

# The Effect Of Home Health Care In Reducing Hospital Readmission For Individuals With Heart Failure: A Systematic Review



Diana Mikula, SPT

Natalia Ochalski, SPT

Dr. Tracey Collins PT, PhD, MBA, Board-Certified Geriatric Clinical Specialist

# Overview



- Background
- Purpose
- Methods
- PRISMA
- Minors Scale
- Results
- Conclusion
- Limitations
- Future Research
- Clinical Relevance



# Heart Failure Overview

- Heart failure (HF) is a term to describe a heart that cannot keep up with its workload → body does not get oxygen it needs<sup>1</sup>
- Chronic, progressive<sup>1</sup>
- Leads to multiple etiologies
  - CAD, HTN, metabolic disorders<sup>2</sup>
- Requires long-term evaluation and medical care due to the progressive nature<sup>2</sup>



# Heart Failure and Hospital Readmission

- Readmittance of patients hospitalized with heart failure (HF) within 30 days reach up to 25%<sup>2</sup>
  - Highest risk within the first 2-5 days after discharge<sup>2</sup>
  - Prevalence of HF will increase to 46% by 2030<sup>2</sup>
- Rehospitalization is the most common outcome assessed in literature<sup>2</sup>

# Importance of PT on Treatment Team



- Specialized, trained professionals ought to manage and monitor signs and symptoms;<sup>2</sup>
  - To monitor activity due to functional limitations<sup>2</sup>
  - To provide appropriate self-management training<sup>2</sup>
- American Heart Association (AHA) recommendations:
  - Regular physical activity<sup>2</sup>
  - PT referral<sup>2</sup>
- Transitional care programs usually only involve nurses and physicians<sup>2</sup>

# Physical Therapy and Heart Failure



- Therapeutic goal of HF<sup>3</sup>
  - Avoid symptom aggravation
  - QOL
  - Decrease cost of health care
- Physical therapy goals:
  - Monitor and educate signs and symptoms of worsening HF<sup>2</sup>
  - Provide AHA recommended activity tolerance<sup>2</sup>
  - Provide functional training to achieve therapeutic goals<sup>2</sup>

# Cardiac Rehab Programs for HF After Hospitalization



- Improves functional capacity and QOL safely and effectively<sup>3</sup>
- Reduces readmission rates when program is hospital based<sup>3</sup>
- Home-based more accessible and functional<sup>3</sup>
- Multidisciplinary, integrated team approach to healthcare delivers optimal comprehensive care<sup>4</sup>

# Purpose



To determine the effect of home health care in reducing hospital readmission for individuals with heart failure



# Methods

# Search Engines



- CINAHL
- Pubmed
- Academic Search Elite
- Medline

# Search Terms



(home care OR home health OR home health care)

AND

(rehospitalization OR readmission OR hospital readmission)

AND

(physical therapy OR physiotherapy OR rehabilitation)

AND

(heart failure)

# Search Limits



- Peer-reviewed
- Published between 2009 and 2019
- English language
- Human subjects

# Selection Criteria



- Adults over 18 years old
- Primary outcome measure including hospital readmission

P

R

I

S

M

A

IDENTIFICATION

SCREENING

ELIGIBILITY

Records ID through  
database searching  
(n= 141)

Records after duplicates  
removed  
(n= 137)

Records screened by Title  
and Abstract  
(n= 137)

Full- text articles screened  
for eligibility (RCT)  
(n= 17)

Studies to be included in  
qualitative synthesis  
(n= 5)

Studies to be included in  
quantitative synthesis  
(n= 5)

Additional records ID through  
other sources  
(n= 0)

Records excluded, with reasons  
(n= 120):

- Irrelevant: (n= 87)
- Does not measure HF: (n= 15)
- Does not measure readmission:  
(n= 18)

Full-text articles excluded, with  
reasons (n= 12):

- Irrelevant: (n= 3)
- Does not measure HF: (n= 3)
- Does not measure readmission:  
(n= 6)

# Results-MINOR's Score



Author	Study Design	MINOR's Scale
Chen et al <sup>3</sup>	Prospective randomized	<b>23</b>
Madigan et al <sup>5</sup>	Retrospective cohort	<b>10</b>
Russel et al <sup>6</sup>	Retrospective observational	<b>16</b>
Miller et al <sup>2</sup>	Non-randomized control	<b>15</b>
Young et al <sup>7</sup>	Randomized control	<b>22</b>

# Results-MINOR's Score



- MINOR's Score
  - Range: 10-23/24
  - Average: 17.2/24



# Results-Study Design



- Randomized Controlled: 2 Studies
- Retrospective: 2 Studies
- Non-Randomized Controlled: 1 Study

# Results-Sample Size



- Sample Size
  - Range: 37-74,580 subjects

# Results-Age and Gender



- Age
  - Range: 58.76-82.36 years old
  - Average: 73.5 years old
- \*Male:
  - Range: 31-226
- \*Female:
  - Range: 6-45,429

\* =1 study did not specify

# Results - Chen et al<sup>3</sup>



## - Program

- Home based cardiac rehab
- Aerobic exercise
  - 3x/week
  - 30 minutes
  - 3 months
- Cardiologists, nurses and **physical therapists**

