Using Real-World Evidence to Quantify Hospital Costs of Subcutaneous Implantable Cardioverter-Defibrillator Infections in the US

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OBJECTIVES

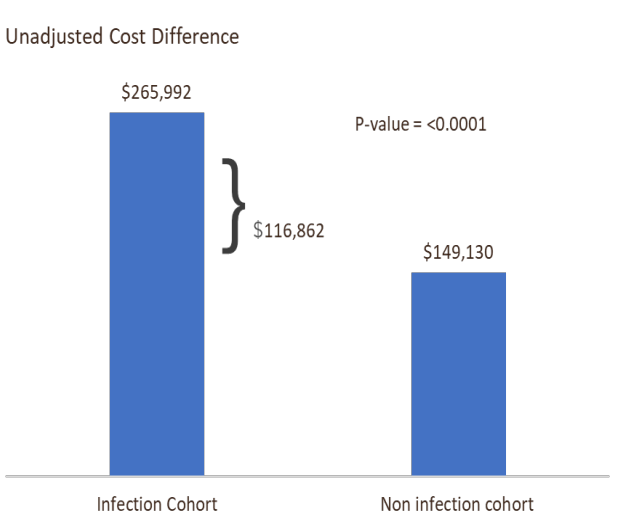
- There are limited studies that specifically assess the infection rates of Subcutaneous Implantable Cardioverter-Defibrillators (S-ICD), and even fewer studies that estimate the cost of these infections.
- The goal of this study is to determine the total healthcare utilization hospital costs of S-ICD infections at 12 months after implant in the US using top-down cost estimates from Medicare administrative claims and generalized linear models.

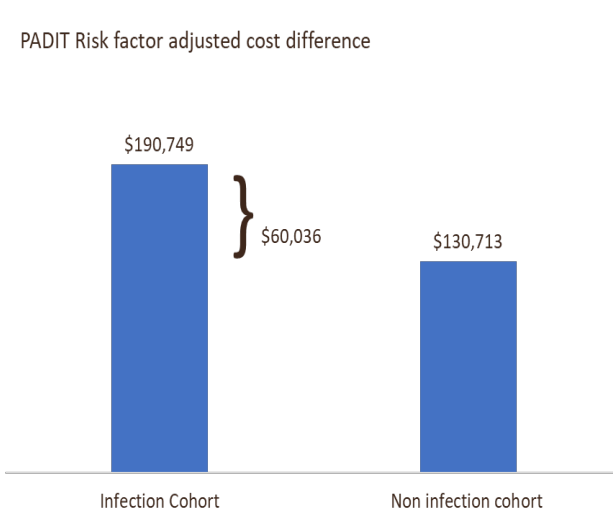
METHODS

- This study conducts a retrospective analysis using Medicare Fee-For-Service (FFS) claims to determine patients implanted with S-ICDs in 2016-2020.
- Device infections and hospital costs are identified in a 12-month follow-up period after device implant; as infections occur during follow-up, this study uses a crossover research design where a patient can have an infection and non-infection status.
- Generalized linear regressions estimate adjusted and unadjusted average cost differences between patients with and without device infection; regressions are adjusted using baseline comorbidities from the PADIT[1] score risk factors identifiable in claims, and with an offset for time in infection and follow-up.
- These differences are interpreted as top-down estimates of S-ICD yearly infection costs.

RESULTS

- 5,326 Medicare FFS patients had an S-ICD implant in 2016-2020, of which 311 (5.8%) had a device infection 12 months after implant.
- Estimated adjusted costs of patients with S-ICD infection $190,749 vs. without S-ICD infection $130,713, 45.9% increase, p-value <0.001 (unadjusted: $265,992 vs. $149,130, 78.4% increase, p-value <0.001).
- The estimated adjusted hospital costs of S-ICD infections are $60,036 (unadjusted: $116,862).





PADIT Risk factors included were history of renal insufficiency, immunocompromised, or prior CIED procedure defined by diagnostic and procedure code available in claims [1]

CONCLUSIONS

- Using real-world evidence in a crossover research design, this study estimates hospital costs of S-ICD infections in the US. S-ICD infections severely impact cost on the US healthcare system especially for older people.

Krahn, A. D., Longtin, Y., Philippon, F., et al. (2018). Prevention of Arrhythmia Device Infection Trial: The PADIT Trial. *Journal of the American College of Cardiology*, *72*(24), 3098–3109. https://doi.org/10.1016/j.jacc.2018.09.068 [1]