

A Description of Patient and Provider Experience and Clinical Outcomes After Heart Failure Shared Medical Appointment

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Abstract

Background: Shared medical appointments (SMAs) are clinical visits in which several patients meet with 1 or more providers at the same time. **Objective:** To describe the outcomes of an interdisciplinary SMA for veterans recently discharged for heart failure (HF). **Methods:** A retrospective chart review for patients' readmission rates, survival, medication adherence, and medication-related problems. For qualitative outcomes, we performed semistructured interviews on 12 patients who had undergone HF SMAs and their respective caregivers focusing on care satisfaction, HF knowledge, disease self-care, medication reconciliation, and peer support. **Results:** The cohort comprised 70 patients—49% had left ventricular function <40% and 50% were prescribed >10 medications. Medication-related problems occurred in 60% of patients. Interviews revealed overall satisfaction with HF-SMA, but patients felt overwhelmed with HF instructions, perceived lack of peer support and self-efficacy, and feelings of hopelessness related to HF. **Conclusion:** Shared medical appointments are well-perceived. Medication problems and need for medication management are prevalent along with patient's lack of self-efficacy in HF care. Multiple HF-SMA visits may be needed to reinforce concepts, reduce confusion, and garner peer support.

Keywords

shared medical appointments, heart failure, medication adherence, interdisciplinary, patient interviews, provider interviews, patient care team

Introduction

Heart failure (HF) is a chronic, burdensome disease that has significant clinical and public health implications. It is a leading cause of cardiovascular disease morbidity and mortality worldwide, costing 1% to 2% of the total health-care budget in developed countries (1). In the United States, approximately 5.1 million Americans are diagnosed with HF and over 650 000 more new diagnoses occur every year (2). In 2009, 1 in 9 deaths in the United States cited HF as a contributing cause and half of Americans with HF die within 5 years of diagnosis (3). It is estimated that HF population will increase by 46% to over 8 million in 2030. Annual health care for HF is estimated to cost US\$32 billion and projected to cost US\$70 billion by 2030 (4). Given the rising costs and complex nature of HF care including polypharmacy, depression, comorbidities, and frailty of patients, targeted efforts to prevent deterioration of health status in HF, recurrence of HF hospitalizations, and the need for system

redesign of chronic care delivery such as shared medical appointments (SMAs) may be beneficial (5–8).

Group medical visits or SMAs are defined as visits in which several patients meet with 1 or more providers at the same time (9). Shared medical appointment should be

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distinguished from a “class” or educational based-interventions in which clinical monitoring of health status, medications, and case management occur in the former but not the latter. Shared medical appointments have been conducted across a large variety of institutions, mainly integrated health systems such as Kaiser Permanente, Harvard Vanguard, Cleveland Clinic, and the Veterans Affairs Health System due to its efficiency and potential for cost savings (10). Shared medical appointments have been utilized for a variety of medical conditions, such as diabetes, asthma, addiction, multiple sclerosis, macular degeneration, and hypertension (10–12). Heart failure is a chronic disease for which the SMA model may offer significant benefits, but there are few published reports regarding outcomes of SMA in patients with HF (11,12).

Various tailored interventions improved patient’s chronic disease control, and the most common intervention in HF management was patient education (13). Peer support, which can be defined as a way to give and receive help by a person who has similar experiences of a common condition or specific behavior, has improved outcomes in chronic illnesses such as diabetes (14). A recent study with patients having HF and telephonic peer support with optional group education sessions with a HF-trained nurse practitioner showed perceived benefit of peer support (15). Given the target intervened population of being military veterans, we expected that these patients with a common chronic illness, recent hospitalizations, and shared military experience would enhance social peer support in a group setting such as SMAs. Education interventions that promote skills for home monitoring can also improve self-care for HF and knowledge (10,16) and would be easy to provide in an SMA setting.

We propose that a nonphysician-based multidisciplinary SMAs for HF may be an efficient method to complement physician-based care by conducting disease management through providing patients with the appropriate resources, improvement of medication optimization, and promotion of behavioral change of self-care measures through group peer support.

