Arytmologie:
Kde jsme a kam kráčíme

Novinky ESC Londýn 2015

M. Táborský

Kurdějov, 3.10. 2015

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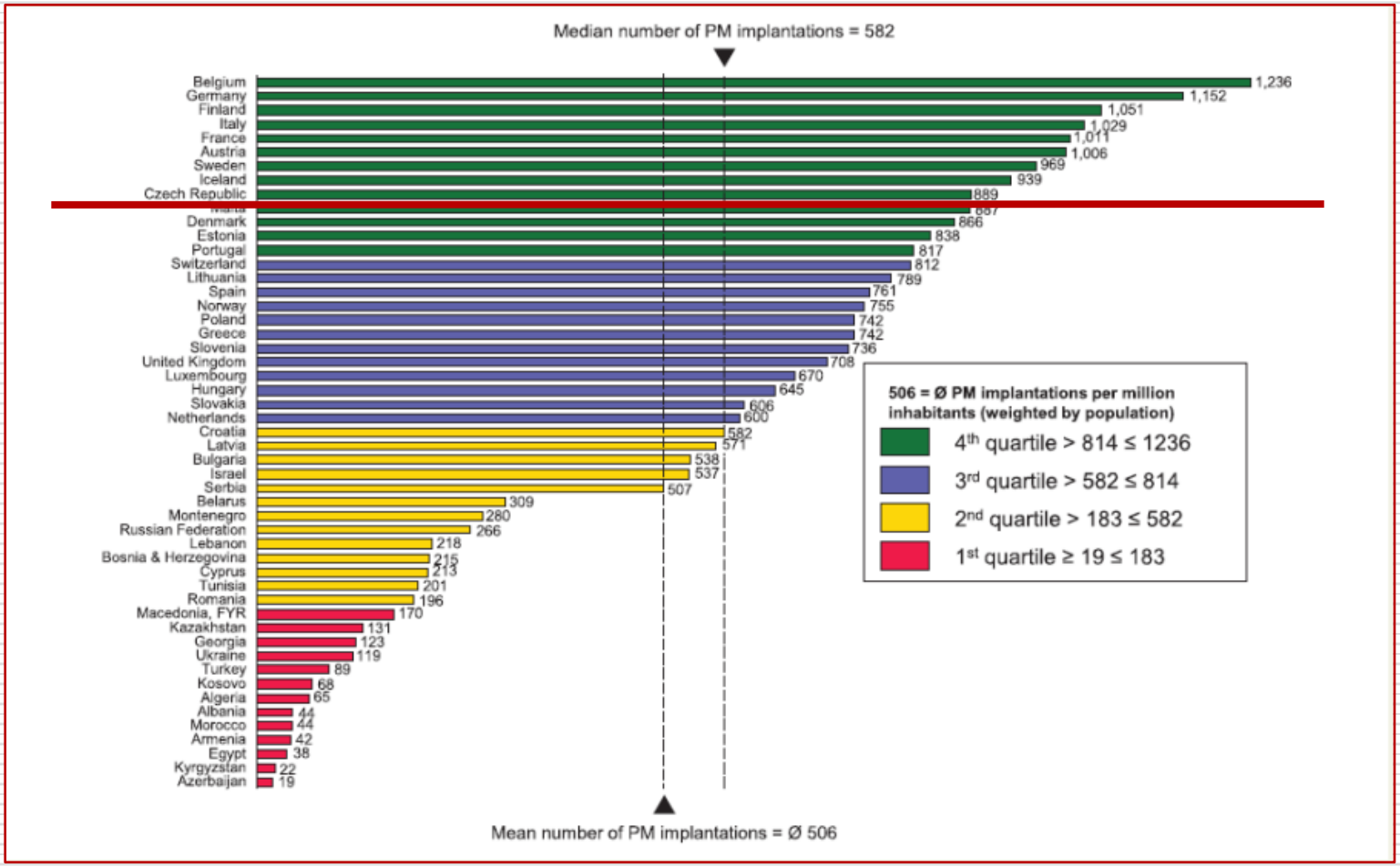
Implantace KS/1 M obyvatel



Europace (2015) **17**, iv1–iv72
doi:10.1093/europace/euv265

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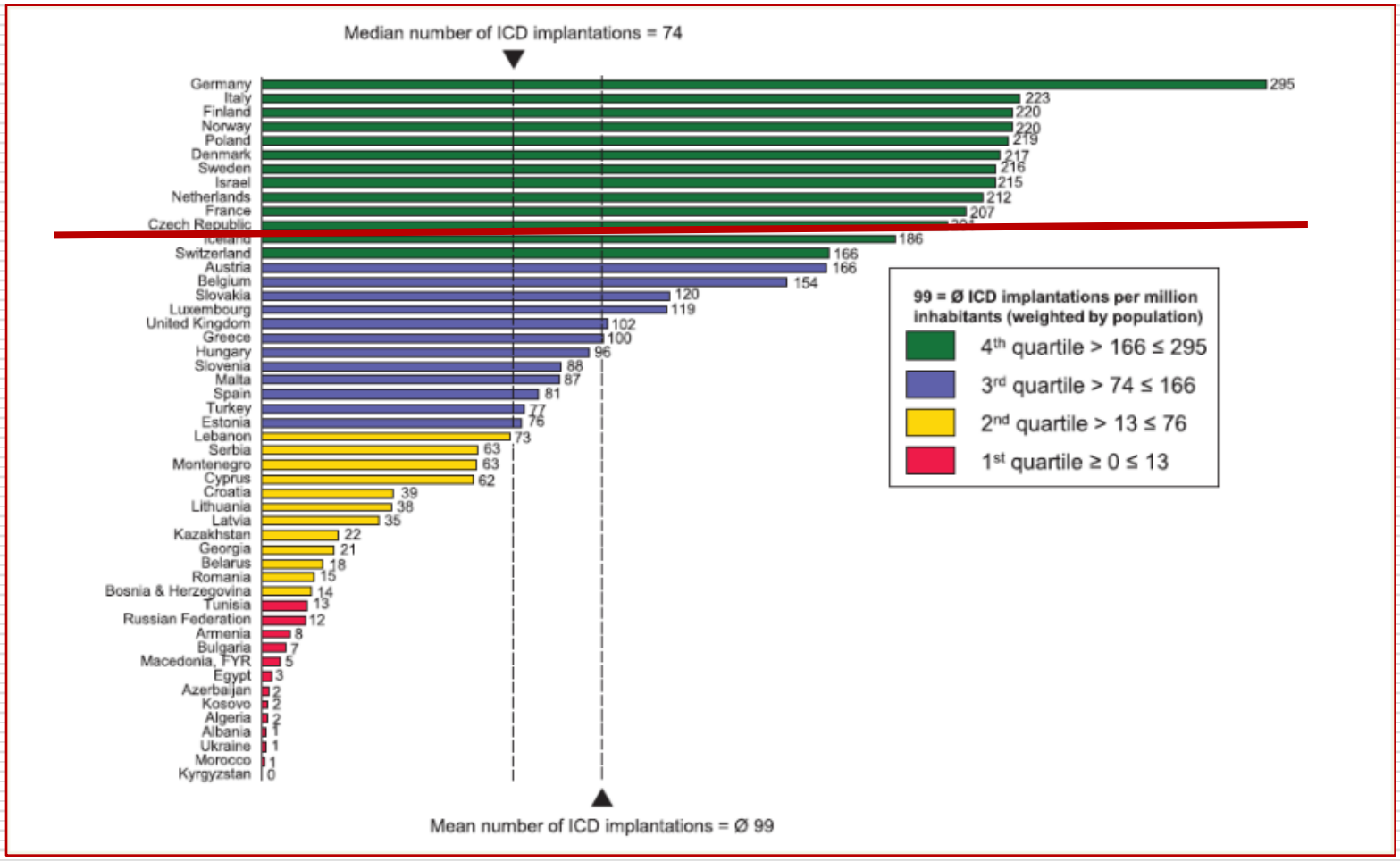
Počet implantovaných ICD/1M



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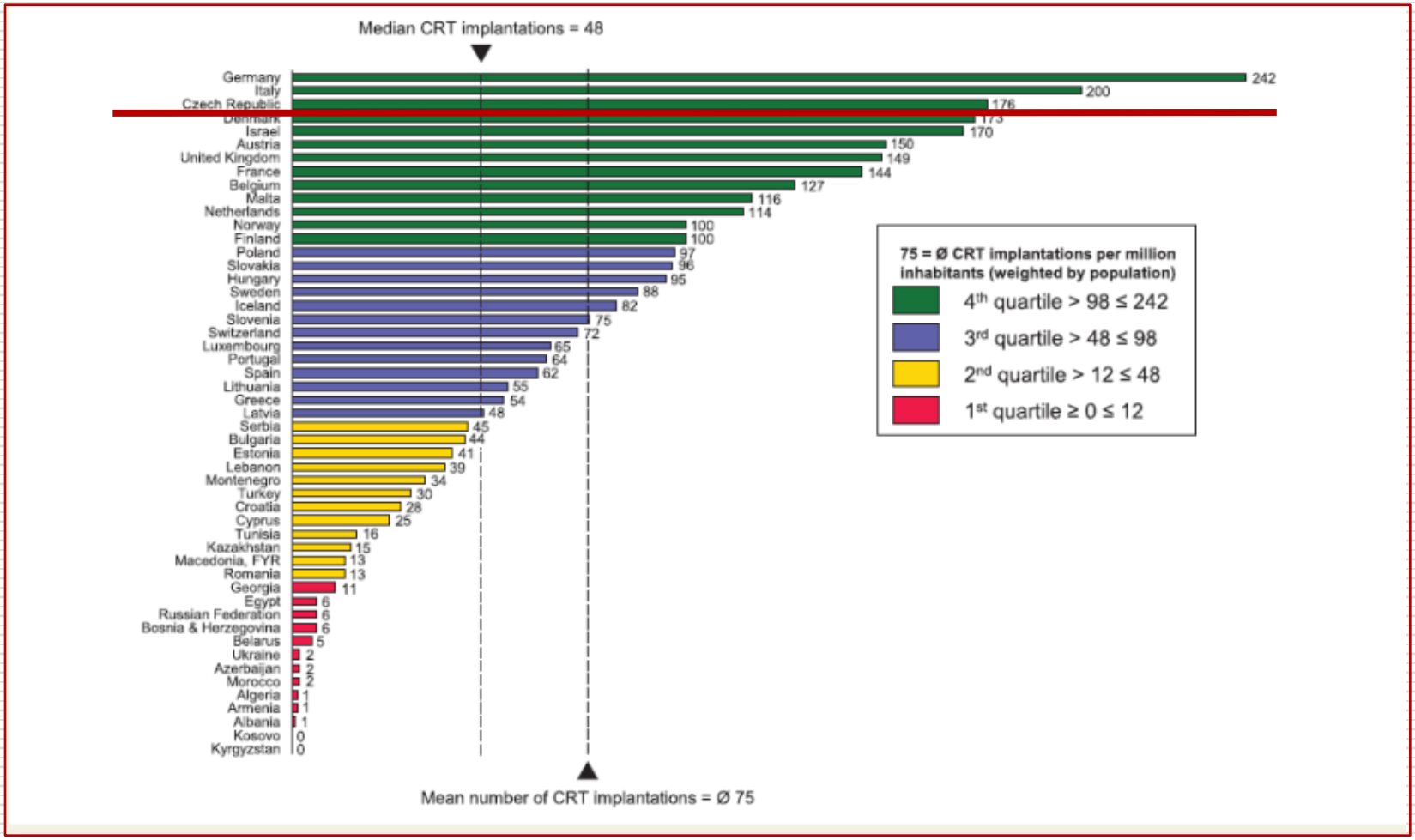
CRT 1 M obyvatel



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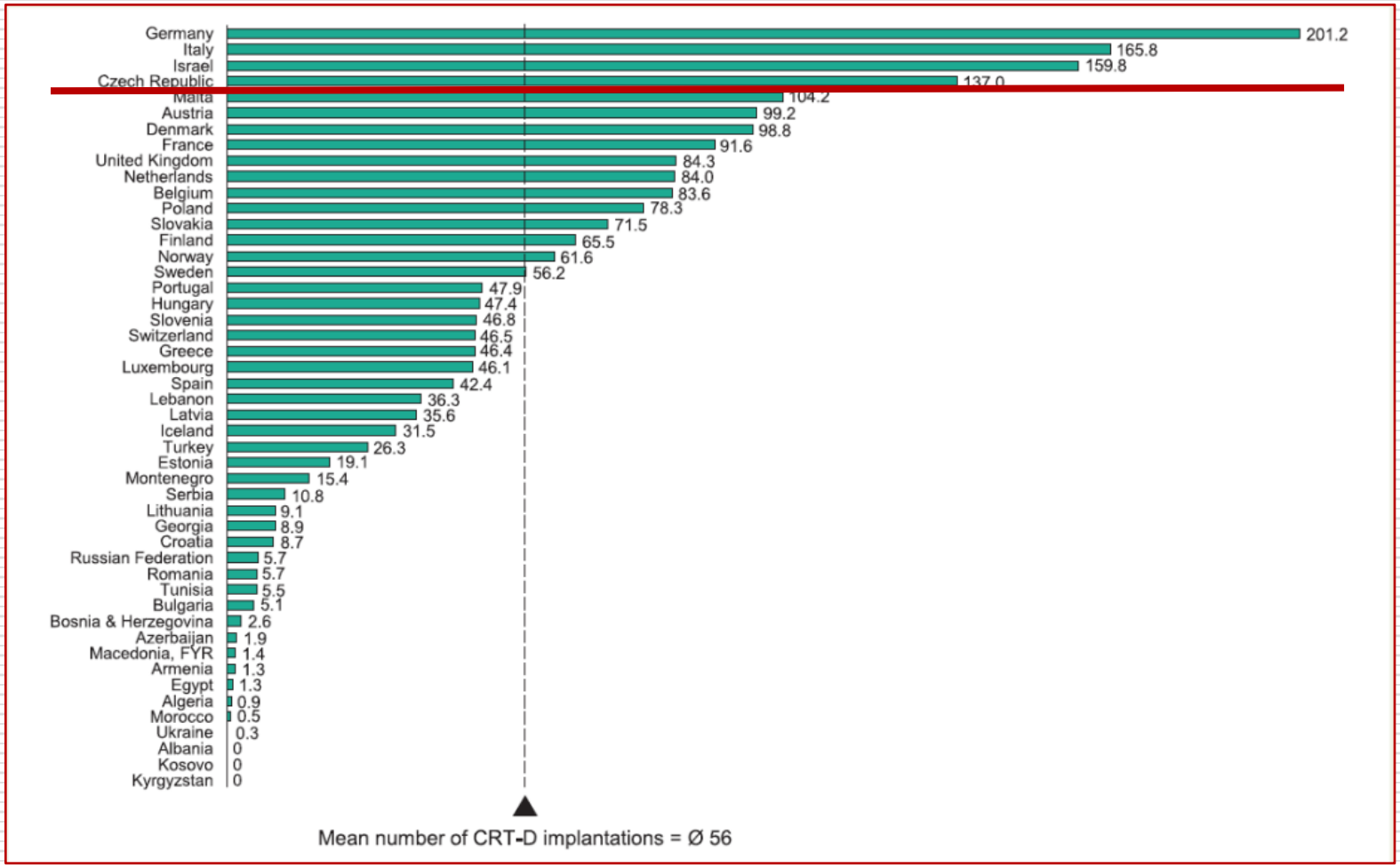
CRT-D 1 M obyvatel



