Risk of motor vehicle accidents in patients with an implantable cardioverter defibrillator

– a Danish nationwide study

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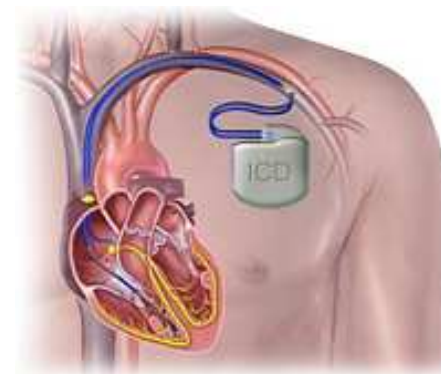Copenhagen, Odense, Aarhus and Aalborg, Denmark

Declaration of Interest

Nothing to declare.

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Background

- Implantable Cardioverter Defibrillator (ICDs) are used to prevent sudden cardiac death

  - Primary prevention
  - Secondary prevention

Europace (2009) **11**, 1097–1107
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CONSENSUS STATEMENT

Consensus statement of the European Heart Rhythm Association: updated recommendations for driving by patients with implantable cardioverter defibrillators

Public safety   Patients' QOL

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Purpose and key points about methods

Investigate the risk of motor vehicle accidents following ICD implantation in a nationwide cohort of ICD patients compared to age and sex matched controls

Methods:

- Retrospective cohort study

- Nationwide Danish registers

- Study period: 2008 – mid 2012

- All first ICD implantations
- Control population:
  - 2:1 match on sex and age

- Primary endpoint:
 - Fatal and non-fatal motor vehicle accidents

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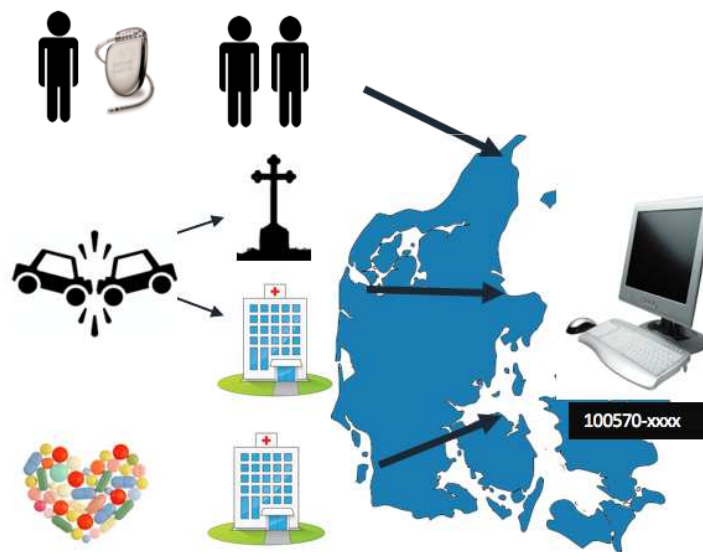
Results

Baseline characteristics	Controls (N=9748)	ICD (N=4874)
Age, median [IQR]	66 [58, 73]	66 [58, 73]
Male, n (%)	7782 (79.8)	3891 (79.8)
Cardiovascular disease*		
Ischemic heart disease	1094 (11.2)	3784 (77.6)
Heart failure	290 (3.0)	3773 (77.4)
Atrial fibrillation/flutter	367 (3.8)	1198 (24.6)
Vascular disease	864 (8.9)	1041 (21.4)
Cardiovascular pharmacotherapy*		
Betablockers	1240 (12.7)	4155 (85.2)
Antiarrhythmics	49 (0.5)	602 (12.4)
ACE/ARB	2351 (24.1)	3943 (80.9)
Diuretics	1471 (15.1)	3247 (66.6)
Non-cardiovascular comorbidities*		
Diabetes	817 (8.4)	1018 (20.9)
Chronic kidney disease	64 (0.7)	184 (3.8)
Chronic obstructive pulmonary disease	827 (8.5)	834 (17.1)
Alcohol abuse	172 (1.8)	137 (2.8)
Anxiolytics	773 (7.9)	884 (18.1)