Methods

Setting, Recruitment, and Sampling

The Providence Veterans Affairs Medical Center (VAMC) is an urban, academic VA Medical Center in Providence Rhode Island servicing Rhode Island, Southeastern Massachusetts and Cape Cod, and parts of Eastern Connecticut.

The institutional review board of Providence VAMC approved this project. A retrospective chart review was performed of all patients enrolled in the HF-SMA clinic from February 2012 through January 2014. These were patients recently hospitalized for decompensated HF and seen within 31 days ($n = 50$) or patients seen >31 days after admission or required more intensive outpatient HF care ($n = 20$). For patients hospitalized at Providence VA with a primary or

secondary diagnosis of HF, they were offered appointments to attend an interdisciplinary HF-SMA, usually within 1 week of contact. Of the 93 patients referred, approximately 10% of patients did not show for their scheduled appointment, 10% were admitted to skilled nursing facilities, and approximately 10% declined to attend the HF-SMA sessions.

Interviews

Patients. Semistructured interviews were conducted on patients from SMA sessions to elicit input about perceived facilitators and barriers to HF care, satisfaction with the program, and determine whether the HF-SMA helped the participants prevent hospitalization. Patients were eligible if they were recently seen within 4 weeks at the HF-SMA visit.

Providers. Semistructured interviews with primary care, cardiology providers and team members were conducted to understand the perceived advantages and obstacles in the implementation of the HF-SMA, as well as its future sustainability.

Heart Failure Shared Medical Appointment Visit and Data Collection—Quantitative Assessment

The HF-SMA visits occurred once weekly, colocated within the primary care clinics at the Providence VAMC (17). The HF-SMA groups were based on the Chronic Care Model Behavioral Interventions drawn from the Social Cognitive Theory (18).

Data was collected on demographics, medications, laboratory data, diagnoses, interventions, hospital utilization (emergency department, hospitalization) medication possession ratios (MPRs), and mortality. HF-related emergency room visits, defined as any signs or symptoms of HF such as shortness of breath, not admitted but diagnosed by the emergency room physician as an exacerbation of HF.

Semistructured Interviews of Patient and Provider

Several weeks after completing the HF-SMA visit, patients were contacted via telephone to attend a post-HF-SMA interview. A research assistant trained in the conduction of semistructured interview techniques and performed a face-to-face interview using 10 semistructured questions on subjects such as helpfulness of the groups and knowledge gained from the sessions and from other participants in the group. The interviewer used open-ended and follow-up questions to assess the facilitators and barriers to HF education and care. Patients were encouraged to bring their caregivers. The interview was recorded and all dialogue was transcribed verbatim.

Providers were contacted via telephone or e-mail to ask about their willingness to participate in an interview. A

research assistant preformed a face-to-face interview using 9 semistructured questions regarding the overall effectiveness of HF-SMA and to determine in what ways the HF-SMA program helped or did not help their patients avoid HF readmission. Participants had the option to be audio recorded. Participants who chose to have their interview audio recorded had their dialogue transcribed verbatim.

Data and Statistical Analysis, Chart Review, and Qualitative Data Analysis—Semistructured Interviews of Patient and Provider

Continuous variables were expressed as mean and standard deviations whereas discrete variables as percentages. All patients who were seen in the HF-SMA visit were included in the quantitative analysis. Patients were evaluated for 30-day readmission, 31- to 180-day readmission, and 180- to 365-day readmission rates, medication-related problems (17), and medication adherence. Medication adherence was measured with MPRs, calculated with the following formula: total days' supply of medication received divided by the total number of expected medication intake days for all HF and cardiovascular medications (19,20).

We used thematic-based methods to analyze our transcripts (21). A team of 4 researchers read through the transcripts several times to evaluate thematic patterns of interview answers. The research team convened several times and reviewed the transcripts for within-case and cross-case similarity of themes and reached conclusions based on consensus.

