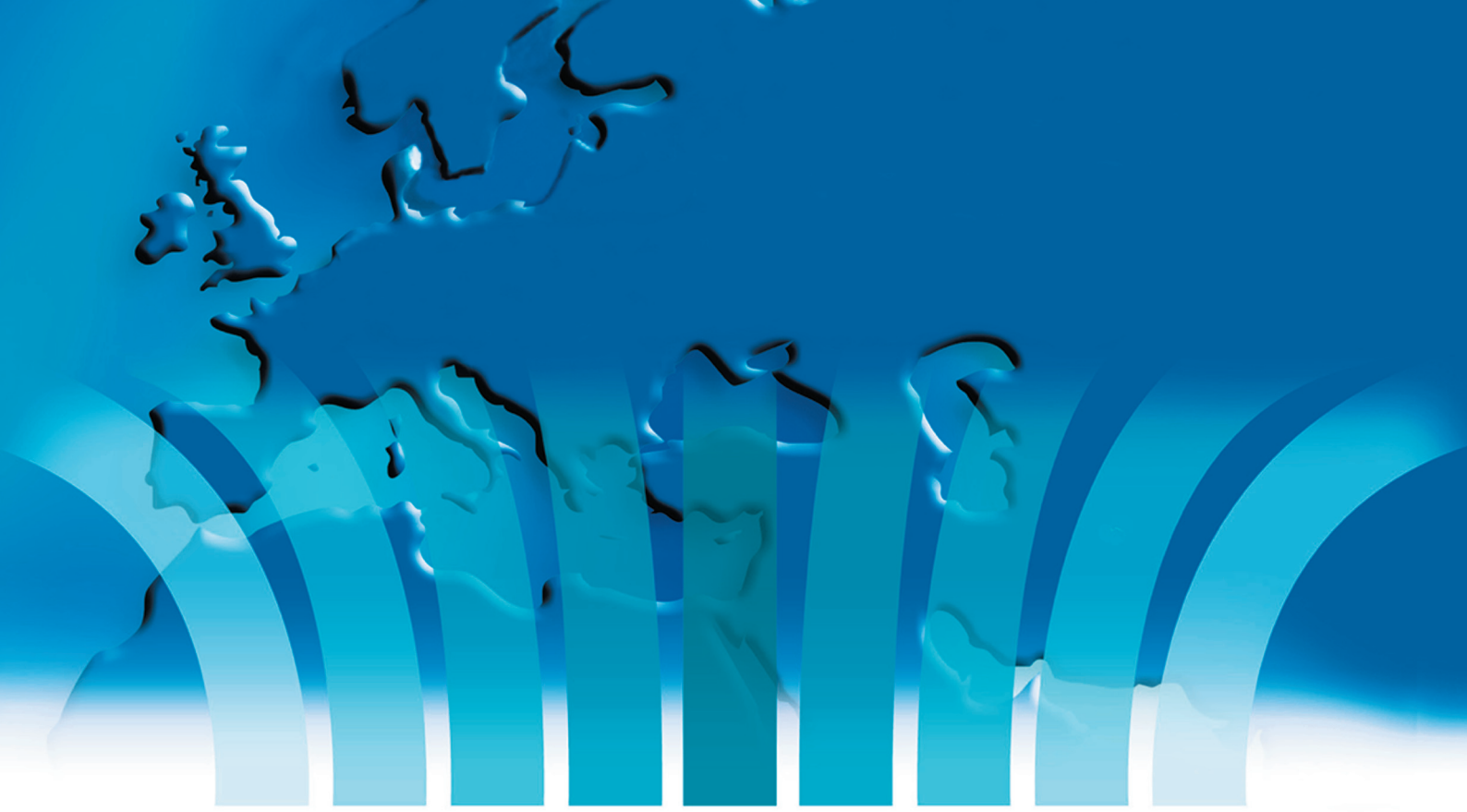
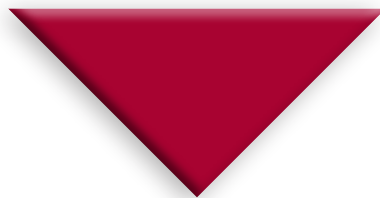




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Additional references listed by chapter of the full text document of the 2010 ESC guidelines on atrial fibrillation

1. Preamble (no references)	
2. Introduction.....	1
2.1 Epidemiology.....	1
2.1.1 AF-related cardiovascular events and complications ("outcomes")	2
2.1.2 Cardiovascular and other conditions associated with AF and AF-related complications	3
2.2 Mechanisms of Atrial Fibrillation.....	3
3. Detection, "Natural" Progression, and Acute Management.....	5
3.1 Definition of AF.....	5
3.2 Detection of AF.....	5
3.3 "Natural" time course of AF.....	6
3.4 ECG techniques to diagnose and monitor AF.....	7
3.5 Types of AF.....	8
3.6 Initial management of patients with AF.....	8
3.7 Clinical Follow-up.....	8
4. Management.....	10
4.1 Antithrombotic therapy.....	10
4.2 Rate and rhythm management.....	15
4.2.1 Acute rate and rhythm management.....	15
4.2.1.1 Acute Rate Control.....	15
4.2.1.2 Pharmacological Conversion.....	15
4.2.1.3 "Pill in the pocket" approach.....	16
4.2.1.4 DC Cardioversion.....	16
4.3 Long Term management.....	15
4.3.1 Rate and Rhythm Control.....	17
4.3.2 Long-term Rate Control.....	19
4.3.3 Pharmacological Rate Control.....	19
4.3.4 Atrioventricular node ablation and modification	20
4.3.5 Long-term rhythm control.....	21
4.3.5.1 Antiarrhythmic drugs to maintain sinus rhythm	21
4.3.5.2 Left atrial ablation.....	23
4.3.5.3 Surgical ablation.....	26
4.4 Upstream Therapy.....	28
5. Specific populations.....	31
5.1 Heart failure.....	31
5.2 Athletes.....	32
5.3 Valvular heart disease.....	33
5.4 Acute coronary syndromes.....	33
5.5 Diabetes Mellitus.....	34
5.6 The Elderly.....	34
5.7 Pregnancy.....	34
5.8 Post-operative AF.....	35
5.9 Hyperthyroidism.....	36
5.10 Wolff-Parkinson-White syndrome.....	36
5.11 Hypertrophic Cardiomyopathy.....	37
5.12 Pulmonary disease.....	37

