

## Significance of the Problem

- 6.2 million Americans have HF (Fitch et al., 2017)
- 30-day readmission costs secondary to HF comprise 2.3% of the total Medicare annual expenditure (Fitch et al., 2017).
- ACA mandated penalties for higher-than-expected readmission rates (CMS, 2020)
- Outpatient HF management options required to reduce costs
- Growing support for the use of telehealth platforms, such as mobile health-applications (MHAs) in the management of HF

(Gorodeski et al., 2020; Werhahn et al., 2019; Athilingam et al., 2016; Foster, 2018; Cajita et al., 2017)

## Decision to Change Practice

- The pay-for-performance and value-based purchasing models of US healthcare have required healthcare organizations to discover alternative ways to manage chronic conditions.
- Interventions must be implemented and managed in the outpatient setting and be inexpensive to maintain
- Organizational data: In 2018, the project facility was fined 1.18% of Medicare reimbursement funds – 10<sup>th</sup> highest penalty in Indiana (Russell, 2018)

## PICOT Question

In adult Medicare beneficiaries who have a diagnosis of heart failure with recent hospitalization (P), does the implementation of an interactive smartphone application (MHA), *HFPATH*® (I), compared to standard office protocol (C) decrease 30-day readmission rates (O) over an eight-week period (T)?

## Best Practices

### Moderate support for use of MHA that includes:

- Daily self-assessment
- Exacerbation warning indicators – recommendations to contact provider
- Frequent communication with provider

## Review of the Literature

Evidence	Database/Source	LOE/Quality
Flodgren et al. (2015) Inglis et al. (2015)	Cochrane	I/High
Kitsiou et al. (2015) Kotb et al. (2015) Lin et al. (2017) Frederix et al. (2019)	Nursing and Allied Health	I/High II/High
Bashi et al. (2017) Aronow et al. (2018) Pekmezaris et al. (2018) Cajita et al. (2016) Long et al. (2017)	CINAHL	I/High II/High III/Good
Clark (2018) Rosen et al. (2017)	Handsearch	I/Good II/Good
Hamilton et al. (2018) Dadosky et al. (2018)	Medline	I/High III/High
Schwamm et al. (2016)	TRIP	VII/High

**Level and Quality:** Hierarchy of Evidence ranking system and Rapid Critical Appraisal Checklists (RCACs) (Fineout-Overholt & Melnyk, 2019)  
<sup>a</sup>High quality; <sup>b</sup>Good quality

## Implementation

**Evidence-Based Practice Model:** Iowa Model Revised

**Setting:** Small rural hospital in Northwest Indiana

**Participants:** 8 intervention group; 9 comparison group

**Intervention:** Mobile Health Application (MHA), *HFPATH*®  
 Used with permission from the American Heart Association (2020)

**Measurement:** Hospital readmission rates were assessed prior to intervention, and 30-days and 8-weeks post-intervention

European Heart Failure Self-care Behavior Scale (EHFScBS) were evaluated pre- and post-intervention to determine impact on participant completion of self-care measures

