



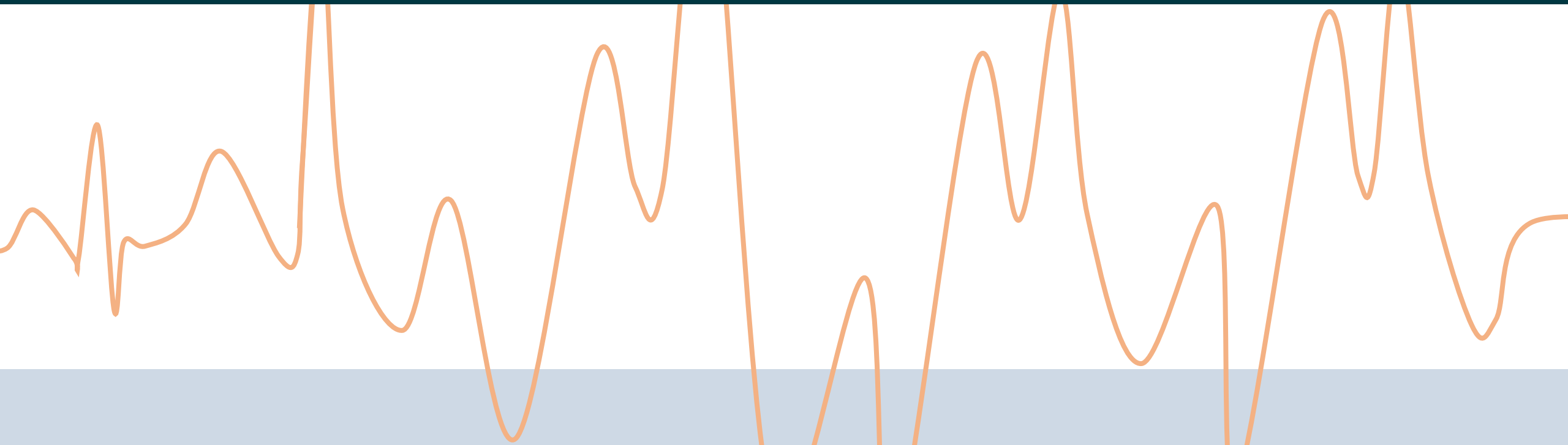
# 25<sup>ste</sup> WCN onderzoeksprijs 2022

**Puck Peltenburg, Amsterdam UMC**



# An International Multicenter Cohort Study on $\beta$ -Blockers for the Treatment of Symptomatic Children With Catecholaminergic Polymorphic Ventricular Tachycardia

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# CV

2012-2018: opleiding Geneeskunde

Universiteit Maastricht

2018: Master Thesis Geneeskunde: *Fever In Children At-Risk For The Brugada Syndrome*

2018-heden: PhD Inherited Cardiac Arrhythmias in the Young

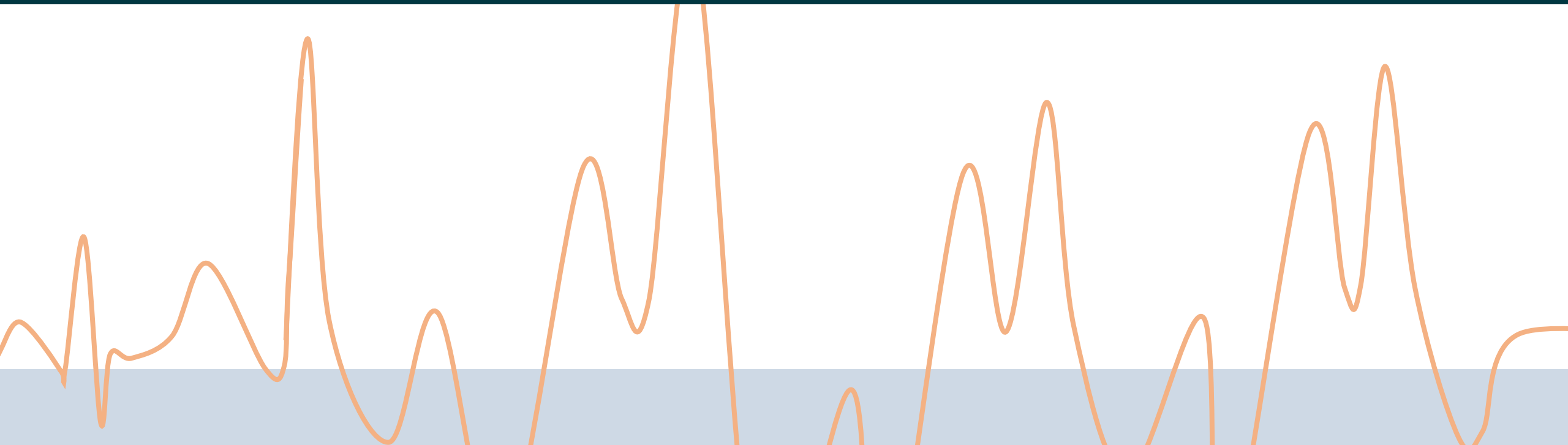
AmsterdamUMC (promotores: A. Wilde, N. Blom)

