Debra K Moser

Health Promotion Strategies to Prevent Heart Failure Rehospitalization

FINANCIAL DISCLOSURE: none

UNLABELED/UNAPPROVED USES DISCLOSURE: none
Health Promotion Strategies to Prevent Heart Failure Rehospitalization

Debra K. Moser, DNSc, RN, FAAN
Professor and Gill Chair of Nursing
University of Kentucky, College of Nursing
Director, Center for Biobehavioral Research in Self-Care of Cardiopulmonary Disease
dmoser@uky.edu
Acknowledgements

- Funding:
  - NIH, NINR R01 NR08567, RO1 NR007952, and Center grant P20NR010679
  - American Association of Critical Care Nurses Philips Medical Systems Outcomes for Clinical Excellence Research Grant
The Increasing Burden of Heart Failure

- Heart failure incidence and prevalence increasing (tripled) in developed and developing countries
  - Mainly among women in U.S.
    - McCullough et al., 2002; Mendez & Cowie, 2001; Roger et al. JAMA 2004;292:344; AHA, 2009; Butler et al., 2008

- Rehospitalization rate remains high
  - Increasing in women at a faster rate than men
    - Zannad et al., 1999; Stewart et al., 2001; Koelling et al., 2004

- Mortality still extreme
  - Rates increasing in women and elderly
    - Stewart et al., 2001; Cleland et al., 1999; Koelling et al., 2004
Hospitalizations

- 27% readmitted within 90 days
  - 29% of these are readmitted more than once
  - 6-month readmission rates are 44%-47%.
  - In patients aged over 65 years who have three or more risk predictors, 6-month all-cause readmission is nearly 60%
- ~70% of costs associated with HF attributable to hospitalizations
- ~50%-66% of hospitalizations preventable

O’Connell, 2000; Starling, 1998; Krumholz et al, 1997; Massie & Shah, 1996
Heart Failure Hospitalizations: Changes over 3 Decades

- Hospitalizations rates increasing
  - Rates increase sharply with age
  - More than 80% of hospitalizations among patients \( \geq 65 \) years
  - Hospitalizations resulting in transfers to long-term care facilities increasing

Fang et al., 2008
Hospital discharges for heart failure by sex.
(United States: 1979-2006). Source: NHDS/NCHS and NHLBI.

*American Heart Association Heart and Stroke Statistics, 2010*
Health Promotion

- American Journal of Health Promotion, 1986
  - “The science and art of helping people change their lifestyle to move toward a state of optimal health"
  - Health Promotion is "aimed at informing, influencing and assisting both individuals and organizations so that they will accept more responsibility and be more active in matters affecting mental and physical health"
Commonly viewed as simply education and promotion of self-care
Ultimately ineffective without multi-pronged approaches
Mutual Aid

Self-Care

Healthy Environments

Health Promotion

Epp, 1986, Canadian Minister of National Health & Welfare
WHO (World Health Organization): the process of enabling people to increase control over, and to improve, their health

- Fiscal Measures
- Organizational Change
- Legislation
- Community Development
- Self-Care
- Spontaneous Local Action Against Health Hazards
Health Promotion to Reduce Rehospitalizations Among Patients with Heart Failure

- Local Actions
- Community Development
- Organization Change
- Fiscal Measures
- Legislation
- Self-Care
Action and Evidence

- Local Actions
  - Local patient and family efforts (web pages)
    - No evidence of effectiveness
- Community Development & Organization Change
  - Heart failure disease management
    - Clear benefit for reduction of rehospitalization
  - Professional organization initiatives, e.g. Get with the Guidelines
    - ± evidence
- Fiscal Measures
  - Change in Medicare reimbursement
    - No evidence of effectiveness (yet)
- Legislation
  - none
- Self-Care
Self-Care in Heart Failure: What is it?
Self-Care

- Self-care is the process whereby individuals and/or their informal caregivers perform the daily activities that serve to maintain health and well-being, prevent illness, manage chronic illness, or restore health.
  - prevention or early detection of health problems
  - better overall health and quality of life
  - improved clinical outcomes and reduced healthcare costs

Deakin, McShane, Cade, & Williams, 2005; Jovicic, Holroyd-Leduc, & Straus, 2006.
Self-care in Heart Failure

- A naturalistic decision-making process involving...
  - the choice of behaviors that maintain physiologic stability (self-care maintenance)
  - the response to symptoms when they occur (self-care management)

Riegel, Carlson, Moser, Sebern, Hicks, Roland, 2004, J Card Fail
Most heart failure care done by patients and their families at home; in fact, community dwelling individuals can’t avoid self-care
Self-Care Activities in Heart Failure

- **Medication taking**
  - Take, don’t stop, identify side effects and differentiate them from other effects
  - Average of 9-13 pills per day
  - Complex instructions for some

- **Following a low sodium diet**
  - Following a diabetic diet, low fat diet, others
  - Know levels, know how to calculate, shop, cook, follow when not at home, adapt family customs
Self-Care Activities in Heart Failure

- Monitoring symptoms of worsening heart failure
  - Daily weighing and what to do; symptom recognition and what to do; which symptoms are important, which are not; when to act with symptom escalation

- Physical activity
  - How much, how, what if never done, rest?

