INFLUENCE OF PREDICTIVE MODELING IN IMPLEMENTING OPTIMAL HEART FAILURE THERAPY

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Background: A gap remains between evidence-based guidelines in the treatment of heart failure and current pharmacologic and device therapy. The reasons for this are multiple, including the failure to recognize the benefit of increased therapeutic intervention in an otherwise stable patient. The Seattle Heart Failure Model is an accurate predictive tool that allows the clinician to quantitatively assess the influence of pharmacologic and device therapy on heart failure. We hypothesized that graphically demonstrating the improvement in survival by such a tool may well modify physician practice behavior.

Methods: We examined 50 randomly selected patients from 10 primary care physicians as having heart failure with a left ventricular ejection fraction (EF) \( \leq \) 40%. Twenty-one data elements were entered into the Seattle Heart Failure Model to create a survival estimate before and after implementation of interventions known to be beneficial, both pharmacologic (addition of ACE/ARB, statin, ß-blocker, aldosterone blocker) and device-based (consideration for AICD, BiV pacer, BiV ICD). The influence of therapeutic change was presented in a focused clinical session with the primary care physician.

Results: The mean age of the population examined was 73 ± 10 years. The cohort was comprised of 66% males, mean weight 90 ± 21 kg, with NYHA class 2.2 ± 0.5 symptoms. Ischemic etiology was identified in 72% with a mean left ventricular EF of 28 ± 7%. Laboratory data included mean Hgb 13.1 ± 2 g/dL with 19 ± 7% lymphocytes, mean total cholesterol of 166 ± 47 mg/dL and mean sodium of 140 ± 3 mmol/L. In the 50 patients examined, we altered device or medical therapy in 82%. This included advancement of medical therapy in 50%, consideration for device referral in 10%, or both (medical therapy and device referral) in 22%. This augmentation of therapy resulted in an increase in estimated mean life expectancy from 8.8 years to 10.9 years (p < 0.001). In addition, referring physicians generally believed this tool would enhance patient acceptance of additional therapies.

Conclusion: Use of the Seattle Heart Failure Model significantly impacted intensification of heart failure therapy in this ambulatory heart failure population.