

Magneetnavigatie bij de behandeling van ritmestoornissen

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Disclosures

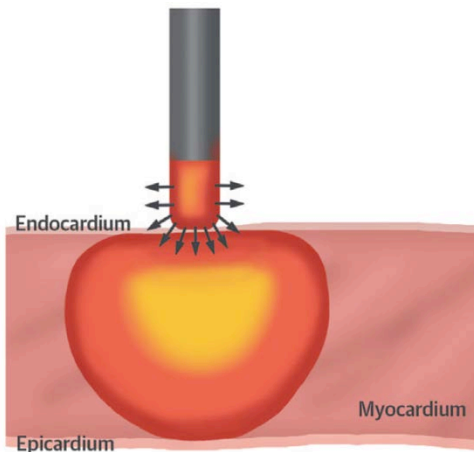
Potentiële belangenverstrengeling	
Voor bijeenkomst mogelijk relevante relaties met bedrijven	Bedrijfsnamen
<ul style="list-style-type: none">• Honorarium of andere (financiële) vergoeding	<ul style="list-style-type: none">• Medtronic• Boston Scientific• Abbott• Stereotaxis• Biotronik

Introductie

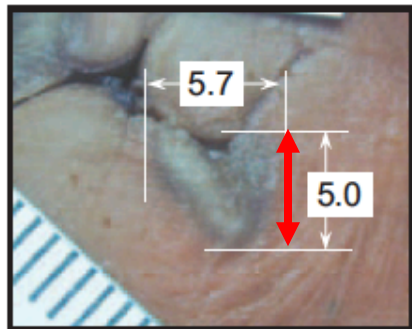
- Magneetnavigatie wordt gebruikt sinds **2003**
- Wereldwijd meer dan **100.000** patiënten behandeld met magneetnavigatie
- Magneetnavigatie kan gebruikt worden voor de behandeling van **elke ritmestoornis**
- In Nederland momenteel beschikbaar in **2** centra:



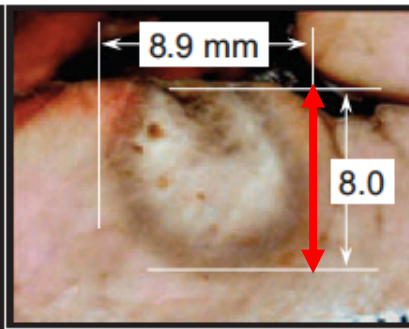
Lesie formatie met geïrrigeerde contact-force ablatie catheters



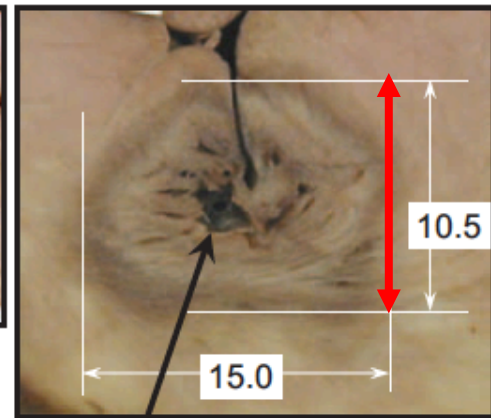
Low Contact Force (6g)



Moderate Contact Force (20g)



High Contact Force (50g)

