

Management of HEART FAILURE in a Rural Community

In rural Western New York, hospitalizations of patients over 65 years of age with heart failure (HF) exceed state and national levels, demonstrating a need for improved management of older adult HF patients in rural communities. The aim of this project was to implement an evidence-based practice (EBP) guideline for HF management at a certified home health agency (CHHA). The objective was to increase CHHA interdisciplinary staff knowledge and to implement an EBP HF guideline to improve care and reduce hospital readmission rates. This quality improvement project used a quantitative descriptive study design, with a convenience sample of 60 CHHA interdisciplinary staff. A series of four 30-minute educational sessions were provided to the staff regarding the EBP HF guideline. Data were collected using pre- and posteducation testing to assess knowledge. A 3-month evaluation was completed to assess implementation along with readmission data pre- and postimplementation. Of the 60 interdisciplinary staff who received the EBP HF guideline education, 17 participants completed both the pretest and posttest. Results demonstrated a statistically significant increase in knowledge from the pretest (Md = 60.00%) to the posttest (Md = 80.00%) ($p = .001$). In the 3-month follow-up survey, 66% of the staff reported using the EBP HF guideline on “most” or “all” older adult HF patients. The organization had a 4.32% reduction in all-cause 30-day rehospitalizations from 11.39% to 7.07% following the implementation of the EBP HF guideline.

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Approximately 5.7 million people in the United States have heart failure (HF), costing the nation an estimated \$30.7 billion each year (U.S. Department of Health and Human Services, 2016). It is projected that by 2030, more than 8 million Americans will have a diagnosis of HF and the total cost will increase almost 127% to \$69.7 billion (American Heart Association, 2015). Estimates suggest the total lifetime cost of HF to be \$109,541 per person, and the majority of costs are accrued during HF hospitalizations, which average \$83,980 per person (Dunlay et al., 2011). The average cost for a single HF hospital stay is \$10,900 (Pfunter et al., 2013). HF hospitalization rates nationally are 14.8 per 1,000 Medicare beneficiaries, and in New York State, HF hospitalization rates are 15.4 per 1,000 MB. In the rural region where this project was conducted, HF hospitalizations were above state and national levels (U.S. Department of Health and Human Services, 2015). According to the Visiting Nurse Associations of America (VNAA), more than 80% of home healthcare patients have three or more chronic conditions with HF being one of those conditions (VNAA Blueprint for Excellence, 2015). The presence of comorbid conditions with HF places this population at higher risk for hospitalization. In a cross-sectional study of 122,630 older adult (>65 years old) patients with HF, the prevalence of comorbidities was over 95% (Braunstein et al., 2003). Management of chronic conditions such as HF requires innovative strategies to address the issue of hospital readmissions.

Problem and Population of Interest

There is a need for improved management of older adult HF patients in rural communities to reduce acute care hospitalizations. The population of interest was 60 interdisciplinary staff from a certified home health agency (CHHA) that served four rural counties in Western New York. The CHHA employs over 60 direct patient care staff including registered nurses (RN) and licensed practice nurses (LPN), physical therapists (PT), PT assistants, occupational

therapists (OT), OT assistants, speech therapists, registered dietitians, and social workers, who are involved in the management of older adult HF patients.

Literature Review

There is a unique opportunity to provide the majority of HF education in the home. The average length of stay in home healthcare for HF is 44 days compared with 3 to 5 days in a hospital (Madigan, 2008). Fergenbaum et al. (2015) performed a systematic review and cost-effectiveness analysis by comparing the management of HF at home versus usual care. Their findings showed that quality of life was improved with care provided in the home, and there was a cost savings of \$10,665 per patient, decreased mortality, and a reduction in hospitalizations.

Flynn (2012) conducted a quality improvement project that studied the effect of implementing an evidence-based HF bundle to provide transition from the hospital to the home care setting. The guideline included patient assessment, patient education, and accurate medication reconciliation. Outcomes of this project included a reduction of 30-day hospital readmission rates for HF patients from 37.5% to 30%. A systematic review of disease management programs for HF completed by McAlister et al. (2001) found that HF disease management programs with emphasis on a multidisciplinary team approach reduced hospitalizations and appeared to reduce costs. Furthermore, research indicates a need for highly knowledgeable home care teams to implement best practice recommendations and improve care (Delaney et al., 2011; Rosa, 2008).

