

# Implementation of a Remote Monitoring Program in Heart Failure Patients: A Quality Improvement Project

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### Problem Statement

- 6.2 million adults in the United States with heart failure<sup>1</sup>
- Incidence of heart failure to increase by 46% between 2012 and 2030 with a five-year mortality rate close to 50%<sup>2</sup>
- Demand for remote patient monitoring (RPM) to **manage chronic conditions, manage costs, and improve patients' health**<sup>3</sup>
- Quality improvement (QI) setting has an average of thirty-five hospitalizations per month with a need for decreased hospital utilization<sup>4</sup>

### Project Purpose

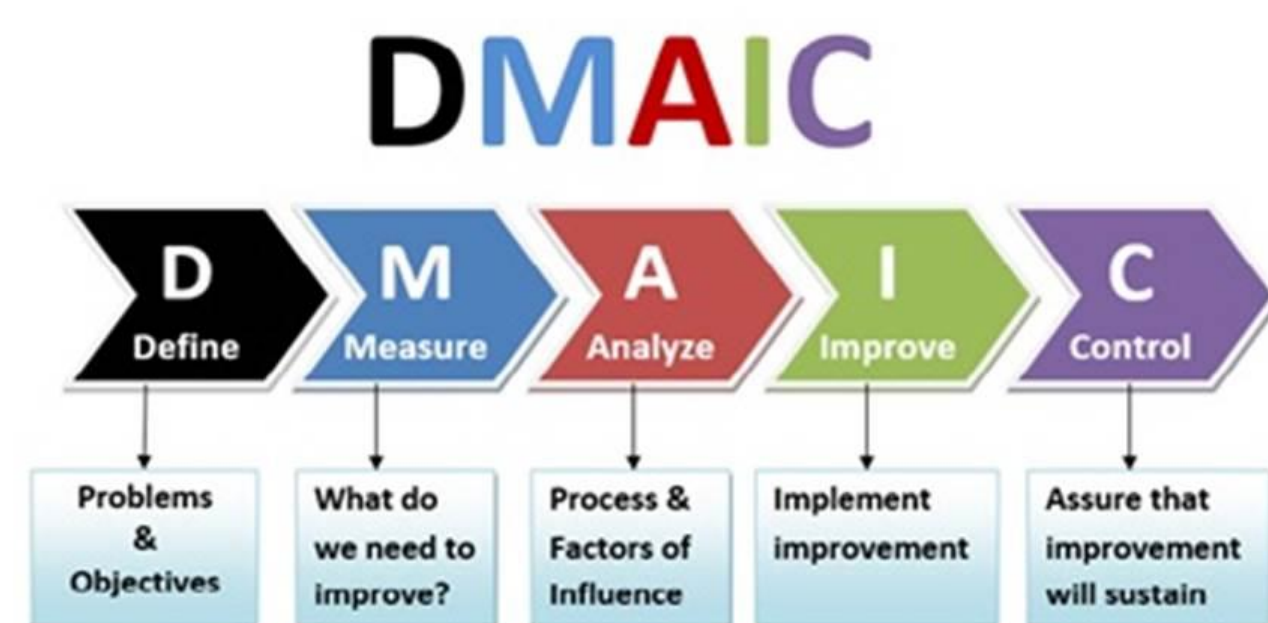
**Purpose:** to improve comfort for patients in their own homes while decreasing heart failure symptoms, decreasing hospitalizations, and increasing quality of life

**Aim:** improve heart failure related outcomes including decreasing symptoms associated with heart failure, improving self-care, and decreasing hospitalizations

**Clinical Question:** In heart failure patients, does remote patient monitoring decrease hospitalizations, decrease heart failure symptoms, and improve self-care, when compared to current practice over three months?

### Model & Nursing Theory

- DMAIC (define, measure, analyze, improve, control) Model



- Symptom Management Model

### Methods

#### Subjects (Participants)

- Hospice individuals  $\geq 18$  years-old with primary or secondary diagnosis of heart failure (I.50)
- Symptoms or heart failure exacerbation-like symptoms

#### Setting

- In-home while utilizing the remote patient monitoring device.