Results

For the quantitative assessment, the medical records of 70 patients were abstracted, of which 50 patients were recently discharged with HF and were seen on an average of 18.1 ± 6.9 days postdischarge after a hospital admission for HF. The remaining 20 outpatients with remote HF hospitalization were seen on an average of 133.0 ± 104.8 days after their last hospital admission for HF. The average age of our patients was 74.7 ± 11.6 years, 49% of the patients had a left ventricular ejection fraction less than 40% (average ejection fraction of $42.4\% \pm 14.8\%$), 33% had greater than 15 comorbidities, 77% of patients had 10 or more comorbidities, and 19% had more than 15 chronic medications. Baseline characteristics are described in Table 1.

The follow-up period for these was 380 person-days. The 50 patients had a 30-day readmission rate of 8% (facility 30-day HF readmission rate during that time period 23.3-27.8%), a 6-month readmission rate of 28%, and a 181- to 365-day readmission rate of 9%. (Table 2) Overall, the time to hospitalization for the 70 patients was 144.1 ± 107.4 days, and 30% of the HF-SMA group had emergency room visits for HF and 246.1 ± 216.1 mean days of survival (Table 2). Medication-related problems occurred in 75% of

Table 1. Baseline Demographics of HF SMA Participants.

Characteristics	N = 70
Age, years (mean \pm SD)	74.7 ± 11.6
Male, %	99
Race	
White, %	93
African American, %	6
Other, %	1
Active smokers, %	14.3
Length of stay (mean \pm SD, n = 50), days	5.0 ± 2.8
Days from discharge to SMA visit (mean \pm SD, n = 50)	40.6 ± 64.3
Patients seen in SMA group within 31 days discharge (n = 50), %	71.4
No. of comorbidities ^a (mean \pm SD)	13.8 ± 5.6
New York Heart Association classification at SMA visit, class II, %	34
New York Heart Association classification at SMA visit, class III, %	50
New York Heart Association classification at SMA visit, class IV, %	16
ACC/AHA heart failure classification, stage C, %	98
ACC/AHA heart failure classification, stage D, %	2
LVEF%, median or mean \pm SD	42.4 ± 14.8
EF \leq 40, %	49
Patient with a scale prior to HF-SMA, %	84
Patients with telehealth prior to HF-SMA ^b , %	7
Method to manage medications, vials, %	56
Method to manage medications, pill box, %	40
Method to manage medications, unknown, %	4
Manage medications themselves, %	76
Medication changes prior to admission or discharge, %	97
More than 15 comorbidities ^a , %	33
Diagnosis of depression, %	24
ACE inhibitor and/or ARB, %	80
Any β -blocker, %	86
Metolazone, %	3
Loop diuretic, %	94
Spironolactone, %	6
Hydralazine, %	6
Other heart failure medication (isosorbide dinitrate/hydralazine, digoxin), %	10
More than 15 chronic medications, %	19

Abbreviations: ACC/AHA, American College of Cardiology/American Heart Association; ACE/ARB, angiotensin-converting enzyme inhibitor/angiotensin receptor blocker; EF, ejection fraction; HF-SMA, heart failure shared medical appointment; LVEF, left ventricular ejection fraction; SD, standard deviation; SMA, shared medical appointment.

^aComorbidity is defined as any co-occurring condition that was diagnosed in the patients' record, such as diabetes, depression, atrial fibrillation and excluding noncurrent acute illness such as history of an upper respiratory illness or gastrointestinal virus.

^bTelehealth is a telephone-based home monitoring system to promote access to care and to monitor symptoms and obtain vitals at home.

patients seen in HF-SMA clinic (Table 3). Most of the medication-related problems were omissions (21% overall) and need for dosage up-titration (29% overall). The mean number of medication-related problems per person was 0.8 ± 1.1 . Medication adherence as indicated by MPRs was

Table 2. Results, Hospital Readmissions, Survival, and Miscellaneous.

Variables	Result
Readmitted within 30 days to Providence VA, %	6
Readmitted within 31-180 days, %	19
Readmitted 180-365 days, %	9
Patients received a scale at HF-SMA visit, %	21
If patient did not already have telehealth, HF-SMA order telehealth, %	19
HF emergency department visit, %	30
Survival days of those that were deceased (mean \pm SD), days	246.0 \pm 216.1
Mean days from discharge to first readmission for heart failure	144.1 \pm 107.4

Abbreviations: HF-SMA, heart failure shared medical appointment; SD, standard deviation.