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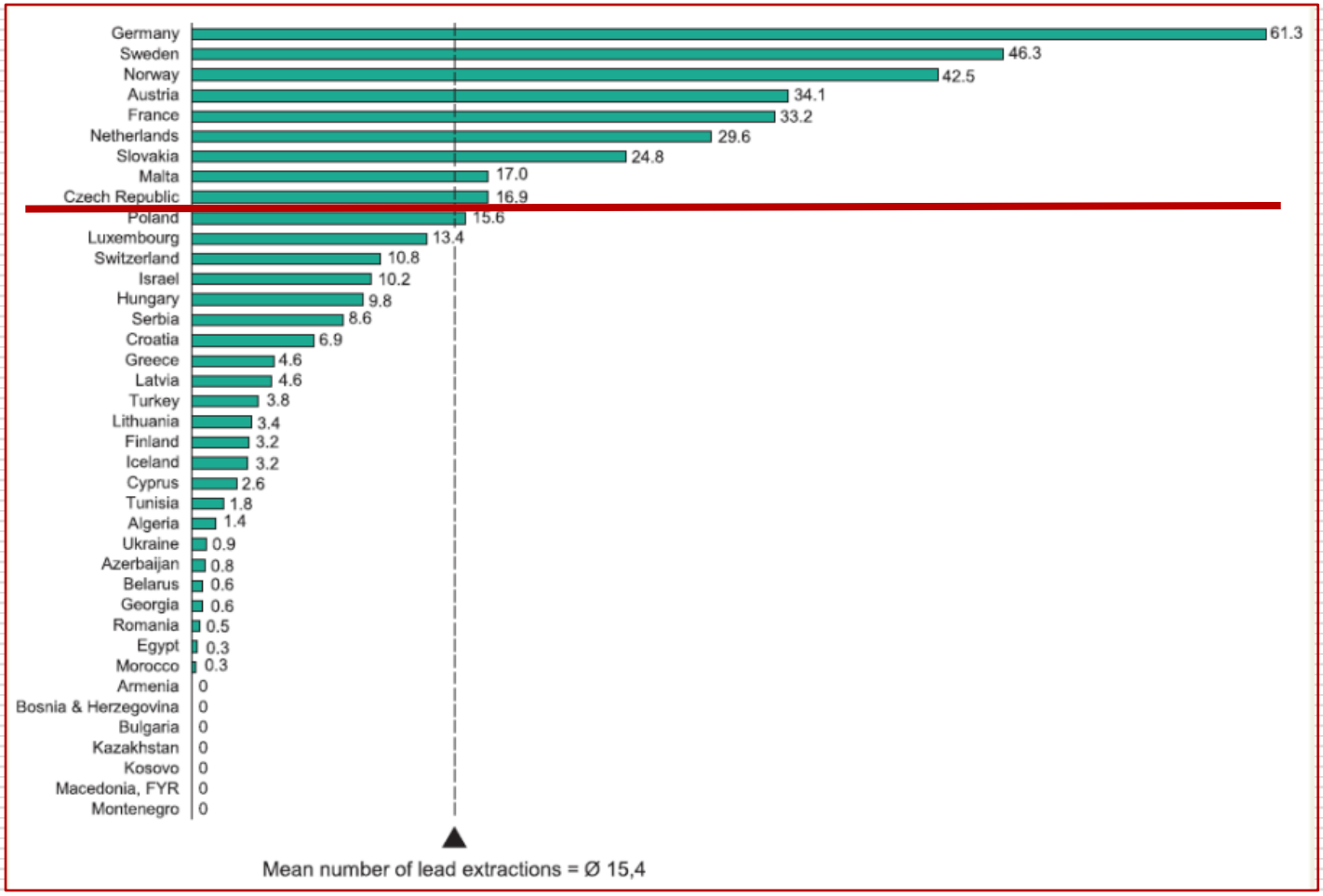
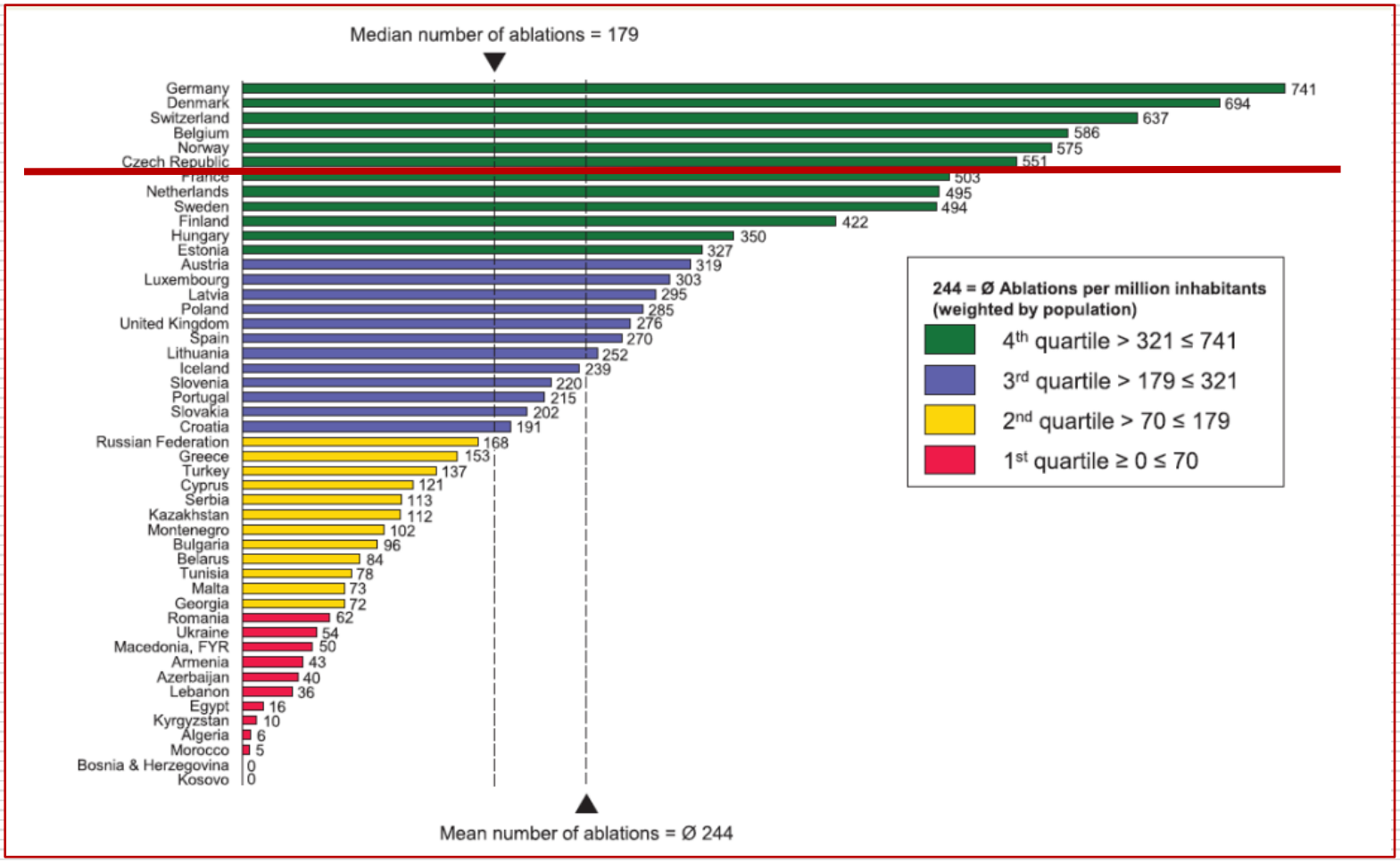
Extrakce EL



Europace (2015) **17**, iv1–iv72
doi:10.1093/europace/euv265

Katetrizační ablace /1M



Europace (2015) **17**, iv1–iv72
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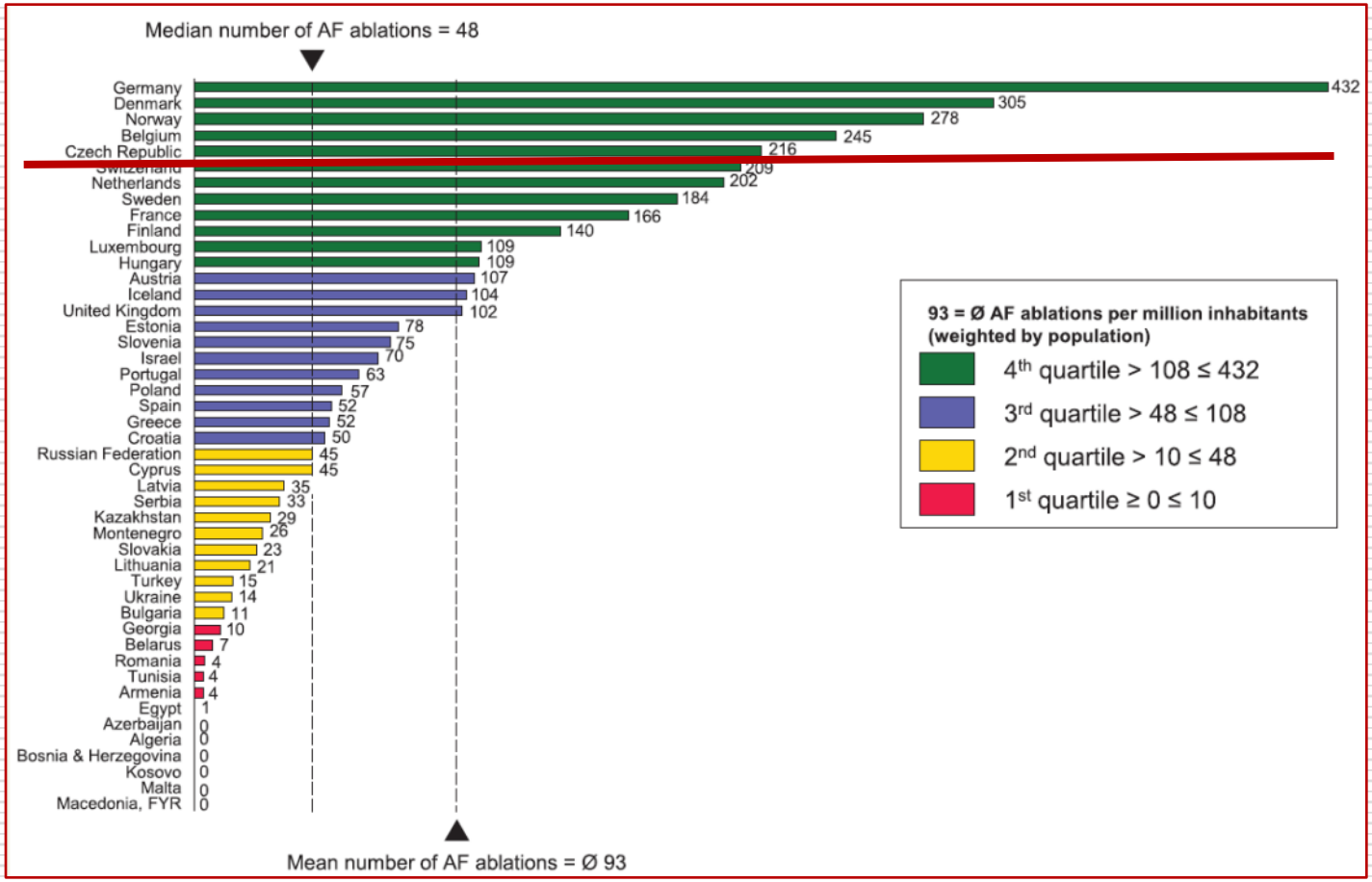
Kat.ablace FS