2. Introduction

2.1 Epidemiology

- Fitzmaurice, D. A., F. D. Hobbs, S. Jowett, J. Mant, E. T. Murray, R. Holder, J. P. Raftery, S. Bryan, M. Davies, G. Y. Lip and T. F. Allan (2007). «Screening versus routine practice in detection of atrial fibrillation in patients aged 65 or over: cluster randomised controlled trial.» *BMJ* 2007; 335(7616):383.
- Freestone, B. and G. Y. Lip (2003). «Ethnicity and arrhythmias.» *Card Electrophysiol Rev* 7(1): 92-5.
- Friberg, L., N. Hammar, et al. (2010). «Stroke in paroxysmal atrial fibrillation: report from the Stockholm Cohort of Atrial Fibrillation.» *Eur Heart J* 31: 967-975.
- Go, A. S., E. M. Hylek, K. A. Phillips, Y. Chang, L. E. Henault, J. V. Selby and D. E. Singer (2001). «Prevalence of diagnosed atrial fibrillation in adults: national implications for rhythm management and stroke prevention: the AnTicoagulation and Risk Factors in Atrial Fibrillation (ATRIA) Study.» *Jama* 285(18): 2370-5.
- Heeringa, J., D. A. van der Kuip, A. Hofman, J. A. Kors, G. van Herpen, B. H. Stricker, T. Stijnen, G. Y. Lip and J. C. Witteman (2006). «Prevalence, incidence and lifetime risk of atrial fibrillation: the Rotterdam study.» *Eur Heart J* 27(8): 949-53.
- Hobbs, F. D., D. A. Fitzmaurice, J. Mant, E. Murray, S. Jowett, S. Bryan, J. Raftery, M. Davies and G. Lip (2005). «A randomised controlled trial and cost-effectiveness study of systematic screening (targeted and total population screening) versus routine practice for the detection of atrial fibrillation in people aged 65 and over. The SAFE study.» *Health Technol Assess* 9(40): iii-iv, ix-x, 1-74.
- Hylek, E. M., A. S. Go, et al. (2003). «Effect of intensity of oral anticoagulation on stroke severity and mortality in atrial fibrillation.» *N Engl J Med* 349: 1019-1026.
- Jabaudon, D., J. Sztajzel, K. Sievert, T. Landis and R. Sztajzel (2004). «Usefulness of ambulatory 7-day ECG monitoring for the detection of atrial fibrillation and flutter after acute stroke and transient ischemic attack.» *Stroke* 35(7): 1647-51.
- Kirchhof, P., A. Auricchio, J. Bax, H. Crijns, J. Camm, H. C. Diener, A. Goette, G. Hindricks, S. Hohnloser, L. Kappenberger, K. H. Kuck, G. Y. Lip, B. Olsson, T. Meinertz, S. Priori, U. Ravens, G. Steinbeck, E. Svernhage, J. Tijssen, A. Vincent and G. Breithardt (2007). «Outcome parameters for trials in atrial fibrillation: executive summary: Recommendations from a consensus conference organized by the German Atrial Fibrillation Competence NETwork (AFNET) and the European Heart Rhythm Association (EHRA).» *Eur Heart J* 28(22): 2803-2817.
- Knecht, S., C. Oelschläger, et al. (2008). «Atrial fibrillation in stroke-free patients is associated with memory impairment and hippocampal atrophy.» *Eur Heart J* 29 2125-2132.
- Lip, G. Y., D. J. Golding, M. Nazir, D. G. Beevers, D. L. Child and R. I. Fletcher (1997). «A survey of atrial fibrillation in general practice: the West Birmingham Atrial Fibrillation Project.» *Br J Gen Pract* 47(418): 285-9.
- Lloyd-Jones, D. M., T. J. Wang, E. P. Leip, M. G. Larson, D. Levy, R. S. Vasan, R. B. D'Agostino, J. M. Massaro, A. Beiser, P. A. Wolf and E. J. Benjamin (2004). «Lifetime Risk for Development of Atrial Fibrillation: The Framingham Heart Study.» *Circulation* 110(9): 1042-1046.
- Mant, J., D. A. Fitzmaurice, et al. (2007). «Accuracy of diagnosing atrial fibrillation on electrocardiogram by primary care practitioners and interpretative diagnostic software: analysis of data from screening for atrial fibrillation in the elderly (SAFE) trial.» *BMJ* 335(7616): 380.
- Miyasaka, Y., M. E. Barnes, B. J. Gersh, S. S. Cha, K. R. Bailey, W.

