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Cost-Impact Analysis Of Baroreflex Activation Therapy In Patients With Chronic Heart Failure In The United States

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Abstract:

Background: Chronic heart failure (CHF) affects roughly 5.7 million adults in the United States, accounting for \$30.7 billion in medical spending each year. One approved therapy for CHF symptomatic treatment in these patients is baroreflex activation therapy (BAT). BAT is delivered by an implantable device designed to modulate the body's natural blood flow by sending signals to the brain by an electrode attached to the outside of the carotid artery, which activates the process of balancing the body's sympathetic and parasympathetic activities to regain homeostasis. The BeAT-HF trial evaluated the safety and effectiveness of BAT, resulting in FDA approval in August 2019.

Objective: The study evaluated the cost of BAT + Optimal Medical Therapy (OMT) compared to OMT alone for CHF patients with reduced ejection fraction and New York Heart Association Class II or III.

Methods: A Cost Impact Model was developed from a U.S. health care payer perspective over a 3-year period, comparing BAT + OMT to OMT alone. The expected costs associated with each group were calculated by utilizing data from BeAT-HF trial and existing literature. Rates of serious BAT related adverse events, cardiovascular (non-HF) hospitalizations, progression to LVAD and heart transplantation, and medication utilization were based on BeAT-HF 6-month results and extrapolated beyond 6-months. HF hospitalization rates throughout the model were extrapolated based on observed baseline to 6-month changes in NT-proBNP levels.

Results: At 6 months, BAT + OMT is \$37,726/patient more expensive than OMT alone, reflecting initial BAT device and implantation costs. The treatments have equal predicted costs starting between years 2 and 3. At 3 years, predicted costs are \$9,008 lower in the BAT+ OMT arm versus OMT-only arm. This stems from an offset of higher short-term BAT+ OMT arm costs with lower rates of significant CV events, hospitalizations, HF hospitalizations, and resource-intensive late-stage procedures (LVADs and heart transplants) as compared to the OMT-only arm.

Conclusion: BAT+OMT starts to become less costly than OMT alone between years 2 and 3 and provides significant savings over time. Results are robust to a variety of sensitivity tests and comparisons to the literature.

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