Implementation of an Evidence-based Discharge Checklist to Reduce 30-day Readmissions for Patients Diagnosed with Heart Failure

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By the end of this session, the learner will be able to:

1. Recognize three recommendations from the American Heart Association/American College of Cardiology guidelines for discharging patients hospitalized with heart failure.

2. Identify two strategies for decreasing readmissions for patients hospitalized with heart failure.

Conflict of Interest: The authors declare no conflict of interest. The authors received no financial support or commercial sponsorship for this study.
• Globally, 23 million people are living with Heart Failure (HF)
• 5 million Americans with HF
• Annual costs: $34 billion
• Leading cause of hospital readmission
• About half of people who develop heart failure die within 5 years of diagnosis
193-bed Rural Community Hospital in Northeastern U.S

• Readmission rate between 22% – 30%

• Up to 50% HF readmissions preventable
Search Strategy

Identification

Records identified through database searching (n = 1408)

Additional records identified through other sources (n = 6)

Records after duplicates removed (n = 779)

Records screened (n = 779)

Records excluded (n = 702)

Full-text articles assessed for eligibility (n = 77)

Full-text articles excluded, with reasons (n = 55)

Studies included in qualitative synthesis (n = 0)

Studies included in quantitative synthesis (meta-analysis) (n = 22)
Use of a discharge checklist based on AHA/ACC recommendations can reduce 30-day readmissions.

Providing evidence-based care is key to improving outcomes for patients w/ HF

Providers are often interested in science-based discussions about quality improvement and value the implementation of evidence-based interventions.

Hospital leaders can efficiently engage providers to promote use of EBP guidelines in practice
Purpose

To implement an evidence-based discharge checklist and evaluate 30-day readmissions among patients hospitalized with heart failure
**Aim 1**
- Reduce 30-day readmission for individuals hospitalized with heart failure.

**Aim 2**
- Determine provider utilization of the discharge checklist

**Aim 3**
- Determine provider satisfaction with using the discharge checklist
Methods

Design: Quality improvement project, quantitative

Sample: Patients admitted for HF during September-November 2015 and September – November 2016

Setting: 165-bed, rural community hospital

Exploratory: Demographic data

Measures: Pre and post implementation readmission rates, Provider utilization and satisfaction responses

Analyses: Descriptive statistics, Independent t-test, Chi-Square
Methods

SPSS

Provider responses

Group 1 Control 2015

Group 2 Intervention 2016
Heart Failure Hospital Discharge Checklist

Based on the most recent ACC/AHA guidelines, these recommendations have been found to reduce readmissions and morbidity/mortality in Systolic LV Dysfunction (HFrEF) heart failure patients:

Please consider the use and/or titration of these medications:

**Beta-blockers:** Standard therapy (LVSD only carvedilol, metoprolol succinate or bisoprolol)

**Corlanor (Ivabradine):** A sinoatrial node modulator. Symptomatic class II-III stable chronic HFrEF (LVEF ≤ 35%). Use with maximum dose of beta blockers or when beta blockers are not tolerated. Resting heart rate > 70 bpm.

**Entresto (Sacubitril/valsartan):** Neprilysin inhibitor. Used in patients with chronic symptomatic HFrEF

**ACEI/ARB:** (LVSD if LSVD and ACEI not tolerated)

**Aldosterone Antagonist:** (LVSD, Cr < 2.5 mg/dl in men, < 2.0 mg/dl in women)

**Hydralazine/Nitrates:** (self-identified African-American and LVSD)

**Diuretics**

Key Points about the Heart Failure Hospital Discharge Checklist

“The use of an Heart Failure checklist was associated with better quality of care and decreased readmission rates for patients admitted with Heart Failure (Basso et al., 2013).”

- The HF Discharge Checklist is designed as a tool that reminds Clinicians of the ACC/AHA recommended pharmacological and non-pharmacological therapies for your patients.

- In a study, Clinicians who used the Checklist at discharge were able to cut the percentage of patients who were re-admitted to the hospital within one month of a cardiac event from 20 percent to 2 percent.

- “In addition to lowering 30-day and 6-month readmissions and the associated costs, we also showed that more patients in the checklist group were likely to be on correct medications and had appropriate drug doses than the patients in the control group (Casteel, 2012).”