- P. Abhayaratna, J. B. Seward and T. S. Tsang (2006). «Secular Trends in Incidence of Atrial Fibrillation in Olmsted County, Minnesota, 1980 to 2000, and Implications on the Projections for Future Prevalence.» *Circulation* 114(2): 119-25.
- Naccarelli, G. V., H. Varker, et al. (2009). «Increasing prevalence of atrial fibrillation and flutter in the United States.» *Am J Cardiol* 104(11): 1534-1539.
- Nieuwlaat, R., A. Capucci, A. J. Camm, S. B. Olsson, D. Andresen, D. W. Davies, S. Cobbe, G. Breithardt, J. Y. Le Heuzey, M. H. Prins, S. Levy and H. J. Crijns (2005). «Atrial fibrillation management: a prospective survey in ESC member countries: the Euro Heart Survey on Atrial Fibrillation.» *Eur Heart J* 26(22): 2422-34.
- Stewart, S., C. L. Hart, D. J. Hole and J. J. McMurray (2001). «Population prevalence, incidence, and predictors of atrial fibrillation in the Renfrew/Paisley study.» *Heart* 86(5): 516-21.
- Thrall, G., D. Lane, et al. (2006). «Quality of life in patients with atrial fibrillation: a systematic review.» *Am J Med* 119(5): 448 e441-419.
- Tsang, T. S., G. W. Petty, et al. (2003). «The prevalence of atrial fibrillation in incident stroke cases and matched population controls in Rochester, Minnesota: changes over three decades.» *J Am Coll Cardiol* 42(1): 93-100.
- ### 2.1.1 AF-related cardiovascular events and complications (“outcomes”)
- Andersen, K. K. and T. S. Olsen (2007). «Reduced poststroke mortality in patients with stroke and atrial fibrillation treated with anticoagulants: results from a Danish quality-control registry of 22,179 patients with ischemic stroke.» *Stroke* 38(2): 259-63.
- Atwood, J. E., J. N. Myers, X. C. Tang, D. J. Reda, S. N. Singh and B. N. Singh (2007). «Exercise capacity in atrial fibrillation: a substudy of the Sotalol-Amiodarone Atrial Fibrillation Efficacy Trial (SAFE-T).» *Am Heart J* 153(4): 566-72.
- Benjamin, E. J., P. A. Wolf, R. B. D'Agostino, H. Silbershatz, W. B. Kannel and D. Levy (1998). «Impact of atrial fibrillation on the risk of death: the Framingham Heart Study.» *Circulation* 98(10): 946-52.
- Binici, Z., T. Intzilakis, O. W. Nielsen, L. Kober and A. Sajadieh (2010). «Excessive Supraventricular Ectopic Activity and Increased Risk of Atrial Fibrillation and Stroke.» *Circulation* 121: 1904-1911.
- Brignole, M., L. Gianfranchi, C. Menozzi, N. Bottoni, R. Bollini, G. Lolli, D. Oddone and G. Gaggioli (1994). «Influence of atrioventricular junction radiofrequency ablation in patients with chronic atrial fibrillation and flutter on quality of life and cardiac performance.» *Am J Cardiol* 74(3): 242-6.
- Brignole, M., C. Menozzi, L. Gianfranchi, G. Musso, R. Mureddu, N. Bottoni and G. Lolli (1998). «Assessment of atrioventricular junction ablation and VVIR pacemaker versus pharmacological treatment in patients with heart failure and chronic atrial fibrillation: a randomized, controlled study.» *Circulation* 98(10): 953-60.
- Bunch, T. J., J. P. Weiss, B. G. Crandall, H. T. May, T. L. Bair, J. S. Osborn, J. L. Anderson, J. B. Muhlestein, B. D. Horne, D. L. Lappe and J. D. Day (2010). «Atrial fibrillation is independently associated with senile, vascular, and Alzheimer's dementia.» *Heart Rhythm* 7(4): 433-7.
- Censori, B., O. Manara, C. Agostinis, M. Camerlingo, L. Casto, B. Galavotti, T. Partziguian, M. C. Servalli, B. Cesana, G. Belloni and A. Mamoli (1996). «Dementia after first stroke.» *Stroke* 27(7): 1205-10.
- Friberg, L., N. Hammar and M. Rosenqvist (2010). «Stroke in paroxysmal atrial fibrillation: report from the Stockholm Cohort of Atrial Fibrillation.» *Eur Heart J* 31(8): 967-75.
- Frost, L., L. V. Andersen, P. Vestergaard, S. Husted and L. S. Mortensen (2007). «Trend in mortality after stroke with atrial fibrillation.» *Am J Med* 120(1): 47-53.
- Gosselink, A. T., H. J. Crijns, M. P. van den Berg, S. A. van den Broek, H. Hillege, M. L. Landsman and K. I. Lie (1994). «Functional capacity before and after cardioversion of atrial fibrillation: a controlled study.» *Br Heart J* 72(2): 161-6.
- Grau, A. J., C. Weimar, F. Buggle, A. Heinrich, M. Goertler, S. Neumaier, J. Glahn, T. Brandt, W. Hacke and H. C. Diener (2001). «Risk factors, outcome, and treatment in subtypes of ischemic stroke: the German stroke data bank.» *Stroke* 32(11): 2559-66.
- Hagens, V. E., D. J. Van Veldhuisen, O. Kamp, M. Rienstra, H. A. Bosker, N. J. Veeger, J. G. P. Tijssen, H. J. Crijns and I. Van Gelder (2005). «Effect of rate and rhythm control on left ventricular function and cardiac dimensions in patients with persistent atrial fibrillation: Results from the RAte Control versus Electrical cardioversion for persistent atrial fibrillation (RACE) study.» *Heart Rhythm* 2: 19-24.
- Harmsen, P., G. Lappas, A. Rosengren and L. Wilhelmsen (2006). «Long-term risk factors for stroke: twenty-eight years of follow-up of 7457 middle-aged men in Goteborg, Sweden.» *Stroke* 37(7): 1663-7.
- Hohnloser, S. H., D. Pajitnev, J. Pogue, J. S. Healey, M. A. Pfeffer, S. Yusuf and S. J. Connolly (2007). «Incidence of stroke in paroxysmal versus sustained atrial fibrillation in patients taking oral anticoagulation or combined antiplatelet therapy: an ACTIVE W Substudy.» *J Am Coll Cardiol* 50(22): 2156-61.
- Hylek, E. M., A. S. Go, Y. Chang, N. G. Jensvold, L. E. Henault, J. V. Selby and D. E. Singer (2003). «Effect of intensity of oral anticoagulation on stroke severity and mortality in atrial fibrillation.» *N Engl J Med* 349: 1019-26.
- Jorgensen, H. S., H. Nakayama, J. Reith, H. O. Raaschou and T. S. Olsen (1996). «Acute stroke with atrial fibrillation. The Copenhagen Stroke Study.» *Stroke* 27(10): 1765-9.
- Kirchhof, P., A. Auricchio, J. Bax, H. Crijns, J. Camm, H. C. Diener, A. Goette, G. Hindricks, S. Hohnloser, L. Kappenberger, K. H. Kuck, G. Y. Lip, B. Olsson, T. Meinertz, S. Priori, U. Ravens, G. Steinbeck, E. Svernhage, J. Tijssen, A. Vincent and G. Breithardt (2007). «Outcome parameters for trials in atrial fibrillation: executive summary: Recommendations from a consensus conference organized by the German Atrial Fibrillation Competence NETwork (AFNET) and the European Heart Rhythm Association (EHRA).» *Eur Heart J* 28(22): 2803-2817.
- Kirchhof, P., A. Auricchio, J. Bax, H. Crijns, J. Camm, H. C. Diener, A. Goette, G. Hindricks, S. Hohnloser, L. Kappenberger, K. H. Kuck, G. Y. Lip, B. Olsson, T. Meinertz, S. Priori, U. Ravens, G. Steinbeck, E. Svernhage, J. Tijssen, A. Vincent and G. Breithardt (2007). «Outcome parameters for trials in atrial fibrillation: Recommendations from a consensus conference organized by the German Atrial Fibrillation Competence NETwork and the European Heart Rhythm Association.» *Europace* 9: 1006-23.
- Knecht, S., C. Oelschlaeger, T. Duning, H. Lohmann, J. Albers, C. Stehling, W. Heindel, G. Breithardt, K. Berger, E. B. Ringelstein, P. Kirchhof and H. Wersching (2008). «Atrial fibrillation in stroke-free patients is associated with memory impairment and hippocampal atrophy.» *Eur Heart J* 29 (17): 2125-2132 - doi: 10.1093/eurheartj/ehn341
- Lavados, P. M., C. Sacks, L. Prina, A. Escobar, C. Tossi, F. Araya, W. Feuerhake, M. Galvez, R. Salinas and G. Alvarez (2007). «Incidence, case-fatality rate, and prognosis of ischaemic stroke