Table 3. Medication-Related Problems and MPR.

Medication-Related Problems	Result
Omission, %	21
Unnecessary medication, %	11
Wrong medication, %	7
Inappropriate dosage, %	29
Patient experiencing adverse drug reaction, %	4
Drug-drug interaction, %	3
Cost issues, %	0
MPR of ACE/ARB (mean \pm SD)	85.7 \pm 22.9
MPR of BB (mean \pm SD)	86.9 \pm 21.4
MPR of spironolactone (mean \pm SD)	70.3 \pm 15.8

Abbreviations: ACE/ARB, angiotensin-converting enzyme inhibitor/angiotensin receptor blocker; BB, β -blockers; MPR, medication possession ratio; SD, standard deviation.

80% for ACE inhibitors or angiotensin II receptor blockers, 86% for β -blockers, and 70% for spironolactone.

Patient's Results—Patient's Semistructured Interview Themes

Of the 70 patients in the HF-SMA visit, 31 patients were invited for an interview, of which 12 patients consented to be interviewed.

Five themes emerged from the semistructured interviews: (1) overall satisfaction with the SMA experience in all 12 of the interviews. Overall, patients expressed enjoyment of the HF-SMA visit and reported that it helped them manage their condition. They did not have any recommendations to change the visits. Patients acknowledged an increase in knowledge and that they were satisfied with their clinical care and management, (2) patients feeling overwhelmed with information and the tasks need to manage HF, (3) patients perceived lack of social support with their illness. When they were asked the question about whether or not other members of the group helped them take care of their heart condition, patients' responses indicated they did not

learn from others and that peer interaction and support were minimal, (4) a lack of self-efficacy to perform self-care measures, that is, lack of confidence in their ability to perform self-care behaviors and the need for more than 1 session to learn HF self-care. Patients in the HF-SMA group appeared to have low motivation for self-care behavior change or lack of skills to make the changes, and (5) a low expectation of health and life expectancy. They seemed to feel a lack of hope and did not expect to feel better or improve their quality of life (Table 4).

Health-Care Provider's Results—Provider's Interview Themes

Of the 5 providers who were interviewed, 3 were primary care nurse clinical managers, 1 cardiologist, and 1 was the chief of primary care. Two interviews were not taped given provider preference.

Based on the provider interviews, the following obstacles to implementation of HF-SMA were found: (1) availability of resources (difficulty finding an appropriate classroom space with at least 2 computers—one for education and another for clinical management), (2) time coordination between HF-SMA team and primary care staff (coordination of HF-SMA team schedule with primary care staff for hand-off of patients), (3) no-shows of patients scheduled for HF-SMAs, and (4) reach (only a portion of eligible patients were enrolled). The following advantages were found after HF-SMA implementation: (1) colocation of HF-SMA in primary care clinical area (we found an appropriate size classroom that was located within the primary care clinics for easy handoffs of patients between services), (2) facilitated referral to telephone-based home monitoring system or telehealth (we were able to secure support from the VA telehealth providers to enroll patients after HF-SMA into telehealth), (3) scheduling flexibility (we were able to accommodate walk-in's because multiple patients can be seen at the same time), and (4) facilitated communication between providers of cardiology and primary care (this was facilitated by the physical colocation of the HF-SMA within primary care and the face-to-face handoffs of patients).

Four themes emerged from the semistructured provider interviews. (1) Overall satisfaction with the HF-SMA program. The first theme was present in all 5 of the interviews. Providers reported that the HF-SMA has helped them manage and care for their patients who have HF, (2) perception of effective communication regarding care management between the HF-SMA clinic and primary care providers, (3) perception that HF-SMA helped achieve proper medication reconciliation and titration, and (4) perception that HF-SMA helped provide education (Table 4).

Discussion

Our experience demonstrated that SMAs are feasible and well-perceived in a complex cohort of patients recently and

Table 4. Patient's and Provider's Interview Quotes.