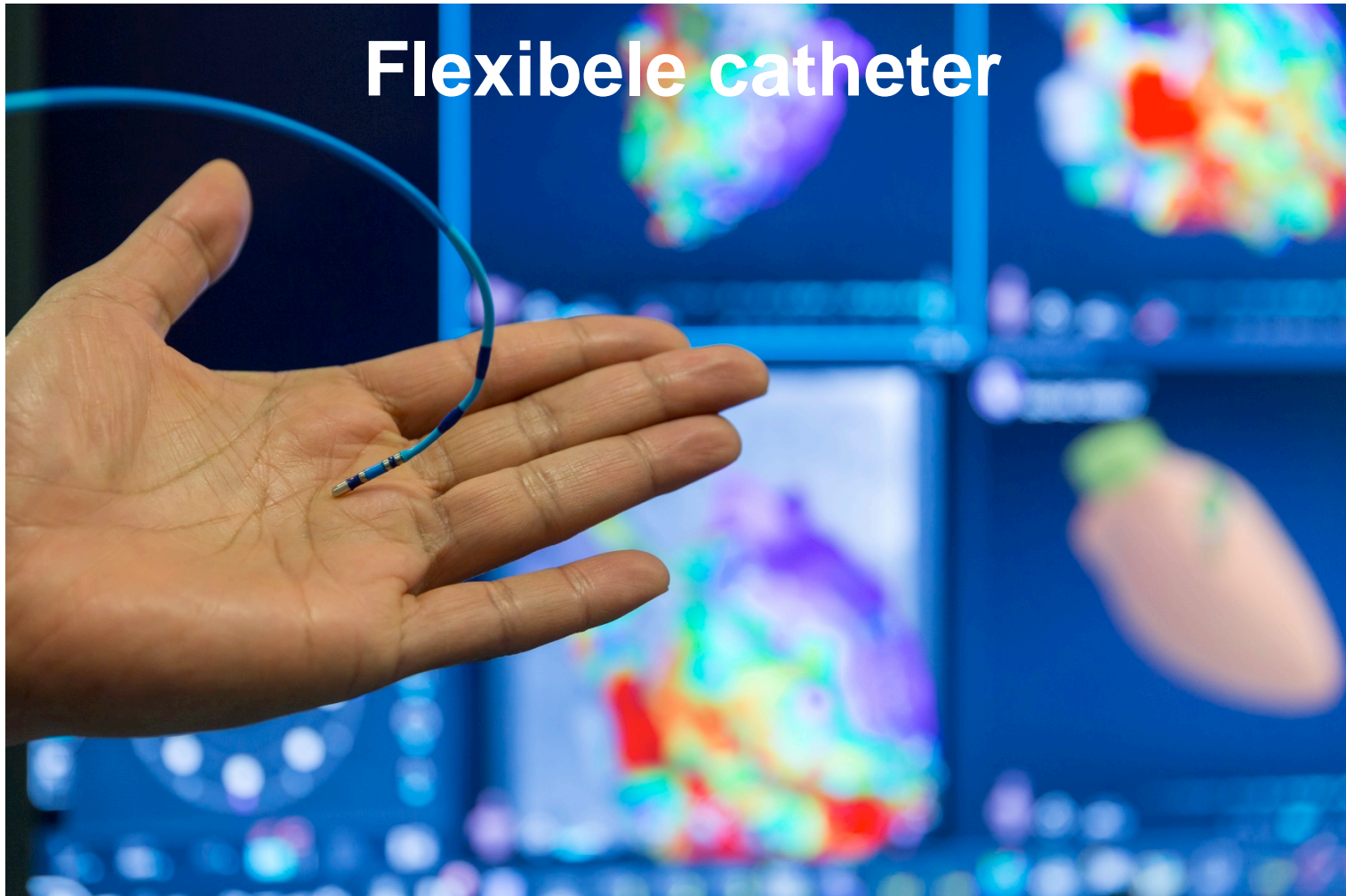


40 W, 60 secs

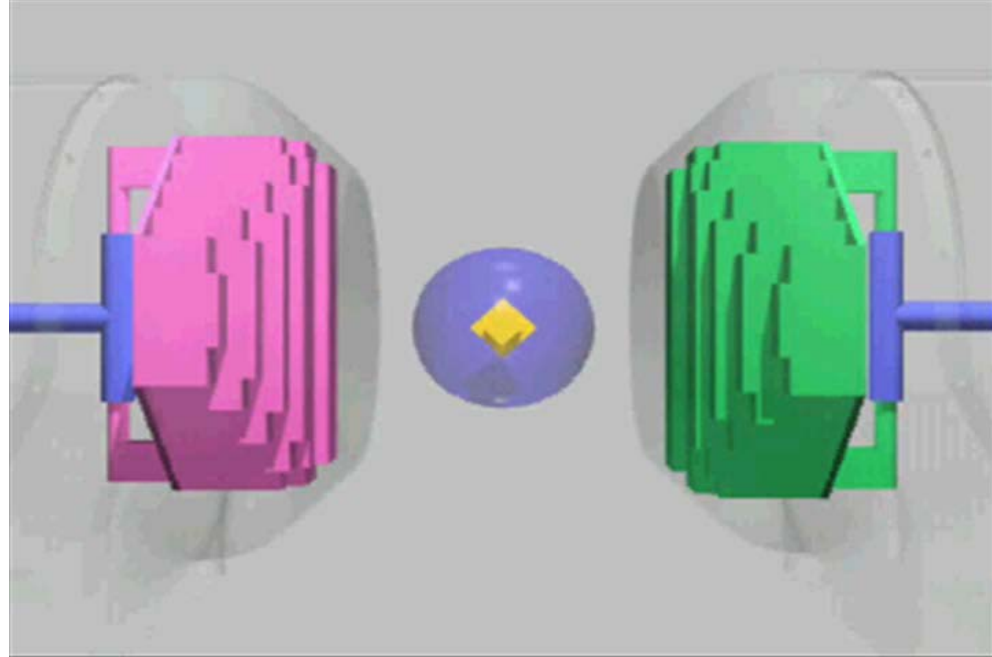
Manuele catheter ablatie



Flexibele catheter



Werking Niobe[®] magneetnavigatie



0.08-0.10 T

Courtesy of J. Lovell



Odyssey



Voordelen van magneetnavigatie

Flexibele catheter

- Veiliger
- Beter stuurbaar

Catheter stabiliteit

- **Constant contact** met lage 'force'
- Precies

Reductie straling

- Patient
- Operateur

... maar ook nadelen

Speciale
catheters

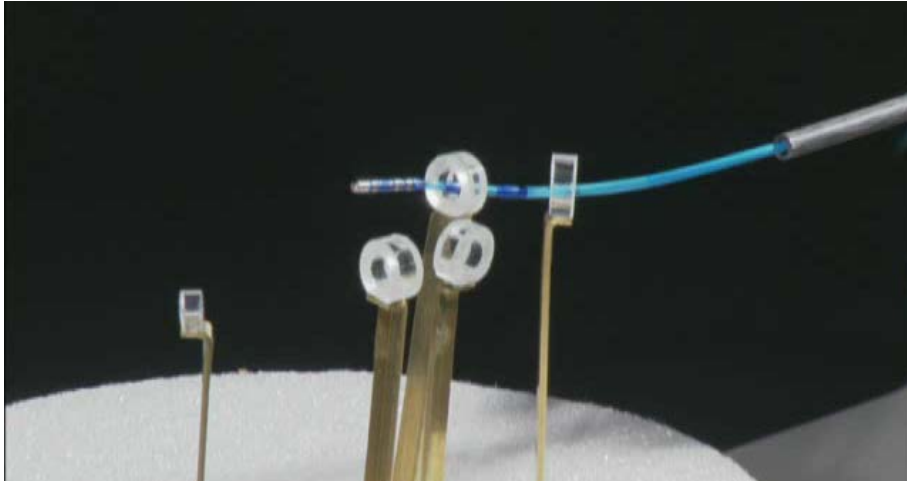
- Nieuwe technologie mogelijk later geïmplementeerd