- All items on the checklist are derived from and reinforces evidence based practices for managing heart failure and lowering the likelihood of another cardiac event.

- The HF Hospital Discharge Checklist has been added to the ELECTRONIC HEALTH RECORD.

References:
Heart Failure Hospital Discharge Checklist

Based on the most recent ACC guidelines, these recommendations have been found to reduce readmissions and morbidity/mortality of both left and right HF patients.

- Please consider the use and/or titration of these medications:
  - Beta-blockers: Standard therapy = LVSD use only carvedilol, metoprolol succinate or bisoprolol.
  - Corlanor = Ivabradine: A sinoatrial node modulator = Symptomatic class II-III stable chronic HFrEF - LVEF less than or equal to 35%. Use maximum dose of medical therapies. Resting heart rate of greater than 70 bpm.
  - Entresto = sacubitril/valsartan: Nepriylisin inhibitor. Used in patients with chronic symptomatic HFrEF.
  - ACEI/ARB: LVSD/ if LVSD and ACEI not tolerated.
  - Aldosterone Antagonist: LVSD, Cr less than or equal to 2.5 mg/dl in men, less or equal to 2.0 mg/dl in women.
  - Hydralazine/Nitrates: Self-identified African-American and LVSD.
  - Diuretics

- Inpatient
  - * Intake/Output with daily weights
  - * Inpatient Cardiology Consults

- Patient Education
  - * Heart Failure Dietary Education - diet/weight
  - * Cardiac Rehab referral/scheduling

- Follow up
  - * Cardiology
  - * Primary Care Provider
  - * Disease Management Program
Analyses

Descriptive Statistics/Frequencies

Independent Sample $t$-test

Chi-Square- Fisher’s Exact Test
### Exploratory Data

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Group 1 (N=109)</th>
<th>Group 2 (N=55)</th>
<th>p value&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, Mean/SD</td>
<td>77.60/12.513</td>
<td>77.75/13.822</td>
<td>.945</td>
</tr>
<tr>
<td>Length of stay</td>
<td>2.996/2.661</td>
<td>2.867/3.267</td>
<td>.787</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td>.786</td>
</tr>
<tr>
<td>Male</td>
<td>59 (54.1%)</td>
<td>31 (56.4%)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>50 (45.9%)</td>
<td>24 (43.6%)</td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td>.222&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Caucasian</td>
<td>98 (89.9%)</td>
<td>53 (96.4%)</td>
<td></td>
</tr>
<tr>
<td>Non-Caucasian</td>
<td>11 (10.1%)</td>
<td>2 (3.6%)</td>
<td></td>
</tr>
<tr>
<td>Comorbidities, No.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Renal Disease</td>
<td>39 (35.8%)</td>
<td>18 (32.7%)</td>
<td>.698</td>
</tr>
<tr>
<td>Hypertension</td>
<td>88 (80.7%)</td>
<td>47 (85.5%)</td>
<td>.454</td>
</tr>
<tr>
<td>Tobacco use</td>
<td>58 (53.2%)</td>
<td>25 (45.5%)</td>
<td>.348</td>
</tr>
<tr>
<td>Diabetes</td>
<td>47 (43.1%)</td>
<td>25 (45.5%)</td>
<td>.776</td>
</tr>
<tr>
<td>LVEF</td>
<td></td>
<td></td>
<td>.869</td>
</tr>
<tr>
<td>&lt; 50%</td>
<td>53 (54.1%)</td>
<td>25 (55.6%)</td>
<td></td>
</tr>
<tr>
<td>&gt; 50%</td>
<td>45 (45.9%)</td>
<td>20 (44.4%)</td>
<td></td>
</tr>
<tr>
<td>unknown</td>
<td>11 (10.1%)</td>
<td>10 (18%)</td>
<td></td>
</tr>
<tr>
<td>Medications</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>beta-blockers</td>
<td>81 (74.3%)</td>
<td>41 (74.5%)</td>
<td>.974</td>
</tr>
<tr>
<td>ACEI&lt;sup&gt;c&lt;/sup&gt;</td>
<td>34 (31.2%)</td>
<td>17 (30.9%)</td>
<td>.970</td>
</tr>
<tr>
<td>ARB&lt;sup&gt;d&lt;/sup&gt;</td>
<td>23 (21.1%)</td>
<td>16 (29.1%)</td>
<td>.257</td>
</tr>
<tr>
<td>diuretic</td>
<td>80 (73.4%)</td>
<td>27 (49.1%)</td>
<td>.002</td>
</tr>
<tr>
<td>Hydralazine</td>
<td>11 (10.1%)</td>
<td>4 (7.3%)</td>
<td>.554</td>
</tr>
<tr>
<td>Sacubutril/Valsartan&lt;sup&gt;e&lt;/sup&gt;</td>
<td>0 (0%)</td>
<td>2 (3.6%)</td>
<td>.111&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Ivabradine&lt;sup&gt;g&lt;/sup&gt;</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td></td>
</tr>
</tbody>
</table>