Themes	Quotes
Patient's theme 1	<p>"I find it informational . . . different people have different ideas" and "It's organized and they had all of my information, all the other fellows information, so . . . I thought it was worth going to."</p> <p>"If I put on too much weight 2 or 3 pounds a day is enough weight to put on, . . . over 3 or 4 days, . . . that's time to get excited," and ". . . they talked about diet, low sodium, exercise, all the other things you're supposed to do if you have congestive HF . . ."</p> <p>"Everyone seems right on it and concerned and want to take care of this . . .," and ". . . she was wonderful . . . when I got all done, she had the card all filled out, because she had asked me about the medication I took in the very beginning . . ."</p>
Patient's theme 2	<p>"They seem concerned and they seemed like they want to help me out quite a bit, but to be perfectly honest, I didn't even know I was suffering any heart problems," "I don't know what really was going on . . . they checked my medicine, checked me, and everything seemed to be all right." And "he gave me paperwork on it . . . I couldn't understand it and I said, the heck with it . . ." Another patient stated, "I don't recall . . . I just know I've got so many things, I've got the fluid thing . . . it's a few new things thrown in, but they gave me so much stuff when I first got done with all of the additional hospital visits . . ."</p>
Patient's theme 3	<p>"No, I really don't know what happened to him . . . I didn't pay much attention to what they were doing to him . . ." and ". . . there was another patient there, but I sort of shut him out . . ." and ". . . whatever his problem is, it's not my problem."</p>
Patient's theme 4	<p>". . . I need somebody to cook for me . . . I need a sweetheart . . . I need somebody to care for and I need somebody to care for me . . .," and "Send a cook . . . I don't know how to cook!" Also, ". . . I just keep making the appointments, cause I'm really relying on them . . . the doctors seem to know." Patients also stated, "You know, I'm not a scientist, I'm not a doctor . . . I'm just an average Joe, but lot of stuff kinda goes over the head" and, "I'm not an expert . . . I'd have to sit in on quite a few of them before I could get a gist of what's actually happening and have an idea if I could change anything . . ."</p>
Patient's theme 5	<p>". . . it's a hopeless cause . . . in my situation." and "I live the hard life . . . if it's meant for me to die today or tomorrow I'm ready . . . and "I think I'm allowed to forget at my age . . ." and "the older you get, the more problems you're going to have with your body . . .," ". . . you got to expect that . . . that's how life is . . . if you have a problem with your body, what medicine to take to cure it . . . if I'm having heart trouble, are a hundred pills going to work to fix it?," ". . . all these pills that they're giving me, it's not going to help my heart."</p>
Provider's theme 1	<p>". . . has been a real help in that area because they follow the patients closely, they get to know them when they're admitted and we consider them the experts in the management of congestive HF." and ". . . it's a really useful way to make sure that somebody isn't back out on their own without good support, good understanding of what's going on . . . it acts as a really necessary bridge . . ."</p>
Provider's theme 2	<p>"When a nurse reports to me that the patient is having some symptoms, I communicate that to either the nurse, nurse practitioner, or the clinical pharmacist and everybody is pretty readily available to me and then we work together to make sure that the homecare nurse and the patients get any changes to their orders and any ongoing assessment." and "notes are very good at describing medication changes or recommendations, everything is listed in detail."</p>
Provider's theme 3	<p>". . . if somebody's going to come back in thirty days, it isn't so much that the process is just continuing, but I would also argue that a lot of times it's somebody coming out and not having had the meds titrated properly or they aren't taking them, they went back to what they were doing before they were admitted, and so to reinforce the new regimen, and make sure that it's correct, I think is really, on the medications where the value is . . ."</p> <p>"I also find that they've been very good giving the patients written instructions when they leave there, which is really important . . . when they call me and they have questions, they've got their written instructions and I can see what's been documented in the medical record and I can coach them through and make sure that they're following orders correctly."</p>
Provider's theme 4	<p>". . . physicians or myself don't have the time to be with the patient half an hour or forty minutes to explain everything. I find when someone comes in and sorts of sits and answers question more leisurely, I think that makes a difference . . ." and ". . . the education . . . I think that's the other part that is beneficial to patients too . . . they're about to leave the hospital and the nurse is saying, "restrict your fluid to this much a day, don't eat any salt" . . . versus somebody coming in . . . saying, . . . this is what this amount of fluid looks like, these are strategies toward watching your fluid intake, these are strategies towards watching the salt in your diet . . . education . . . is an important aspect . . ."</p>