- Alcohol and smoking restriction
Self-Care Activities in Heart Failure

- Manage co-morbidities, emotional problems, cognitive impairment, functional impairment, social isolation, lack of financial resources
- Flu shots, other prevention activities
- Negotiate the health care system
  - Keep appointments, transitions, multiple care providers
  - Average Medicare HF patient sees 15 providers/year; 50% prescribe meds

Page et al., 2007, Circulation; Bayliss et al., 2007, Chronic Illness
Why is self-care important?

- ~ 70% of costs associated with HF attributable to hospitalizations
- ~ 50%-66% of hospitalizations preventable
  - most of these attributable to failed self-care

Factors Contributing to HF Hospitalizations

- iatrogenesis
- inadequate drug therapy
- social issues
- arrhythmias
- HTN
- poor self-care


O’Connell, 2000; Starling, 1998; Krumholz et al, 1997; Massie & Shah, 1996; Vinson 1990; Bennett et al., 1998; Michelson et al., 1998; Morgan et al., 2006; Hope et al., 2004; Opasich et al., 2001; Tsuyuki et al., 2001; Jovicic, Holroyd-Leduc, & Straus, 2006.
Event-Free Survival and Heart Failure Self-Care Management

Survival free from all-cause mortality, hospitalization, or ER visit

- Below Median Mgt Score
- Above Median Mgt Score
- Symptom Free

Days

Lee, Moser, Lennie, Riegel, 2010
Effectiveness of Self-Care Maintenance

- Adherence to prescribed medications produces better outcomes in patients with heart failure

Patient Adherence Using the MOS-SAS: *How Often Did You Take Your Prescribed Medications?*

- **All of the time**: 36.1%
- **Most of the time**: 16.3%
- **Good bit**: 9.5%
- **Some**: 20.4%
- **None**: 11.6%
Patient Adherence Using the MEMS: Percentage of Doses Prescribed That Were Taken

- Percentage of doses ≥ 89%: 69.6%
- Percentage of doses <89%: 30.4%
Patient Adherence Concordance Groups: Concordance of Objectively Rated and Self-Rated Adherence

- **Objective Measured Adherence**
  - **adherent**
    - Realistic adherers: accurately assessed their adherence
    - Over-confident nonadherers: thought they were more adherent than they were
  - **nonadherent**
    - Under-confident adherers: adherent, thought they were not
    - Realistic nonadherers: accurately assessed their nonadherence

- **Patient-Assessed Adherence**
  - **adherent**
    - Realistic adherers: accurately assessed their adherence
  - **nonadherent**
    - Under-confident adherers: adherent, thought they were not

- **Percentage of patients**
  - **under-confident adherer**: 14.3%
  - **realistic nonadherer**: 15%
  - **over-confident nonadherer**: 12.9%
  - **realistic adherer**: 49.7%
Event-Free Survival Compared by Groups

- Under-confident adherers, 15.6%
- Realistic adherers, 54.1%
- Realistic non-adherers, 16.3%
- Overconfident non-adherers, 14%

Cumulative Survival vs. Days Follow-up
Why is self-care so hard?
## Percent Anxiety and Depression, N = 981

<table>
<thead>
<tr>
<th></th>
<th>HF</th>
<th>CABG</th>
<th>MI</th>
<th>Healthy Elders</th>
</tr>
</thead>
<tbody>
<tr>
<td>% anxious</td>
<td>42</td>
<td>34</td>
<td>42</td>
<td>11</td>
</tr>
<tr>
<td>% depressed</td>
<td>61</td>
<td>51</td>
<td>55</td>
<td>29</td>
</tr>
</tbody>
</table>

CABG = coronary artery bypass grafting; HF = heart failure; MI = myocardial infarction

*Moser et al., 2006*
Depression and Medication Adherence Measured by the MEMS

Moser et al., 2007
Health Literacy

Do patients understand what we teach?

