

Nationwide Trends of Pacemaker Implantation in Patients with Sick Sinus Syndrome with normal Atrioventricular Conduction.

Background: Sinus node dysfunction (SND), also referred to as sick sinus syndrome (SSS), is a common indication for permanent pacemaker implantation. Patients with symptomatic SSS and intact atrioventricular (AV) conduction with no evidence of AV block require placement of a single atrial lead for pacing; however, the majority of patients nationwide receive dual-chamber devices. Dual-chamber pacing, however, requires implantation of an additional ventricular lead. The additional procedural risk must be carefully weighed against the likelihood of future development of AV block, which would mandate the implantation of a ventricular lead. In clinical practice, physicians are concerned about implanting single-chamber atrial devices in patients with SSS because of the risk of subsequent AV block; however, there is no reliable way to predict who will eventually develop AV block. In this analysis, we attempt to study the national trends, outcomes and cost effectiveness of single-chamber atrial pacemakers compared to dual-chamber pacemaker implantation in patients with SSS and no evidence of AV block.

Methods: Data was gathered from the National Inpatient Sample (NIS) from January 2002 to December 2012. Patients ≥ 18 years of age undergoing permanent pacemaker implantation for SSS or SND were identified. Patients were excluded if there was any presence of AV conduction delay/disease.

Results: A total of 757,962 adult patients with SSS were identified, of which 752,075 (99.2%) received dual-chamber devices compared to 5,887 (0.7%) who received single-chamber atrial pacemakers. A propensity matching was used to compare the two groups with 1,646 patients in the single chamber group and 4,800 patients in the dual-chamber group with no significant difference between the two matched groups in all patient characteristics. The average cost savings of an implanted single-chamber atrial pacemaker per hospitalization was 1,286 United States Dollars (USD) with a projected annual cost saving of 99.462 million USD nationwide.

Conclusion: The utility of single-chamber atrial pacemaker implantation in symptomatic SSS patients with no evidence of AV block is cost effective with significant savings compared to dual-chamber device implantation with no increase in adverse events.