Delaney et al. (2011) conducted a study using a cross-sectional survey consisting of 94 home care nurses from four agencies. Results of this study included a 78.9% knowledge level of overall HF education principles. Nurses requested further information on all HF topics addressed in the survey as well as on psychosocial issues, research evidence, and more information from other healthcare providers. Findings from this study suggested that home care nurses were not sufficiently knowledgeable on EBP education

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topics for managing HF. There is a lack of current literature regarding HF management knowledge of clinicians working in the home care setting including nurses and other healthcare disciplines. Furthermore, Albert et al. (2002) suggested there was a need for future studies to address knowledge deficits between healthcare disciplines “because HF is best managed by a multidisciplinary team” (p. 111).

Schuetz et al. (2010) reviewed the benefits of an interdisciplinary team training approach to provide improved interpersonal professional relationships, understanding of different roles, and increased levels of job satisfaction and teamwork. They suggested “expanding collaborative education is key to the creation of efficiently functioning teams that generate clinical benefits” (p. 1480). With the growing emphasis on the use of EBP in home care, there was a need for CHHA to implement established EBP guidelines and educate the interdisciplinary staff collaboratively to improve the management of older adult HF patients in rural settings and to reduce acute care hospital readmission rates.

Purpose and Project Aim

The purpose of this project was to implement an EBP guideline for HF management. This project aimed to achieve improved management of older adult HF patients using an EBP guideline in a rural community resulting in reduced hospital readmissions.

Methodology

A quantitative descriptive design was used with a convenience sample of 60 CHHA interdisciplinary staff. The guideline selected for implementation at the CHHA was based on the VNAA Blueprint for Excellence due to the evidence-based detailed recommendations for management of HF patients in the home care setting. A series of four 30-minute education sessions were provided to the CHHA interdisciplinary team during regularly scheduled

staff meetings to enhance overall knowledge of the EBP HF guideline. The educational intervention was designed specifically for the CHHA team caring for HF patients in rural communities. Pre- and posteducation testing was used to assess CHHA team knowledge relating to HF management and the EBP guideline. A 3-month follow-up survey was conducted for participants to self-report their usage of the EBP guideline following implementation of the program. HF readmission rate data were collected before and after the intervention using the organization’s quality metrics. Statistical analysis was conducted using IBM SPSS Statistics Version 24 (Armonk, NY: IBM Corporation).

Sample and Recruitment

The educational sessions were deemed mandatory by the CHHA administration to update interdisciplinary staff on the EBP guideline for HF management. Participation in the data collection to assess knowledge and change in practice was voluntary. The pretest and posttest contained the same knowledge questions in a different order to reduce participants’ ability to memorize questions. The completion and submission of the pretest indicated implied consent to participate in this quality improvement project. The participants chose their code to match on the pretest and posttest; therefore, the primary investigator had no knowledge of who participated and who did not. Institutional review board approval was obtained from the college where the researcher was enrolled and a letter of support was obtained from President and CEO of the CHHA. Internal stakeholders and administrators provided support for this project.

Results

Sixty interdisciplinary CHHA staff received EBP HF guideline education. Both the pretest and posttest needed to be completed to be included in the final data analysis. The final sample size was 17 participants who completed both the pretest and posttest; this included 7 nursing staff (RN and LPN) and 10 nonnursing staff members. On average, participants attended 3.4 sessions with 17.6% attending 2 sessions, 29.4% attending 3 sessions, and 52.9% attending all 4 sessions.

Knowledge Scores

Pretest and posttest scores were assessed for nursing, nonnursing, and total participants as shown in Table 1. The Wilcoxon signed ranks test

Table 1. Average Pretest and Posttest Scores

	Average Pretest Score (%)	Average Posttest Score (%)
Nursing	56.24	82.93
Nonnursing	59.25	75.34
All staff	57.3	78.4

was used because of the relatively small sample size, and meaningful information was gathered by comparing median test results rather than means. The results of the Wilcoxon signed ranks test indicated that the 17 interdisciplinary staff members who took part in the educational intervention significantly increased their median knowledge levels from pretest (Md = 60.00%) to posttest (Md = 80.00%) ($p = .001$). The median of differences between the percentage correct on the pretest and the percentage correct on the posttest was compared with a significance level of 0.05. Subscale differences between nursing and nonnursing groups were not meaningful because of the small sample size.

