



2019 ABSTRACT BALLOTS - ORAL ABSTRACTS FOR THE AAHFN SECTION

RESEARCH CATEGORY

Inspiratory Capacity and NT-pro BNP Predict Key Cardiopulmonary Exercise Results but not Six-Minute Walk Test distance in Older Patients with Heart Failure

Introduction: Heart failure (HF) affects more than five million people, half of whom are at least 75 years old. Peak oxygen consumption (VO₂peak), Ventilatory efficiency (VE/VCO₂ slope) and the Six-Minute Walk test (6MWT) are powerful prognostic indicators and are useful for monitoring the therapeutic efficacy of symptom and disease management. Cardiopulmonary Exercise testing (CPX) and/or the 6MWT are often not performed as a part of symptom assessment and management in older adults with HF, presumably due to cost, comorbidities and/or potential frailty. NT-pro BNP, NYHA classification, and inspiratory capacity are all easily obtainable in an office setting and may correlate with VO₂peak, the VE/VCO₂ slope, Peak cardiac output (Q_{peak}) and/or 6MWT.

Hypothesis: NT-pro BNP, NYHA classification, and/or inspiratory capacity predict VO₂peak, the VE/VCO₂ slope, Q_{peak}, and/or 6MWT.

Methods: Twenty-three patients (73.6 ± 4.5 years old) with HF underwent assessment and determination of NYHA classification status, venipuncture, inspiratory capacity measurement, and performed the 6MWT and CPX per standardized protocol, (Q_{peak} measured via acetylene washin method). VO₂peak, VE/VCO₂ slope and Q_{peak} were recorded during the CPX.

Results: The strongest relationships were between inspiratory capacity and Q_{peak}, and between NT-pro BNP and the VE/VCO₂ slope. There was a moderate relationship between inspiratory capacity and VO₂peak and between NT-pro BNP and VO₂peak. Inspiratory capacity and NT-pro BNP combined explained 42% of the variance in VO₂peak (adjusted R² = 0.42, F (2, 20) = 8.82, p < 0.002). Due to the lack of variance NYHA classification was not included in the analysis. The 6MWT distance did not correlate with inspiratory capacity or NT-pro BNP.

Conclusion: NT-pro BNP and inspiratory capacity can, either alone or combined, explain between 42% and 59% of variance in key exercise measurements. Both measurements are obtainable in the office setting for monitoring the therapeutic efficacy of symptom and disease management. Moreover, inspiratory capacity has the potential to be measured by older adults in their home.

PRACTICE IMPROVEMENT

Heart Failure Knowledge among CNAs in a Skilled Nursing Facility: A Pilot Project

Background: Heart failure (HF) is one of the leading causes of hospitalization among patients over the age of 65 yrs. Many patients with HF are transitioned to skilled nursing facilities (SNF) following hospital discharge for rehabilitation. Limited formal education is currently available to SNF staff on HF treatment and management.

Purpose: The purpose of this quality improvement pilot project was to develop a sustainable HF educational program specifically for SNF staff to improve their HF knowledge base. This educational intervention focused on the certified nurse aid's (CNA) HF care knowledge through computerized based education and competency demonstration offered during annual competency evaluation.

Methods: Assessment of perceived knowledge gaps and current available education was reviewed at the SNF. Based on adult learning theory, current literature and ACC/AHA/HFSA guidelines were used to develop computer based educational modules. Module 1 offered basic HF knowledge and an introduction to HF care. Module 2 focused on specific guideline recommended care measures such as, modifying lifestyle choices and completing daily tasks necessary to manage the patient with HF in the SNF environment. The modules were reviewed by a HF expert who offered feedback, and revisions were made. A written 10 question pretest and post-test were developed and given prior and following viewing of the educational modules. Hands on competencies were developed which included, weight assessment, application of compression stockings, volume status monitoring, and low sodium diet recommendations. The educational program was implemented during the annual SNF competency fair.

Results: Thirty-four of 40 employed CNAs participated in the program. CNA work experience ranged from 6 months to 17 years. Pre-test scores ranged from 4 to 10 (M = 7.8, SD 1.4) and post-test scores ranged from 6 to 10 (M = 8.9, SD 1.0) demonstrating a significant improvement in knowledge (p < .00). Participants struggled with understanding symptoms of fluid volume overload and recognition of subtle symptoms of patient decline. Participants also struggled with medical terminology, including terms such as, dyspnea. Hands on competencies revealed some participants had difficulty with identifying steps for proper weight measurement and lower sodium food choices.

Conclusions: HF education is important for all caregivers across the nursing continuum. As HF care continues to transition to SNFs, timely staff education is critically important to ensure optimal patient care and outcomes. Further study is warranted that explores implementation of this educational program in other SNFs and assessment of long range outcomes.