2021-2022: ANIOS kindergeneeskunde

OLVG Amsterdam

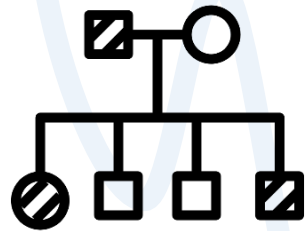
# DOI

None





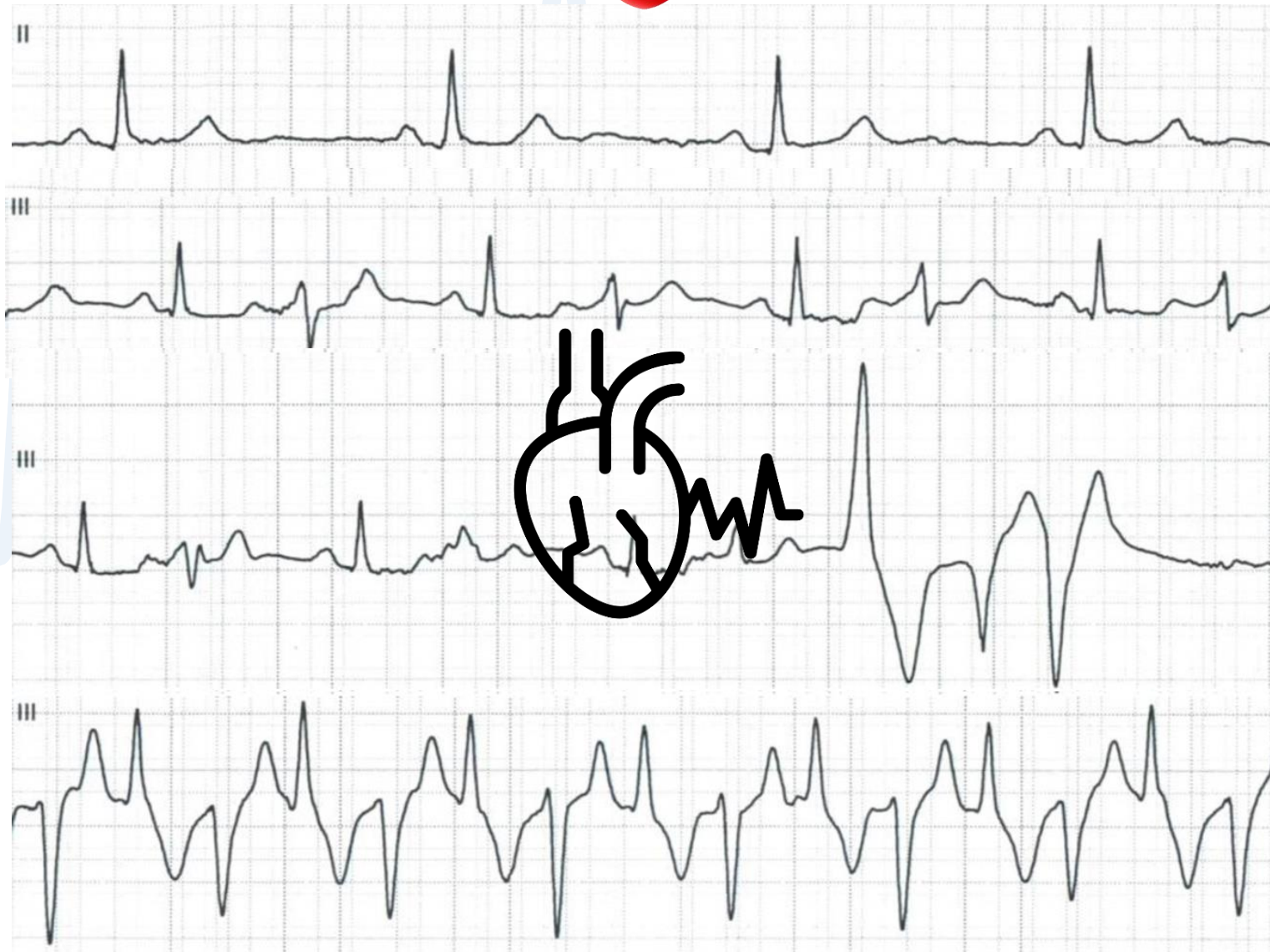
# Catecholaminerge Polymorfe Ventriculaire Tachycardie



1:10.000



*RYR2* gen



Achtergrond – Onderzoeksvraag – Methode – Resultaten – Conclusie – Discussie



# β-blokkers

## Symptomen

Propranolol

- BB verlaagt risico Hayashi et al. 2009, Circulation.