Guideline Compliance

A 3-month follow-up survey was given to evaluate usage of the EBP HF guideline. There was a 65% survey response rate, and 60% of the participants reported using the EBP HF guideline with “most patients” or “all patients.” Among these respondents, 7.5% reported that they “never” or with “few patients” used certain components of the guideline, including the use of educational tools, working with patients and families to address barriers to medication adherence, or to request appropriate referral for a registered dietician.

Organizational stakeholders used an individual chart review to assess guideline compliance, as shown in Table 2. Guideline usage in documentation occurred for 100% of HF patients, whereas 100% of start-of-care visits were conducted within the first 24 hours of hospital discharge. Areas requiring increased compliance included the second RN visit within 24 hours of start of care, frontloading visits with appropriate visit frequency, use of the HF education booklet, and telehealth referral.

30-Day Hospital Readmission Outcomes

Three months following implementation of the EBP HF guideline, 30-day hospital readmission rates were assessed. Table 3 shows the HF 30-day hospital readmission rates for November 2015 through January 2016 compared with November 2016 through January 2017.

The total number of HF patients in the 3-month cumulative report did not match the individual month reports because the organization’s metrics were not capturing all HF patients because they were reporting rehospitalization for any cause,

Table 2. Guideline Compliance

Guideline Compliance	Correct Action Documented (%)
EBP HF guideline used	100%
Start of care (SOC) with 24 hours of hospital discharge	100%
Nursing order frequency correct	71%
2nd RN visit completed with 24 hours of SOC	42%
Physical therapy (PT) referred	92%
PT order frequency correct	70%
Occupational therapy (OT) referred	92%
OT order frequency correct	70%
Telehealth referred	81%
Evidence that HF education booklet used	71%

Note. EBP = evidence-based practice; HF = heart failure.

not HF specifically. Data from individual chart reviews following the implementation of the EBP HF guideline showed 38 HF patients were managed by the CHHA in November, December, and January 2016–2017 following the implementation of the guideline, and only four returned due to HF within 30 days. In addition to HF readmission rates, all-cause 30-day rehospitalization data were collected to include all patients with HF and other comorbid conditions served by the CHHA, as seen in Table 4.

Discussion of the Findings

The statistically significant increase in postknowledge scores suggests the education sessions were beneficial to the interdisciplinary staff. The pretest median score of 60% indicated the staff was not highly knowledgeable regarding HF education principles and the EBP guideline recommendations. The educational sessions were important to inform the staff of current EBP recommendations for the management of HF patients in the home care setting. Having a knowledgeable interdisciplinary staff provided a solid foundation to assist in successful implementation of the guideline into clinical practice.

Table 3. 30-Day HF Readmission Rates for Older Adult Patients

	Preintervention 2015–2016			Postintervention 2016–2017		
	Percentage Readmitted	Patients Readmitted to the Hospital	Total HF Cases	Percentage Readmitted	Patients Readmitted to the Hospital	Total HF Cases
November	14.29%	1	7	27.27%	3	11
December	20.0%	1	5	0%	0	5
January	9.09%	1	11	25%	1	4
Three-month cumulative	13.04	3	23	29.17%	7	24 ^a

Note. HF = heart failure.

^aCumulative report did not equal individual month reports

The implementation of the EBP HF guideline was successful because of its integration into the electronic health record and the interdisciplinary staff training regarding use of the guideline and education principles. In the 3-month follow-up survey, the majority of respondents (60%) reported using the guideline with most or all HF patients. However, assessment of compliance through individual chart reviews demonstrated the staff were using the guideline on all HF patients. Areas for improved compliance included increased use of PT/OT disciplines and increased visit frequency to meet guideline recommendations for frontloading of visits.