- subtypes in a predominantly Hispanic-Mestizo population in Iquique, Chile (PISCIS project): a community-based incidence study.» *Lancet Neurol* 6(2): 140-8.
- Marini, C., F. De Santis, S. Sacco, T. Russo, L. Olivieri, R. Totaro and A. Carolei (2005). «Contribution of atrial fibrillation to incidence and outcome of ischemic stroke: results from a population-based study.» *Stroke* 36(6): 1115-9.
- Nabauer, M., A. Gerth, et al. (2009). «The Registry of the German Competence NETwork on Atrial Fibrillation: Patient characteristics and initial management.» *Europace* 11: 423-434.
- Nieuwlaat, R., A. Capucci, et al. (2005). «Atrial fibrillation management: a prospective survey in ESC member countries: the Euro Heart Survey on Atrial Fibrillation.» *Eur Heart J* 26(22): 2422-2434.
- Ott, A., M. M. Breteler, M. C. de Bruyne, F. van Harskamp, D. E. Grobbee and A. Hofman (1997). «Atrial fibrillation and dementia in a population-based study. The Rotterdam Study.» *Stroke* 28(2): 316-21.
- Rodriguez, L. M., J. L. Smeets, B. Xie, C. de Chillou, E. Cheriex, F. Pieters, J. Metzger, K. den Dulk and H. J. Wellens (1993). «Improvement in left ventricular function by ablation of atrioventricular nodal conduction in selected patients with lone atrial fibrillation.» *Am J Cardiol* 72(15): 1137-41.
- Stewart, S., C. L. Hart, D. J. Hole and J. J. McMurray (2002). «A population-based study of the long-term risks associated with atrial fibrillation: 20-year follow-up of the Renfrew/Paisley study.» *Am J Med* 113(5): 359-64.
- Therkelsen, S. K., B. A. Groenning, J. H. Svendsen and G. B. Jensen (2006). «Atrial and ventricular volume and function evaluated by magnetic resonance imaging in patients with persistent atrial fibrillation before and after cardioversion.» *Am J Cardiol* 97(8): 1213-9.
- Thrall, G., D. Lane, D. Carroll and G. Y. Lip (2006). «Quality of life in patients with atrial fibrillation: a systematic review.» *Am J Med* 119(5): 448 e1-19.
- Johnson, J. N., D. J. Tester, J. Perry, B. A. Salisbury, C. R. Reed and M. J. Ackerman (2008). «Prevalence of early-onset atrial fibrillation in congenital long QT syndrome.» *Heart Rhythm* 5(5): 704-9.
- Kannel, W. B., P. A. Wolf, E. J. Benjamin and D. Levy (1998). «Prevalence, incidence, prognosis, and predisposing conditions for atrial fibrillation: population-based estimates.» *Am J Cardiol* 82(8A): 2N-9N.
- Lip, G. Y., L. Frison and M. Grind (2007). «Effect of hypertension on anticoagulated patients with atrial fibrillation.» *Eur Heart J* 28(6): 752-9.
- Maron, B. J., J. A. Towbin, G. Thiene, C. Antzelevitch, D. Corrado, D. Arnett, A. J. Moss, C. E. Seidman and J. B. Young (2006). «Contemporary definitions and classification of the cardiomyopathies: an American Heart Association Scientific Statement from the Council on Clinical Cardiology, Heart Failure and Transplantation Committee; Quality of Care and Outcomes Research and Functional Genomics and Translational Biology Interdisciplinary Working Groups; and Council on Epidemiology and Prevention.» *Circulation* 113(14): 1807-16.
- Nabauer, M., A. Gerth, T. Limbourg, S. Schneider, M. Oeff, P. Kirchhof, A. Goette, T. Lewalter, U. Ravens, T. Meinertz, G. Breithardt and G. Steinbeck (2009). «The Registry of the German Competence NETwork on Atrial Fibrillation: Patient characteristics and initial management.» *Europace* 11: 423-34.
- Nieuwlaat, R., A. Capucci, A. J. Camm, S. B. Olsson, D. Andresen, D. W. Davies, S. Cobbe, G. Breithardt, J. Y. Le Heuzey, M. H. Prins, S. Levy and H. J. Crijns (2005). «Atrial fibrillation management: a prospective survey in ESC member countries: the Euro Heart Survey on Atrial Fibrillation.» *Eur Heart J* 26(22): 2422-34.
- Stevenson, I. H., H. Teichtahl, D. Cunnington, S. Ciavarella, I. Gordon and J. M. Kalman (2008). «Prevalence of sleep disordered breathing in paroxysmal and persistent atrial fibrillation patients with normal left ventricular function.» *Eur Heart J* 29(13): 1662-9.
- Tsang, T. S., G. W. Petty, M. E. Barnes, W. M. O'Fallon, K. R. Bailey, D. O. Wiebers, J. D. Sicks, T. J. Christianson, J. B. Seward and B. J. Gersh (2003). «The prevalence of atrial fibrillation in incident stroke cases and matched population controls in Rochester, Minnesota: changes over three decades.» *J Am Coll Cardiol* 42(1): 93-100.
- Verdecchia, P., G. Reboldi, R. Gattobigio, M. Bentivoglio, C. Borgioni, F. Angeli, E. Carluccio, M. G. Sardone and C. Porcellati (2003). «Atrial fibrillation in hypertension: predictors and outcome.» *Hypertension* 41(2): 218-23.
- Zellerhoff, S., R. Pistulli, G. Moennig, M. Hinterseer, B.-M. Beckmann, J. Koebe, G. Steinbeck, S. Kaab, W. Haverkamp, L. Fabritz, R. Gradaus, G. Breithardt, E. Schulze-Bahr, D. Boecker and P. Kirchhof (2009). «Atrial Arrhythmias in Long QT Syndrome – a Nested Case Control Study.» *J Cardiovasc Electrophysiol* 20: 401-7.

