Adherence to driving restrictions among patients with an implantable cardioverter defibrillator: insights from a nationwide register-linked survey study

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Background
Patients with an implantable cardioverter defibrillator (ICD) are restricted from driving following initial implantation or ICD shock. It is unclear how many patients are aware of, and adhere to, these restrictions.

Purpose
To investigate knowledge of, and adherence to, private and professional driving restrictions in a nationwide cohort of ICD patients.

Methods
A questionnaire was distributed to all living Danish residents ≥18 years who received a first-time ICD between 2013 and 2016 (n=3,913). During this period, Danish guidelines recommended 1 week driving restriction following ICD implantation for primary prevention, and 3 months following either ICD implantation for secondary prevention or appropriate ICD shock, and permanent restriction of professional driving and driving of large vehicles (>3.5 metric tons). Questionnaires were linked with relevant nationwide registries. Logistic regression was applied to identify factors associated with non-adherence.

Results
Of 2,741 questionnaire respondents, 92% (n=2,513) held a valid private driver’s license at time of ICD implantation (85% male; 46% primary prevention indication; median age: 67 years (IQR: 59-73)). Of these, 7% (n=175) were actively using a professional driver’s license for truck driving (n=73), bus driving (n=45), taxi driving (n=22), large vehicle driving for private use (n=54), or other purposes (n=32) (multiple purposes allowed).

Only 42% of primary prevention patients, 63% of secondary prevention patients, and 72% of patients who experienced an appropriate ICD shock, recalled being informed of any driving restrictions. Only 45% of professional drivers recalled being informed about specific professional driving restrictions (Figure). Most patients (93%, n=2,344) resumed private driving after ICD implantation, more than 30% during the driving restriction period: 34% of primary prevention patients resumed driving within 1 week, 43% of secondary prevention patients resumed driving within 3 months, and 30% of patients who experienced an appropriate ICD shock resumed driving within 3 months. Professional driving was resumed by 35%. Patients who resumed
driving within the restricted periods were less likely to report having received information about driving restrictions (all p <0.001) (Figure).

In a multiple logistic regression model, non-adherence was predicted by reporting non-receipt of information about driving restrictions (OR: 3.34, CI:2.27-4.03), as well as male sex (OR: 1.53, CI:1.17-2.01), age >= 60 years (OR: 1.20, CI:1.02-1.64), receipt of a secondary prevention ICD (OR: 2.2, CI:1.80-2.62), and being the only driver in the household (OR: 1.29, CI:1.05-1.57).

Conclusion
In this nationwide survey study, many ICD patients were unaware of the driving restrictions, and many ICD patients, including professional drivers, resumed driving within the restricted periods. More focus on communicating driving restrictions might improve adherence.