### Intervention & Data Collection

#### Pre-RPM

- Develop Protocol
- RPM & dashboard education
- Train Nurses and staff
- Complete MLHFQ, SCHFI, and hospitalization data

#### Post-RPM

- Complete MLHFQ, SCHFI, hospitalization data
- Implement sustainability

Table 1: Outcome measures and instruments Utilized

Type of Outcome	Name of Measure	Data Collection	Brief Description of Measure
HF Symptoms	Minnesota Living with Heart Failure Questionnaire (MLHFQ)	V1, V2	Addresses physical, emotional and psychological symptoms of heart failure.
Self-care Improvement	Self-Care of Heart Failure Index (SCHFI)	V1, V2	Linked concepts that include self-maintenance, symptom perception and self-management
HF hospitalizations	Hospitalizations associated with heart failure	V1, V2	Addresses hospital admission rates

### Results

- Results for the MLHFQ show statistical significance ( $p=0.0068$ ) indicating that RPM was effective.
- Results for the SCHFI show clinical significance ( $p=0.0650$ ).
- Pre-RPM hospitalization rate of 22.73% vs. post-RPM hospitalization rate of 18.75% for sample population.

Table 2: Scores from the MLHFQ pre and post implementation of RPM

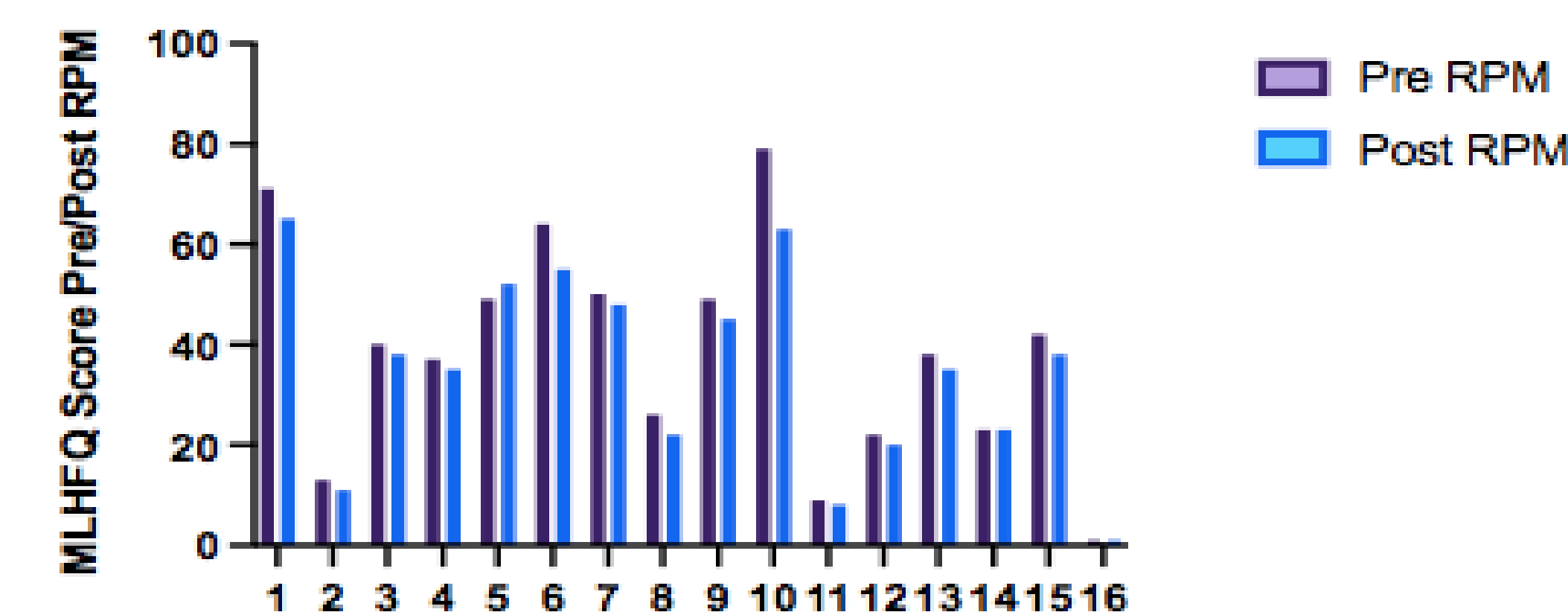