remotely hospitalized with HF, with multiple comorbidities and medication burden. Patients were able to receive a general clinical visit focused on HF symptoms, vitals, leg edema, and didactic session and met with up to 3 different health-care providers at once. Medication problems and need for medication change or dose titration are a prevailing

theme along with patient's lack of self-efficacy in HF care. Heart failure shared medical appointments are a result of cross collaboration between preexisting staff from cardiology and primary care. More importantly, there is leadership support from both cardiology and primary care to ensure its future sustainability.

As the burden of HF prevalence grows (4), there is an increase in the number of patients but relative dearth of HF providers. Shared medical appointments, where multiple patients can be seen at the same time by a nonphysician team after hospital discharge overcoming the scheduling hurdle, can be appealing. SMA, while well known in integrated health settings, is still an unknown intervention—outside of diabetes and nascent in many clinical settings such as those that care for complex and severely ill patients. Patients with HF have much higher acute mortality and functional impairment, and it is important that HF-SMAs are developed with a multidisciplinary care team. To our knowledge, this is the first mixed-methods study evaluating the perceptions of HF patients after attending HF-SMA and the obstacles that HF patients faced after hospital discharge. Although qualitative interviews revealed high patient satisfaction with the HF-SMA groups, patients were overwhelmed with the burden of chronic illness as evidenced by their perceived lack of social support, significant confusion regarding their disease process, poor self-efficacy, and sense of hopelessness. These interviews also revealed that most patients need more than 1 SMA session to be comfortable with HF self-care. Another important finding from our study is the high frequency of medication-related problems. Our findings of high medication burden and high rate of medication-related problems (75%) reinforced the importance of having a pharmacist as part of the intervention. A recent meta-analysis found that medication therapy management interventions reduced the odds of hospitalizations due to HF by 45% (22). Our patients had an average of 11.7 ± 4.9 chronic disease medications prior to enrollment in our HF-SMA, and 75% had at least 1 medication-related problem at the HF-SMA visit. This is similar to the study by Gastelurrutia et al, which found an average of 1.5 ± 1.4 medication-related problems per patient for HF patients (23). Multidisciplinary group visits included a discussion of the medication-related problems face-to-face with the entire health-care team during our group sessions, making the visits time efficient and streamlined. Most of the medication problems were related to omission (21%) or an inappropriate dosage (29%). Considering that our adherence rates through MPRs were approximately 80% or higher for the HF medications, we are well above the national rates of approximately 50% adherence with chronic illness medications (24).

The interviews also revealed significant opportunities for improvement. Unlike our prior DM SMA studies which fostered peer support, we found little evidence of increased peer support among our HF-SMA patients. This may be due to patients increased illnesses and recent hospitalizations and patients feeling hopeless with their disease and not feeling physically well overall, therefore less likely to participate in group discussions. Consequently, lack of participation may reduce opportunities to communicate with other patients in the room and bond with them. In addition, this pilot study only had a single session and this may cause patients to be less likely to build relationships with each other. Also, the

assessed sample size may not have been large enough to provide a representation of patients with HF. In addition, patients in the HF-SMA group had less confidence in their ability to perform self-care behaviors and felt an overwhelming need for a caregiver if they did not have one. Many patients had a decreased expectation of improvement in quality of life or life course despite a positive delivery of information. Further, there was a high degree of hopelessness, which may indicate depression or risk of depression of our participants. Next, patients reported confusion regarding their HF medications and disease process. Our findings suggest that a more longitudinal approach with peer-to-peer learning and attention to depression should be incorporated to meet the needs and preferences of the patients.

Although formal comparisons cannot be made, it is helpful to point out that the 30-day readmission rates of patients seen by our HF-SMA group was 6%, which is intriguing relative to the 30-day readmission rates of 22.8% to 26.8% in 2012 to 2013 at Providence VAMC and the 24.4% of the national Medicare rates of HF hospital readmission rates (20,25).

