heart failure.
► Randomised vignette-based format provides helpful insights into provider decision-making.
► Low response rate, and most respondents came from academic settings which may limit generalisability.
► Lack of access to specialty palliative care is an important barrier to timely referral for patients with heart failure not addressed by our study.

Conclusions A number of patient and provider factors influence palliative care referral decisions in hospitalised patients with advanced heart failure.

INTRODUCTION

Advanced heart failure (HF) occurs when patients with HF experience persistent symptoms that interfere with daily living despite maximum medical therapy. Specialty palliative care (PC) can improve symptom burden and quality of life for patients with advanced HF when delivered early in the disease course and regardless of prognosis.[1 2] However, the American College of Cardiology/American Heart Association guidelines only recommend PC for patients with end-stage (Stage D) HF.[3 4] Over half of all patients with advanced HF die within a year of diagnosis,[5] and 4 in every 5 such patients are hospitalised in the last 6 months of life.[6] Less than 10% of patients with advanced HF are seen by PC within a year of a hospital admission.[5] Thus, hospitalisations can serve as important intervention points at which to refer patients to PC.

The onus of identifying hospitalised patients with HF who may benefit from PC frequently falls on hospitalists who commonly care for these patients, rather than cardiologists.[7 8] Understanding how hospitalists' approach compares to cardiologists and what factors are influential in shaping provider decisions to refer to PC may help improve PC delivery to hospitalised patients with advanced HF. Previous studies have evaluated barriers to PC referral in patients with HF. These barriers include: misconstruing PC with terminal care, such as hospice; lack of clarity around the appropriate timing of introducing PC due to unclear prognosis and desire to continue life-prolonging interventions; barriers to interprofessional relationships and communication; perceptions that longitudinal providers may better serve patients in making PC referral; and a lack of provider knowledge of PC and decision support tools.[9–12] However, these prior studies were qualitative in nature and primarily focused on outpatient providers or contained only a small sampling of hospital-based providers.

Given this gap, we performed a vignette-based survey study to evaluate factors that may impact hospitalists' and cardiologists' decisions to refer hospitalised patients with HF to PC. We hypothesised that cardiologists would have greater awareness of guidelines compared with hospitalists, but that both would be highly influenced by subjective factors in their decisions to refer to PC.

METHODS
Study participants and setting
We recruited hospitalists and cardiologists via three consecutive electronic mail requests to their respective division listservs between January 2019 and May 2019 at three institutions in Michigan (Michigan Medicine, which includes the University of Michigan Medical Centre and Ann Arbor Veterans Affairs Hospital; Henry Ford Health System; and Beaumont Health). We chose these sites because they were all large, multi-site, teaching health systems in which patients with HF have access to robust inpatient subspecialty PC services. All of these systems (with the exception of Beaumont Health) also provided access to outpatient PC services for patients with HF. In addition, we had close contact with leaders at these sites to facilitate survey distribution. To diversify our sample, hospitalists from around the state were also recruited from the Michigan's Society of Hospital Medicine (SHM) Chapter via three consecutive emails to the Chapter listserv. The SHM's Michigan Chapter is a state-wide professional organisation that includes hospitalists from a variety of settings, including community and academic settings. We similarly attempted to recruit cardiologists from varied practice settings using state-wide professional society networks, but 'no solicitation' rules prohibited this. Hence, the cardiologist cohort was restricted to the three academic institutions listed. A $20 gift card was provided to participants as a token of appreciation.

This study was deemed exempt by the institutional review boards at all three institutions.

Survey design and data collection
An electronic, randomised, vignette-based survey was developed for this study (see online supplemental appendix 1) based on a review of the literature related to barriers to PC referral[2 9 11 12] and discussion with HF and PC content experts. The survey was tested with four hospitalists and three cardiologists with experience in multiple care settings and revised based on results from cognitive interviewing. This was designed as an exploratory study; hence, no sample size calculation was performed.

All participants were presented with a standard vignette of a hospitalised patient with an acute HF exacerbation complicated by acute kidney injury and history of multiple prior hospitalisations, refractoriness to high-dose diuretics, and having considered but turned down a left ventricular assist device as an outpatient. We asked participants to report likelihood of referring the patient to PC (scale of 0%–100%) after the initial stem and again following three successive randomised vignettes containing the following additional details: (a) the presence versus the absence of continuity with an outpatient cardiologist; (b) the presence versus the absence of documented advance care planning; and (c) patient voicing acceptance of their illness versus wanting everything done. Given that the participants could be randomised to 1 of 2 possible vignette modifiers in each category, a total of 8 different permutations were possible for the survey. Figure 1 provides a visual representation of the vignette randomisation.