2.1.2 Cardiovascular and other conditions associated with AF and AF-related complications

- Beaglehole, R., S. Ebrahim, S. Reddy, J. Voute and S. Leeder (2008). «Prevention of chronic diseases: a call to action.» *Lancet* 370(9605): 2152-7.
- Buch, P., J. Friberg, H. Scharling, P. Lange and E. Prescott (2003). «Reduced lung function and risk of atrial fibrillation in the Copenhagen City Heart Study.» *Eur Respir J* 21(6): 1012-6.
- Cleland, J. G., K. Swedberg, F. Follath, M. Komajda, A. Cohen-Solal, J. C. Aguilar, R. Dietz, A. Gavazzi, R. Hobbs, J. Korewicki, H. C. Madeira, V. S. Moiseyev, I. Preda, W. H. van Gilst, J. Widimsky, N. Freemantle, J. Eastaugh and J. Mason (2003). «The EuroHeart Failure survey programme-- a survey on the quality of care among patients with heart failure in Europe. Part 1: patient characteristics and diagnosis.» *Eur Heart J* 24(5): 442-63.
- Darbar, D., P. J. Kannankeril, B. S. Donahue, G. Kucera, T. Stubblefield, J. L. Haines, A. L. George, Jr. and D. M. Roden (2008). «Cardiac sodium channel (SCN5A) variants associated with atrial fibrillation.» *Circulation* 117(15): 1927-35.
- Eckardt, L., P. Kirchhof, P. Loh, E. Schulze-Bahr, R. Johna, T. Wichter, G. Breithardt, W. Haverkamp and M. Borggrefe (2001). «Brugada syndrome and supraventricular tachyarrhythmias: a novel association?» *J Cardiovasc Electrophysiol* 12(6): 680-5.
- Hirosawa, K., M. Sekiguchi, H. Kasanuki, S. Kimata, N. Kaneko, K. Nakamura, M. Aosaki, S. Takahashi and M. Kondo (1987). «Natural history of atrial fibrillation.» *Heart Vessels Suppl* 2: 14-23.