- 4-47% ondanks BB van der Werf et al. 2012, Europace. Roston et al. 2015 Circ Arrhythm Electrophysiol

Metoprolol

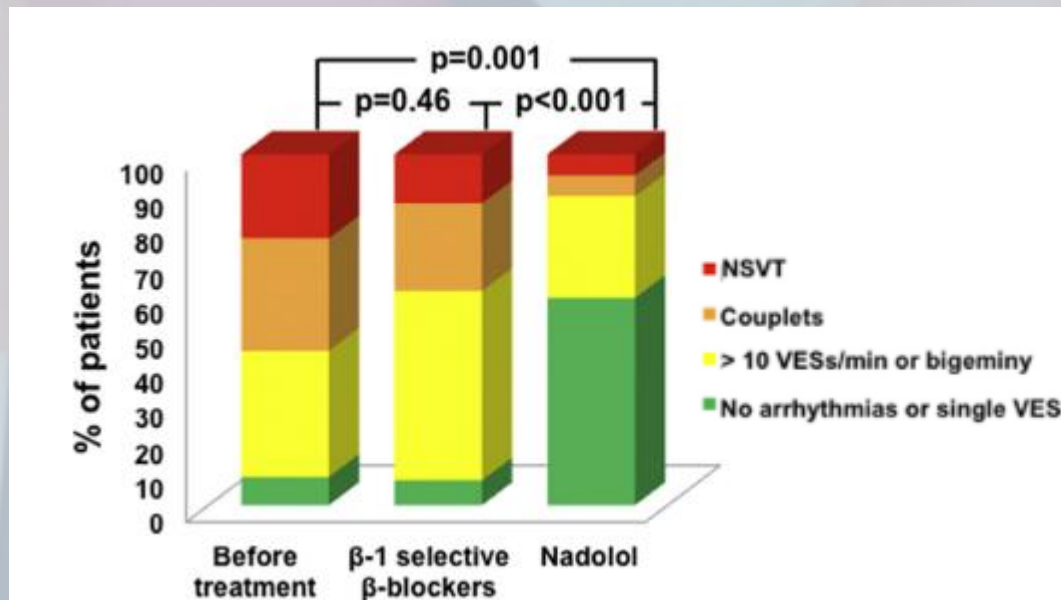
Bisoprolol

- Elke andere BB vs nadolol: HR  
3.12 [1.16-8.38] Hayashi et al. 2009, Circulation.

## Inspanningstest

Nadolol

Atenolol



Leren et al. 2016, Heart Rhythm

Labetalol



Is er een verschil in het risico op symptomen tussen non-selectieve vs selectieve BB bij symptomatische kinderen met CPVT?







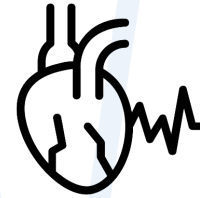
## International CPVT Registry



The Pediatric & Congenital  
Electrophysiology Society



*RYR2* gen



Symptomatische  
kinderen <19 years



B-blokker



# Statistische analyse

- Survival analyse met time-dependent covariates

## Symptomen

1. Primaire eindpunt: syncope, terechte ICD shock, plotse hartdood, doorgemaakte reanimatie
2. Secundaire eindpunt: terechte ICD shock, plotse hartdood, doorgemaakte reanimatie



# Resultaten

329 kinderen

217 non-selectieve BB

140 nadolol

70 propranolol

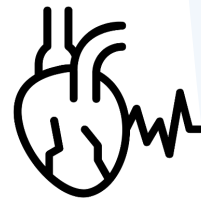
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112  $\beta$ 1-selectieve BB