Participants were also asked their reasons for not referring the patient to PC after the initial stem, and their impressions and practice related to the percentage of hospitalised patients with HF that they (a) encountered with PC needs; (b) routinely referred to hospice; (c) deferred PC delivery to other providers; and (d) provided PC themselves (without specialty PC involvement). The data on participant age, gender, race, ethnicity, rank, time since training, practice type (ie, academic, community, etc), board certification and formal or informal education in PC, access to subspecialty PC, and awareness of guidelines related to PC delivery to patients with HF were also collected. We also asked respondents for their comfort level in determining which patients with HF would benefit from PC.

Statistical analysis
Characteristics for hospitalists and cardiologists were compared using χ^2 and Fisher's exact tests, as appropriate. Generalised linear models adjusted for age (analysed as a continuous variable), rank, practice type and response to the previous question and predictive margins were used to evaluate the impact of each randomised modifier on likelihood of PC referral. Akaike information criterion and Bayesian information criterion were used to determine which covariates to include in the final model based on
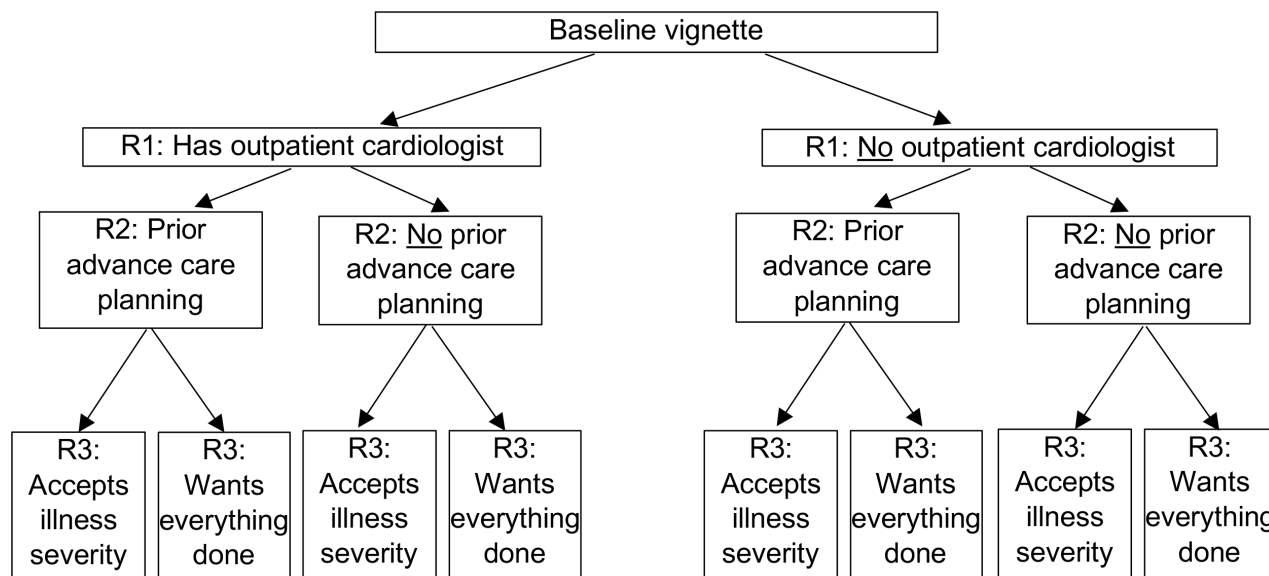
Figure 1 Flowsheet of vignette randomisation. R, randomisation.

best fit. An interaction term was used to evaluate whether provider type (cardiologist vs hospitalist) resulted in different outcomes. Missing data were dropped from the analyses. All analyses were conducted using Stata V.15 (College Station, Texas, USA). A two-tailed p value of <0.05 was considered statistically significant.

Patient and public involvement

Given this was a provider survey, patients and the public were not included in the conceptualisation or design of this project.

RESULTS

The overall study response rate was 31.3% (n=209/667; n=145 hospitalists and 64 cardiologists, respectively). In some cases, participants chose not to respond to individual questions, so the total N is reported separately for each question. Characteristics of responding hospitalists and cardiologists are described in table 1. The majority of hospitalists and cardiologists indicated that they were attending physicians; most were employed at an academic medical centre. The majority had access to subspecialty PC in their respective health systems, and approximately half of all providers had formal PC education (either as a trainee or through PC coursework or continued medical education) (table 1).