Europace (2015) **17**, iv1–iv72
doi:10.1093/europace/euv265

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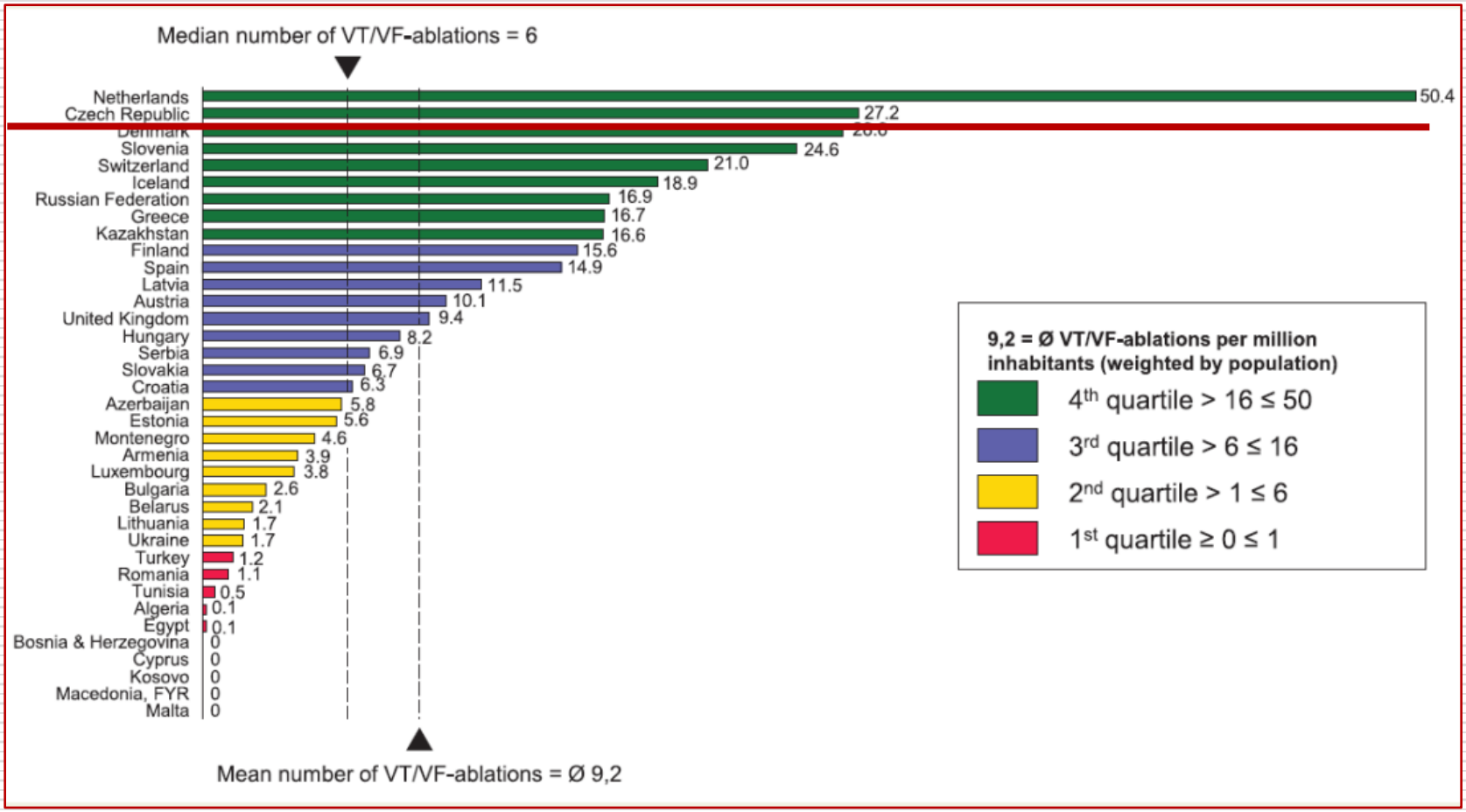
Ablace KT/KF/1M



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HEART HEALTH INSTITUTE

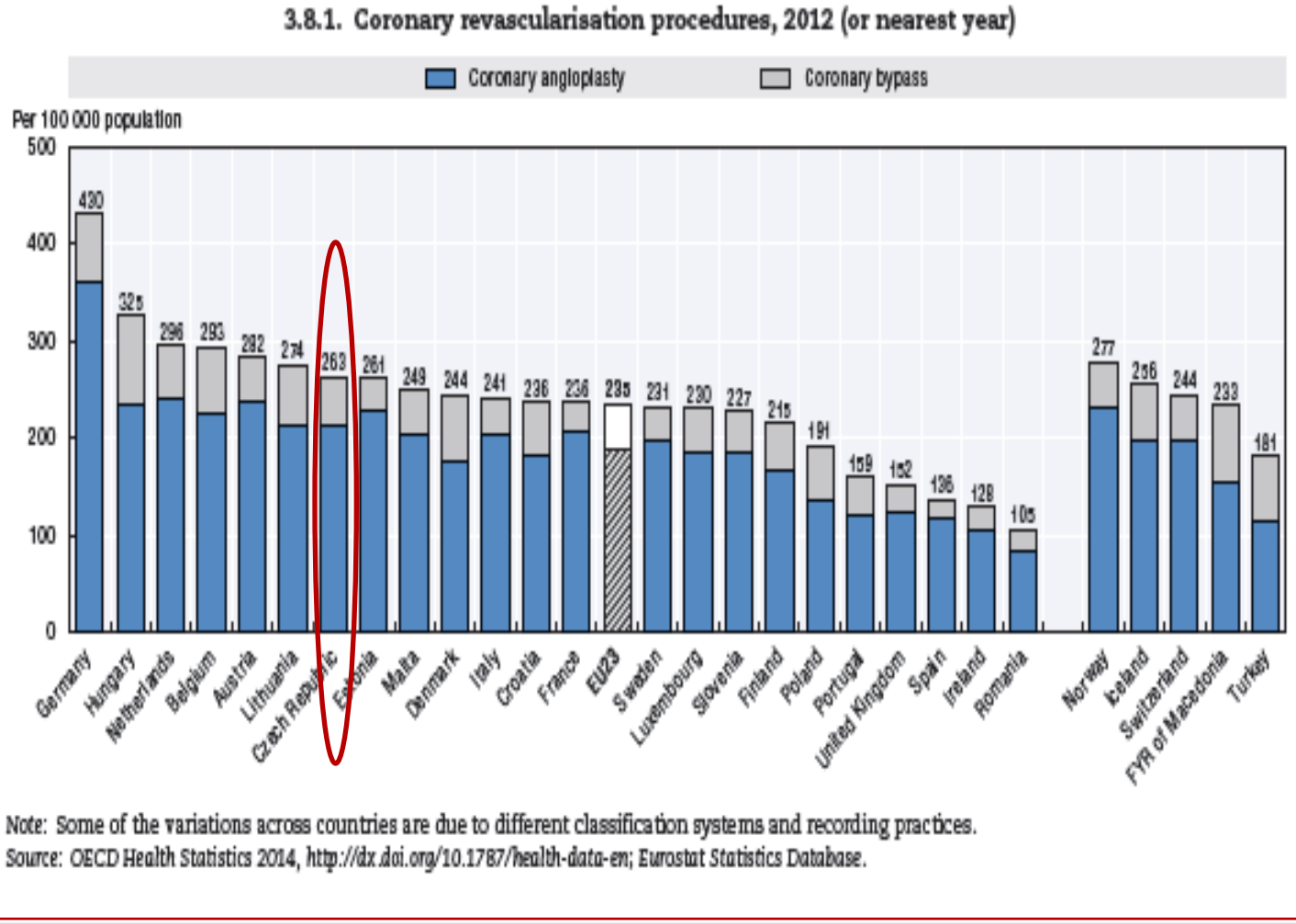
Heart Policy Unit

ESC ATLAS OF CARDIOLOGY

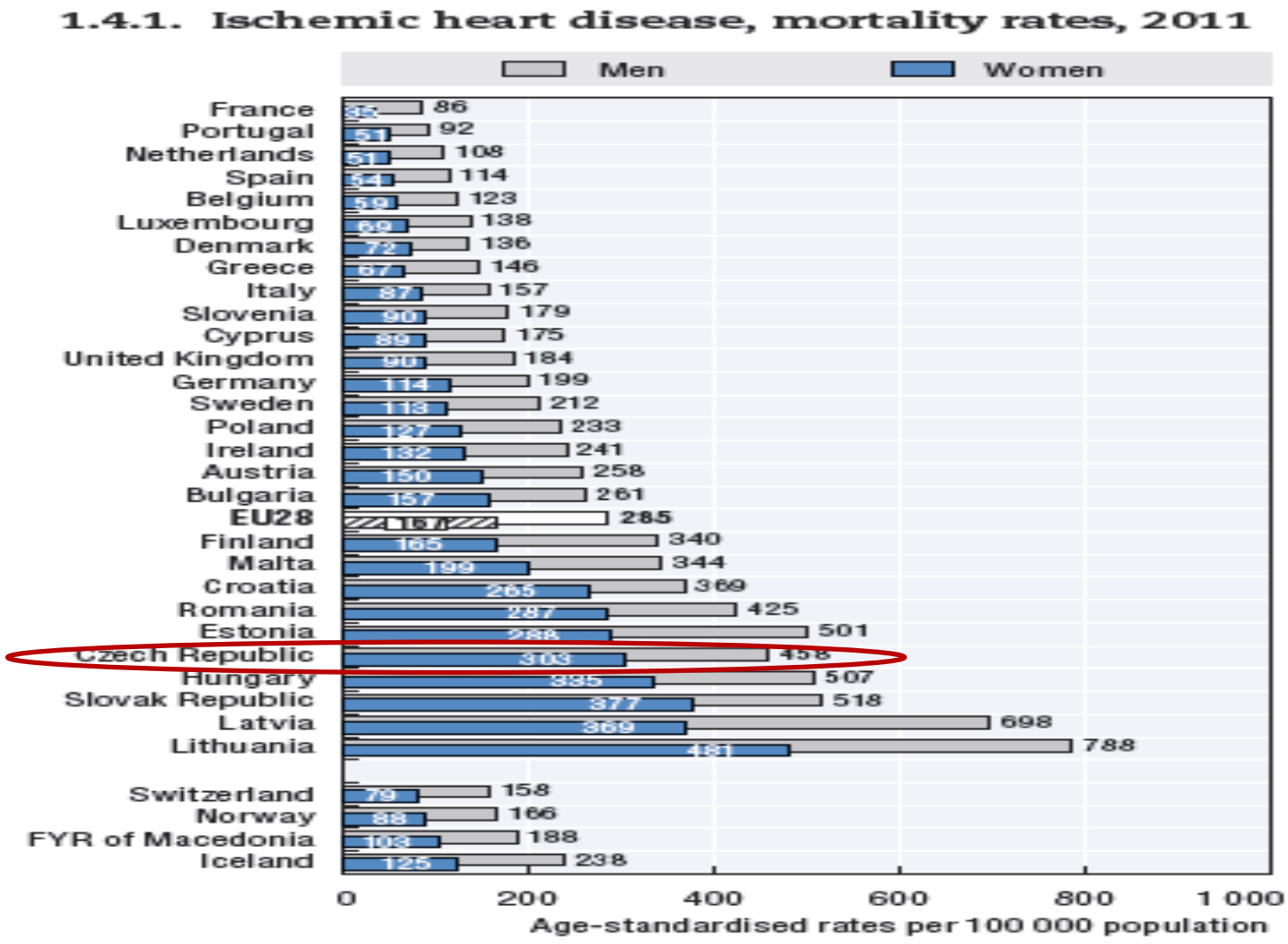
Prof. Nikos Maniadakis,BSc, MSc, PhD
Anastasia Naoum, Bsc, MSc

EUROPEAN SOCIETY OF CARDIOLOGY®

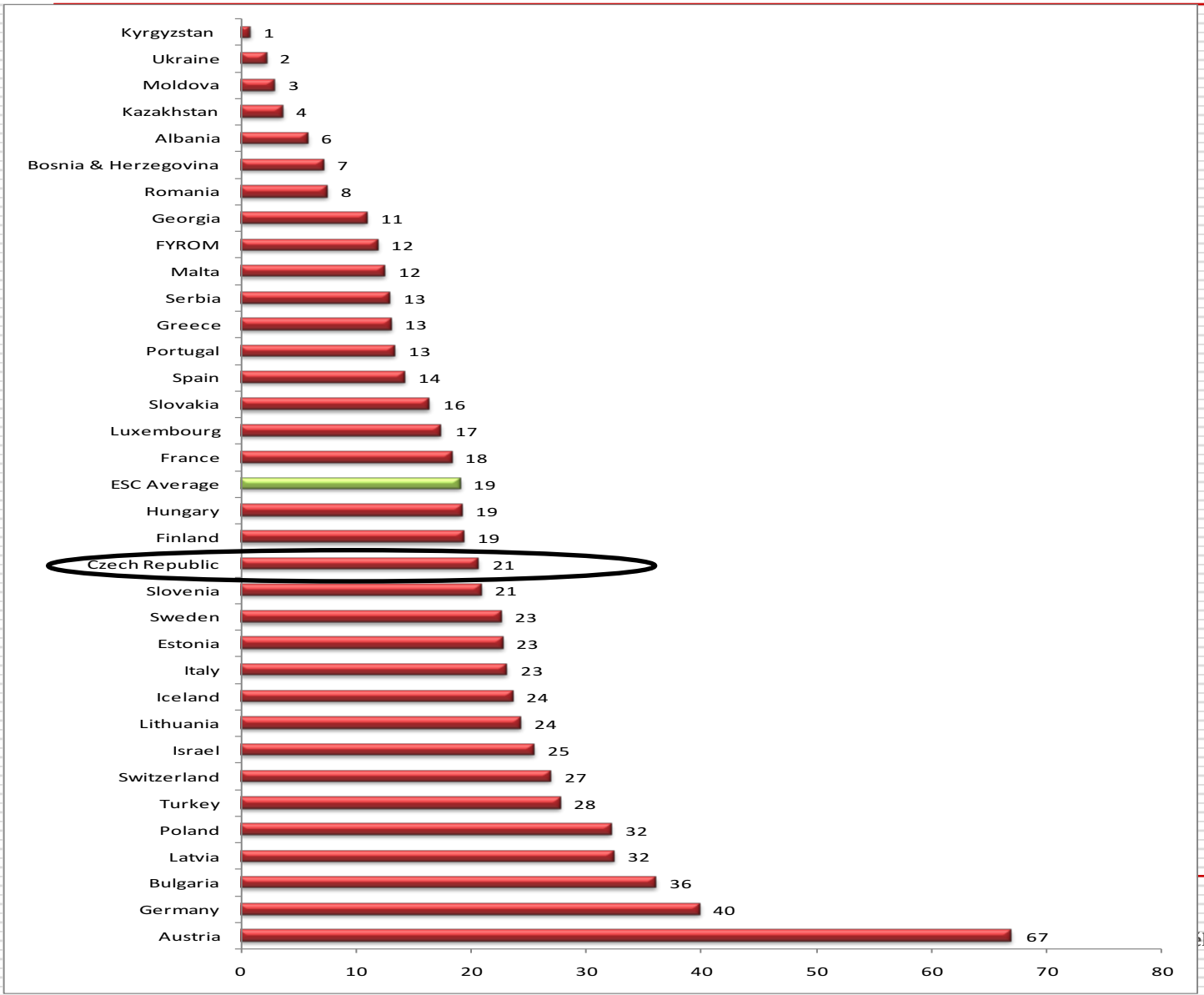
There are serious disparities in service provision across systems