2.2 Mechanisms of Atrial Fibrillation

- Aime-Sempe, C., T. Folliguet, C. Rucker-Martin, M. Krajewska, S. Krajewska, M. Heimbürger, M. Aubier, J. J. Mercadier, J. C. Reed and S. N. Hatem (1999). «Myocardial cell death in fibrillating and dilated human right atria.» *J Am Coll Cardiol* 34(5): 1577-86.
- Allessie, M., J. Auma and U. Schotten (2002). «Electrical, contractile and structural remodeling during atrial fibrillation.» *Cardiovasc Res* 54(2): 230-46.
- Atienza, F., J. Almendral, J. Moreno, R. Vaidyanathan, A. Talkachou, J. Kalifa, A. Arenal, J. P. Villacastin, E. G. Torrecilla, A. Sanchez, R. Ploutz-Snyder, J. Jalife and O. Berenfeld (2006). «Activation of

- inward rectifier potassium channels accelerates atrial fibrillation in humans: evidence for a reentrant mechanism.» *Circulation* 114(23): 2434-42.
- Benchimol, A. (1969). «Significance of the contribution of atrial systole to cardiac function in man.» *Am J Cardiol* 23(4): 568-71.
- Black, I. W. (1994). «Left atrial spontaneous echo contrast and embolism.» *Stroke* 25(6): 1295-6.
- Boldt, A., U. Wetzel, J. Lauschke, J. Weigl, J. Gummert, G. Hindricks, H. Kottkamp and S. Dhein (2004). «Fibrosis in left atrial tissue of patients with atrial fibrillation with and without underlying mitral valve disease.» *Heart* 90(4): 400-5.
- Brookes, C. I., P. A. White, M. Staples, P. J. Oldershaw, A. N. Redington, P. D. Collins and M. I. Noble (1998). «Myocardial contractility is not constant during spontaneous atrial fibrillation in patients.» *Circulation* 98(17): 1762-8.
- Daoud, E. G., F. Bogun, R. Goyal, M. Harvey, K. C. Man, S. A. Strickberger and F. Morady (1996). «Effect of atrial fibrillation on atrial refractoriness in humans.» *Circulation* 94(7): 1600-6.
- de Bakker, J. M., S. Y. Ho and M. Hocini (2002). «Basic and clinical electrophysiology of pulmonary vein ectopy.» *Cardiovasc Res* 54(2): 287-94.
- de Bakker, J. M., F. J. van Capelle, M. J. Janse, S. Tasseron, J. T. Vermeulen, N. de Jonge and J. R. Lahpor (1993). «Slow conduction in the infarcted human heart. 'Zigzag' course of activation.» *Circulation* 88(3): 915-26.
- Chen, Y. H., S. J. Xu, S. Bendahhou, X. L. Wang, Y. Wang, W. Y. Xu, H. W. Jin, H. Sun, X. Y. Su, Q. N. Zhuang, Y. Q. Yang, Y. B. Li, Y. Liu, H. J. Xu, X. F. Li, N. Ma, C. P. Mou, Z. Chen, J. Barhanin and W. Huang (2003). «KCNQ1 gain-of-function mutation in familial atrial fibrillation.» *Science* 299(5604): 251-254.
- Dobrev, D., A. Friedrich, N. Voigt, N. Jost, E. Wettwer, T. Christ, M. Knaut and U. Ravens (2005). «The G protein-gated potassium current I(K,ACh) is constitutively active in patients with chronic atrial fibrillation.» *Circulation* 112(24): 3697-706.
- Donal, E., H. Yamada, C. Leclercq and D. Herpin (2005). «The left atrial appendage, a small, blind-ended structure: a review of its echocardiographic evaluation and its clinical role.» *Chest* 128(3): 1853-62.
- Eckardt, L., P. Kirchhof, P. Loh, E. Schulze-Bahr, R. Johna, T. Wichter, G. Breithardt, W. Haverkamp and M. Borggrefe (2001). «Brugada syndrome and supraventricular tachyarrhythmias: a novel association?» *J Cardiovasc Electrophysiol* 12(6): 680-5.
- Fox, C. S., H. Parise, R. B. D'Agostino, Sr., D. M. Lloyd-Jones, R. S. Vasan, T. J. Wang, D. Levy, P. A. Wolf and E. J. Benjamin (2004). «Parental atrial fibrillation as a risk factor for atrial fibrillation in offspring.» *JAMA* 291(23): 2851-2855.
- Frustaci, A., C. Chimenti, F. Bellocci, E. Morgante, M. A. Russo and A. Maseri (1997). «Histological substrate of atrial biopsies in patients with lone atrial fibrillation.» *Circulation* 96(4): 1180-4.
- Gollob, M. H., J. J. Seger, T. N. Gollob, T. Tapscott, O. Gonzales, L. Bachinski and R. Roberts (2001). «Novel PRKAG2 mutation responsible for the genetic syndrome of ventricular preexcitation and conduction system disease with childhood onset and absence of cardiac hypertrophy.» *Circulation* 104(25): 3030-3.
- Gosselink, A. T., A. J. Smit, H. J. Crijns, H. H. Hillege and K. I. Lie (1996). «Alteration of peripheral vasodilatory reserve capacity after cardioversion of atrial fibrillation.» *Eur Heart J* 17(6): 926-34.