Kosten

- Geconcentreerd in **hoog-volume centra**

Procedure tijd

Flexibiliteit en stuurbaarheid



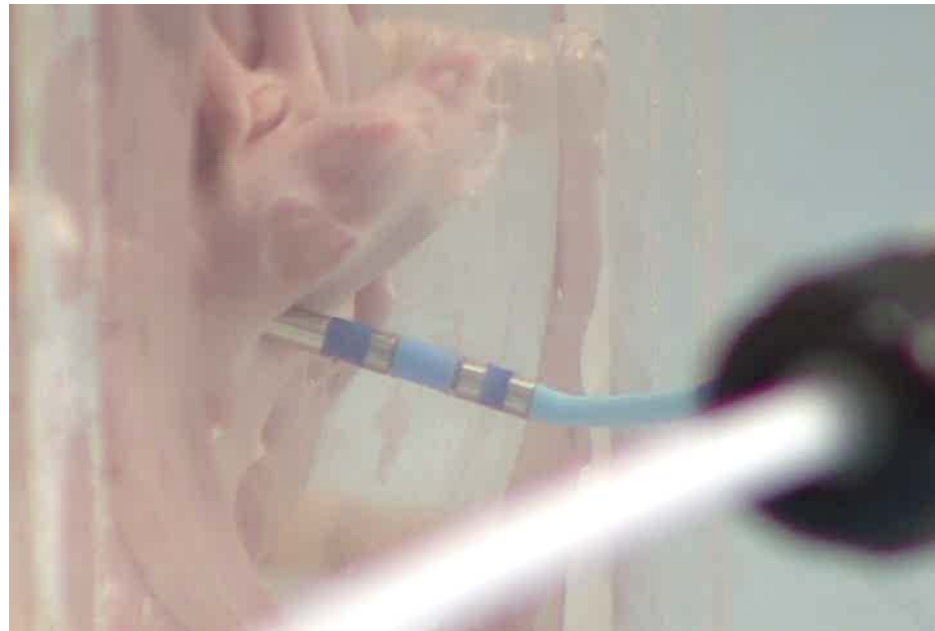
Courtesy of J. Lovell

Catheter stabiliteit

Manueel



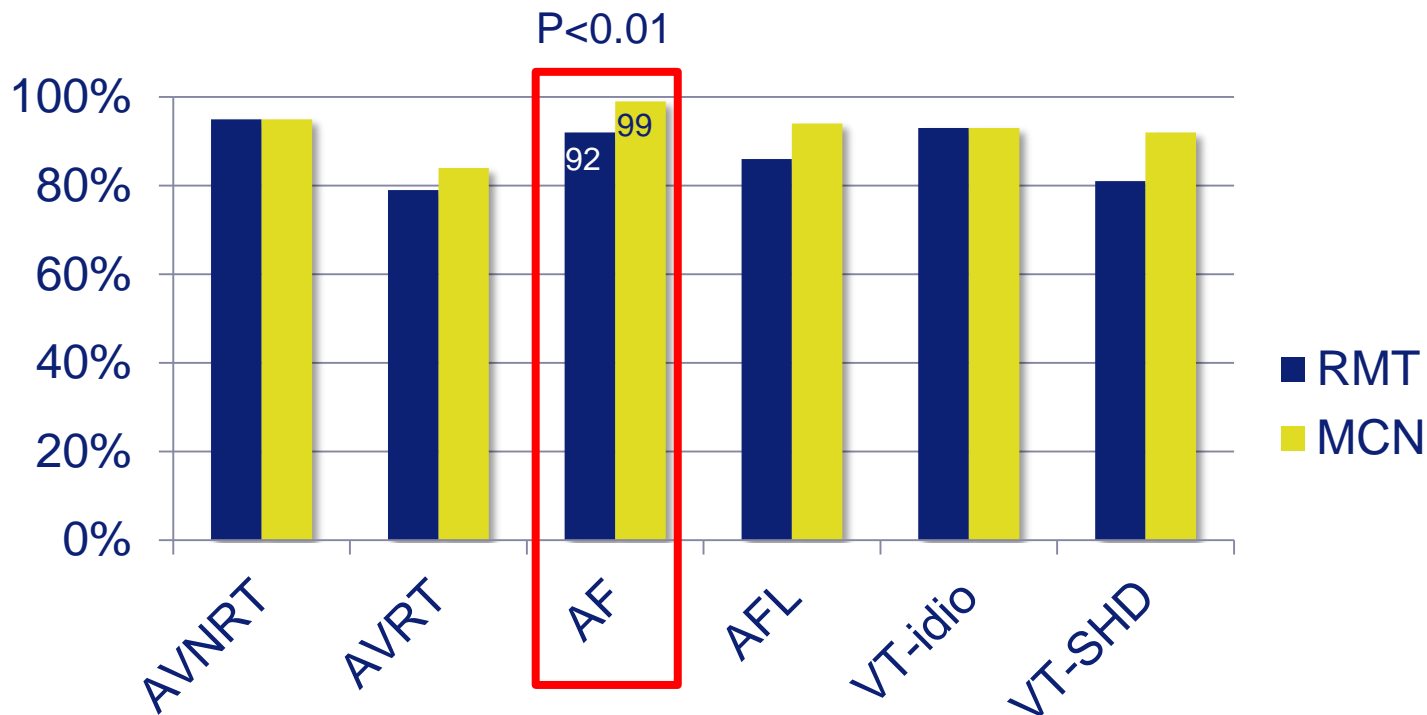
Magneetnavigatie



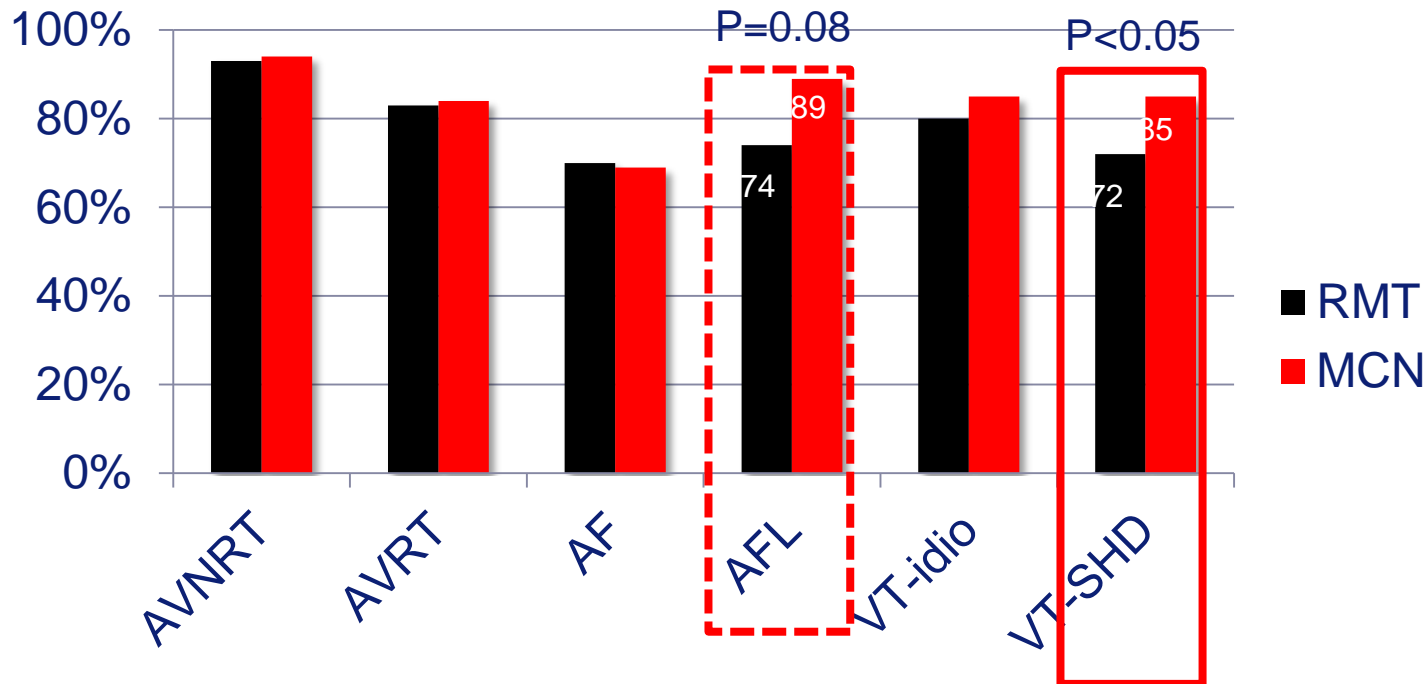
Courtesy of J. Lovell

MAGNEETNAVIGATIE EN RITMESTOORNISSEN

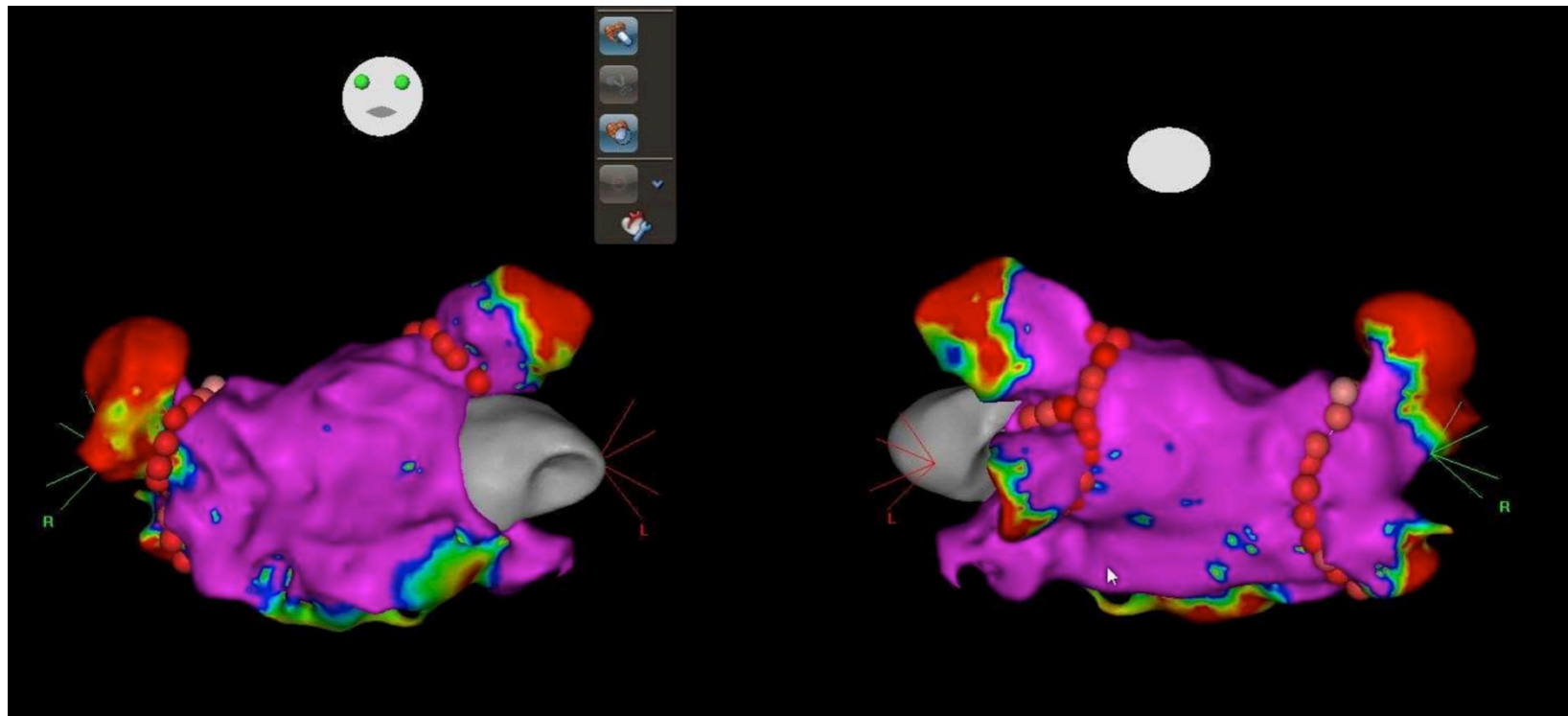
Acuut succes: RMT vs manueel



Intermediair succes: RMT vs manueel