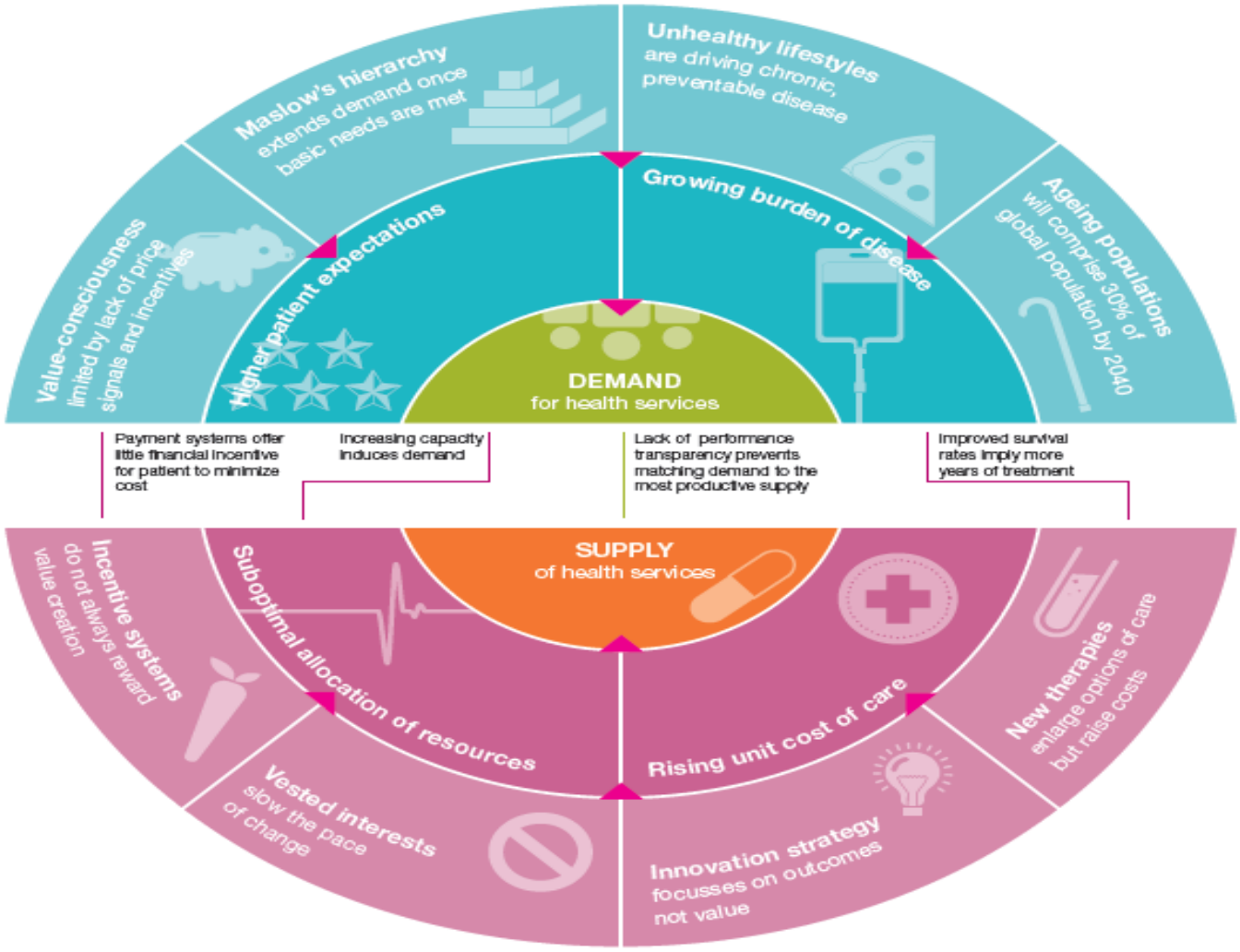
and in CVD outcomes



PCIs per 10,000 people



Trends in health care delivery

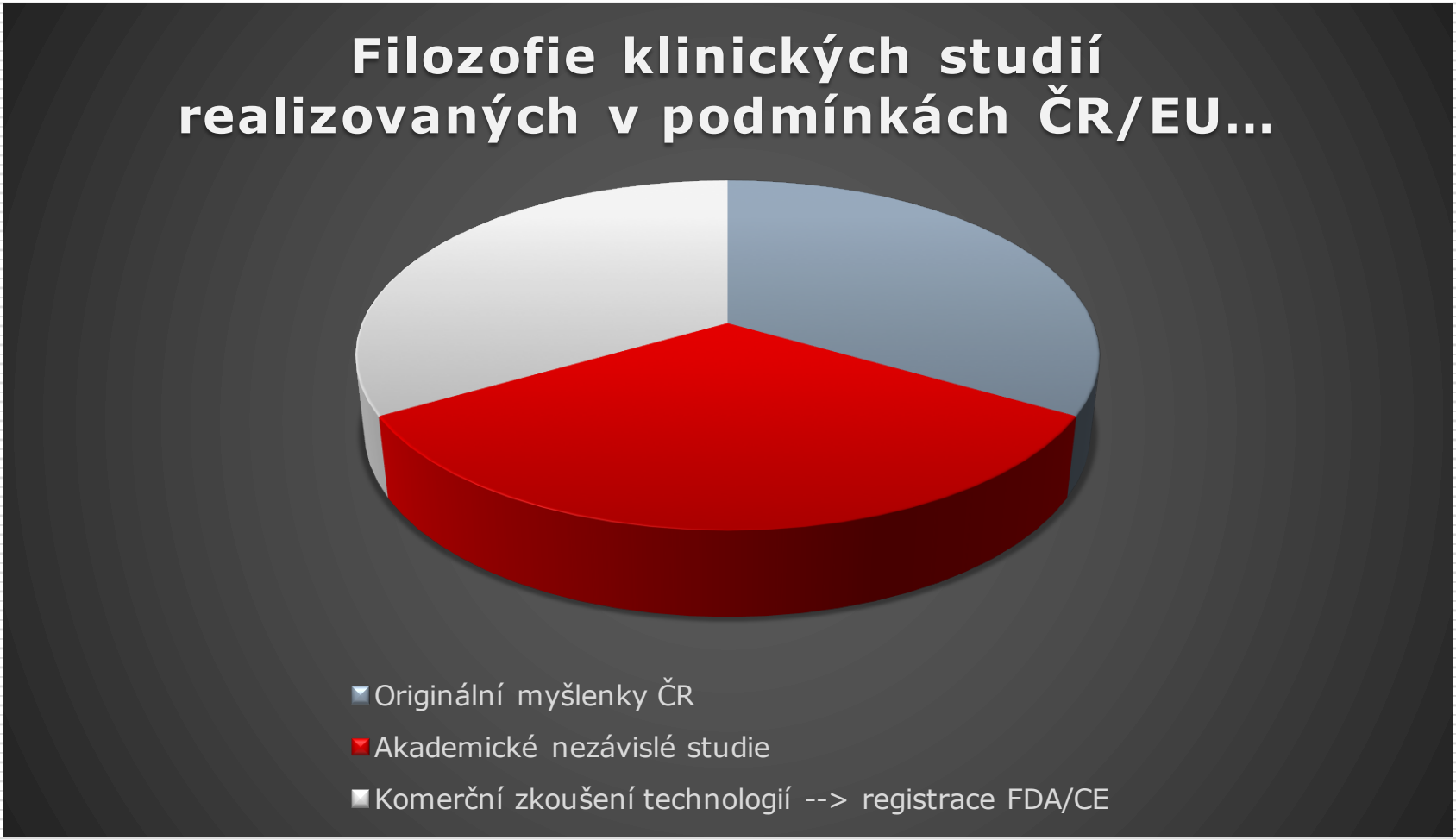


Future trends create a challenging scenario

Evidence and data are important!

Sustainable Health Systems Visions, Strategies, Critical Uncertainties and Scenarios. January 2013

Diferenciace



Leadless pacing

LEADLESS II Study

Percutaneous Implantation of an Entirely Intracardiac Leadless Pacemaker

Vivek Y. Reddy, M.D., Derek V. Exner, M.D., M.P.H., Daniel J. Cantillon, M.D., Rahul Doshi, M.D., T. Jared Bunch, M.D., Gery F. Tomassoni, M.D., Paul A. Friedman, M.D., N.A. Mark Estes III, M.D., John Ip, M.D., Imran Niazi, M.D., Kenneth Plunkitt, M.D., Rajesh Banker, M.D., James Porterfield, M.D., James E. Ip, M.D., and Srinivas R. Dukkipati, M.D., for the LEADLESS II Study Investigators*

ABSTRACT

BACKGROUND

Cardiac pacemakers are limited by device-related complications, notably infection and problems related to pacemaker leads. We studied a miniaturized, fully self-contained leadless pacemaker that is nonsurgically implanted in the right ventricle with the use of a catheter.

METHODS

In this multicenter study, we implanted an active-fixation leadless cardiac pacemaker in patients who required permanent single-chamber ventricular pacing. The primary efficacy end point was both an acceptable pacing threshold (≤2.0 V at 0.4 msec) and an acceptable sensing amplitude (R wave ≥5.0 mV, or a value equal to or greater than the value at implantation) through 6 months. The primary safety end point was freedom from device-related serious adverse events through 6 months. In this ongoing study, the prespecified analysis of the primary end points was performed on data from the first 300 patients who completed 6 months of follow-up (primary cohort). The rates of the efficacy end point and safety end point were compared with performance goals (based on historical data) of 85% and 86%, respectively. Additional outcomes were assessed in all 526 patients who were enrolled as of June 2015 (the total cohort).

RESULTS

The leadless pacemaker was successfully implanted in 504 of the 526 patients in the total cohort (95.8%). The intention-to-treat primary efficacy end point was met in 270 of the 300 patients in the primary cohort (90.0%; 95% confidence interval [CI], 86.0 to 93.2, P=0.007), and the primary safety end point was met in 280 of the 300 patients (93.3%; 95% CI, 89.9 to 95.9; P<0.001). At 6 months, device-related serious adverse events were observed in 6.7% of the patients; events included device dislodgement with percutaneous retrieval (in 1.7%), cardiac perforation (in 1.3%), and pacing-threshold elevation requiring percutaneous retrieval and device replacement (in 1.3%).

CONCLUSIONS

The leadless cardiac pacemaker met prespecified pacing and sensing requirements in the large majority of patients. Device-related serious adverse events occurred in approximately 1 in 15 patients. (Funded by St. Jude Medical; LEADLESS II ClinicalTrials.gov number, NCT02030418.)

Characteristic	Primary Cohort (N=300)	Total Cohort (N=526)
Procedural characteristics§		
Duration of implantation — min		
Total: sheath insertion to removal	50.0±27.3	46.5±25.3
Procedure: insertion of delivery catheter to removal	30.4±18.2	28.6±17.8
Duration of fluoroscopy — min	14.9±9.4	13.9±9.1
Device repositioning — no. of patients/total no. (%)		
None	199/289 (68.9)	354/504 (70.2)
1	53/289 (18.3)	89/504 (17.7)
2	24/289 (8.3)	39/504 (7.7)
>2	13/289 (4.5)	22/504 (4.4)
Final device position in right ventricle — no. of patients/total no. (%)		
Apex	140/289 (48.4)	192/504 (38.1)
Apical septum	5/289 (1.7)	96/504 (19.0)
Outflow, septum, or other	144/289 (49.8)	215/504 (42.7)
Missing data	0/289	1/504 (0.2)

Total	22	20	6.7	40	34	6.5
Cardiac perforation						
Cardiac tamponade with intervention	1	1	0.3	5	5	1.0
Cardiac perforation requiring intervention	1	1	0.3	1	1	0.2
Pericardial effusion with no intervention	2	2	0.7	2	2	0.4
Vascular complication						
Bleeding	2	2	0.7	2	2	0.4
Arteriovenous fistula	1	1	0.3	1	1	0.2
Pseudoaneurysm	1	1	0.3	2	2	0.4
Failure of vascular closure device requiring intervention	0	0	0	1	1	0.2
Arrhythmia during device implantation						
Asystole	1	1	0.3	1	1	0.2
Ventricular tachycardia or ventricular fibrillation	1	1	0.3	2	2	0.4
Cardiopulmonary arrest during implantation procedure	0	0	0	1	1	0.2
Device dislodgement	5	5	1.7	6	6	1.1
Device migration during implantation owing to inadequate fixation	0	0	0	2	2	0.4
Pacing threshold elevation with retrieval and implantation of new device	4	4	1.3	4	4	0.8

DOI: 10.1056/NEJMoa1507192

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MICRA Study

Early performance of a miniaturized leadless cardiac pacemaker: the Micra Transcatheter Pacing Study

Philippe Ritter[1]*, Gabor Z. Duray[2], Clemens Steinwender[3], Kyoko Soejima[4], Razali Omar[5], Lluís Mont[6], Lucas VA Boersma[7], Reinoud E. Knops[8], Larry Chinitz[9], Shu Zhang[10], Calambur Narasimhan[11], John Hummel[12], Michael Lloyd[13], Timothy Alexander Simmers[14], Andrew Voigt[15], Verla Laager[16], Kurt Stromberg[16], Matthew D. Bonner[16], Todd J. Sheldon[16], and Dwight Reynolds[17], Micra Transcatheter Pacing Study Group

[1]Hôpital Cardiologique du Haut-Lévêque, CHU Bordeaux, Université Bordeaux, IHU LIRYC, Bordeaux, France; [2]Clinical Electrophysiology Department of Cardiology, Medical Centre, Hungarian Defence Forces, Budapest, Hungary; [3]Department of Cardiology, Linz General Hospital, Johannes Kepler University School of Medicine Linz, Linz, Austria; [4]Department of Cardiology, Kyorin University Hospital, Tokyo, Japan; [5]Electrophysiology and Pacing Unit, National Heart Institute, Kuala Lumpur, Malaysia; [6]Hospital Clínic, Universitat de Barcelona, Catalonia, Spain; [7]St Antonius Ziekenhuis, Nieuwegein, the Netherlands; [8]Academisch Medisch Centrum (AMC), Amsterdam, the Netherlands; [9]New York University, New York, NY, USA; [10]State Key Laboratory of Cardiovascular Disease Fuwai Hospital, National Center for Cardiovascular Disease, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing, China; [11]Division of Electrophysiology, Department of Cardiology, CARE Hospitals and CARE Foundation, Hyderabad, India; [12]The Ohio State University, Columbus, OH, USA; [13]Emory University Hospital, Atlanta, GA, USA; [14]Catharina Ziekenhuis, Eindhoven, the Netherlands; [15]University of Pittsburgh Medical Center UPMC Presbyterian, Pittsburgh, PA, USA; [16]Medtronic plc, Mounds View, MN, USA; and [17]Cardiovascular Section, University of Oklahoma Health Sciences Center, OU Medical Center, Oklahoma City, OK, USA

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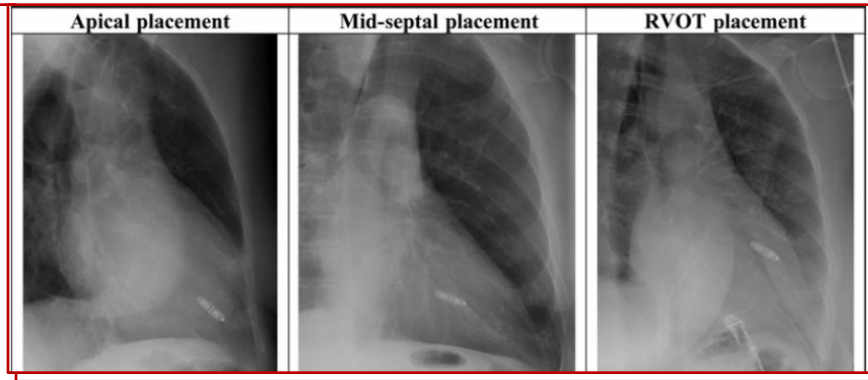
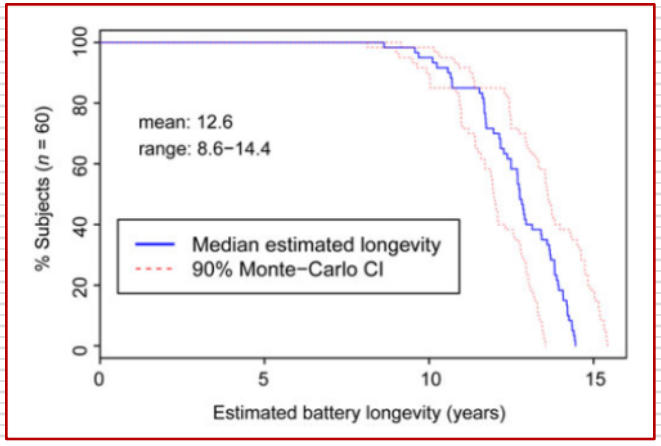
See page 2520 for the editorial comment on this article (doi:10.1093/eurheartj/ehv261)

Aims Permanent cardiac pacing is the only effective treatment for symptomatic bradycardia, but complications associated with conventional transvenous pacing systems are commonly related to the pacing lead and pocket. We describe the early performance of a novel self-contained miniaturized pacemaker.

