ECG Home Telemonitoring in Patients With Heart Failure

Pace University, College of Health Professions, Lienhard School of Nursing

PICO: For patients ages 65 and older with heart failure, would using home telemonitoring reduce the rate of readmission to the VA Hospital within 30 days, compared to those who did not utilize the telemonitoring service?

BACKGROUND & RATIONALE

- Heart failure (HF) is defined as the inability of the heart to pump enough blood to meet the body’s demand for oxygen (NIH, 2014).
- HF resulted in 6.5 million hospital days annually in the USA, and is the most common cause of hospitalization in elderly adults over the age of 65. Hospital admission due to HF is the largest contributor of unexpected readmission costs (Kaneko et al., 2015).
- Readmission due to HF cost medicare over $1.74 billion in 2011 (Hines et al, 2014).
- The VA NY Harbor readmission rate within 30 days for patients with HF is above the national average readmission rate of 22.7% (CMS, 2015).

SEARCH STRATEGY

- Databases searched included the following: CINAHL, Cochrane, Google Scholar, NIH, and PubMed.
- Keywords included: congestive heart failure, heart failure, ECG home monitoring, interventions, readmissions, telemonitoring, telemedicine.
- Delimitations included: English language only, publication date of 2010 and after, scholarly systematic reviews, and research articles.
- Based on the relevance to our PICO question, the amount of evidence, and level of effectiveness, 12 articles were used including: two systematic reviews, one clinical guidelines, and a randomized control trial.

LITERATURE REVIEW

- Telemonitoring of patients at home helps increase early recognition of heart failure exacerbation so that appropriate intervention are implemented in a timely manner, which leads to less hospitalizations (Kitsiou et al., 2015; Smith, 2013).
- Network meta-analysis found that patients who received telemedicine interventions that involved the use of ECG data transmission were hospitalized less than patients who received usual care, and had reduced mortality rates and fewer hospitalizations (Antonicelli, Mazzanti, Abbatecola, & Parati, 2010; Kitsiou et al., 2015; Kottb, Cameron, Hsieh & Wells, 2015).
- Cardiac arrhythmias, palpitations of unknown causes, the outcome of antiarrhythmic drug therapy, or interventional ablation therapy can be assessed using ECG telemonitoring (Mateev, Smova, Katova, & Dimitrov, 2012).
- Telemonitoring, or nurse administered telephone based management programs were clinically effective in patients with chronic HF in comparison to the usual care methods (Antonicelli et al., 2010).

EBP RECOMMENDATIONS

- Home telemonitoring for patients with CHF including the use of an ECG home monitor, combined with education of heart failure symptoms (Pinkerman et al., 2013).
- Education about telemonitoring and use of an ECG to begin at the time of admission by the patient’s primary nurse.
- Education on recognizing signs and symptoms of HF exacerbations should continue for the duration of the hospital stay.
- Discharge teaching by telemonitoring nurse.
- Having the patient “teach-back” how to use equipment needed to monitor blood pressure, heart rate, pulse oximetry, weight, and ECG.
- Daily structured telephone support by a nurse to monitor signs of HF exacerbations.

METHOD FOR IMPLEMENTATION

- Educate the VA NY Harbor nurses about the benefits of telemonitoring, and about the technology used for telemonitoring.
- Create a coalition of diverse healthcare professionals to advocate for the use of ECG telemonitoring for patients with HF, and educate healthcare professionals and patients about the benefits of ECG telemonitoring.
- Primary nurse begins educating each patient with CHF about signs and symptoms of exacerbations of HF.
- Assess patients ability and teach patient how to use equipment to monitor blood pressure, heart rate, pulse oximetry and weight daily.
- Teach patient how to use an ECG telemonitor.
- Instruct patient to contact telemonitoring nurse and receive home ECG monitoring as needed.
- Patients discharged home from the VA with HF are supplied with a Cardiocom Commander-Flex monitor, which allows for daily vital signs and health checks, analyzed by VA nurses.

EVALUATION

- After 4 months, evaluate rate of readmission within 30 days for patients with CHF using an ECG monitor to determine the effectiveness of using home ECG telemonitoring.
- Compare percentage of readmission rates among patients who used ECG telemonitoring with patients who used the current VA telemonitor system.
- Ask patients who participate in the program to complete a survey to evaluate ease-of-use, comfort, and how long it takes to complete the daily monitoring. Also, assess for potential barriers to compliance.

REFERENCES

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- Hines, H., Smith, J., & Wilmer, J. (2014). Cardiac arrhythmias, palpitations of unknown causes, the outcome of antiarrhythmic drug therapy, or interventional ablation therapy can be assessed using ECG telemonitoring (Mateev, Smova, Katova, & Dimitrov, 2012).