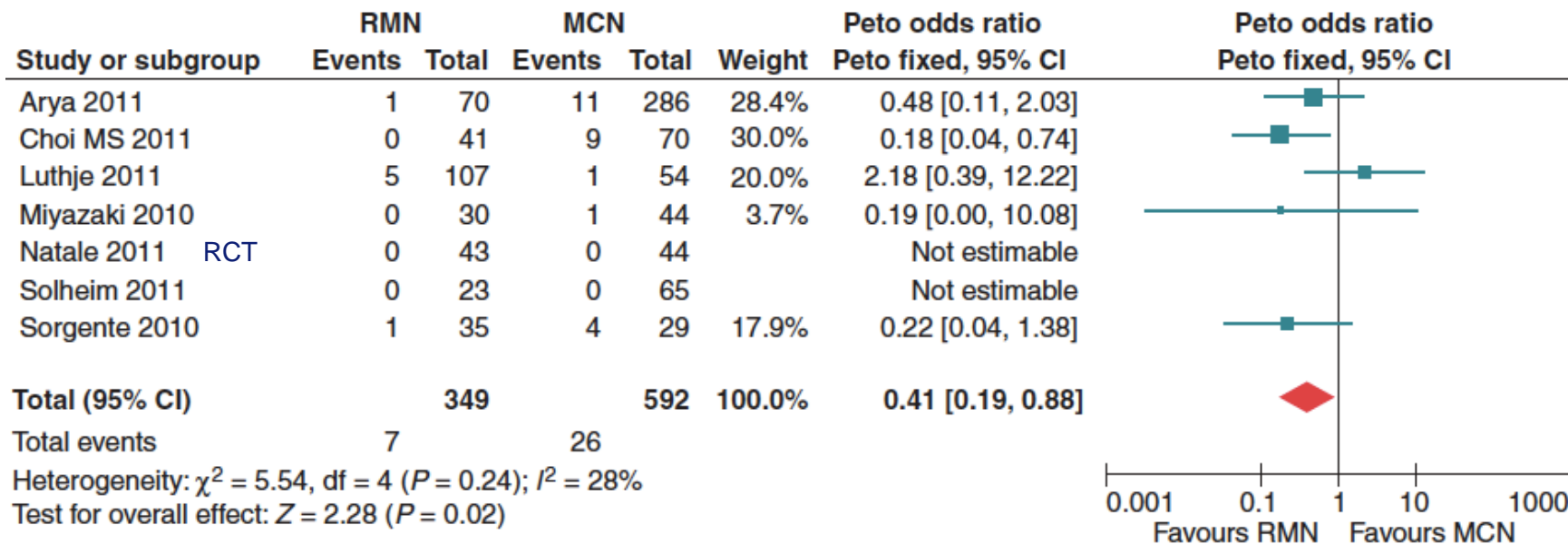
Ablatie van atriumfibrilleren



Ablatie van atriumfibrilleren

- Meta-analyse van 7 studies (N=**941**) waaronder 1 RCT (abstract)
- Geïrrigeerde RMT catheters beschikbaar sinds **2007**
- Geen verschil tussen RMT en MCN t.a.v.:
 - Bereiken pulmonaal venen isolatie (OR 0.41; 95%CI 0.11-1.47)
 - AF/AT recidief (OR 1.18; 95%CI 0.85-1.65)
- Wel verschil in:
 - **Complicaties, fluoroscopie en procedure tijd**