Methods and results Patients having Class I or II indication for VVI pacing underwent implantation of a Micra transcatheter pacing system, from the femoral vein and fixated in the right ventricle using four protractible nitinol tines. Prespecified objectives were >85% freedom from unanticipated serious adverse device events (safety) and <2 V 3-month mean pacing capture threshold at 0.24 ms pulse width (efficacy). Patients were implanted ($n = 140$) from 23 centres in 11 countries (61% male, age 77.0 ± 10.2 years) for atrioventricular block (66%) or sinus node dysfunction (29%) indications. During mean follow-up of 1.9 ± 1.8 months, the safety endpoint was met with no unanticipated serious adverse device events. Thirty adverse events related to the system or procedure occurred, mostly due to transient dysrhythmias or femoral access complications. One pericardial effusion without tamponade occurred after 18 device deployments. In 60 patients followed to 3 months, mean pacing threshold was 0.51 ± 0.22 V, and no threshold was ≥2 V, meeting the efficacy endpoint ($P < 0.001$). Average R-wave was 16.1 ± 5.2 mV and impedance was 650.7 ± 130 ohms.

Conclusion Early assessment shows the transcatheter pacemaker can safely and effectively be applied. Long-term safety and benefit of the pacemaker will further be evaluated in the trial.





European Heart Journal (2015) **36**, 2510–2519
doi:10.1093/eurheartj/ehv214

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Kdo je „ideální kandidát“ pro leadless pacing ?

CRT Multisite Pacing

A review of multisite pacing to achieve cardiac resynchronization therapy

Christopher Aldo Rinaldi[1]*, Haran Burri[2], Bernard Thibault[3], Antonio Curnis[4], Archana Rao[5], Daniel Gras[6], Johannes Sperzel[7], Jagmeet P. Singh[8], Mauro Biffi[9], Pierre Bordachar[10], and Christophe Leclercq[11]

[1]Cardiac Department, Guy's and St Thomas' Hospitals, London SE1 7EH, UK; [2]Cardiology Service, University Hospital of Geneva, Rue Gabrielle Perret Gentil 4, 1205 Geneva, Switzerland; [3]Department of Medicine and Research Center, Montreal Heart Institute and Université de Montréal, 5000 Belanger Street, Montreal, Quebec, QC, Canada; [4]Department of Experimental and Applied Medicine, Section of Cardiovascular Diseases, University of Brescia, Brescia, Italy; [5]Liverpool Heart and Chest Hospital, Thomas Drive, Liverpool L14 3PE, UK; [6]Nouvelles Cliniques Nantaises, Nantes, France; [7]Department of Cardiology and Electrophysiology, Kerckhoff-Klinik GmbH, Benekestrasse 2-8, D-61231 Bad Nauheim, Germany; [8]Massachusetts General Hospital Heart Center, Harvard Medical School, 55 Fruit St., Boston, MA 02114, USA; [9]Institute of Cardiology, University of Bologna, Bologna 40138, Italy; [10]Service de Rythmologie, Hôpital Cardiologique du Haut-Lévêque, Université Victor Segalen Bordeaux II, Avenue de Magellan, Bordeaux-Pessac 33604, France; and [11]Département de Cardiologie et Maladies Vasculaires, CHU Pontchaillou 2, rue Henri le Guilloux, 35033 Rennes Cédex 09, France

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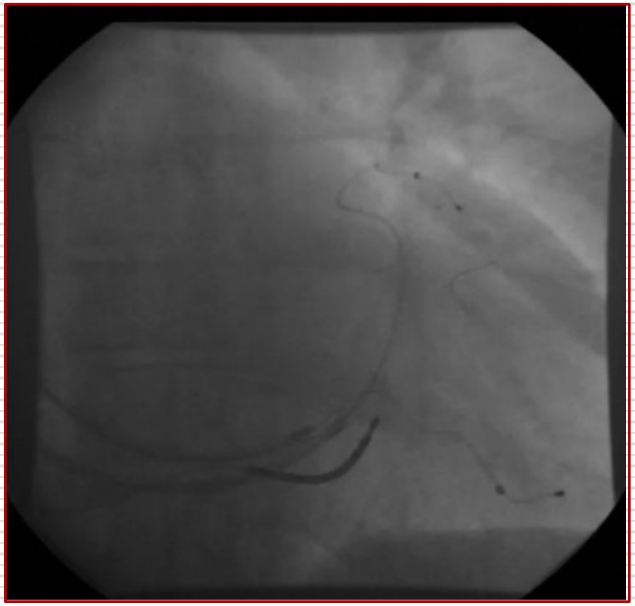
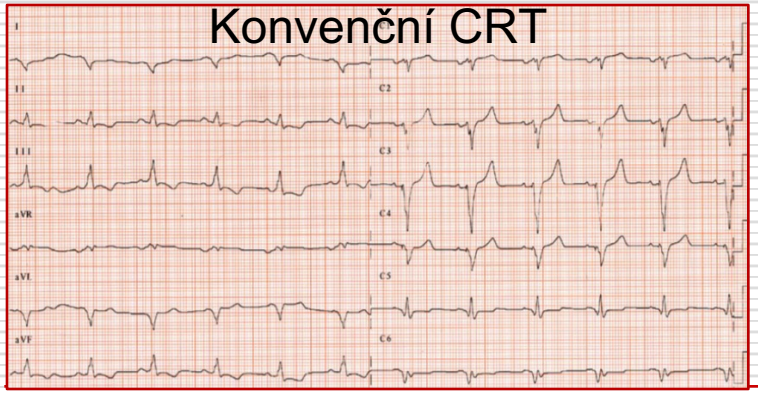
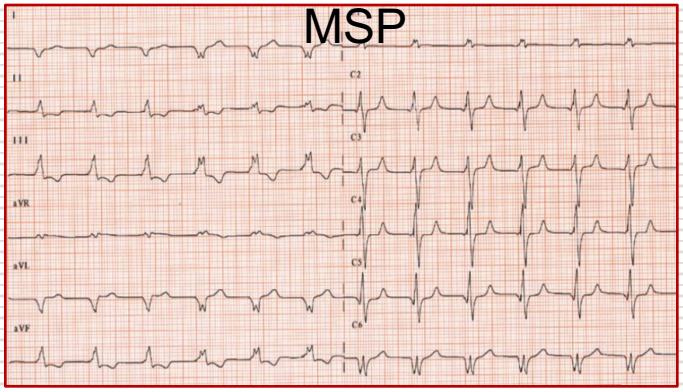
Non-response to cardiac resynchronization therapy remains a significant problem in up to 30% of patients. Multisite stimulation has emerged as a way of potentially overcoming non-response. This may be achieved by the use of multiple leads placed within the coronary sinus and its tributaries (dual-vein pacing) or more recently by the use of multipolar (quadripolar) left ventricular pacing leads which can deliver pacing stimuli at multiple sites within the same vein. This review covers the role of multisite pacing including the interaction with the underlying pathophysiology, the current and planned studies, and the potential pitfalls of this technology.







Europace (2015) **17**, 7–17
doi:10.1093/europace/euu197

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Septální x apikální stimulace u CRT

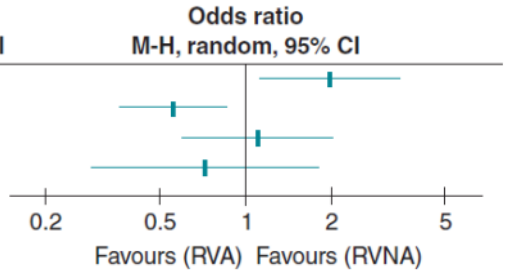
Apical vs. non-apical right ventricular pacing in cardiac resynchronization therapy: a meta-analysis

Theodoros A. Zografos[1], Valentina Kutyifa[4], Helm Demosthenes G. Katritsi

[1]Department of Cardiology, Athens Euroclinic, 9 Ath Interventional Electrocardiology and Hypertension, U

Received 10 October 2014; accepted after revision 11 Fe

Study or subgroup	RVA Events	RVA Total	RVNA Events	RVNA Total	Weight	Odds ratio M-H, random, 95% CI
Jastrzebski 2013	32	57	120	305		1.97 [1.11, 3.49]
Kaitani 2012	74	284	55	142		0.56 [0.36, 0.86]
Kutyifa 2013	116	656	14	86		1.10 [0.60, 2.03]
Thebault 2012	13	237	8	108		0.73 [0.29, 1.81]



Aims Cardiac resynchronization therapy (CRT) has been shown to improve outcomes in patients with heart failure. The optimal site of right ventricular (RV) stimulation in CRT has not been established. We aimed to conduct a meta-analysis of randomized-controlled trials and observational studies comparing the mid- and long-term effects of RV apical (RVA) and non-apical (RVNA) pacing on CRT outcomes.

Methods We systematically searched the Cochrane library, EMBASE, and MEDLINE databases for studies evaluating RVA vs. RVNA pacing in CRT with regards to left ventricular end-systolic volume (LVESV) reduction, functional status improvement (defined as ≥1 New York Heart Association class improvement), and the clinical outcome of mortality or cardiovascular hospitalization. Effect estimates [standardized mean difference (SMD) and odds ratio (OR) with 95% confidence intervals (CI)] were pooled using random-effect models.

Results Twelve studies comprising 2670 patients (1655 with an apical and 1015 with a non-apical RV lead position) were included. In meta-analyses, LVESV reduction and functional status improvement were similar in patients with RVA and RVNA pacing (SMD 0.13, 95% CI: −0.24 to 0.50, $P = 0.48$; OR 1.08, 95% CI: 0.81 to 1.45, $P = 0.60$, respectively). Data regarding mortality and hospitalizations could not be pooled due to a small number of relevant studies with significant heterogeneity.

Conclusion Our meta-analysis suggests that in CRT patients the effects of RVA or RVNA pacing on LV remodelling and functional status are similar. Mortality and morbidity outcomes with different RV lead positions should be further assessed in randomized clinical trials.

Europace (2015) **17**, 1259–1266
doi:10.1093/europace/euv048

CRT u QRS < 130 ms

Cardiac-resynchronization therapy in patients with systolic heart failure and QRS interval ≤130 ms: insights from a meta-analysis

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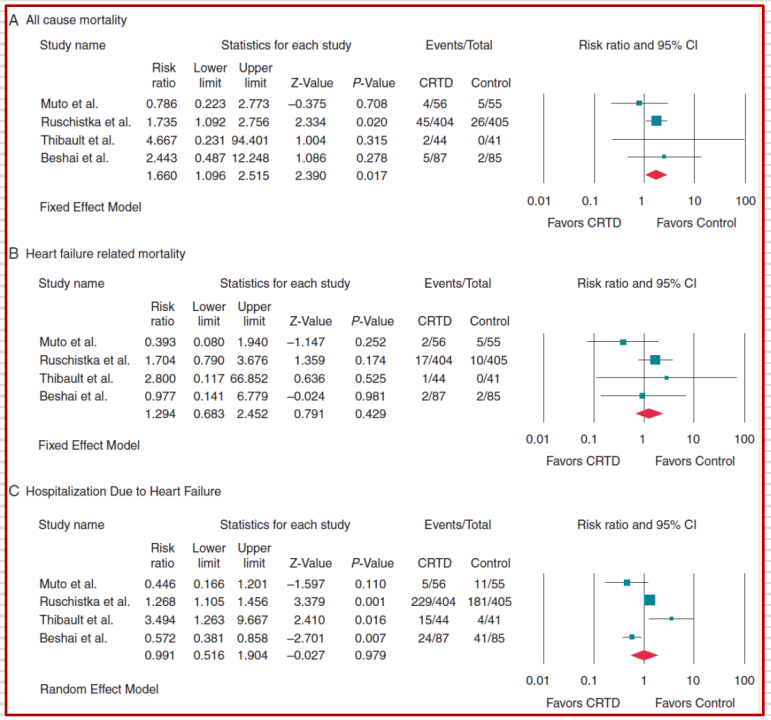
Received 15 June 2014; accepted after revision 3 July 2014; online publish-ahead-of-print 27 August 2014

Aims Cardiac-resynchronization therapy (CRT) reduces morbidity and mortality in patients with chronic systolic heart failure (SHF) and a wide QRS complex. It is unclear whether the same benefit extends to patients with QRS duration (QRSd) <130 ms.