Subscale differences between nursing and non-nursing providers were not meaningful because of the small sample size; however, the overall increase in knowledge from pretest to posttest indicated that providing education to the entire staff using an interdisciplinary approach was effective in increasing knowledge levels. In healthcare, disciplines are often provided educational opportunities within the silos of their profession. The interdisciplinary education sessions provided an opportunity for different disciplines to be educated as a team on the same content with same patient outcome goals. This approach was cost-saving for the CHHA.

The presence of multiple comorbidities made it difficult to generate accurate HF-specific readmission data. Therefore, in addition to HF readmission rates, it was important to assess all-cause 30-day rehospitalization data to include all patients with HF and other comorbid conditions served by the CHHA, as seen in Table 4. For the organization, that was a 4.32% reduction in rehospitalization. The average daily census during those time periods increased 10.8%, and despite the increase in number of patients, the all-cause 30-day rehospitalization rate decreased. Considering the average cost per HF hospital stay is \$10,900, reducing the 30-day rehospitalization by 4.32% potentially prevented rehospitalizations for 15 patients compared with the year before; this was a potential cost savings of \$163,500 of healthcare expenditures.

The use of the interdisciplinary EBP guideline improved the outcomes for older adult patients by reducing hospital readmissions. The reduction in “all-cause” 30-day rehospitalizations was a positive outcome considering the average daily census increased postintervention. Although it would have been ideal to assess the true impact of the EBP HF guideline on HF patients specifically, the CHHA did consider the overall reduction in all-cause hospital readmissions an improved clinical outcome. The organization had been making an effort to develop practices that were based in evidence, and the EBP HF guideline with the educational series supported that initiative. Given the reduction in readmission rates because of the implementation of this guideline, the organization may benefit from the addition of other EBP guidelines to address other costly chronic conditions in a similar way.

Table 4. All-Cause 30-Day Rehospitalization Rates

	Preintervention 2015–2016		Postintervention 2016–2017	
	11.39%	Count 37 Cases 323	7.07%	Count 25 Cases 358
All-cause 30 day Rehospitalization				

Limitations

Limitations of this quality improvement project included the small sample size. This study should be replicated with a larger sample size. To maintain anonymity of subjects, it was not possible to ask participants their discipline; this may have provided useful information regarding knowledge differences between each discipline. It was also difficult to account for the differences in staff self-reported usage of the guideline and the actual use of the guideline in the EHR, due to limitations of the 3-month follow-up survey. Once the guideline was selected for the HF patient at the start of care, the guideline was embedded into the chart so the clinicians were using the guideline; however, they may not have been doing so intentionally. The presence of multiple comorbidities commonly seen with HF made it difficult to assess the impact of the guideline to reduce hospital readmissions for HF specifically. The assessment of the impact of HF guideline implementation was limited because of the short time frame provided for the project, ongoing organizational assessment and evaluation will provide additional data regarding the outcomes of implementing this guideline.

Implications for Practice

This project supported that home healthcare teams need to improve their knowledge of EBP guidelines for the management of HF. Also, this project supported the benefit of an interdisciplinary staff approach when providing EBP HF management education. It is important that the CHHA staff is aware that every patient with a HF diagnosis needs to be managed under the HF guideline and receive comprehensive visits, education, and transitional care planning. Ongoing organizational assessment and evaluation of the guideline is needed with appropriate interventions to maintain a knowledgeable staff and assess the long-term impact of the guideline. In addition, this project identified an organizational need for improved measurement of diagnosis-specific outcomes. The significance of implementing the EBP HF guidelines into practice was evident from the outcomes of improved readmission rates. This project supported using other EBP guidelines for the management of other conditions, such as diabetes, depression, or joint replacements.

Areas for Future Research

Ongoing studies should include patient and caregiver knowledge of HF self-management skills as taught by CHHA staff under the EBP HF guideline. Patient and caregiver perspectives for those receiving care under the EBP guideline would be beneficial to assess impact on quality of life and satisfaction. In addition, the long-term impact of the guideline needs to be assessed. Development of improved quality metrics would assist in generating diagnosis-specific outcomes that would be beneficial for evaluating the EBP HF guideline and assist in implementing and evaluating future EBP guidelines at the organization. This quality improvement project should be replicated at a larger CHHA with a larger HF population to provide more evidence regarding the outcomes of implementing the EBP HF guideline.