Ablatie van atriumfibrilleren

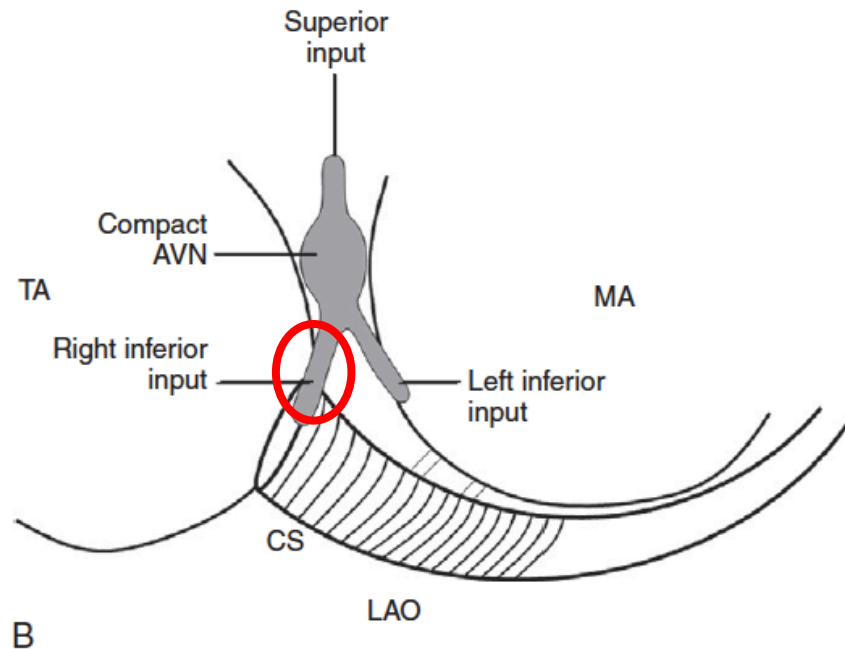
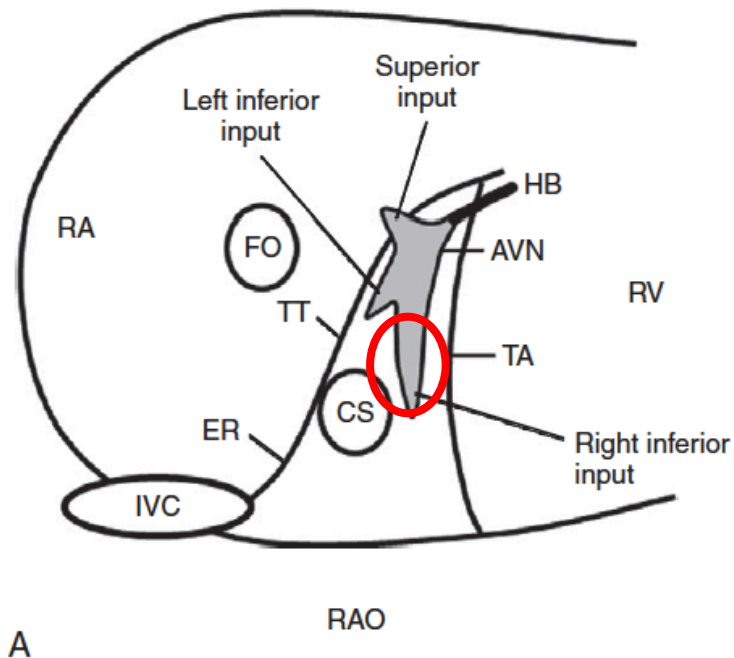


59% reductie in ernstige complicaties

Proietti et al. Europace 2013;15:1241-8

Fluoroscopie tijd: -22 min
 Procedure tijd: +61 min

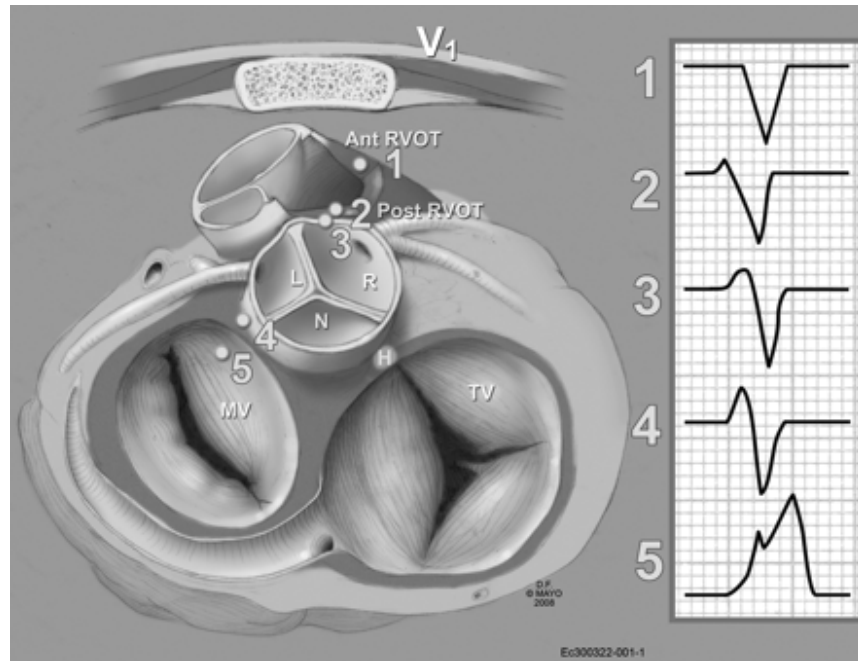
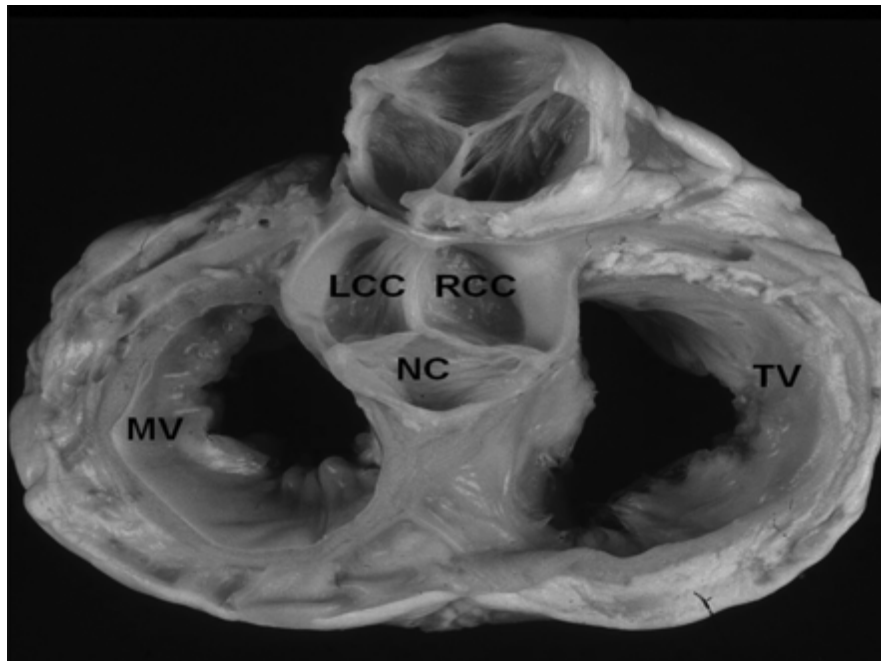
Ablatie van AVNRT