Methods and results Our aim was to perform a meta-analysis of all randomized controlled trial (RCTs) and to evaluate the effect of implantable CRT defibrillator (CRTD) on all-cause mortality, HF mortality, and HF hospitalization in patients with QRSd <130 ms. We performed a systematic literature search to identify all RCTs, comparing CRTD therapy with implantable cardiac defibrillator (ICD) therapy in patients with SHF (ejection fraction <35%) and QRS ≤130 ms, published in Pubmed, Medline, EMBASE, Cochrane library, and Google scholar from June 1980 through June 2013. The search terms included CRT, QRS duration, narrow QRS, clinical trial, RCT, biventricular pacing, heart failure, systolic dysfunction, dyssynchrony, left ventricular remodelling, readmission, mortality, survival, and various combinations of these terms. We studied the trends of overall mortality, SHF mortality, and hospitalizations due to SHF between the two groups. Heterogeneity of the studies was analysed by Q statistic. A fixed-effect model was used to compute the relative risk (RR) of mortality due to SHF, while a random-effects model was used to compare hospitalization due to SHF. Out of a total of 12 100 citations, four RCTs comparing CRTD vs. ICD therapy in patients with SHF and QRS ≤130 ms fulfilled the inclusion criteria. The median follow-up was 12 months and the cumulative number of patients was 1177. Relative Risk for all-cause mortality in patients treated with CRTD was 1.66 with a 95% CI of 1.096–2.515 (P = 0.017) while for SHF mortality was 1.29 with 95% CI of 0.68–2.45 (P = 0.42). Relative risk for HF hospitalization in patients treated with CRTD was 0.94 with 95% CI of 0.50–1.74 (P = 0.84) in comparison to the ICD group.

Conclusion Cardiac-resynchronization therapy defibrillator has no impact on SHF mortality and SHF hospitalization in patients with systolic HF with QRS duration ≤130 ms and is associated with higher all-cause mortality in comparison with ICD therapy.



A All cause mortality

Study name	Risk ratio	Lower limit	Upper limit	Z-Value	P-Value	CRTD	Control
Muto et al.	0.786	0.223	2.773	−0.375	0.708	4/56	5/55
Ruschistka et al.	1.735	1.092	2.756	2.334	0.020	45/404	26/405
Thibault et al.	4.667	0.231	94.401	1.004	0.315	2/44	0/41
Beshai et al.	2.443	0.487	12.248	1.086	0.278	5/87	2/85
	1.660	1.096	2.515	2.390	0.017		

Fixed Effect Model

0.01 0.1 1 10 100
Favors CRTD Favors Control

B Heart failure related mortality

Study name	Risk ratio	Lower limit	Upper limit	Z-Value	P-Value	CRTD	Control
Muto et al.	0.393	0.080	1.940	−1.147	0.252	2/56	5/55
Ruschistka et al.	1.704	0.790	3.676	1.359	0.174	17/404	10/405
Thibault et al.	2.800	0.117	66.852	0.636	0.525	1/44	0/41
Beshai et al.	0.977	0.141	6.779	−0.024	0.981	2/87	2/85
	1.294	0.683	2.452	0.791	0.429		

Fixed Effect Model

0.01 0.1 1 10 100
Favors CRTD Favors Control

C Hospitalization Due to Heart Failure

Study name	Risk ratio	Lower limit	Upper limit	Z-Value	P-Value	CRTD	Control
Muto et al.	0.446	0.166	1.201	−1.597	0.110	5/56	11/55
Ruschistka et al.	1.268	1.105	1.456	3.379	0.001	229/404	181/405
Thibault et al.	3.494	1.263	9.667	2.410	0.016	15/44	4/41
Beshai et al.	0.572	0.381	0.858	−2.701	0.007	24/87	41/85
	0.991	0.516	1.904	−0.027	0.979		

Random Effect Model

0.01 0.1 1 10 100
Favors CRTD Favors Control

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FAKULTNÍ NEMOCNICE OLOMOUC

EFFICAS II Study

EFFICAS II: optimization of catheter contact force improves outcome of pulmonary vein isolation for paroxysmal atrial fibrillation

Josef Kautzner[1]*, Petr Neuzil[2], Hendrik Lambert[3], Petr Peichl[1], Jan Petru[2], Robert Cihak[1], Jan Skoda[2], Dan Wichterle[1], Erik Wissner[4], Aude Yulzari[3], and Karl-Heinz Kuck[4]

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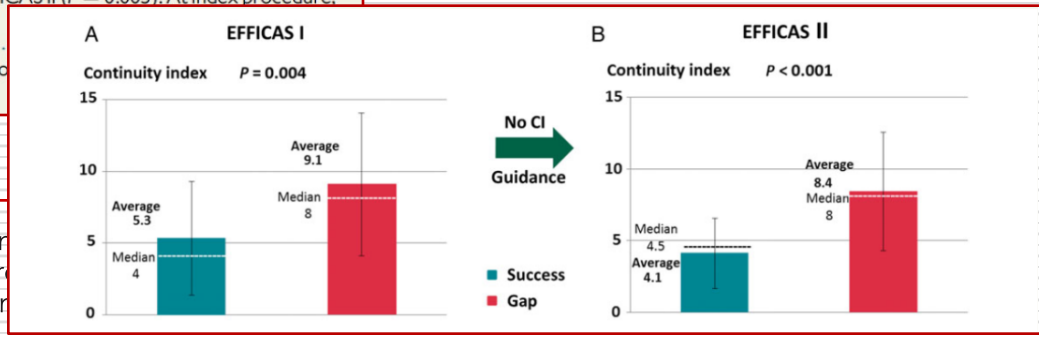
Aims A challenge of pulmonary vein isolation (PVI) in catheter ablation for paroxysmal atrial fibrillation (PAF) is electrical reconnection of the PV. EFFICAS I showed correlation between contact force (CF) parameters and PV durable isolation but no prospective evaluation was made. EFFICAS II was a multicentre study to prospectively assess the impact of CF guidance for an effective reduction of PVI gaps.

Methods and results Pulmonary vein isolation using a radiofrequency (RF) ablation catheter with an integrated force sensor (TactiCath™) was performed in patients with PAF. Operators were provided EFFICAS I-based CF guidelines [target 20 g, range 10–30 g, minimum 400 g s force-time integral (FTI)]. Conduction gaps were assessed by remapping of PVs after 3 months, and gap rate was compared with EFFICAS I outcome. At follow up, 24 patients had 85% of PVs remaining isolated, compared with 72% in EFFICAS I ($P = 0.037$) in which CF guidelines were not used. The remaining 15% of gaps correlated to the number of catheter moves at creating the PVI line, quantified as Continuity Index. For PV lines with contiguous lesions and low catheter moves, durable isolation was 81% in EFFICAS I and 98% in EFFICAS II ($P = 0.005$). At index procedure, the number of lesions was reduced by 15% in EFFICAS II vs. EFFICAS I.

Conclusion The use of CF with the above guidelines and contiguous deployment of RF lesio
durable PVI in catheter ablation of PAF.



Europace (2015) **17**, 1229–1235
doi:10.1093/europace/euv057

NORDIC ICD Study

Intra-operative defibrillation testing and clinical shock efficacy in patients with implantable cardioverter-defibrillators: the NORDIC ICD randomized clinical trial

Dietmar Bänsch[1]*, Hendrik Bonnemeier[2], Johan Brandt[3], Frank Bode[4], Jesper Hastrup Svendsen[5,6], Miloš Táborský[7], Stefan Kuster[8], Carina Blomström-Lundqvist[9], Angelika Felk[10], Tino Hauser[10], Anna Suling[11], and Karl Wegscheider[11], for the NORDIC ICD Trial Investigators†

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See page 2508 for the editorial comment on this article (doi:10.1093/eurheartj/ehv324)

Aims This trial was designed to test the hypothesis that shock efficacy during follow-up is not impaired in patients implanted without defibrillation (DF) testing during first implantable cardioverter-defibrillator (ICD) implantation.

Methods and results Between February 2011 and July 2013, 1077 patients were randomly assigned (1 : 1) to first time ICD implantation with ($n = 540$) or without ($n = 537$) DF testing. The intra-operative DF testing was standardized across all participating centres, and all ICD shocks were programmed to 40 J irrespective of DF test results. The primary end point was the average first shock efficacy (FSE) for all true ventricular tachycardia and fibrillation (VT/VF) episodes during follow-up. The secondary end points included procedural data, serious adverse events, and mortality. During a median follow-up of 22.8 months, the model-based FSE was found to be non-inferior in patients with an ICD implanted without a DF test, with a difference in FSE of 3.0% in favour of the no DF test [confidence interval (CI) −3.0 to 9.0%, $P_{\text{non-inferiority}} < 0.001$ for the pre-defined non-inferiority margin of −10%). A total of 112 procedure-related serious adverse events occurred within 30 days in 94 patients (17.6%) tested compared with 89 events in 74 patients (13.9%) not tested ($P = 0.095$).

Conclusion Defibrillation efficacy during follow-up is not inferior in patients with a 40 J ICD implanted without DF testing. Defibrillation testing during first time ICD implantation should no longer be recommended for routine left-sided ICD implantation.

Outcome	Events		Incidence[a]		Log rank		95% CI	
	Without DF test (*N* = 537)	With DF test (*N* = 540)	Without DF test	With DF test	*P*-value	HR	Lower	Upper
All-cause mortality	44 (8.2%)	52 (9.6%)	0.044	0.053	0.377	0.835	0.559	1.248
Non-cardiac mortality	24 (4.5%)	23 (4.3%)	0.024	0.023	0.907	1.035	0.584	1.833
Unknown (primary organ cause)	6 (1.1%)	10 (1.9%)	0.006	0.01	0.306	0.593	0.216	1.632
Cardiac mortality	14 (2.6%)	19 (3.5%)	0.014	0.019	0.350	0.721	0.361	1.438
Arrhythmic mortality	1 (0.2%)	5 (0.9%)	0.001	0.005	0.100	0.198	0.023	1.694
Non-arrhythmic mortality	13 (2.4%)	13 (2.4%)	0.013	0.013	0.948	0.975	0.452	2.103
Unknown cardiac mortality	0 (0.0%)	1 (0.2%)	0	0.001				

European Heart Journal (2015) **36**, 2500–2507
doi:10.1093/eurheartj/ehv292

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FAKULTNÍ NEMOCNICE OLOMOUC

SQ ICD u pacientů s VSV

Potential eligibility of congenital heart disease patients for subcutaneous implantable cardioverter-defibrillator based on surface electrocardiogram mapping

Mehmood Zeb[1,2]*, Nicholas Curzen[1,2], Gruschen Veldtman[1,2], Arthur Yue[1], Paul Roberts[1], David Wilson[1,2], and John Morgan[1,2]

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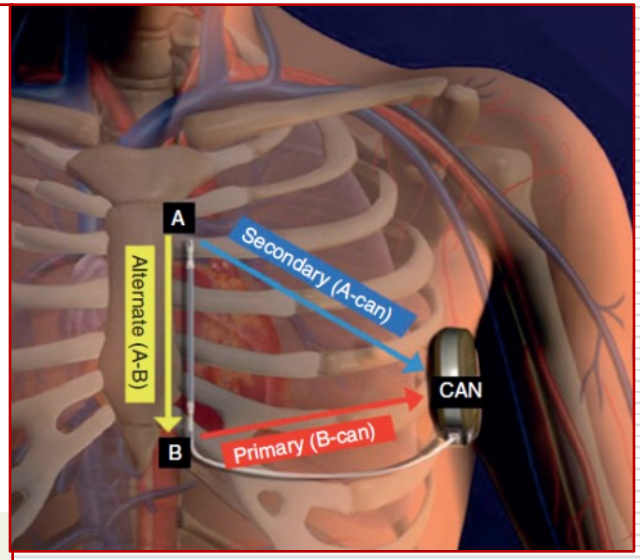
[2]Faculty of Medicine, University of Southampton, Southampton, UK

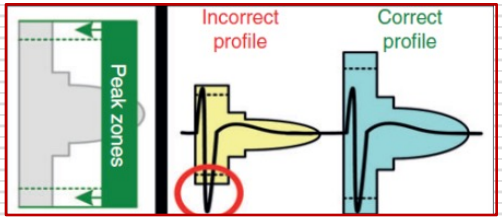
Received 13 September 2014; accepted after revision 22 November 2014; online publish-ahead-of-print 12 February 2015

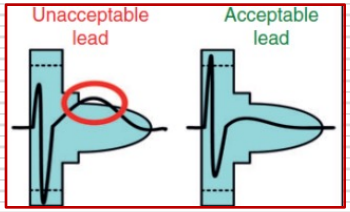
Aims The eligibility of complex congenital heart disease (C-CHD) patients for subcutaneous implantable cardioverter-defibrillator (S-ICD) has yet to be determined. The aim of this study was to determine in C-CHD patients: (i) the S-ICD eligibility, (ii) the most effective sensing vector, (iii) the impact of posture change on screening eligibility, and (iv) the impact of using two vs. six postures for screening. Adults with structurally normal hearts were used as controls.

Methods and results The Boston Scientific ECG screening tool was used to determine eligibility for S-ICD in two and six different postures in 30 patients with C-CHD and 10 controls. Statistical significance was determined using Fisher's exact test. In total, 1440 bipolar vectors were collected. The mean age was 36.3 years, 57% subjects were men. Over all 86.7% of C-CHD patients and 100% controls ($P > 0.05$) met S-ICD eligibility. In controls, the primary vector (PV) was the most effective, and the alternate vector (AV) was least effective. In C-CHD patients, the AV was comparable to the PV. Posture change did not significantly affect S-ICD eligibility in C-CHD patients and controls ($P > 0.05$). Screening with six postures vs. two did not significantly affect S-ICD eligibility of C-CHD patients (83% vs. 87%, $P > 0.05$) or controls (90% vs. 100% $P = > 0.05$).

Conclusion No significant differences were observed between S-ICD eligibility in C-CHD patients and controls. The AV and PV are most suitable in C-CHD patients. No significant impact of postural change was observed for S-ICD eligibility between the two groups. No significant difference was observed in S-ICD eligibility when screening using two or six postures in both groups.