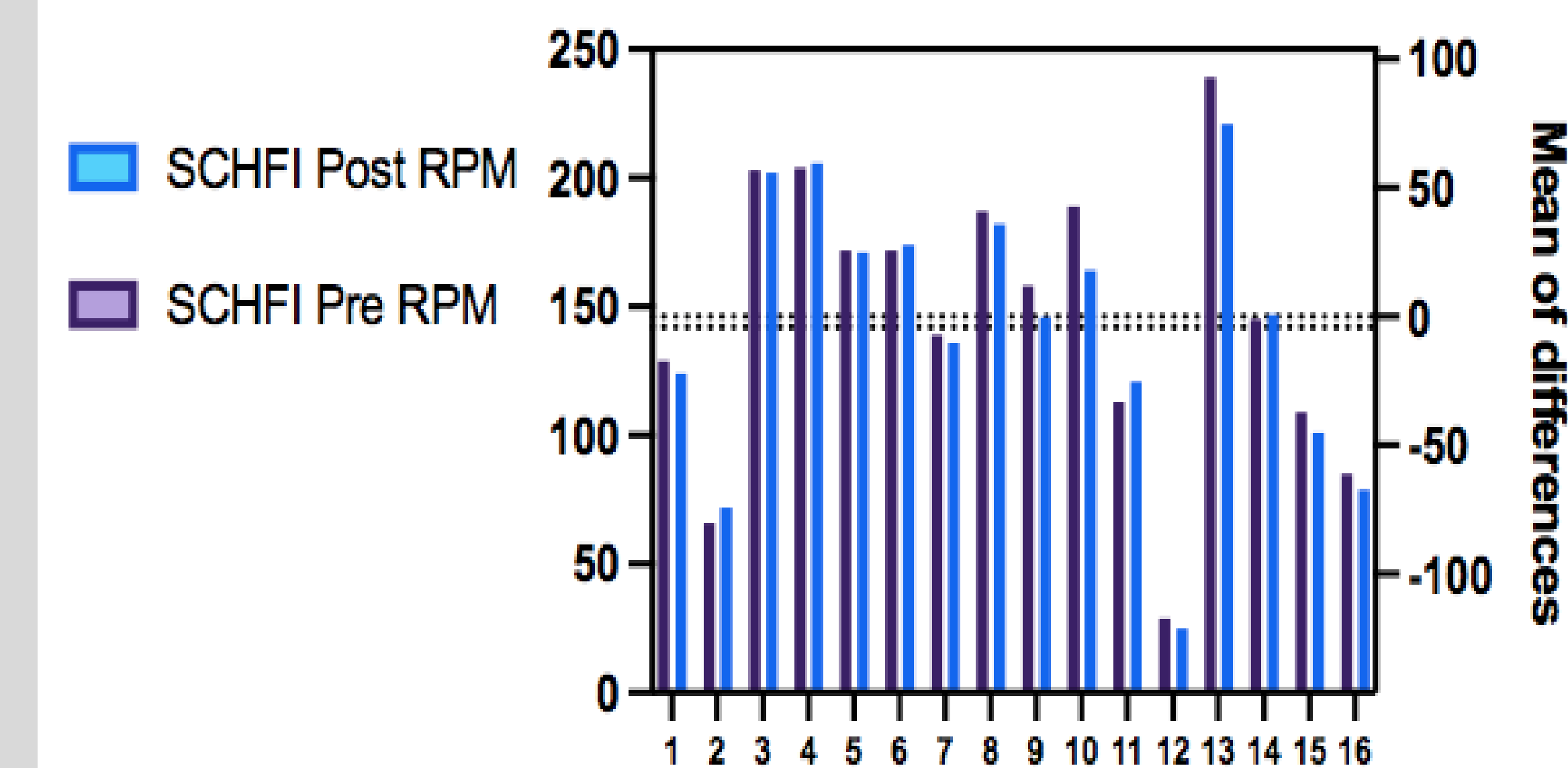


Table 3: Scores from the SCHFI pre and post implementation of RPM



### Discussion

- The result of the MLHFQ shows that with the Implementation of RPM quality of life in hospice patients increases as evidenced by the decrease in symptoms associated with heart failure.
- The RPM equipment was user-friendly and operated on 4G.
- Quicker response time in patient care and treatment
- Supplements in-home nurse visits and allows for objective data to be analyzed and trended over time



### Implications for Advanced Practice Nursing

- RPM can decrease symptoms associated with chronic conditions such as heart failure.
- RPM can improve quality of life in patients who have chronic conditions.
- RPM can empower patients and families to actively participate in plan of care.
- RPM can prioritize patients for providers and home nurses.

### Sustainability

- The protocol that has been developed for this quality improvement project has been adopted and will be utilized for RPM patients.
- RPM increased quality of life by decreasing symptoms associated with heart failure.

### References



**Remote patient monitoring decreased heart failure-related symptoms while decreasing hospitalizations.**