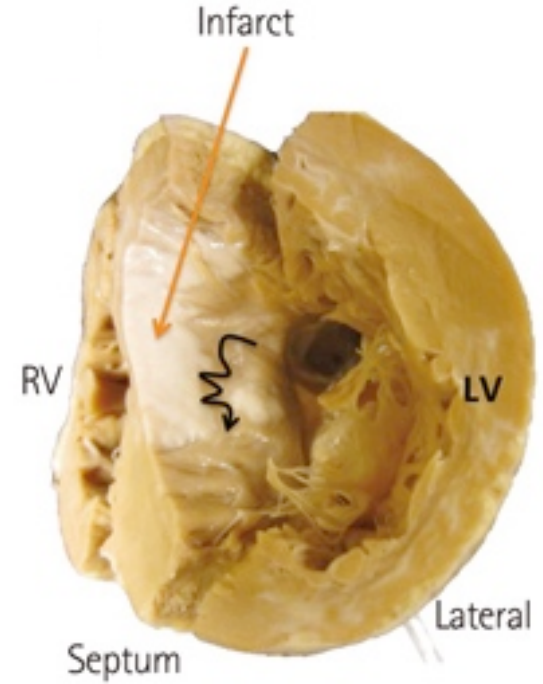
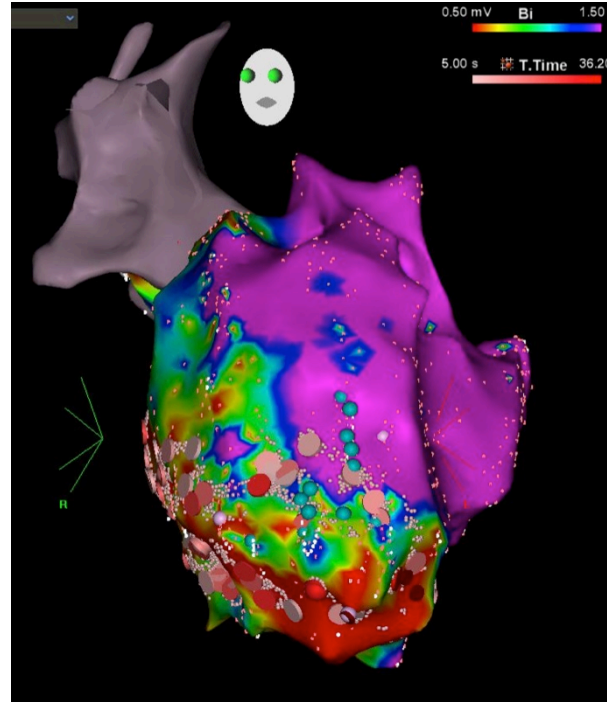
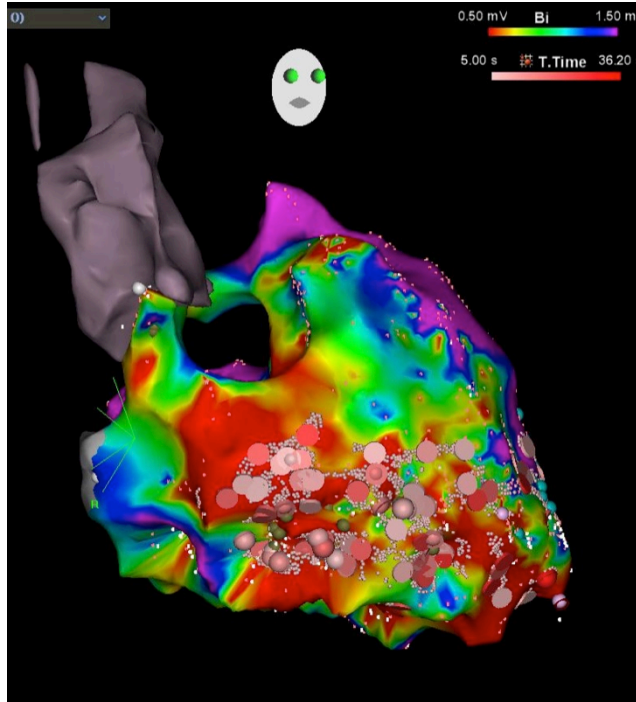
Ablatie van AVNRT

- Meta-analyse van 13 studies (N=**679**) waaronder 2 RCT
- Geen verschil tussen RMT en MCN t.a.v.:
 - Acut en lange termijn succes (98% vs 98%, 97% vs 96%, resp.)
 - Fluoroscopie tijd (15 vs 19 min)
 - Complicaties (2.7% vs 1.0%)
- Wel verschil in:
 - **Procedure tijd** (160 vs 148 min ten nadele van RMT)