Colocated services for patients with other concomitant illnesses such as mental illness have shown improvement in cardiovascular risk and an increase in visits to their primary care physician (26). Successful care management programs utilize multiple different approaches to reduce hospital admissions (27). We chose to place the HF-SMA groups in the primary care area of the hospital to ensure good communication with the primary care providers and HF-SMA staff.

Some limitations were that this was an observational study without a comparator group, however, it is useful to test for feasibility and obtain user perceptions and satisfaction. The population was heterogenous with regard to recently hospitalized patients and stable outpatients, but this is likely what would happen in standard clinical practice. Finally, patients who were less mobile and receiving end-of-life care at home may not have been able to attend these sessions.

Shared medical appointments after HF hospitalization are feasible and well-perceived. Medication problems and need for medication change or dose titration is a prevailing theme along with patient's lack of self-efficacy in HF care. Although there were system obstacles to overcome, the advantages were many after HF-SMA implementation. Heart failure shared medical appointments can be a patient-centered method of care delivery redesign to improve self-management skills and medication therapy management after HF hospitalization. However, in order for patients to adopt self-care measures, self-efficacy, and obtain peer support, they may need multiple HF-SMA visits to reinforce concepts, reduce confusion, and garner peer support.

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References

- Berry C, Murdoch DR, McMurray JJ. Economics of chronic heart failure. *Eur J Heart fail.* 2001;3:283-91.
- Yancy CW, Jessup M, Bozkurt B, Butler J, Casey DE Jr, Drazner MH, et al; Writing Committee Members. 2013 ACCF/AHA guideline for the management of heart failure: a report of the American College of Cardiology Foundation/American Heart Association Task Force on practice guidelines. *Circulation.* 2013;128:e240-e319.
- Go AS, Mozaffarian D, Roger VL, Benjamin EJ, Berry JD, Borden WB, et al; American Heart Association Statistics C, Stroke Statistics S. Heart disease and stroke statistics—2013 update: a report from the American Heart Association. *Circulation.* 2013;127: e6-245.
- Heidenreich PA, Trogdon JG, Khavjou OA, Butler J, Dracup K, Ezekowitz MD, et al; American Heart Association Advocacy Coordinating Committee; Stroke Council; Council on Cardiovascular Radiology and Intervention; Council on Clinical Cardiology; Council on Epidemiology and Prevention; Council on Arteriosclerosis, Thrombosis and Vascular Biology; Council on Cardiopulmonary, Critical Care, Perioperative and Resuscitation; Council on Cardiovascular Nursing; Council on the Kidney in Cardiovascular Disease; Council on Cardiovascular Surgery and Anesthesia, and Interdisciplinary Council on Quality of Care and Outcomes Research. Forecasting the future of cardiovascular disease in the United States: a policy statement from the American Heart Association. *Circulation.* 2011;123:933-44.
- Cheng JW, Cooke-ariel H. Pharmacists' role in the care of patients with heart failure: review and future evolution. *J Manag Care Pharm.* 2014;20:206-13.
- Eggink RN, Lenderink AW, Widdershoven JW, Van Den Bemt PM. The effect of a clinical pharmacist discharge service on medication discrepancies in patients with heart failure. *Pharm World Sci.* 2010;32:759-66.
- López Cabezas C, Falces Salvador C, Cubí Quadrada D, Arnau Bartés A, Ylla Boré M, Muro Perea N, et al. Randomized clinical trial of a postdischarge pharmaceutical care program vs regular follow-up in patients with heart failure [in English, Spanish]. *Farm Hosp.* 2006;30:328-42.
- Gattis WA, Hasselblad V, Whellan DJ, O'Connor CM. Reduction in heart failure events by the addition of a clinical pharmacist to the heart failure management team: results of the Pharmacist in Heart Failure Assessment Recommendation and Monitoring (PHARM) Study. *Arch Intern Med.* 1999;159: 1939-45.
- Weinger K. Group medical appointments in diabetes care: is there a future? *Diabetes Spectr.* 2003;16:104-7.
- Taveira TH, Dooley AG, Cohen LB, Khatana SA, Wu WC. Pharmacist-led group medical appointments for the management of type 2 diabetes with comorbid depression in older adults. *Ann Pharmacother.* 2011;45:1346-55.
- Edelman DA. Shared medical appointments for chronic medical conditions a systematic review: Evidence-based synthesis program. 2012. <http://www.ncbi.nlm.nih.gov/books/NBK99785/pdf/TOC.pdf>. Accessed May 30, 2017.
- Cleveland Clinic Website. Shared Medical Appointments. 2016. <https://my.clevelandclinic.org/patients-visitors/prepare-appointment/shared-medical-appointments>. Accessed May 30, 2017.
- Weingarten SR, Henning JM, Badamgarav E, Knight K, Hasselblad V, Gano A Jr, et al. Interventions used in disease management programmes for patients with chronic illness— which ones work? Meta-analysis of published reports. *Brit Med J.* 2002;325:925.
- Dale JR, Williams SM, Bowyer V. What is the effect of peer support on diabetes outcomes in adults? A systematic review. *Diabet Med.* 2012;29:1361-77.
- Lockhart E, Foreman J, Mase R, Heisler M. Heart failure patients' experiences of a self-management peer support program: a qualitative study. *Heart Lung.* 2014;43:292-8.
- Dickson VV, Melkus GD, Katz S, Levine-Wong A, Dillworth J, Cleland CM, et al. Building skill in heart failure self-care among community dwelling older adults: results of a pilot study. *Patient Educ Couns.* 2014;96:188-96.
- American Pharmacists Association; National Association of Chain Drug Stores Foundation. Medication therapy management in pharmacy practice: core elements of an MTM service model (version 2.0). *J Am Pharm Assoc (2003).* 2008;48: 341-53.
- Bandura A. Health promotion by social cognitive means. *Health Educ Behav.* 2004;31:143-64.
- Sclar DA, Chin A, Skaer TL, Okamoto MP, Nakahiro RK, Gill MA. Effect of health education in promoting prescription refill compliance among patients with hypertension. *Clin Ther.* 1991;13:489-95.
- Krumholz HM, Merrill AR, Schone EM, Schreiner GC, Chen J, Bradley EH, et al. Patterns of hospital performance in acute myocardial infarction and heart failure 30-day mortality and readmission. *Circ Cardiovasc Qual Outcomes.* 2009;2(5): 407-13.
- Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol.* 2006;3:77-101.
- Viswanathan M, Kahwati LC, Golin CE, Blalock SJ, Coker-Schwimmer E, Posey R, et al. Medication therapy management interventions in outpatient settings: a systematic review and

