Improving the Effectiveness of Remote Patient Monitoring Reports in Heart Failure Patients

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Background

Heart failure (HF) is a public health issue that is gradual rising. In 2017, there was an estimated 5.7 million Americans suffering from HF with a projection that in 2030, 8 million would have to deal with HF; a 46% increase in prevalence [2]. And there is currently an $18 billion economic burden with an estimated projection to $45 billion in medical cost [1]. With this rise, there is a need to predict HF exacerbations and intervention to reduce the projected rise in prevalence and economic burden. This, among other healthcare issues that we face, has lead to the development of Telehealth services. In particular, Remote Patient Monitoring (RPM), a part of home Telehealth services, has been an integral part in improving the outcomes of HF patients [3]. RPM allows healthcare providers to monitor patients using a mobile-based device. Given that RPM is a fairly new developed concept and the recent advancement in RPM, there is much to investigate. And as such, there are current debates as to whether RPM is effective. There are current studies, which indicate that RPM improves care, reduces mortality, and reduce readmission [4]. However, there are also studies that show that RPM for HF patients did not reduce 180 readmissions [5]. This raises the question of whether RPM is ineffective or just not properly used. For an institution to effectively use RPM in HF patients, one aspect of focus is the use of RPM reports that providers receive.

Problem Statement

Do providers consider the current RPM reports functional in providing proper care to HF patients?

Methods

A likert scale (1= strongly agree to 5= strongly disagree) was utilized to gain feedback from survey items. Expert validation and cognitive interviewing was conducted to ensure purpose and scope of the problem as well as to establish the surveys clarity, construct, and language use. Survey was piloted to stakeholder providers with adjustments to the survey based on feedback and follow up survey to other providers in order to report findings for future changes to RPM reports.

Plan
- Literature Review
- Focus Group
- Synthesize Literature Review and Focus Group
- Develop Survey Items
- Expert Validation
- Cognitive Interview

Do
- Pilot Survey

Check
- Review Pilot Survey Results
- Review Pilot Survey Evaluation Results
- Make Adjustments to the Survey

Act
- Conduct Survey to Other Providers
- Analyze Data
- Report Findings for Future Change to RPM Reports

Results

Piloted survey to 8 stakeholders (50% Physicians, 50% APC-CRNP/PA-C, response rate 66.7%, 100% cardiology patient population). Providers experienced with the RPM reports involved 21 responses (52.4% physicians, 23.8% APC-CRNP/PA-C, 19.1% nurses, and 4.8% other) with a response rate of 16.2% (survey sent to 130 providers) and included 38.1% Cardiology, 4.76% Pulmonology, 9.52% Geriatric, 23.81% Family Practice, 19.05% Internal Medicine, and 4.76% other. There was no significant difference between stakeholders and other providers. Median scores reported [7].

Median Scores for Survey Prompts
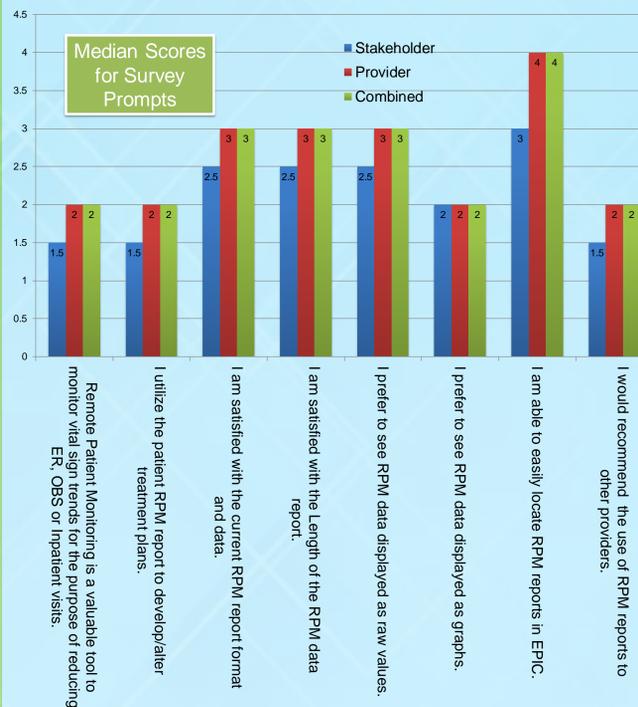
Combined satisfaction of RPM report format and data
14%, 28%, 34%, 24%
Strongly Agree / Agree / Neutral / Disagree / Strongly Disagree
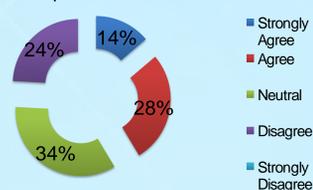
I am satisfied with the Length of the RPM data report.
14%, 21%, 34%, 31%