PRACTICE IMPROVEMENT

A Heart Failure Collaborative to Accelerate Improved Patient Outcomes in 3 Metro Markets

Background: Nearly 6.5 million Americans are living with heart failure (HF), the leading cause of hospitalization among adults aged 65 and older. Despite advancements in medical therapy, HF patient outcomes remain of concern. HF readmission rates remain high and only half of patients diagnosed with heart failure are expected to live beyond 5 years of diagnosis. Increasing prevalence and poor outcomes provide significant opportunities for improvement. Hospital participation in a quality initiative designed to improve care by

promoting adherence to the scientific guidelines, such as Get With the Guidelines®-Heart Failure (GWTG-HF), assists hospitals in effectively delivering high quality care to improve patient outcomes. The objective of this project is to form multidisciplinary collaboratives that will rapidly implement evidence-based guidelines to develop best practices that can be shared to improve heart failure patient outcomes.

Methods: The AHA will lead a quality improvement initiative for transforming heart failure care in three major cities including Chicago, Milwaukee and St. Louis.

- A retrospective review was conducted using GWTG-HF on measures with low adherence from participating hospitals in the metro markets.
- Baseline data of specific HF measures from Quarter 1, 2018 were analyzed and to determine areas of improvement needed.
- Using regional and 1:1 hospital meetings, AHA will lead a quality improvement initiative to transform HF patient care.
- The HF project will focus on professional education, enhancing systems of care and facilitating the sharing of best practices.
- The patient population will include patients from GWTG-HF with a principal/primary diagnosis of heart failure.

Results: The project goal within the 2-year timeframe of this initiative is to achieve 20% improvement from baseline data OR achieve AHA's 85% adherence threshold in each measure. AHA Quality staff will observe and monitor market-level data within GWTG-HF to uncover and recommend improvements, provide consultation to clinicians, deliver targeted training and resources such as webinars, conferences, toolkits, care pathways, educational materials and to foster best-practice sharing to address common barriers.

Limitations: Participating hospitals vary in size, discharge volume, GWTG participation tenure, FTE support and resources

- *There is incomplete baseline data for the three thirty day follow up measures
- Initiative implementation may vary slightly in 3 metro markets

Conclusions: The two-year multi-city quality initiative will bring together multiple hospitals to share best practices, develop resources and analyze Get With The Guidelines data for performance improvement to accelerate heart failure patient outcomes. Further investigation is merited evaluating the effectiveness of quality collaboratives to enhance care.

PRACTICE IMPROVEMENT

Safely Ambulating Patients with a Pulmonary Artery Catheter: Changing Practice and Improving Care

Background: Patients waiting for a heart transplant can be hospitalized for extended periods of time, ranging from months to over a year. During this time, patients typically require continuous hemodynamic monitoring with pulmonary artery catheters (PACs) to guide medical

management. Out of concern for catheter movement/dislodgement, the standard of care for patients with PACs historically has their activity limited to bed rest. Decreased physical activity leads to deconditioning, osteoporosis and emotional distress. Recent data of ICU patients demonstrated beneficial effects from early mobility. There is limited data in the literature with regards to safely ambulating patients with PACs but from what has been studied, patients expressed a feeling of improved physical and emotional well-being (Harris et al., 2013).

Purpose: To determine if patients with PACs can ambulate safely, without movement or dislodgement of their catheter, in order to prevent physical deconditioning and improve emotional well-being.

Method: All patients on the Cardiomyopathy Unit with a PAC in place were included in this quantitative analysis. Inclusion/Exclusion criteria were created as patients were considered unsafe to ambulate if they had the following: symptomatic arrhythmias, low blood pressure, low SV02, substantial oxygen requirements ($\geq 4L$) or had inotropes started within 12 hours. Those with significant physical therapy constraints such as non-weight bearing, non-ambulatory, or an assist of ≥ 2 were not eligible. The Heart Failure Nurse Practitioner evaluated the patients and entered an order if ambulation was deemed appropriate. The patient was educated on ambulating with a PAC guidelines. The patient was allowed to ambulate on telemetry twice daily, accompanied by a RN only. Prior to ambulation, the RN measured PAC position externally, ensured securement of an occlusive dressing at the site and catheter immobilization, printed RA and PA waveform strips to be placed on a tracking sheet. The patient's transducer cables were then disconnected from the bedside monitor. The patient was allowed to ambulate as tolerated, while being monitored for arrhythmias on telemetry, (hemodynamic waveforms were not monitored during ambulation). Post ambulation, the patient's PAC transducer cable was reconnected to the monitor and zeroed. The RN then reassessed the PAC position externally, printed RA and PA waveforms to compare to prior and ensured integrity of the dressing. The RN replaced the dressing if it was no longer occlusive to prevent infection. If a complication occurred, the Heart Failure Nurse Practitioner was notified and the type of complication was documented on the tracking sheet.

Results: 89 patients were observed for potential complications associated with PACs during ambulation including: migration of the PAC (forward/backward), fracture in the catheter, dislodgement of catheter, life threatening dysrhythmias. No complications were observed in 493 ambulation experiences.

Conclusions: By utilizing and inclusion/exclusion criteria, setting limits on the frequency a patient is allowed to ambulate and creating a protocol to ensure a controlled setting, patients with PACs can safely ambulate without monitoring the PA waveforms. The use of a standard dressing and immobilization technique prevents catheter dislodgement during ambulation. By increasing physical activity, patients will gain strength to help prevent deconditioning during prolonged hospitalizations