## - Results

- Decreased readmission from 14% to 5% at 90 day follow up

# Results - Madigan et al<sup>5</sup>



- Program
  - All home health care patients (74,580 patients) with a primary diagnosis of HF receiving home health care in 2005
  - Skilled nursing, **physical therapists**, physical therapist assistants, occupational therapists, speech language pathologists and social workers
- Results
  - Readmission at 30 days was 26% however was considered avoidable
  - The number of prior hospitalizations strongest factor followed by dyspnea leading to subsequent hospitalization
  - Home care provider judgment can influence rehospitalization

# Results - Russel et al<sup>6</sup>



- Program
  - Heart failure transition program
    - Partnership between a certified home health agency and a regional hospital
    - Emphasized coordination between healthcare providers, patient education, self-management
    - Skilled nursing, home health aides, **physical therapists**
  - Usual care
    - Skilled nursing, home health aides, **physical therapists**
- Results
  - The heart failure transition program less likely (43%) to be readmitted
  - $p < .01$

# Results - Miller et al<sup>2</sup>



- Program
  - 1 year multidisciplinary transitional care program
  - Referring physicians, nurses and **physical therapy**
  - Goal: Address high risk readmission, maximize professional visits in home care
- Results
  - Reduced readmission to 23.4% compared to before the program (39.5%)
  - $p < .001$

# Results - Young et al<sup>7</sup>



- Program
  - Patient Activated Care at Home (PATCH)
    - 12 week self-management training and coaching
    - Verbal, written and interactive care
    - 45-50 minute post discharge reinforcement sessions
  - Readmission at 30, 90, 180 days
- Results
  - Increased readmission at 30 days
  - Improvement in self-management adherence
  - $p < .0005$



# Results-Summary



Author	Program	Readmission
Chen et al <sup>3</sup>	Home based cardiac rehab	<b>Decreased</b> by 10%
Madigan et al <sup>5</sup>	Home health care	<b>26%</b>
Russel et al <sup>6</sup>	Heart failure transition program	43% <b>less likely</b>
Miller et al <sup>2</sup>	1 year multidisciplinary transitional care program	<b>Decreased</b> by 23.4%
Young et al <sup>7</sup>	-Patient Activated Care at Home (PATCH)	<b>Increased</b> at 30 days

# Conclusion



- There is moderate evidence supporting the value of home health care for hospital readmission reduction among patients with primary diagnosis of heart failure

# Limitations



- Small sample sizes
- Short study period
- Low follow-up secondary to drop outs
- Do not consider HF stage or progression → limits generalizability

# Future Research



- Larger sample size
- Longer study period
- Consider disease progression and stage of heart failure

# Clinical Relevance



- A multidisciplinary team approach for home health care reduces hospital readmission rates for patients with heart failure
- Episodes of care should be front-loaded earlier in the diagnosis to address high risk patients with heart failure

# Acknowledgements



Thank you!

- Dr. Tracey Collins, PT, PhD, MBA, Board-Certified Geriatrics Clinical Specialist
- DPT faculty & students

# References



1. What is heart failure. American Heart Association website. <https://www.heart.org/en/health-topics/heart-failure/what-is-heart-failure>. Updated May 31, 2017. Accessed October 20, 2019.
2. Miller A, Edenfield EE, Roberto J, Erb JK. Reduction in re-hospitalization rates utilizing physical therapists within a post-acute transitional care program for home care patients with heart failure. *Home Health Care Manag Pract*. 2017;29(1):7-12. doi: 10.1177/1084822316654881
3. Chen YW, Wang CY, Lai YH, Liao YC, Wen YK et al. Home-based cardiac rehabilitation improves quality of life, aerobic capacity, and readmission rates in patients with chronic heart failure. *Medicine (Baltimore)*. 2018;97(4).doi: 10.1097/MD.00000000000009629.
4. Mitchell G, Tieman JJ, James TM. Multidisciplinary care planning and teamwork in primary care. *Med J Aust*. 2008;188(8).doi: 10.5694/j.1326-5377.2008.tb01747.x
5. Madigan EA, Gordon NH, Fortinsky RH, Koroukian SM, Piña I, Riggs JS. Rehospitalization in a national population of home health care patients with heart failure. *Health Serv Res*. 2012;47(6):2316-38. doi: 10.1111/j.1475-6773.2012.01416.
6. Russel D, Rosati RJ, Sobolewski S, Marren J, Rosenfeld P. Implementing a transitional care program for high-risk heart failure patients: findings from a community-based partnership between a certified home healthcare agency and regional hospital. *J Healthc Qual*. 2011;33(6):17-23. doi: 10.1111/j.1945-1474.2011.00167.x.
7. Young L, Hertzog M, Barnason. Effects of a home-based activation intervention on self-management adherence and readmission in rural heart failure patients: the PATCH randomized controlled trial. *BMC Cardiovasc Disord*. 2016; 16:176. Doi: 10.1186/s12872-016-0339-7

# Questions?

---