The mean likelihood of referring the HF patient described in the initial vignette (a patient with acute kidney injury, repeated hospitalisations and worsening diuretic resistance) was similar for hospitalists and cardiologists (59.2% vs 58.5%, p=0.56). The most common reason for not referring the patient to PC for cardiologists was that 'the patient's outpatient cardiologist is better suited to make this determination', whereas for hospitalists it was, 'the patient is not imminently dying' (table 2).

In unadjusted generalised linear models, predictive margins demonstrated that providers were statistically significantly more likely to refer the vignette patient to inpatient PC if he (a) did not have a longitudinal relationship with an outpatient cardiologist (unadjusted mean difference: 6.1% higher compared with a patient with an outpatient cardiologist (p=0.006, 95% CI 1.7% to 10.5%)); (b) had evidence of advance care planning documentation in the chart (unadjusted mean difference: 8.7% higher compared with a patient without evidence of prior advance care planning documentation (p<0.001, 95% CI 3.4% to 13.5%)); and (c) was accepting of his serious illness (mean difference: 29.0% higher compared with a patient who voiced that they wanted everything done (p<0.001, 95% CI 24.2% to 33.8%)).

In adjusted generalised linear models, no interactions between provider specialty and responses were observed. Hence, the interaction term was dropped from the final analysis. Predictive margins from generalised linear models adjusted for provider age, rank, practice type and response to the prior vignette demonstrated that providers were statistically significantly more likely to refer the vignette patient to inpatient PC if he (a) did not have a longitudinal relationship with an outpatient cardiologist (adjusted mean difference: 6.3% higher compared with a patient with an outpatient cardiologist (p=0.006, 95% CI 1.8% to 10.8)); (b) had evidence of advance care planning documentation in the chart (mean difference: 9.7% higher compared with a patient with no evidence of prior advance care planning (p<0.001, 95% CI 4.4% to 15.0%)); and (c) was accepting of his serious illness (mean difference: 29.6% higher compared with a patient who voiced that they wanted everything done (p<0.001, 95% CI 24.8% to 34.4%)). Adjusted margins' plots show the influence of each vignette modifier on provider likelihood to refer the patient to inpatient PC based on their response to the previous vignette (figures 2–4).

Most hospitalists and cardiologists responded that they were unaware of PC guidelines for patients with HF

Table 1 Hospitalist's and cardiologist's characteristics

Characteristics	Hospitalists		Cardiologists		
	Total responses	N (%)	Total responses	N (%)	P value
Age, mean years±SD	132	39.0±8.98	61	42.6±11.4	0.019
Female	134	72 (53.73)	63	25 (39.7)	0.066
Ethnicity					
Hispanic	134	3 (2.2)	63	0 (0)	0.553
Race					
White	134	91 (67.9)	62	42 (67.7)	0.486
Asian		30 (22.4)		16 (25.8)	
American Indian or Alaska Native		1 (0.8)		0 (0)	
Black or African American		0 (0)		1 (1.6)	
Other		12 (9.0)		3 (4.8)	
Rank					
Fellow	134	1 (0.8)	62	23 (37.1)	<0.001
Attending		98 (73.1)		37 (59.7)	
Advanced Practitioner (NP, PA)		19 (14.2)		2 (3.2)	
Other		16 (11.9)		0 (0)	
Time since training, mean years±SD	129	8.1±8.0	59	9.0±11.3	0.534
Practice setting					0.001
Academic	134	81 (60.5)	63	52 (82.5)	
VA		5 (3.7)		4 (6.4)	
Community		45 (33.6)		7 (11.1)	
Other		3 (2.2)		0 (0)	
Board certified in PC	134	7 (5.2)	62	1 (1.6)	0.439
Formal education in PC	133	72 (54.1)	63	33 (52.4)	0.818
Additional coursework in PC	133	39 (29.3)	63	9 (14.3)	0.022
Access to subspecialty PC					
Yes, inpatient only	134	31 (23.1)	63	9 (14.3)	0.272
Yes, inpatient and outpatient		93 (69.4)		51 (81.0)	
Yes, outpatient only		4 (3.0)		0 (0)	
No, neither inpatient nor outpatient		2 (1.5)		2 (3.2)	
Not sure		4 (3.0)		1 (1.6)	
Aware of guidelines for PC in patients with HF					
Yes, they are helpful	145	38 (26.2)	64	14 (21.9)	0.712
Yes, but they are not helpful		5 (3.5)		3 (4.7)	
No, I do not know of any guidelines		102 (70.3)		47 (74.3)	
Comfort level with identifying patients with HF in need of PC					
Very comfortable	145	34 (23.5)	64	23 (35.9)	0.175
Somewhat comfortable		67 (46.2)		31 (48.4)	
Neutral		26 (17.9)		6 (9.4)	
Somewhat uncomfortable		16 (11.0)		4 (6.3)	
Very uncomfortable		2 (1.4)		0 (0)	