- Gudbjartsson, D. F., D. O. Arnar, A. Helgadóttir, S. Gretarsdóttir, H. Holm, A. Sigurdsson, A. Jonasdóttir, A. Baker, G. Thorleifsson, K. Kristjánsson, A. Pálsson, T. Blondal, P. Sulem, V. M. Backman, G. A. Hardarson, E. Pálsdóttir, A. Helgason, R. Sigurjonsdóttir, J. T. Sverrisson, K. Kostulas, M. C. Ng, L. Baum, W. Y. So, K. S. Wong, J. C. Chan, K. L. Furie, S. M. Greenberg, M. Sale, P. Kelly, C. A. MacRae, E. E. Smith, J. Rosand, J. Hillert, R. C. Ma, P. T. Ellinor, G. Thorgeirsson, J. R. Gulcher, A. Kong, U. Thorsteinsdóttir and K. Stefansson (2007). «Variants conferring risk of atrial fibrillation on chromosome 4q25.» *Nature* 448(7151): 353-7.
- Haissaguerre, M., P. Jais, D. C. Shah, A. Takahashi, M. Hocini, G. Quiniou, S. Garrigue, A. LeMouroux, P. LeMetayer and J. Clementy (1998). «Spontaneous initiation of atrial fibrillation by ectopic beats originating in the pulmonary veins.» *N Engl J Med* 339: 659-666.
- Hodgson-Zingman, D. M., M. L. Karst, L. V. Zingman, D. M. Heublein, D. Darbar, K. J. Herron, J. D. Ballew, M. de Andrade, J. C. Burnett, Jr. and T. M. Olson (2008). «Atrial natriuretic peptide frameshift mutation in familial atrial fibrillation.» *N Engl J Med* 359(2): 158-165.
- Kirchhof, P., J. Bax, C. Blomstrom-Lundquist, H. Calkins, A. J. Camm, R. Cappato, F. Cosio, H. Crijns, H. C. Diener, A. Goette, C. W. Israel, K. H. Kuck, G. Y. Lip, S. Nattel, R. L. Page, U. Ravens, U. Schotten, G. Steinbeck, P. Vardas, A. Waldo, K. Wegscheider, S. Willems and G. Breithardt (2009). «Early and comprehensive management of atrial fibrillation: Proceedings from the 2nd AFNET/EHRA consensus conference on atrial fibrillation entitled 'research perspectives in atrial fibrillation'» *Europace* 11(7): 860-85.
- Kirchhof, P., L. Eckardt, M. R. Franz, G. Mönig, P. Loh, H. Wedekind, E. Schulze-Bahr, G. Breithardt and W. Haverkamp (2003). «Prolonged atrial action potential durations and polymorphic atrial tachyarrhythmias in patients with long QT syndrome.» *J Cardiovasc Electrophysiol* 14: 1027-33.
- Klein, G. J., T. M. Bashore, T. D. Sellers, E. L. Pritchett, W. M. Smith and J. J. Gallagher (1979). «Ventricular fibrillation in the Wolff-Parkinson-White syndrome.» *N Engl J Med* 301(20): 1080-5.
- Langendorf, R., A. Pick, A. Edelist and L. N. Katz (1965). «Experimental demonstration of concealed AV conduction in the human heart.» *Circulation* 32(3): 386-93.
- Levy, S. (1997). «Factors predisposing to the development of atrial fibrillation.» *Pacing Clin Electrophysiol* 20(10 Pt 2): 2670-4.
- Li, D., S. Fareh, T. K. Leung and S. Nattel (1999). «Promotion of atrial fibrillation by heart failure in dogs: atrial remodeling of a different sort.» *Circulation* 100(1): 87-95.
- Maron, B. J., S. A. Casey, L. C. Poliac, T. E. Gohman, A. K. Almquist and D. M. Aeppli (1999). «Clinical course of hypertrophic cardiomyopathy in a regional United States cohort.» *JAMA* 281(7): 650-5.
- Naito, M., L. S. Dreifus, D. David, E. L. Michelson, T. J. Mardelli and J. J. Kmetz (1983). «Reevaluation of the role of atrial systole to cardiac hemodynamics: evidence for pulmonary venous regurgitation during abnormal atrioventricular sequencing.» *Am Heart J* 105(2): 295-302.
- Olivetto, I., F. Cecchi, S. A. Casey, A. Dolara, J. H. Traverse and B. J. Maron (2001). «Impact of atrial fibrillation on the clinical course of hypertrophic cardiomyopathy.» *Circulation* 104(21): 2517-24.
- Olson, T. M., V. V. Michels, J. D. Ballew, S. P. Reyna, M. L. Karst, K. J. Herron, S. C. Horton, R. J. Rodeheffer and J. L. Anderson (2005). «Sodium channel mutations and susceptibility to heart failure and atrial fibrillation.» *JAMA* 293(4): 447-454.
- Packer, D. L., G. H. Bardy, S. J. Worley, M. S. Smith, F. R. Cobb, R. E. Coleman, J. J. Gallagher and L. D. German (1986). «Tachycardia-induced cardiomyopathy: a reversible form of left ventricular dysfunction.» *Am J Cardiol* 57(8): 563-70.
- Page, R. L., J. M. Wharton and E. N. Prystowsky (1996). «Effect of continuous vagal enhancement on concealed conduction and refractoriness within the atrioventricular node.» *Am J Cardiol* 77(4): 260-5.