- 90 million in U.S. lack basic health literacy
- Study of English-speaking patients (AMA, 1998)
  - 27% could not read their appointment slips
  - 42% could not understand the details on their prescription bottles
- Heart failure
  - 38% of patients unable to read and understand medication labels → increase in ED visits

Hope et al., 2018
Cognitive Impairment in Patients with Heart Failure

- Cognitive impairment far more prevalent than recognized
  - 23-53% in community-dwelling HF patients >65 years
- Often undetected
  - 28.6% (12/42) HF patients living independently identified as impaired by 1 of 4 screening tests

Cognitive Impairment in Heart Failure: Results of a Systematic Review

- Electronic database search from 1966-2006 for investigations of cognitive function in heart failure
  - 22 controlled studies
  - 2937 HF patients, 14,848 controls
    - Odds for cognitive impairment in HF = 1.62 (1.48-1.79, p < 0.001)
    - Characterized by: forgetfulness, attention and memory problems, decreased concentration.

Vogels et al., 2006
202 patients recently discharged from hospitalization for decompensated heart failure
- 75% had substantial symptom burden in prior week
- 70% NYHA

Moser et al., 2005
Social Isolation and SES

- Lack of support
- Inadequate finances

34% of 281 HF patients lived alone

*Poor defined as <$15,000 annually
Multiple Comorbidities

- Most heart failure patients have numerous comorbidities
  - HTN 78%, diabetes 46%, lung disease or asthma 24%
- Patients hospitalized for HF exacerbation
  - every patient had one or more comorbidities
- Medicare sample of HF patients
  - 40% had 5 or more comorbidities

Braunstein et al., 2003; Klapholz, 2004; Lien et al., 2002
Self-care experts and non-experts

**Expert at self-care, 10%**
- Able to describe their symptoms, link them to HF pathophysiology, and manage them
  - “I came to realize that salt retains fluid. I don’t feel good when I retain fluid so we don’t cook with salt or use salt.”
- Verbalize understanding of treatments and their impact
- Comprehensive understanding of medication regimen

**Poor at self-care**
- Low HF knowledge and misconceptions
  - “If I eat something salty, I try to flush it out of myself by drinking lots of water…”
- Lack skill to problem-solve
- No action plan for managing symptoms
  - “I didn’t know what to do… I waited to call the squad until it was almost too late.”

*Bentley et al., 2005, Eur J Cardiovasc Nurs; Riegel et al., 2007, Nurs*
Self-care experts and non-experts

Expert at self-care

- Substantially less daytime sleepiness
- Vigilance with self-care
  - “It is a routine..I feel like everyday my main concentration is on it…”
- Experience either with another family member or in themselves
- Actively sought information about heart failure

Poor at self-care

- Daytime sleepiness
- Impaired memory, attention and cognitive processing
  - “..the little things that I can’t figure out right now..”
- Depression
  - “Sometimes you just get fed up…that day was a downward spiral and I just ate everything I wanted..I just didn’t care..”

_Bentley et al., 2005, Eur J Cardiovasc Nurs_ Riegel et al., 2007, _Nurs Res_
Self-care experts and non-experts

Expert at self-care

- Good family functioning
- Engaged family members who know when to help
  - Patient: “..sometimes I’m just a noodle and need help with everything..”
  - Daughter: “..when she is feeling lousy you really need someone else to help…”

Poor at self-care

- Poor family functioning/lack of a support person
  - Reported difficulty managing day to day tasks and feeling isolated
  - “At family parties, there was never anything for me to eat.”

Bentley et al., 2005, Eur J Cardiovasc Nurs; Riegel et al., 2007, Nurs Res
Improving Self-Care: Assessment

- Suspect problems with HF self-care
  - Very few patients are experts
- Suspect misconceptions about basic concepts
- Look for factors that interfere with learning
  - Cognitive impairment
  - Health literacy; education level
  - Anxiety
- Look for factors that interfere with the willingness or ability to engage in self-care
  - Depression
  - Sleep problems
  - No social support
  - Functional impairment
  - Sensory impairment
  - Lack of financial resources
Improving Self-Care: Intervention

- Knowledge is necessary but not sufficient
  - Build skill in self-care
    - *How* to read labels and choose high and low sodium foods
    - *How* to remember to take medicines on time
    - *How* to recognize and respond to symptoms
    - *When* to call the provider
    - *How* to manage comorbidities
    - *How* to problem solve
    - *How* to talk to clinicians and navigate the healthcare system
Improving Self-Care: Intervention

- Knowledge is necessary but not sufficient
  - Build confidence in self-care
    - Encourage shared decision-making
    - Encourage HF disease management

- Overcome barriers to self-care
  - Assess for and treat depression and anxiety
  - Assess for cognitive impairment, treat “treatable” causes, and social network
  - Assess for and treat sleep disorders
  - Assess for and address health literacy problems

- Engage family and other informal caregivers