HF, heart failure; NP, nurse practitioner; PA, physician's assistant; PC, palliative care; VA, veteran's affairs.

(74.3% vs 70.3%, p=0.71) (table 1). No differences were noted when hospitalists and cardiologists were asked what percentage of their hospitalised patients with HF had PC needs (51.6% vs 50.2%, p=0.71) and what percentage they referred to hospice (34.8% vs 36.0%, p=0.76). Similarly, they reported similar percentages of patients in whom

Table 2	Reasons for not referring HF patient to PC		
A: hospitalist reasons (n=258)*		**N**	**%**
1. The patient is not imminently dying		47	18.2
2. The patient's outpatient cardiologist is better suited to make this determination		41	15.9
3. I would provide palliative interventions myself		38	14.7
4. The patient does not have clear PC needs at this time		32	12.4
5. I do not want Mr Jones to feel like I have given up on him		20	7.8
6. The patient's primary care doctor is better suited to make this determination		19	7.4
7. I would first explore the patient's goals/preferences		15	5.8
8. I do not want Mr Jones's family to feel like I have given up on him		15	5.8
9. I would want cardiology to weigh in first		8	3.1
10. We do not have an inpatient PC team		7	2.7
11. We have an inpatient PC team, but I have not had good experiences referring patients to them		7	2.7
12. Other		4	1.6
13. The patient would benefit from outpatient rather than inpatient PC		3	1.1
14. I do not know how best to connect the patient with palliative services care		2	0.8
Total		258	100.0
B: cardiologist reasons (n=111)*		**N**	**%**
1. The patient's outpatient cardiologist is better suited to make this determination		21	18.9
2. I do not want Mr Jones to feel like I have given up on him		17	15.3
3. The patient is not imminently dying		16	14.4
4. I do not want Mr Jones's family to feel like I have given up on him		14	12.6
5. I would provide palliative interventions myself		10	9.0
6. The patient does not have clear PC needs at this time		8	7.2
7. I would first explore the patient's goals/preferences		8	7.2
8. The patient's primary care doctor is better suited to make this determination		5	4.5
9. I would first try medical interventions		4	3.6
10. We have an inpatient PC team, but I have not had good experiences referring patients to them		3	2.7
11. Other		3	2.7
12. We do not have an inpatient PC team		1	0.9
13. I do not know how best to connect the patient with palliative services care		1	0.9
Total		111	100.0

*Respondents could select more than one choice; hence, N is larger than the number of sample participants.
HF, heart failure; PC, palliative care.

they delivered PC themselves without specialty PC (35.9% vs 40.8%, p=0.34). However, compared with hospitalists, cardiologists were more likely to report that they deferred PC delivery to other providers (53.6% vs 43.4%, p=0.03) (table 3).

DISCUSSION

Our study demonstrates that regardless of specialty, patient and provider factors are highly influential in provider decisions to refer hospitalised patients with HF to PC. We deliberately created a clinical vignette with several objective, high-risk features for mortality, including renal dysfunction, recurrent hospitalisations and disease progression despite optimal management.