RPM reports can easily be found
25%, 21%, 43%, 11%
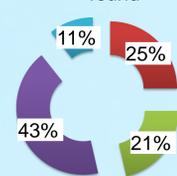
I prefer to see RPM data displayed as raw values.
7%, 24%, 52%, 17%
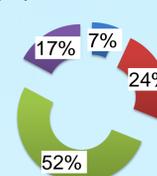
RPM valuble tool to monitor patients for purpose of reducing hospital admission
41%, 38%, 14%, 4%, 3%

I prefer to see RPM data displayed as graphs.
3%, 52%, 28%, 14%, 3%
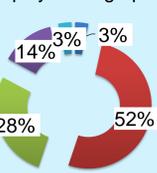
I utilize the patient RPM report to develop/alter treatment plans.
21%, 41%, 35%, 3%
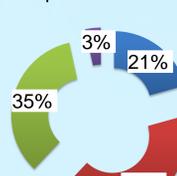
I would recommend the use of RPM reports to other providers.
35%, 38%, 17%, 10%
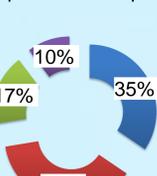
Discussion

The Remote Patient Monitoring Reports of heart failure patient's study is apart of an ongoing investigation to determine the proper use of RPM.
- 42% consider the current RPM report format and data functional.
- 1/3 disapprove of the length, which goes in accord with the report form the focus group; that they were long and cumbersome.
- Providers prefer data to be displayed as graphs vs raw data.
  - Potential goal of the RPM reports to present the data in a shortened synopsis with the option of having access to the raw values.
- Provides have difficulty in retrieving the RPM reports.
  - Potential goal of incorporating the reports into EPIC in a location where providers are aware of and have easy access.
- Providers find a need for RPM in HF patients. As one provider mentioned, it's the system in place that's suboptimal.
- Providers use the reports to develop/alter patient treatment plans.
  - However, providers in agreement that reviewing the reports alone could lead to harm.
  - Potential goal of having safety measures in place to prevent blind medical intervention.
- Providers likely to refer other providers in using RPM and continue using RPM report themselves.
- The quality of the study was limited by the low response rate. Stakeholder response rate was 66.7% and other provider rate was 16.2%.

To fully answer the question of whether RPM is effective or just ill-used, a more comprehensive investigation into how patients are risk stratified and placed in RPM programs, internet connectivity for patients to send in data, patient education on the proper use of RPM technologies, healthcare provider use and access of RPM technologies, and the continued investigation into the type of information provided in the reports given to healthcare providers is needed.

Make It Happen

Conclusion

Among the surveyed healthcare providers, approximately 42% felt that the current RPM report was functional with room for improvement regarding the length, retrieval of the reports, and viewing the vital signs data displayed in graphs. Secondary outcomes of providers attitude toward RPM for HF patients, how providers use the RPM reports, and the future of RPM expansion showed a promising future. Further investigation into these claims is needed given the lower than expected response rate.
- In accordance with SELECT principles of:
  - Accelerating effective change in healthcare.
  - Continuous improvement approach to optimize the efficient use of resources.
- And following along with the institution's triple aim of:
 - Better health
  - Better care
  - Better cost

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