Conclusion

The implementation of the EBP HF guideline and the education of the interdisciplinary staff improved the management of older adult patients living in a rural community by decreasing rehospitalization rates. The educational series was a successful intervention to increase knowledge of interdisciplinary CHHA staff on the EBP HF guidelines. This quality improvement project met the organization's need for this guideline to be translated into clinical practice and documentation. ■

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REFERENCES

- Albert, N. M., Collier, S., Sumodi, V., Wilkinson, S., Hammel, J. P., Vopat, L., ..., Bittel, B. (2002). Issues in cardiovascular nursing: Nurses' knowledge of HF education principles. *Heart & Lung*, 31, 102-112.

- American Heart Association. (2015) Heart disease and stroke statistics—2015 update: A report from the American Heart Association. *Circulation*, 131(4), e29. doi:10.1161/CIR.0000000000000152
- Braunstein, J. B., Anderson, G. F., Gerstenblith, G., Weller, W., Niefeld, M., Herbert, R., & Wu, A. W. (2003). Noncardiac comorbidity increases preventable hospitalizations and mortality among Medicare beneficiaries with chronic heart failure. *Journal of the American College of Cardiology*, 42(7), 1226-1233.
- Delaney, C., Apostolidis, B., Lachapelle, L., & Fortinsky, R. (2011). Home care nurses' knowledge of evidence-based education topics for management of heart failure. *Heart & Lung*, 40(4), 285-292. doi:10.1016/j.hrtlng.2010.12.005
- Dunlay, S., Shah, N., Shi, Q., Morlan, B., Vanhouten, H., Hall Long, K., & Roger, V. L. (2011). Lifetime costs of medical care after HF diagnosis. *Circulation: Cardiovascular Quality & Outcomes*, 4(1), 68-75. doi:10.1161/CIRCOUTCOMES.110.957225
- Fergenbaum, J., Birmingham, S., Krahn, M., Alter, D., & Demers, C. (2015). Care in the home for the management of chronic HF: Systemic review and cost-effectiveness analysis. *Journal of Cardiovascular Nursing*, 30(4 Suppl. 1), S44-S51. doi:10.1097/JCN.0000000000000235
- Flynn, D. L. (2012). *Transitioning from hospital to home: An evidence based approach in HF patients* (Doctoral dissertation). Retrieved from CINAHL Complete, EBSCOhost.
- Madigan, E. A. (2008). People with heart failure and home health care resource use and outcomes. *Journal of Nursing & Healthcare of Chronic Illnesses*, 17(7B), 253-259.
- McAlister, F. A., Lawson, F. M., Teo, K. K., & Armstrong, P. W. (2001). A systematic review of randomized trials of disease management programs in heart failure. *American Journal of Medicine*, 110(5), 378-384.
- Pfunter, A., Wier, L. M., & Steiner, C. (2013). Cost for hospital stays in the United States, 2011. *Statistical Brief #168. Agency for Healthcare Research and Quality*. Rockville, MD. Retrieved from <http://www.hcup-us.ahrq.gov/reports/statbriefs/sb168-Hospital-Costs-United-States-2011.pdf>
- Rosa, M. A. (2008). How a heart failure home care disease management program makes a difference. *Home Healthcare Nurse*, 26(8), 483-490.
- Schuetz, B., Mann, E., & Everett, W. (2010). Educating health professionals collaboratively for team-based primary care. *Health Affairs*, 29(8), 1476-1480. doi:10.1377/hlthaff.2010.0052
- U.S. Department of Health and Human Services, National Center for Disease Control and Prevention, & Division for Heart Disease and Stroke Prevention. (2015). *Interactive atlas of heart disease and stroke*. Retrieved from <http://nccd.cdc.gov/DHDSPAtlas>
- U.S. Department of Health and Human Services, National Center for Chronic Disease Prevention and Health Promotion, & Division for Heart Disease and Stroke Prevention. (2016). *HF fact sheet*. Retrieved from http://www.cdc.gov/DHDSP/data_statistics/fact_sheets/fs_heart_failure.htm
- VNA Blueprints for Excellence. (2015). *Clinical conditions and symptom management: HF*. Retrieved from http://0104.nccdn.net/1_5/3ac/28b/021/HF-Blueprint-Guide-Final.pdf

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