Association of Physician Certification and Outcomes Among Patients Receiving an Implantable Cardioverter-Defibrillator

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Context  Allowing nonelectrophysiologists to perform implantable cardioverter-defibrillator (ICD) procedures is controversial. However, it is not known whether outcomes of ICD implantation vary by physician specialty.

Objective  To determine the association of implanting physician certification with outcomes following ICD implantation.

Design, Setting, and Patients  Retrospective cohort study using cases submitted to the ICD Registry performed between January 2006 and June 2007. Patients were grouped by the certification status of the implanting physician into mutually exclusive categories: electrophysiologists, nonelectrophysiologist cardiologists, thoracic surgeons, and other specialists. Hierarchical logistic regression models were developed to determine the independent association of physician certification with outcomes.

Main Outcome Measures  In-hospital procedural complication rates and the proportion of patients meeting criteria for a defibrillator with cardiac resynchronization therapy (CRT-D) who received that device.

Results  Of 111,293 ICD implantations included in the analysis, 78,857 (70.9%) were performed by electrophysiologists, 24,399 (21.9%) by nonelectrophysiologist cardiologists, 1,862 (1.7%) by thoracic surgeons, and 6,175 (5.5%) by other specialists. Compared with patients whose ICD was implanted by electrophysiologists, patients whose ICD was implanted by either nonelectrophysiologist cardiologists or thoracic surgeons were at increased risk of complications in both unadjusted (electrophysiologists, 3.5% [2,743/78,857]; nonelectrophysiologist cardiologists, 4.0% [970/24,399]; thoracic surgeons, 5.8% [108/1,862]; P < .001) and adjusted analyses (relative risk [RR] for nonelectrophysiologist cardiologists, 1.11 [95% confidence interval {CI}, 1.01-1.21]; RR for thoracic surgeons, 1.44 [95% CI, 1.15-1.79]). Among 35,841 patients who met criteria for CRT-D, those whose ICD was implanted by physicians other than electrophysiologists were significantly less likely to receive a CRT-D device compared with patients whose ICD was implanted by an electrophysiologist in both
unadjusted (electrophysiologists, 83.1% [21 303/25 635]; nonelectrophysiologist cardiologists, 75.8% [5950/7849]; thoracic surgeons, 57.8% [269/465]; other specialists, 74.8% [1416/1892]; \( P < .001 \)) and adjusted analyses (RR for nonelectrophysiologist cardiologists, 0.93 [95% CI, 0.91-0.95]; RR for thoracic surgeons, 0.81 [95% CI, 0.74-0.88]; RR for other specialists, 0.97 [95% CI, 0.94-0.99]).

**Conclusions** In this registry, nonelectrophysiologists implanted 29% of ICDs. Overall, implantations by a nonelectrophysiologist were associated with a higher risk of procedural complications and lower likelihood of receiving a CRT-D device when indicated compared with patients whose ICD was implanted by an electrophysiologist.

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