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doi:10.1093/europace/euu375

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I. INTERNÍ KLINIKA KARDIOLOGICKÁ
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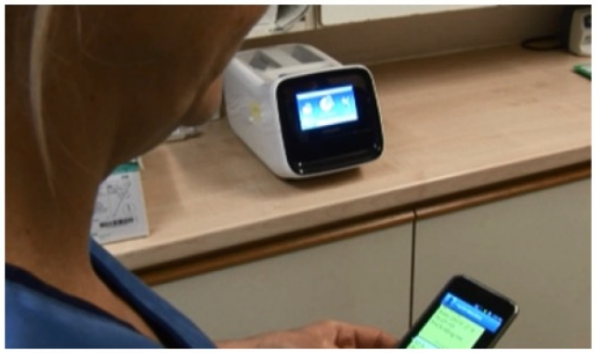
Telemedicína nejen u CIEDs

Testing for **Troponin I** (cTnI) while transit in ambulance:

Scottish Ambulance Service (SAS)



Hospital

- **Average transport time** to Borders General Hospital (BGH) was **28 min,** max.1h 10min
- ~80% of all transports had cTnI test results available on or prior to arrival at BGH
- There is **~2½ h difference** in availability of results when testing is performed by SAS

Table 2	Time difference -Baseline cTnI Result Availability
	SAS result vs. BGH Lab result
	(hh:mm)
Average	2:21
Median	2:07
Max Time	6:09
Min Time	0:23
Count	97

Scotland S, Scientific Poster, American Association for Clinical Chemistry (AACC 2013) Samsung Labgeo cTnI testing

TM u antikoagulační terapie pacientů s mech chlopenními náhradami: ESCAT III Study

Interventions

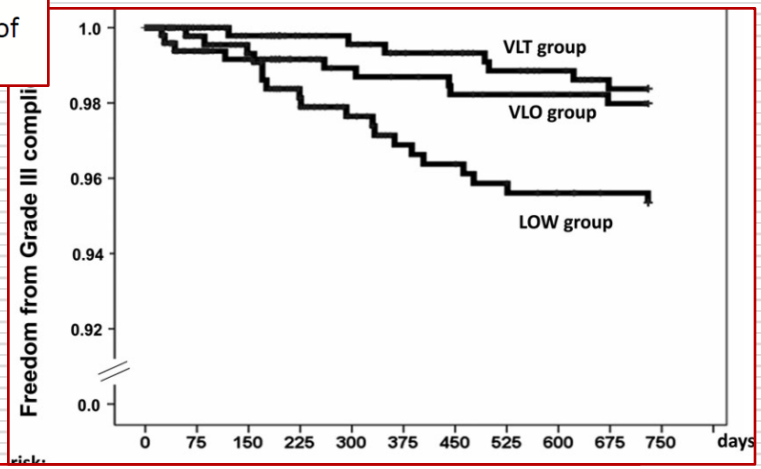
- Patients were trained in INR self-control (and management) before discharge
- Automatically transmission of measured INR values from the coagulation monitor via to telemedical centre (IFAT) leaded by cardiologists (24/7) in the VLO/VLT groups
- INR-Target for AVR in LOW **2,3** (1,8-2,9), INR-Target for AVR in VLO/VLT **2,0** (1,6-2,1)

Results

- 2-year freedom from bleedings or thrombotic events in the LOW-Group (96.3%), VLO group (98.6%) and VLT group (99.1%); **LOW versus VLO/VLT (p=0.008)**
- Telemedicine-guided very low-dose INR self-control is comparable with low-dose INR in thrombotic risk, and is superior in bleeding risk.
- Weekly testing is sufficient.

Limitations:

- Results only valid for AVR patients due to low number of MVR/DVR patients
- Prematurely stop of recruitment due to the increasing number of biological instead of mechanical heart valves implants.



European Heart Journal (2015) **36**, 1297–1305
doi:10.1093/eurheartj/ehu330

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Nové position papers ESC

Antitrombotická léčba pacientů podstupujících kat. ablace a implantace KS/ICD

Europace (2015) **17**, 1197–1214
doi:10.1093/europace/euv190

EHRA POSITION PAPER

Antithrombotic management in patients undergoing electrophysiological procedures: a European Heart Rhythm Association (EHRA) position document endorsed by the ESC Working Group Thrombosis, Heart Rhythm Society (HRS), and Asia Pacific Heart Rhythm Society (APHRS)

Christian Sticherling (Chair; Switzerland), Francisco Marin (Co-chair; Spain), David Birnie (Canada), Giuseppe Boriani (Italy), Hugh Calkins (USA), Gheorghe-Andrei Dan (Romania), Michele Gulizia (Italy), Sigrun Halvorsen (Norway), Gerhard Hindricks (Germany), Karl-Heinz Kuck (Germany), Angel Moya (Spain), Tatjana Potpara (Serbia), Vanessa Roldan (Spain), Roland Tilz (Germany), and Gregory Y.H. Lip (UK)

Document reviewers: Bulent Gorenek (Reviewer Coordinator;Turkey), Julia H. Indik (USA), Paulus Kirchhof (UK), Chang-Shen Ma (China), Calambur Narasimhan (India), Jonathan Piccini (USA), Andrea Sarkozy (Belgium), Dipen Shah (Switzerland), and Irene Savelieva (on behalf of EP-Europace, UK)

Online publish-ahead-of-print 23 June 2015

Sticherling C., et al. Europace. 2015;17,1197-1214.

Antithrombotic management in patients undergoing atrial fibrillation catheter ablation for the maintenance of sinus rhythm: consensus recommendations

- All patients undergoing AF catheter ablation who present for the procedure in AF should be anticoagulated with a NOAC, or a VKA with a therapeutic INR of 2.0–3.0 for 3 weeks prior to the procedure; or undergo a TEE to screen for thrombi prior to the procedure; post procedure, patients should receive anticoagulation for at least 2 months.
- In patients receiving a VKA, the ablation should be performed without interruption of VKA therapy.
- During the ablation procedure, patients should receive unfractionated heparin with an ACT of >300 s.
- Transoesophageal electrocardiography can be useful before the intervention to rule our left atrial thrombi in all patients with a CHA_2DS_2-VASc score of ≥2.
- In patients presenting in atrial flutter and undergoing right-sided atrial flutter ablation of the cavotricuspid isthmus only, therapy with a VKA and a NOAC should not be interrupted and continued for at least 4 weeks after a successful ablation.
- For patients with AF who present for ablation in sinus rhythm, pre-procedural TEE or initiation of anticoagulation ≥3 weeks prior to ablation can be useful, especially in those patients with a CHA_2DS_2-VASc score of ≥2.
- Transoesophageal electrocardiography can be useful in patients who present for ablation in AF and who have been adequately anticoagulated for 3 weeks or longer prior to ablation, especially in those with a CHA_2DS_2-VASc score of ≥2.

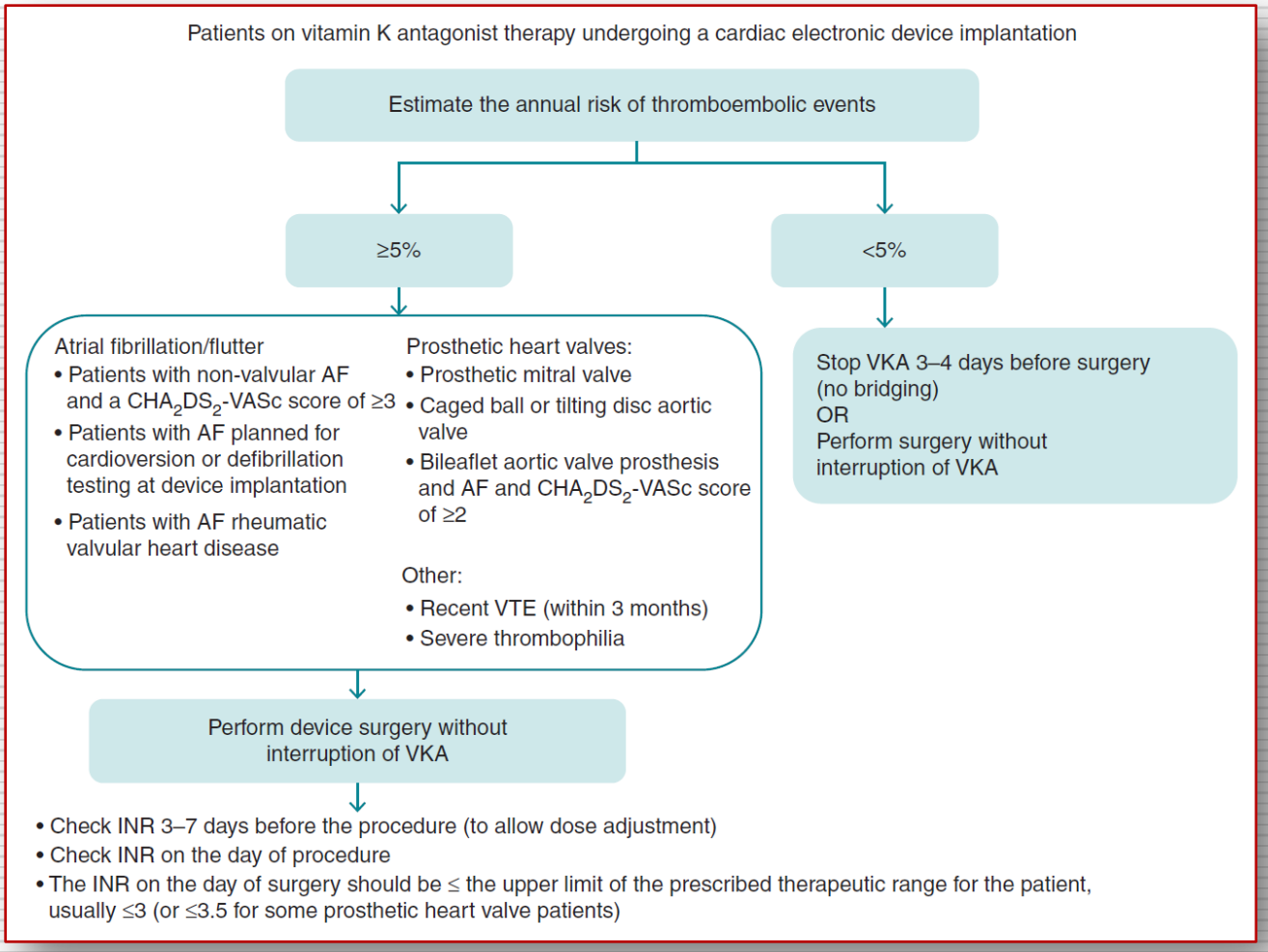
Sticherling C., et al. Europace. 2015;17,1197-1214.

Antithrombotic management in patients undergoing atrial fibrillation catheter ablation for the maintenance of sinus rhythm: consensus recommendations

- In patients receiving a NOAC and with normal renal function, it is reasonable to give the last dose 24 h before the ablation. For patients on dabigatran and renal impairment, this period of interruption is longer.
- Uninterrupted NOAC therapy may be considered in some patients undergoing ablation.
- For patients in sinus rhythm and a CHA_2DS_2-VASc score of 0 (males) or 1 (females), it may be considered starting a NOAC on the day of the procedure, post-ablation.
- Transoesophageal electrocardiography may be considered in patients who present for ablation in sinus rhythm and who have been adequately anticoagulated for 3 weeks or longer prior to ablation, especially in those with a CHA_2DS_2-VASc score of ≥2.
- Ablation is not recommended in patients in whom no anticoagulation can be administered during and after the procedure.
- In patients on a VKA and an INR of >2–3, the VKA should not be stopped and no bridging with a low molecular weight should be instituted.

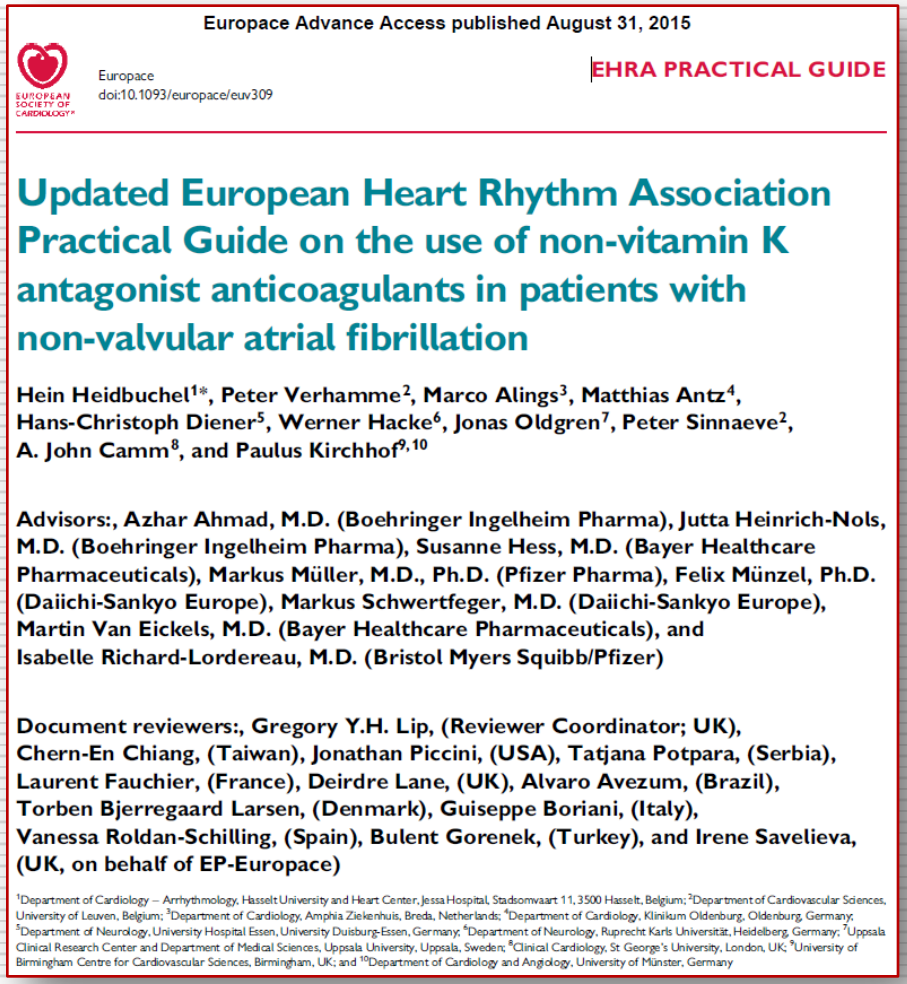
Sticherling C., et al. Europace. 2015;17,1197-1214.

Algorithm for peri-device surgery anticoagulation for patients on a VKA (note exceptions to operating without interruption of VKA include sub-pectoral implants and lead extraction). AF, atrial fibrillation; VKA, vitamin K antagonist; VTE, venous thromboembolism.



Sticherling C., et al. Europace. 2015;17,1197-1214.