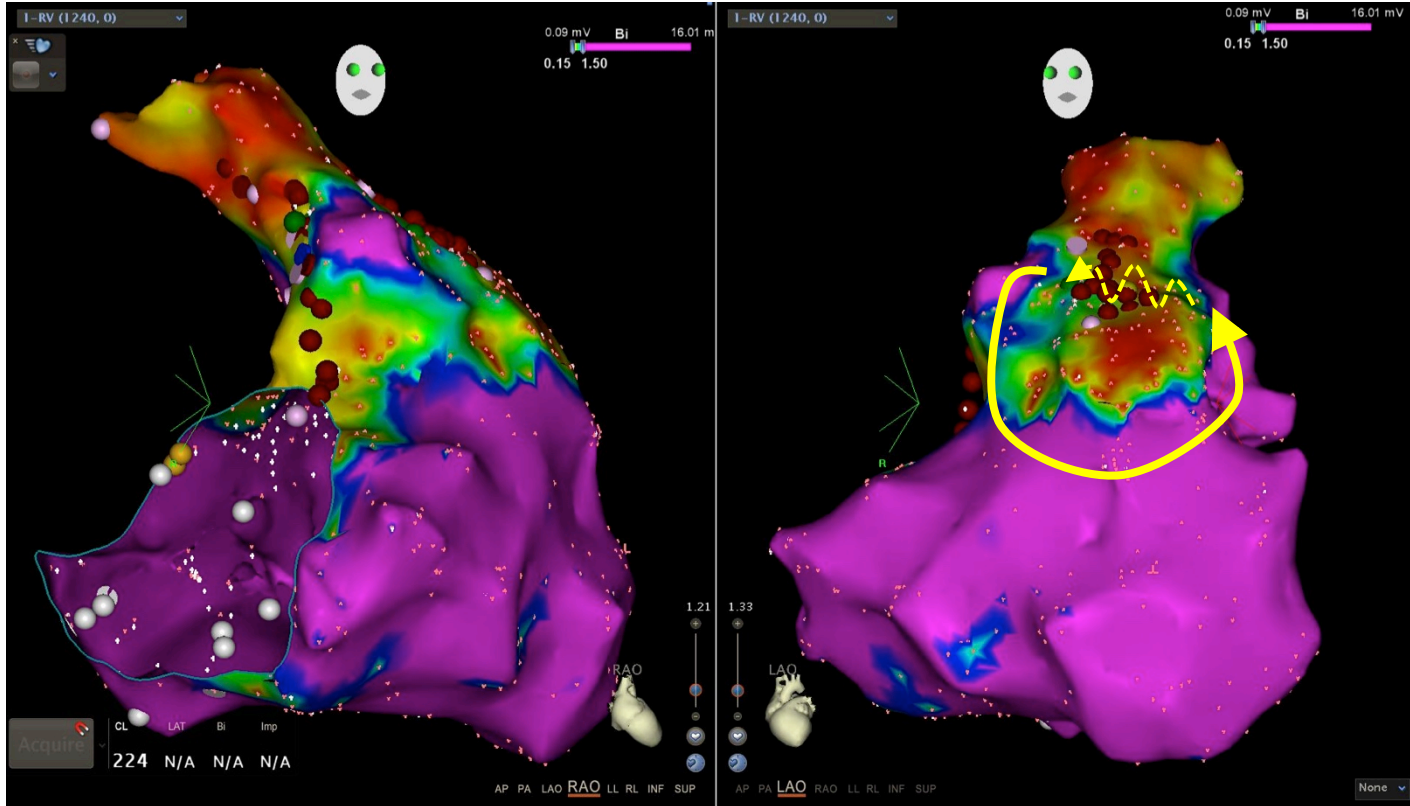
Idiopathische VT ablatie



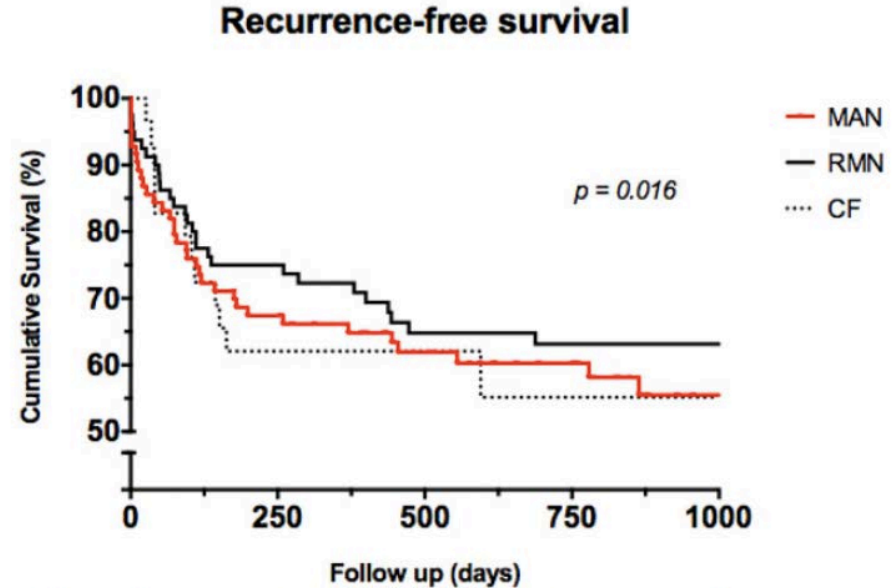
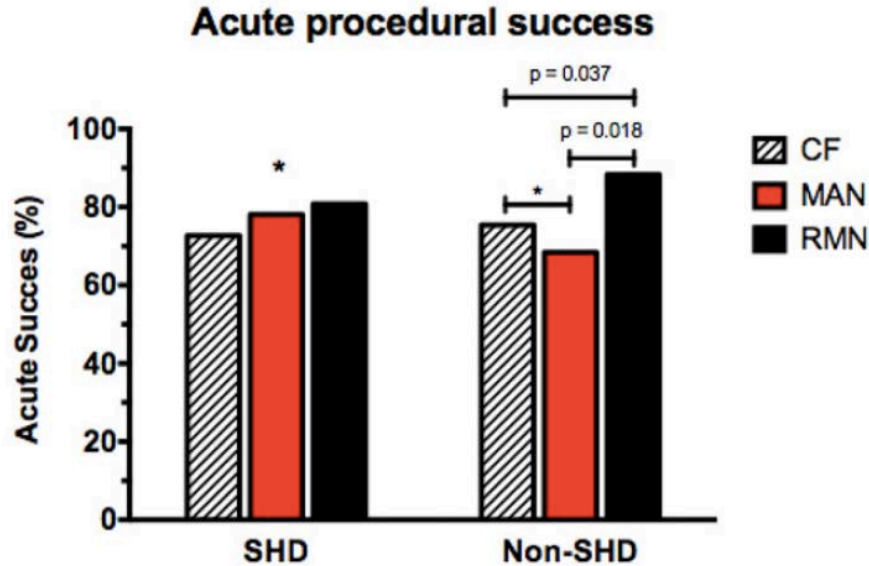
VT ablatie na septaal myocardinfarct



VT ablatie in tetralogie van Fallot



Uitkomsten van VT ablatie in EMC



N=239

2007-2014

Hendriks, ... Yap, Szili-Torok. J Cardiovasc Electrophysiol 2015

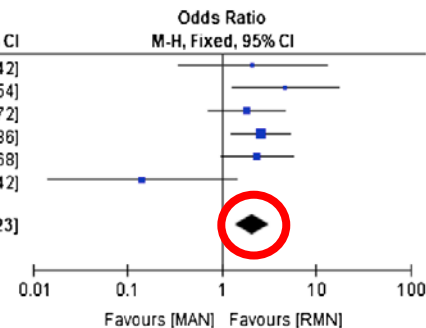
MAN	112	55	41	30	15
RMN	86	57	41	36	22
CF	41	15	10	5	1

