Brain Natriuretic Peptide is a Predictor of Thirty Day Hospital Admission in Patients Enrolled in a Collaborative Care Heart Failure Treatment Program

Miguel Gambetta, MD, Dawn Nelson, CNS, FNP, Patrick Dunn, MS/MBA, Ross Arena, PhD, PT

Community Hospital, Munster, IN, Virginia Commonwealth University

Introduction: The Community Hospital in Munster, Indiana developed a collaborative care outpatient heart failure (HF) treatment program. This program is staffed by a cardiologist, an advanced practice nurse and a team of registered nurses. The program included HF education, an infusion clinic (Nesiritide, Milrinone) and tele-management. A primary goal of this program is to address sings/symptoms of HF decomposition and prevent the need for hospital admission. We have previously demonstrated this program is successful in significantly reducing the need for inpatient care, although a number of subjects in our cohort were still hospitalized within 30 days of program enrollment. The purpose of the present study is to determine baseline variables that predict short-term hospitalization.

Methods: 1,404 (856 male/548 female) subjects were enrolled in the collaborative care program included in this analysis. Mean age of the group was 77.11 ($\pm$8.9) years. All subjects received outpatient care as previously described. Heart Rate (HR), blood pressure (BP), respiratory rate and brain natriuretic peptide (BNP) was collected upon program enrollment. Subjects were tracked for inpatient hospital admissions for 30 days following initiation of the collaborative care program.

Results: Seventy-five subjects (5.3%) were hospitalized within the 30-day tracking period. Multivariate Cox regression analysis revealed BNP was the only predictor of 30-day hospitalization. Receiver operating characteristic curve analysis revealed a BNP threshold $</\geq$ 651 pg/ml produced a sensitivity and specificity of 62% and 60% respectively. The hazard ratio for this BNP threshold value was 2.4 (95% CI = 1.5-3.8), $p<0.001$.

Discussion: The results of the present study further illustrate the clinical value of BNP in the HF population. Specifically, in a group of HF patients demonstrating signs/symptoms of acute documentation and being aggressively treated on an out-patient basis, BNP appears useful in identifying those individuals at higher risk for hospitalization.

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