However, these clinical measures were less influential in PC referral. Respondents in our study were more likely to refer patients who did not have an outpatient cardiologist, had advance care directives or were more accepting of the severity of their illness. These latter two findings are concerning in that patients without prior documented advanced care planning conversations and those who are struggling to accept their illness stand to benefit most from PC.[4][13] Generalist or specialty PC interventions for such patients could include goals of care conversations and evaluation of prognostic awareness, as well as psychosocial and spiritual assessment to better understand the reasons behind why they have particular preferences around their disease management.[2] While it is not clear
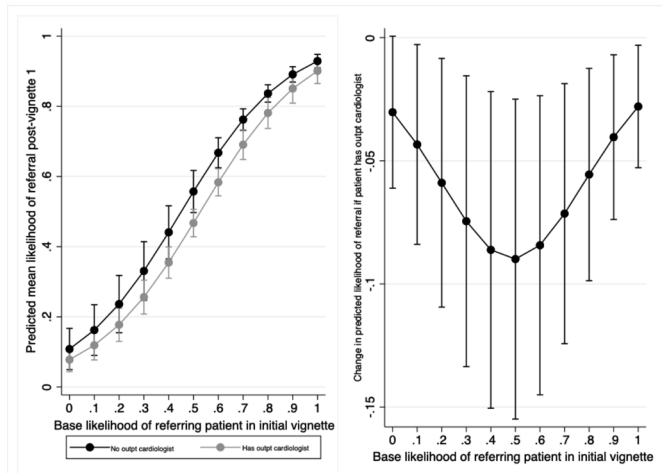
Figure 2 Differences in predictive margins for likelihood of referring patient to palliative care (PC) based on the presence or the absence of an outpatient cardiologist. The panel on the left plots the base likelihood (%) of referring the patient with heart failure in the initial vignette to PC (X-axis) against the predicted mean likelihood (%) that they would refer the patient after learning that he either (grey) has an outpatient cardiologist or (black) does not have an outpatient cardiologist (Y-axis). The error bars represent 95% CIs. Overall, participants were less likely to refer a patient to PC if the patient had an outpatient cardiologist. The panel on the right demonstrates the change in the predicted likelihood of referral if the patient has an outpatient cardiologist (Y-axis) based on the likelihood of referring the patient in the initial vignette (X-axis).

Figure 3 Differences in predictive margins for likelihood of referring patient to palliative care (PC) based on the presence or the absence of documented advanced care planning. The panel on the left plots the base likelihood (%) of referring the patient with heart failure in the previous vignette (the presence or the absence of an outpatient cardiologist) (X-axis) against the predicted mean likelihood (%) that they would refer the patient after learning that he either (grey) has documented advance care planning (ACP) or (black) no documented ACP (Y-axis). The error bars represent 95% CIs. Overall, participants were more likely to refer a patient to PC if the patient had prior documented ACP. The panel on the right demonstrates the change in the predicted likelihood of referral if the patient has prior documented ACP (Y-axis)

why these contradictory referral patterns emerged in our study, they highlight a missed opportunity for PC referral in this population. Further evaluation with qualitative or ethnographic studies is warranted to better understand why these contradictory findings arose.

Prior studies have shown that several other provider and patient factors are influential in PC referral decisions. First, prognostic uncertainty has frequently been cited as a barrier to timely PC and hospice referral.[14] Second, low knowledge of the benefits of PC in advanced patients with HF throughout the disease continuum, and/or conflation of PC with hospice services often leads to delays in referral until patients are more imminently near death.[9 14] Our findings support these data and also highlight an important need for PC education among providers. Just half of the providers in our study had formal PC training and most had limited knowledge of guidelines around the timing and appropriateness of PC referral in patients with HF. Finally, some HF providers feel that honouring prior patient–provider relationships among outpatient cardiologists and primary care providers is important in determining who is best suited to initiate PC referral.[14] This latter point may explain why cardiologists were more likely to defer decisions around PC referral to other providers in our study. Collectively, these findings suggest that decisions around PC referral
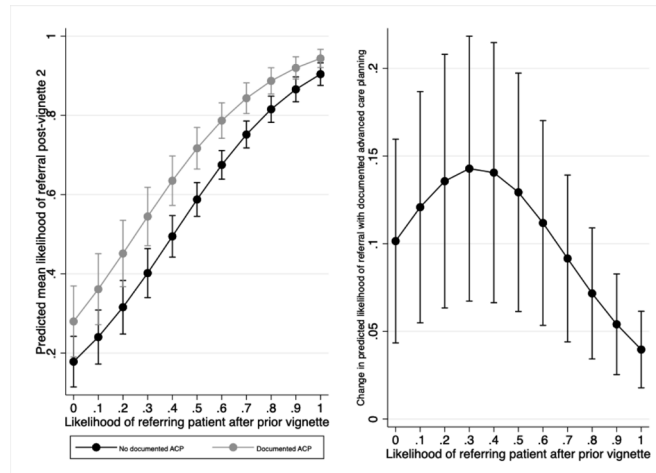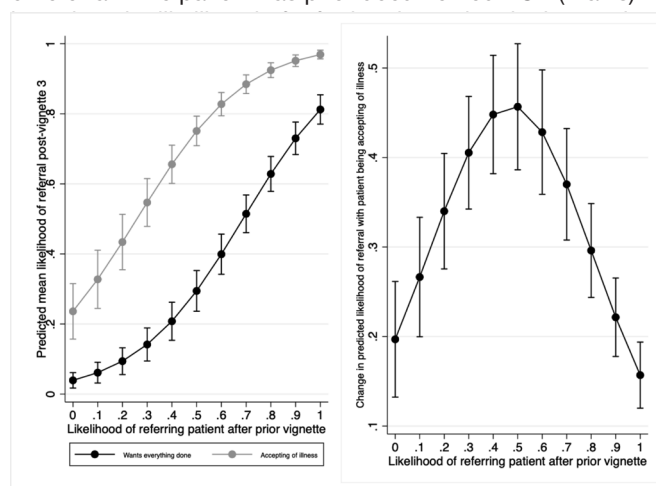