- meta-analysis. *J Amer Med Assoc Intern Med.* 2015;175:76-87.
23. Gastelurrutia P, Benrimoj SI, Espejo J, Tuneu L, Manges MA, Bayes-Genis A. Negative clinical outcomes associated with drug-related problems in heart failure (HF) outpatients: impact of a pharmacist in a multidisciplinary HF clinic. *J Card Fail.* 2011;17:217-23.
 24. Sabaté E, ed. *Adherence to Long-Term Therapies: Evidence for Action.* Geneva, Switzerland: World Health Organization; 2003. <http://whqlibdoc.who.int/publications/2003/9241545992.pdf>. Accessed May 30, 2017.
 25. Hospital Compare Quality of Care Profile: The official US Government Site for Medicare. 2014. [http://www.medicare.gov/hospitalcompare/details.html?msrCd=prnt3grp1&ID=41005F&stCd=RI&stName=RHODE ISLAND](http://www.medicare.gov/hospitalcompare/details.html?msrCd=prnt3grp1&ID=41005F&stCd=RI&stName=RHODE%20ISLAND). Accessed May 30, 2017.
 26. Pirraglia PA, Rowland E, Wu WC, Friedmann PD, O'Toole TP, Cohen LB, et al. Benefits of a primary care clinic co-located and integrated in a mental health setting for veterans with serious mental illness. *Prev Chronic Dis.* 2012;9:E51
 27. Brown RS, Peikes D, Peterson G, Schore J, Razafindrakoto CM. Six features of Medicare coordinated care demonstration programs that cut hospital admissions of high-risk patients. *Health Aff (Millwood).* 2012;31:1156-66.

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