VT ablatie

- Meta-analyse van 7 studies (N=779), waaronder 1 RCT

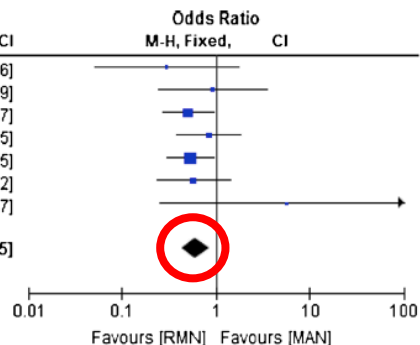
Acuut succes →
2x meer kans
Met RMT

Study or Subgroup	RMN		MAN		Weight	Odds Ratio	
	Events	Total	Events	Total		M-H, Fixed, 95% CI	M-H, Fixed, 95% CI
Akca 2012	15	18	7	10	4.9%	2.14	[0.34, 13.42]
Bauernfeind et al. 2011	50	54	21	29	6.6%	4.76	[1.29, 17.54]
Dinov et al. 2012	41	50	37	52	21.4%	1.85	[0.72, 4.72]
Hendricks 2015	74	86	79	112	31.4%	2.58	[1.24, 5.36]
Szili-Torok et al. 2012	59	72	27	41	20.4%	2.35	[0.97, 5.68]
Zhang et al. 2013	10	15	14	15	15.3%	0.14	[0.01, 1.42]
Total (95% CI)	295		259		100.0%	2.13	[1.40, 3.23]
Total events	249		185				
Heterogeneity: Chi ² = 7.19, df = 5 (P = 0.21); I ² = 30%							
Test for overall effect: Z = 3.53 (P = 0.0004)							



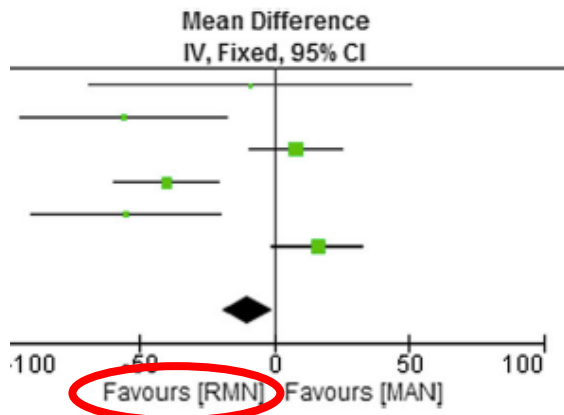
VT recidief →
39% minder kans
met RMT

Study or Subgroup	RMN		MAN		Weight	Odds Ratio	
	Events	Total	Events	Total		M-H, Fixed, 95% CI	M-H, Fixed, CI
Akca 2012	3	18	4	10	4.6%	0.30	[0.05, 1.76]
Bauernfeind et al. 2011	7	54	4	29	4.9%	0.93	[0.25, 3.49]
Di Biase 2015	26	138	25	80	27.6%	0.51	[0.27, 0.97]
Dinov et al. 2012	21	50	24	52	14.6%	0.84	[0.39, 1.85]
Hendricks 2015	36	86	64	112	34.7%	0.54	[0.31, 0.95]
Szili-Torok et al. 2012	14	72	12	41	13.2%	0.58	[0.24, 1.42]
Zhang et al. 2013	2	15	0	15	0.5%	5.74	[0.25, 130.37]
Total (95% CI)	433		339		100.0%	0.61	[0.44, 0.85]
Total events	109		133				
Heterogeneity: Chi ² = 4.15, df = 6 (P = 0.66); I ² = 0%							
Test for overall effect: Z = 2.97 (P = 0.003)							

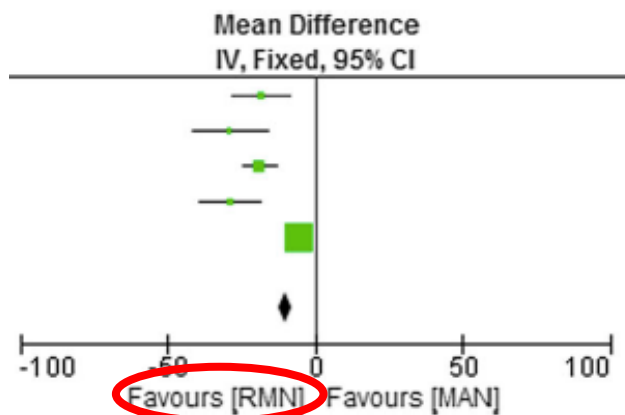


VT ablatie

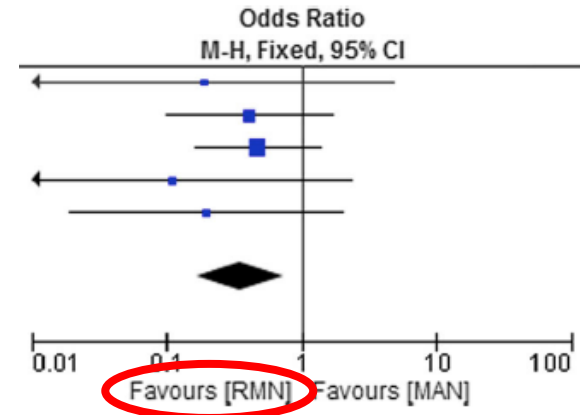
Procedure tijd



Fluoroscopie tijd



Complicaties



MAGNETIC VT study: a prospective, multicenter, post-market randomized controlled trial comparing VT ablation outcomes using remote magnetic navigation-guided substrate mapping and ablation versus manual approach in a low LVEF population

Luigi Di Biase^{1,2,3,4} • Roderick Tung⁵ • Tamás Szili-Torok⁶ • J. David Burkhardt¹ • Peter Weiss⁷ • Rene Tavernier⁸ • Adam E. Berman⁹ • Erik Wissner¹⁰ • William Spear¹⁰ • Xu Chen¹¹ • Petr Neuzil¹² • Jan Skoda¹² • Dhanunjaya Lakkireddy¹³ • Bruno Schwagten¹⁴ • Ken Lock¹⁵ • Andrea Natale^{1,3,16,17,18,19,20} • on behalf of MAGNETIC VT investigators

N=386

Take home message

- Magneetnavigatie is **effectief** voor de behandeling van bijna alle ritmestoornissen
- Grote voordelen zijn **veiligheid, minder blootstelling aan radiatie** en **bereikbaarheid** bij complexe anatomie
- Gebrek aan gerandomiseerde studies met voldoende power, echter inclusie van Magnetic VT trial is nog bezig

Bedankt voor de aandacht!

Erasmus MC