SD- standard deviation, <sup>a</sup> Independent T-test and X², <sup>b</sup> Fisher’s exact test, <sup>c</sup> angiotensin converting enzyme inhibitor, <sup>d</sup> angiotensin renin-blocker, <sup>e</sup> Entresto, <sup>g</sup> Corlanor
### Results: Aim #1

#### 30-day Readmission rates

<table>
<thead>
<tr>
<th>Group 1 (N=109)</th>
<th>Group 2 (N= 55)</th>
<th>p value&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 (9.2%)</td>
<td>5 (9.1%)</td>
<td>.986</td>
</tr>
</tbody>
</table>

<sup>a</sup> Chi- Square ($X^2$)
<table>
<thead>
<tr>
<th>Provider Utilization</th>
<th>N=15 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have you consulted using the heart failure discharge checklist?</td>
<td></td>
</tr>
<tr>
<td>Never/rarely</td>
<td>10 (66.7%)</td>
</tr>
<tr>
<td>Sometimes</td>
<td>4 (26.7%)</td>
</tr>
<tr>
<td>Frequently</td>
<td>1 (6.6%)</td>
</tr>
<tr>
<td>On what percentage of your patients would you say you have referred to the checklist?</td>
<td></td>
</tr>
<tr>
<td>0 – 25%</td>
<td>10 (66.7%)</td>
</tr>
<tr>
<td>25 – 50%</td>
<td>4 (26.7%)</td>
</tr>
<tr>
<td>50 – 75%</td>
<td>1 (6.6%)</td>
</tr>
</tbody>
</table>

*a Questions pertain to provider utilization of the heart failure discharge checklist*
### Results: Aim #3

<table>
<thead>
<tr>
<th>Provider Feedback/Satisfaction</th>
<th>N=15 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did you find the heart failure discharge checklist to be helpful?</td>
<td></td>
</tr>
<tr>
<td>Strongly agree</td>
<td>10 (66.7%)</td>
</tr>
<tr>
<td>Agree</td>
<td>5 (33.3%)</td>
</tr>
<tr>
<td>Are you satisfied with the heart failure hospital checklist?</td>
<td></td>
</tr>
<tr>
<td>Strongly agree</td>
<td>4 (26.7%)</td>
</tr>
<tr>
<td>Agree</td>
<td>10 (66.7%)</td>
</tr>
<tr>
<td>Disagree</td>
<td>1 (6.6%)</td>
</tr>
</tbody>
</table>

*a Questions pertain to provider feedback/satisfaction with the heart failure discharge checklist*
Discussion

- Readmissions among groups not statistically significant
- Slight decrease in admissions
- Providers responded positively to checklist
- Checklist can be used to reduce readmission
Limitations

• Results are not generalizable
• Single-site study
• Relatively small, non-randomized sample
• Provider use of checklist not mandatory
• Survey questions, reliability
• Self-reported data by providers
• More data needed
Conclusion

• Provider engagement is necessary for practice change
• Sustainability- Institutional and system-wide implementation
• Multidisciplinary discharge checklist integrated in HF order set in EHR
• Further study necessary to further validate effects of HF checklist
Leading the way in education, research and practice – locally and globally.
References


References


References

• Jeffs, L., Dhalla, I., Cardoso, R., & Bell, C. M. (2014). The perspectives of patients, family members and healthcare professionals on readmissions: preventable or inevitable? Journal of Interprofessional care, 28(6), 507-512.


• Turrise, S. (2014). Illness representations, treatment beliefs, medication adherence and hospital readmission in elderly individuals with chronic heart failure (Doctoral dissertation, Rutgers University-Graduate School-Newark).