Figure 4 Differences in predictive margins for likelihood of referring patient to palliative care (PC) based on patient being accepting of illness vs wanting everything done. The panel on the left plots the base likelihood (%) of referring the patient with heart failure in the previous vignette (the presence or the absence of advance care planning documentation) to PC (X-axis) against the predicted mean likelihood (%) that they would refer the patient after learning that he either (grey) is accepting of his illness or (black) wants everything done for his illness (Y-axis). The error bars represent 95% CIs. Overall, participants were more likely to refer a patient to PC if the patient was accepting of his illness. The panel on the right demonstrates the change in the predicted likelihood of referral if the patient was accepting of his illness (Y-axis) based on the likelihood of referring the patient in the previous vignette (X-axis).

Table 3 General practice patterns around PC for hospitalised patients with HF among hospitalists and cardiologists

	Hospitalists (N=145)			Cardiologists (N=64)			
	Total responses	Mean % reported	SD	Total responses	Mean % reported	SD	P value
Percentage of hospitalised patients with HF whom you care for who have PC needs	139	50.2	24.8	60	51.6	25.4	0.709
Percentage of hospitalised patients with HF that you refer to hospice	137	36.0	28.1	62	34.8	26.6	0.761
Percentage of hospitalised patients with HF to whom you provide PC yourself	134	40.8	30.2	50	35.9	31.5	0.338
Percentage of hospitalised patients with HF in which you defer PC to another provider	135	43.4	29.8	58	53.6	32.1	0.034

HF, heart failure; PC, palliative care.;

in HF may be underinformed and variable, translating into delayed or absent PC referral in end-stage patients with HF.

There is little denying that many patients with advanced HF experience poorly coordinated, fragmented care at the end of life, frequently moving in and out of acute care settings with little time to engage with longitudinal providers. As such, hospitalisations become an important 'touch point' during which to elicit patient goals and values around their care and engage PC.[15] At the provider level, raising awareness of guidelines and the role of PC in alleviating suffering is an important first step among hospitalists and cardiologists alike.[2] Additionally, interventions specifically aiming to enhance interprofessional and interprovider communication could help clarify roles and expectations around when and how to introduce PC to patients who traverse many care settings and providers.[16] For example, given the influence of advance care planning documentation on provider decisions in our study, documenting and communicating advance care planning can ensure that patient preferences are communicated across care settings.[13] Additionally, other system-based interventions such as decision support tools based on prediction models[17] may help identify patients who would benefit from PC, removing subjective assessments that may delay PC referral. Tools such as these have been developed to assist in decision-making for end-stage patients with HF who are being evaluated for destination therapies,[18] and could similarly be adapted for use for inpatients with HF in need of PC.

Limitations

Our study has limitations. First, the response rate was low, though this is comparable to other previously published multi-institutional surveys of hospitalists evaluating practice patterns and attitudes.[19] Second, as most respondents came from academic settings, our findings may not be generalisable to community settings. Third, while most participants in our study had access to specialty PC services, lack of access to PC is an important barrier to timely PC referral for patients with HF not addressed by our study.

CONCLUSIONS

Many patient and provider factors are highly influential in provider decisions around referring hospitalised patients with HF to PC, perhaps more than clinical measures alone. Better understanding of these factors are needed to inform interventions that improve access to PC for this vulnerable group.

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