51 atenolol

33 metoprolol

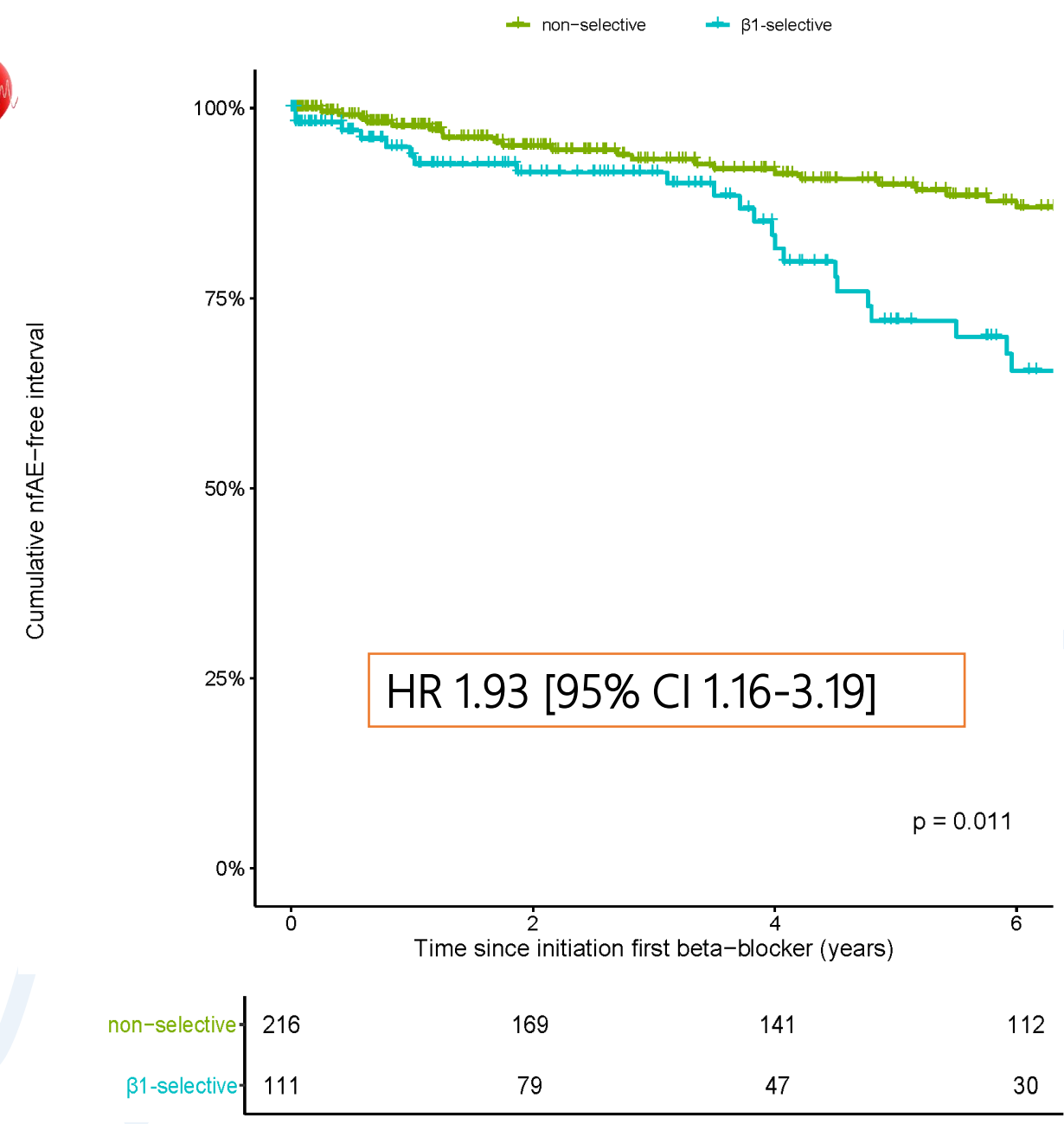
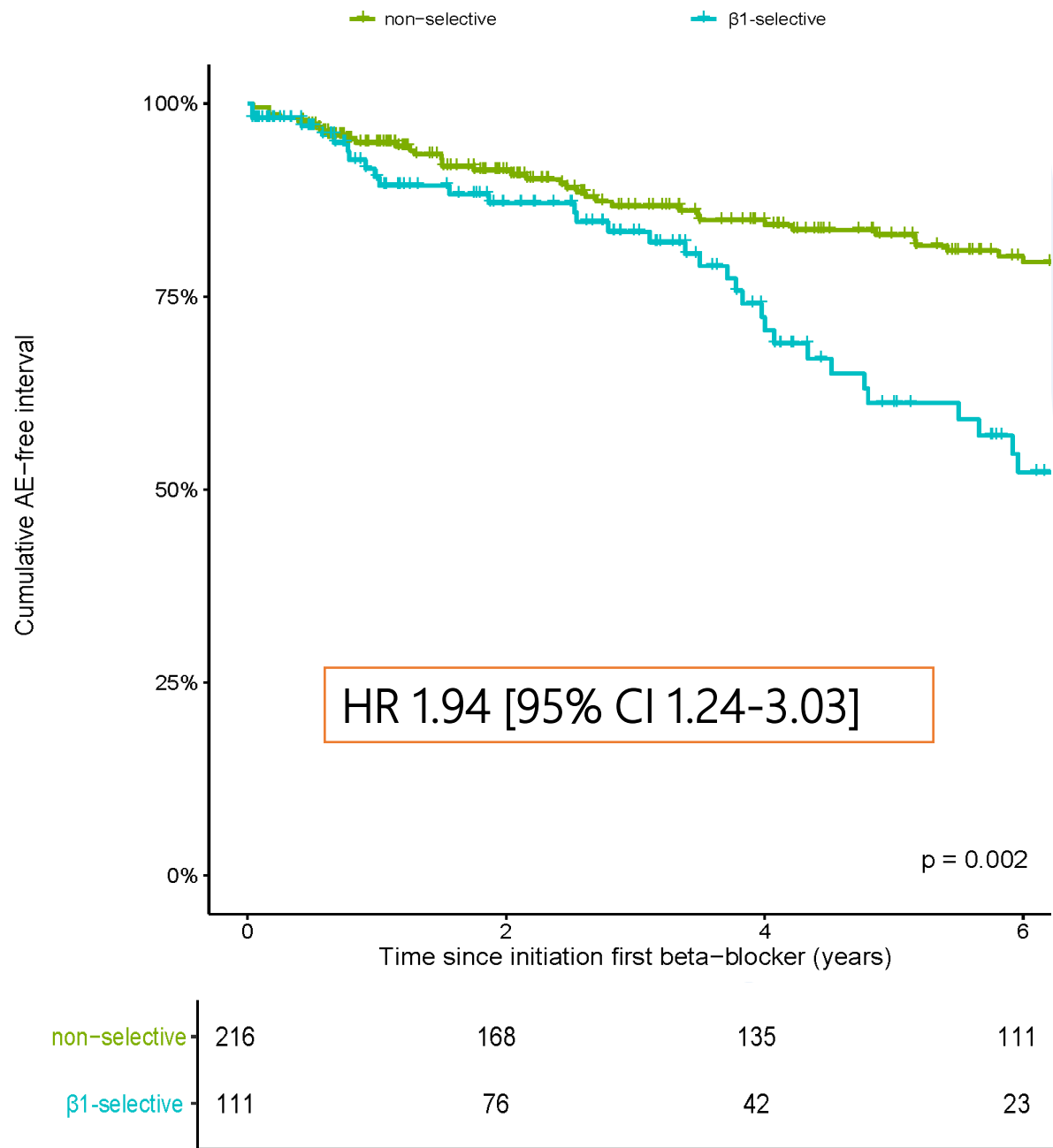
19 bisoprolol