*All p-values < 0.001

- No fatal motor vehicle accidents in the ICD-population
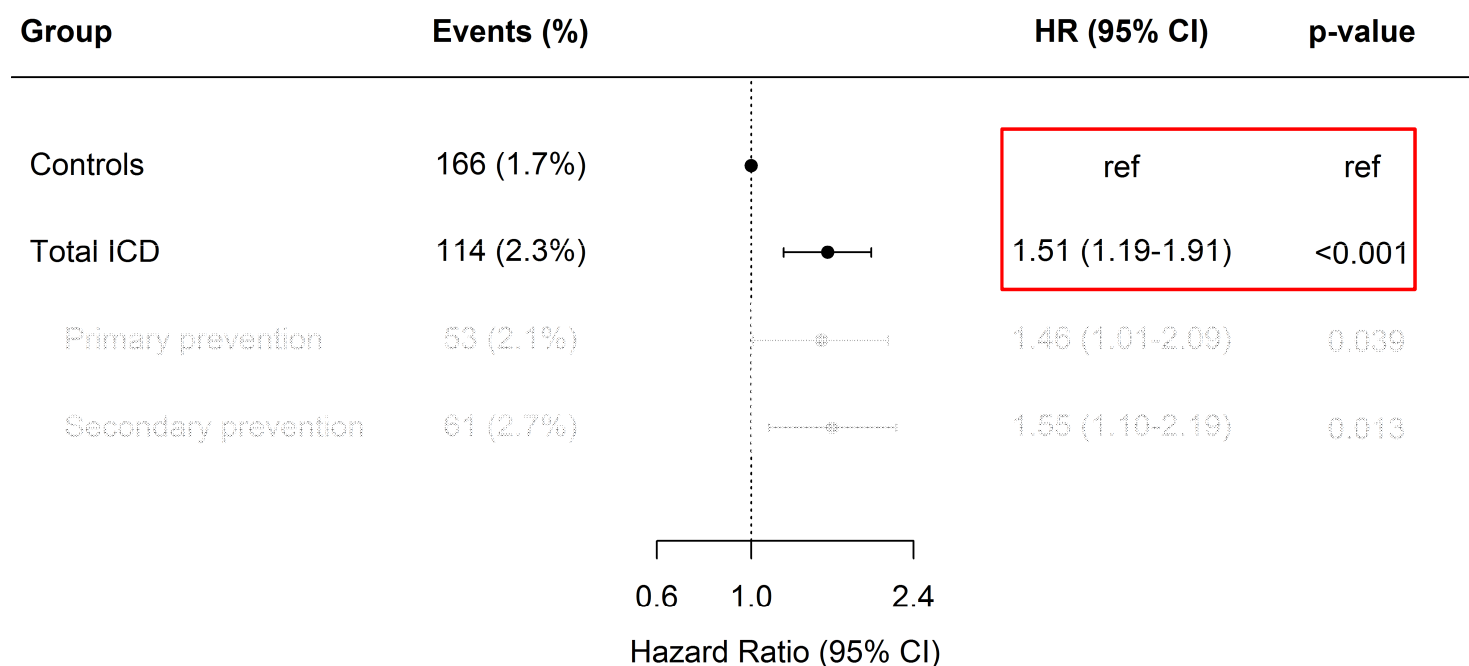
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Cumulative incidence of motor vehicle accidents in ICD patients and matched controls from 2008-2012
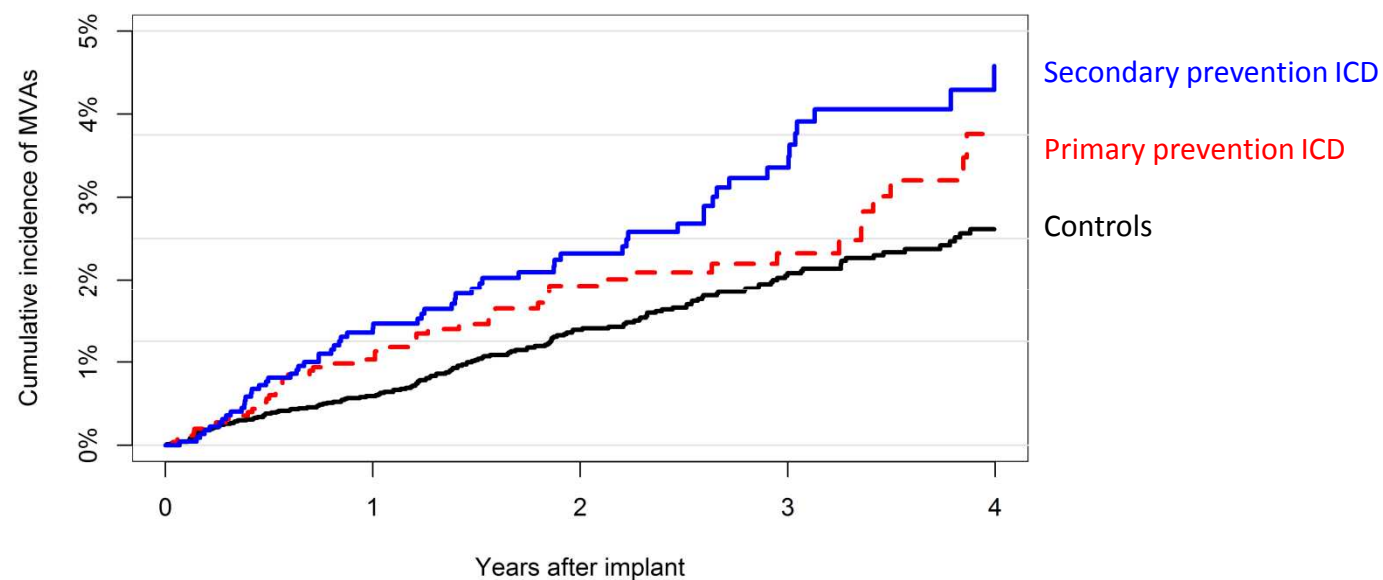
Number of patients (Risk of event,%)

Controls	9748 (0.0)	8222 (0.6)	5771 (1.4)	3572 (2.1)	1657 (2.6)
Primary	2568 (0.0)	1988 (1.0)	1282 (1.9)	737 (2.3)	276 (3.8)
Secondary	2306 (0.0)	1823 (1.4)	1244 (2.3)	707 (3.4)	334 (4.6)

Conclusions

In a nationwide cohort of ICD-patients we found:

- *a 51% increased risk of motor vehicle accidents* compared with an age and gender matched control population

- *no significant risk difference* between primary and secondary prevention ICD-patients

Thank you for your attention!

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