**Timeframe:** 8 weeks; rolling starts times

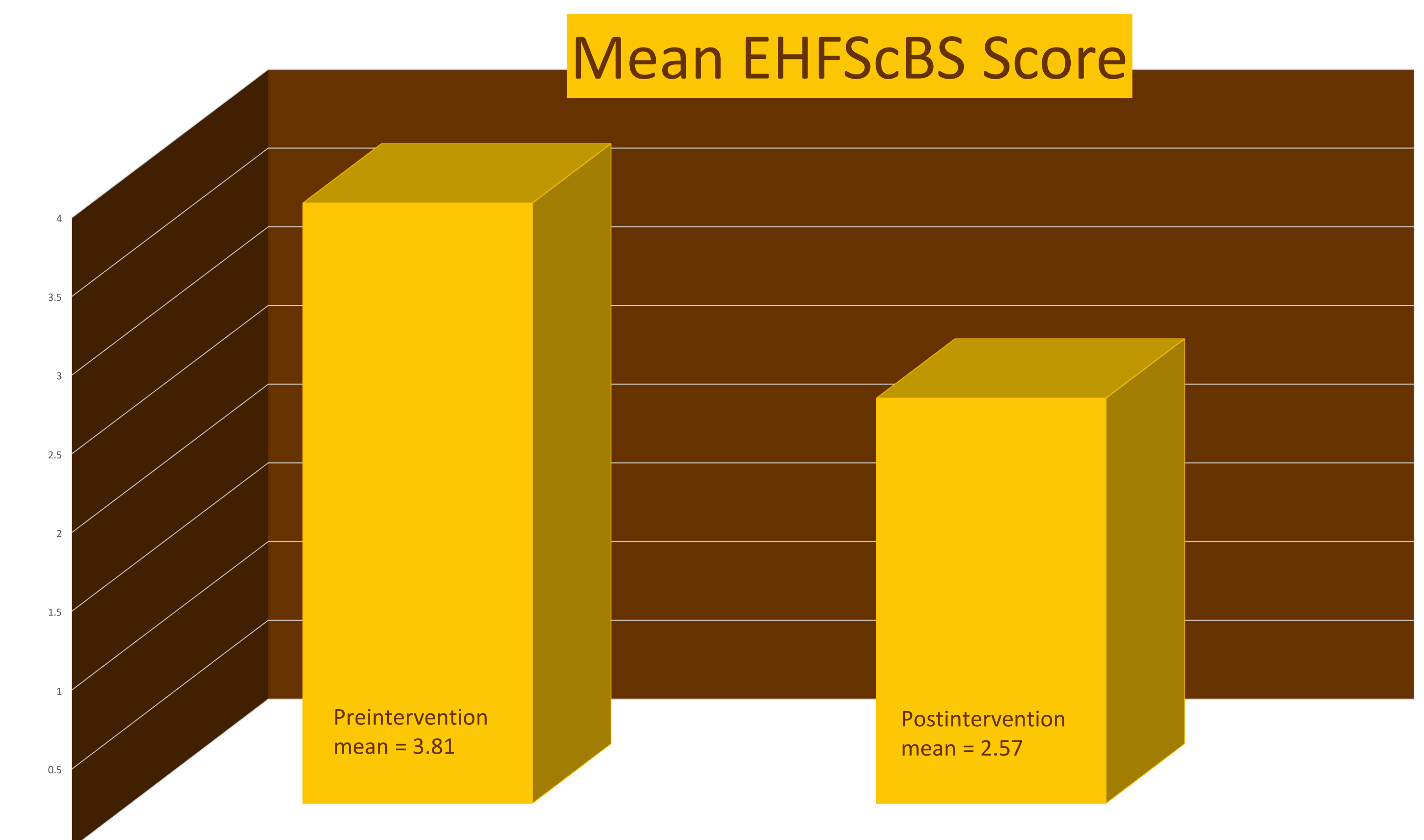
## Evaluation

### Primary Outcome

- A one-way MANOVA was calculated to examine the effect of MHA use on 30-day and 8-week post discharge readmission rates.
- No significant effect was found ( $Lambda(2,4) = .804, p > 0.05$ ).
- Neither 30-day or 8-week post intervention readmission rates were significantly influenced by MHA use.

### Secondary Outcomes

- A paired sample t-test was calculated to compare pre- and post-intervention participation in self-care behaviors using the EHFScBS.
- A statistically significant increase in participant self-care measures was appreciated ( $t(7) = 4.058, p = 0.005$ )
- Patient satisfaction with the use of the MHA was evaluated with a single sample t-test.
- The mean satisfaction score of 1.63 ( $sd = .589$ ) was significantly different from the constant of zero, indicating a high degree of participant satisfaction.



## Conclusion and Recommendations

Although statistically significant results were not achieved for the primary outcome, clinical significance can be appreciated. Participants indicated overall satisfaction with the program. Addition of this free MHA to treatment plans could be beneficial. Further assessment of MHA use is recommended in larger populations.