Praktická doporučení EHRA NOAC 2015



Europace Advance Access published August 31, 2015

Europace
doi:10.1093/europace/euv309

EHRA PRACTICAL GUIDE

Updated European Heart Rhythm Association Practical Guide on the use of non-vitamin K antagonist anticoagulants in patients with non-valvular atrial fibrillation

Hein Heidbuchel[1]*, Peter Verhamme[2], Marco Alings[3], Matthias Antz[4], Hans-Christoph Diener[5], Werner Hacke[6], Jonas Oldgren[7], Peter Sinnaeve[2], A. John Camm[8], and Paulus Kirchhof[9,10]

Advisors:, Azhar Ahmad, M.D. (Boehringer Ingelheim Pharma), Jutta Heinrich-Nols, M.D. (Boehringer Ingelheim Pharma), Susanne Hess, M.D. (Bayer Healthcare Pharmaceuticals), Markus Müller, M.D., Ph.D. (Pfizer Pharma), Felix Münzel, Ph.D. (Daiichi-Sankyo Europe), Markus Schwertfeger, M.D. (Daiichi-Sankyo Europe), Martin Van Eickels, M.D. (Bayer Healthcare Pharmaceuticals), and Isabelle Richard-Lordereau, M.D. (Bristol Myers Squibb/Pfizer)

Document reviewers:, Gregory Y.H. Lip, (Reviewer Coordinator; UK), Chern-En Chiang, (Taiwan), Jonathan Piccini, (USA), Tatjana Potpara, (Serbia), Laurent Fauchier, (France), Deirdre Lane, (UK), Alvaro Avezum, (Brazil), Torben Bjerregaard Larsen, (Denmark), Guiseppe Boriani, (Italy), Vanessa Roldan-Schilling, (Spain), Bulent Gorenek, (Turkey), and Irene Savelieva, (UK, on behalf of EP-Europace)

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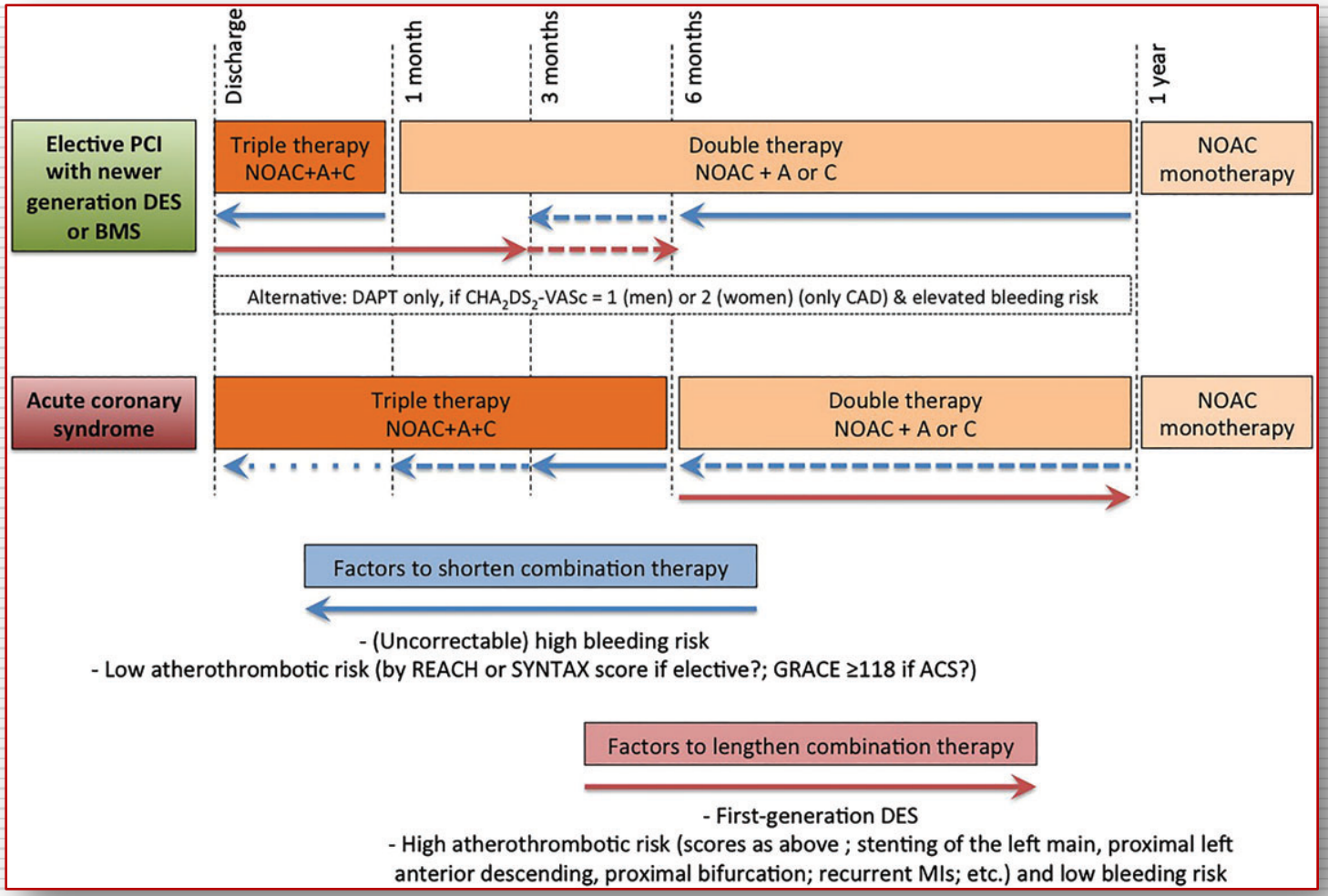
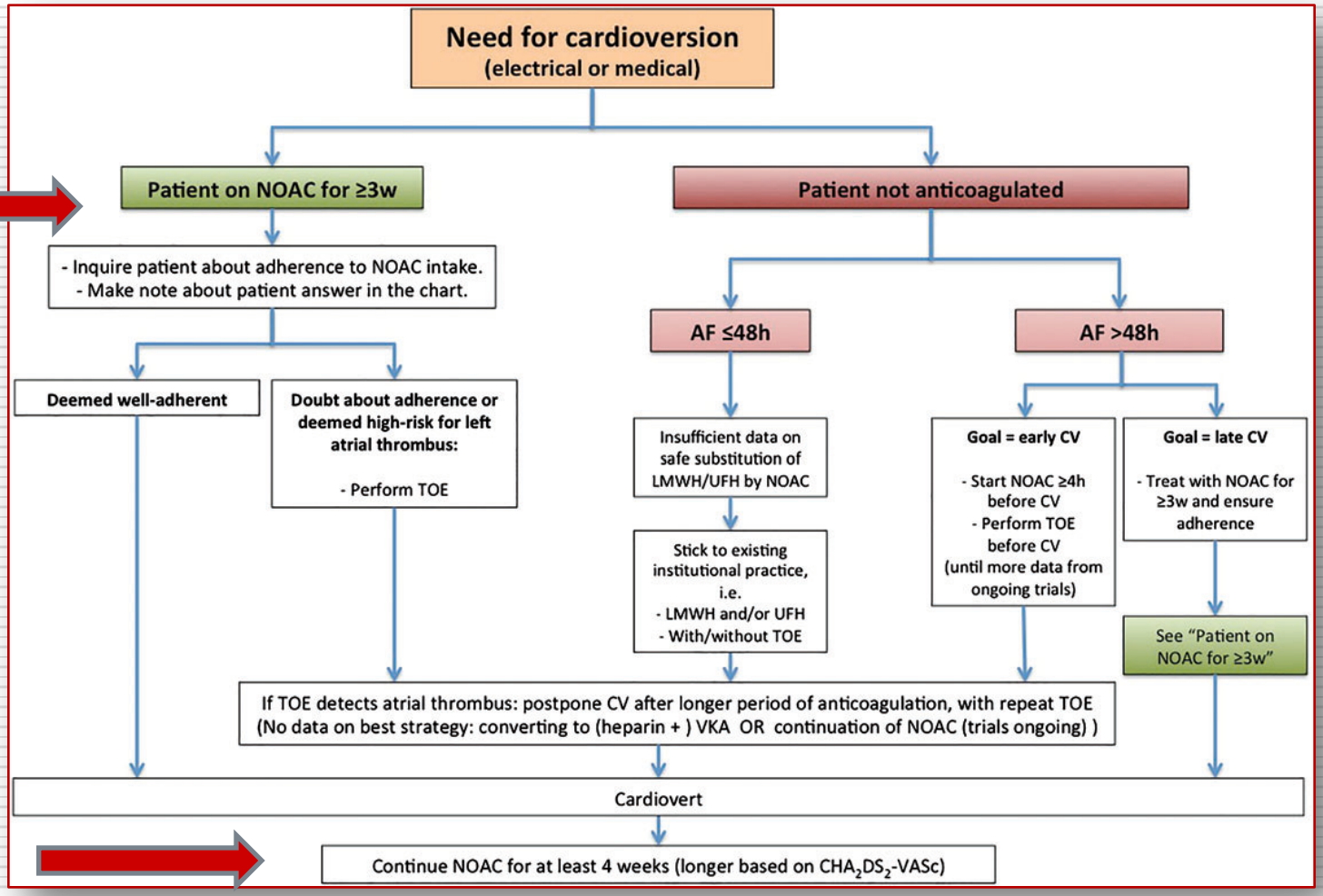
Heidbuchel H, et al. Europace. doi:10.1093/europace/euv309

Default scenarios and criteria for adaptation for long-term treatment of patients on NOAC therapy after revascularization or ACS. There are innumerable possible variations on this global theme, as discussed in the text. Patient characteristics and institutional practices should be taken into account to individualize the approach. This figure wants to create a 'backbone' as guidance for such tailored approaches. A: aspirin 75–100 mg OD; C: clopidogrel 75 mg OD.



Heidbuchel H, et al. Europace. doi:10.1093/europace/euv309

Cardioversion work-flow in AF patients treated with NOAC, depending on the duration of the arrhythmia and prior anticoagulation.



Heidbuchel H, et al. Europace. doi:10.1093/europace/euv309

Komplexní kardiovaskulární centrum
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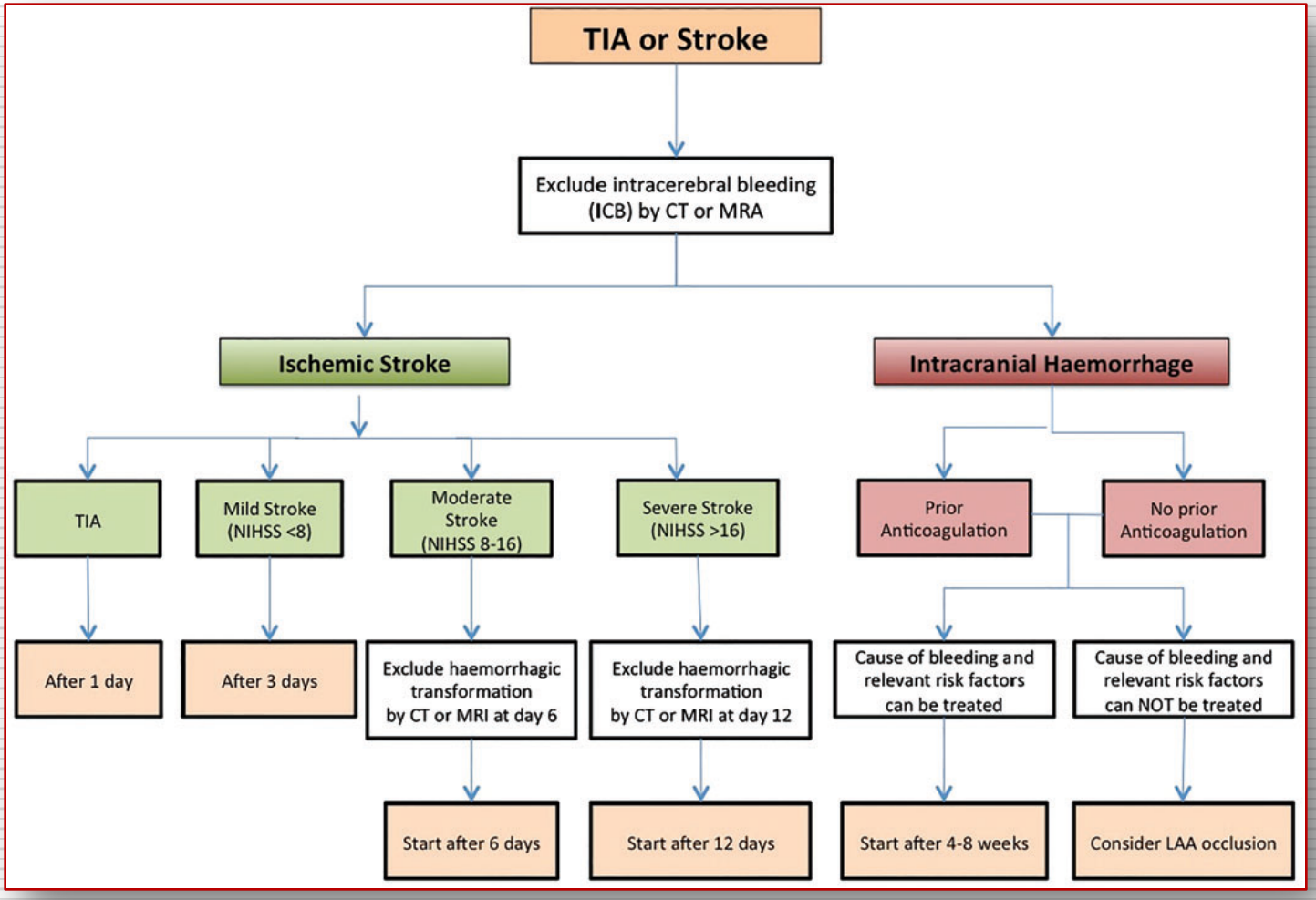
FAKULTNÍ NEMOCNICE OLOMOUC

Flowchart for the initiation or re-initiation of anticoagulation after TIA/stroke or intracerebral haemorrhage.



Heidbuchel H, et al. Europace. doi:10.1093/europace/euv309

Kardio 35

Perspektiva pohledem ČKS

PS Kardio 35: Jak dál ?

- Podpora edukačních aktivit
- Příprava ke kardiologické atestaci
- Podpora vědecké činnosti
- Získání FESC pro vědecky aktivní členy
- Významné zvýšení objemu financí na cestovní granty
- Kongres ESC = základ kontinuální edukace → dostupnost max. počtu členů PS Kardio 35