99 primaire eindpunt

74 secundaire eindpunt

Follow-up 6.6 jaar [IQR 1.8-10.8]





# Individuele beta-blokkers

Primaire eindpunt

Symptomatisch, HR (95%CI) P  
n (%)\*

nadolol

35/298 (11.7)

atenolol 17/83 (20.5) 2.68 (1.44-4.99) 0.002

bisoprolol 9/40 (22.5) 3.24 (1.47-7.17) 0.004

metoprolol 11/65 (16.9) 2.18 (1.08-4.40) 0.031

propranolol 20/99 (20.2) 1.72 (0.98-3.03) 0.061

overig 5/27 (18.5) 2.89 (1.44-5.79) 0.003

<0.001†



# Conclusie

B1-selectieve BBs zijn geassocieerd met een hoger risico op symptomen in vergelijking met non-selectieve BBs, specifiek nadolol



# Discussie

- Therapietrouw en suboptimale dosering
  - Halfwaardetijd
  - Pubertijd
- Farmacokinetische variabiliteit
- Farmacodynamische effecten



# Klinische implicaties

Non-selectieve BB voorkeursbehandeling voor symptomatische kinderen met CPVT



nadolol

## CPVT

Genetic testing and genetic counselling are indicated in patients with clinical suspicion or clinical diagnosis of CPVT.

I

Beta-blockers, ideally non-selective (nadolol or propranolol) are recommended in all patients with a clinical diagnosis of CPVT.

I

Epinephrine or isoproterenol challenge may be considered for the diagnosis of CPVT when an exercise test is not possible.

IIb

*Zeppenfeld et al. 2022, European Heart Journal*





Vragen?