Polontchouk, L., J. A. Haefliger, B. Ebelt, T. Schaefer, D. Stuhlmann, U. Mehlhorn, F. Kuhn-Regnier, E. R. De Vivie and S. Dhein (2001). «Effects of chronic atrial fibrillation on gap junction distribution in human and rat atria.» *J Am Coll Cardiol* 38(3): 883-91.

Rocken, C., B. Peters, G. Juenemann, W. Saeger, H. U. Klein, C. Huth, A. Roessner and A. Goette (2002). «Atrial amyloidosis: an arrhythmogenic substrate for persistent atrial fibrillation.» *Circulation* 106(16): 2091-7.

Rucker-Martin, C., F. Pecker, D. Godreau and S. N. Hatem (2002). «Dedifferentiation of atrial myocytes during atrial fibrillation: role of fibroblast proliferation in vitro.» *Cardiovasc Res* 55(1): 38-52.

Sanders, P., C. J. Nalliah, R. Dubois, Y. Takahashi, M. Hocini, M. Rotter, T. Rostock, F. Sacher, L. F. Hsu, A. Jonsson, M. D. O'Neill, P. Jais and M. Haissaguerre (2006). «Frequency mapping of the pulmonary veins in paroxysmal versus permanent atrial fibrillation.» *J Cardiovasc Electrophysiol* 17(9): 965-72.

Schotten, U., J. Ausma, C. Stellbrink, I. Sabatschus, M. Vogel, D. Frechen, F. Schoendube, P. Hanrath and M. A. Allesie (2001). «Cellular mechanisms of depressed atrial contractility in patients with chronic atrial fibrillation.» *Circulation* 103(5): 691-8.

Schotten, U., M. Duytschaever, J. Ausma, S. Eijbsbouts, H. R. Neuberger and M. Allesie (2003). «Electrical and contractile remodeling during the first days of atrial fibrillation go hand in hand.» *Circulation* 107(10): 1433-9.

Skalidis, E. I., M. I. Hamilos, I. K. Karalis, G. Chlouverakis, G. E. Kochiadakis and P. E. Vardas (2008). «Isolated atrial microvascular dysfunction in patients with lone recurrent atrial fibrillation.» *J Am Coll Cardiol* 51(21): 2053-7.

Spach, M. S. (1994). «Changes in the topology of gap junctions as an adaptive structural response of the myocardium.» *Circulation* 90(2): 1103-6.

Spach, M. S. and M. E. Josephson (1994). «Initiating reentry: the role of nonuniform anisotropy in small circuits.» *J Cardiovasc Electrophysiol* 5(2): 182-209.

Van Wagoner, D. R., A. L. Pond, M. Lamorgese, S. S. Rossie, P. M. McCarthy and J. M. Nerbonne (1999). «Atrial L-type Ca^{2+} currents and human atrial fibrillation.» *Circ Res* 85(5): 428-36.

Watson, T., E. Shantsila and G. Y. Lip (2009). «Mechanisms of thrombogenesis in atrial fibrillation: Virchow's triad revisited.» *Lancet* 373(9658): 155-66.

Wijffels, M. C., C. J. Kirchhof, R. Dorland and M. A. Allesie (1995). «Atrial fibrillation begets atrial fibrillation. A study in awake chronically instrumented goats.» *Circulation* 92(7): 1954-1968.

Yu, W. C., S. H. Lee, C. T. Tai, C. F. Tsai, M. H. Hsieh, C. C. Chen, Y. A. Ding, M. S. Chang and S. A. Chen (1999). «Reversal of atrial electrical remodeling following cardioversion of long-standing atrial fibrillation in man.» *Cardiovasc Res* 42(2): 470-6.

Zellerhoff, S., R. Pistulli, G. Moennig, M. Hinterseer, B.-M. Beckmann, J. Koebe, G. Steinbeck, S. Kaab, W. Haverkamp, L. Fabritz, R. Gradaus, G. Breithardt, E. Schulze-Bahr, D. Boecker and P. Kirchhof (2009). «Atrial Arrhythmias in Long QT Syndrome – a Nested Case Control Study.» *J Cardiovasc Electrophysiol* 20: 401-7.

3. Detection, “Natural” Progression, and Acute Management

3.1 Definition of AF

Friberg, L., N. Hammar and M. Rosenquist (2010). «Stroke in paroxysmal atrial fibrillation: report from the Stockholm Cohort of Atrial Fibrillation.» *Eur Heart J* 31: 967-975.

Hobbs, F. D., D. A. Fitzmaurice, J. Mant, E. Murray, S. Jowett, S. Bryan, J. Raftery, M. Davies and G. Lip (2005). «A randomised controlled trial and cost-effectiveness study of systematic screening (targeted and total population screening) versus routine practice for the detection of atrial fibrillation in people aged 65 and over. The SAFE study.» *Health Technol Assess* 9(40): iii-iv, ix-x, 1-74.

Kirchhof, P., J. Bax, C. Blomstrom-Lundquist, H. Calkins, A. J. Camm, R. Cappato, F. Cosio, H. Crijns, H. C. Diener, A. Goette, C. W. Israel, K. H. Kuck, G. Y. Lip, S. Nattel, R. L. Page, U. Ravens, U. Schotten, G. Steinbeck, P. Vardas, A. Waldo, K. Wegscheider, S. Willems and G. Breithardt (2009). «Early and comprehensive management of atrial fibrillation: executive summary of the proceedings from the 2nd AFNET-EHRA consensus conference ‘research perspectives in AF’.» *Eur Heart J* 30(24): 2969-2977c.

Kirchhof, P., J. Bax, C. Blomstrom-Lundquist, H. Calkins, A. J. Camm, R. Cappato, F. Cosio, H. Crijns, H. C. Diener, A. Goette, C. W. Israel, K. H. Kuck, G. Y. Lip, S. Nattel, R. L. Page, U. Ravens, U. Schotten, G. Steinbeck, P. Vardas, A. Waldo, K. Wegscheider, S. Willems and G. Breithardt (2009). «Early and comprehensive management of atrial fibrillation: Proceedings from the 2nd AFNET/EHRA consensus conference on atrial fibrillation entitled ‘research perspectives in atrial fibrillation’.» *Europace* 11(7): 860-885.

Meurling, C. J., J. E. Waktare, F. Holmqvist, A. Hedman, A. J. Camm, S. B. Olsson and M. Malik (2001). «Diurnal variations of the dominant cycle length of chronic atrial fibrillation.» *Am J Physiol* 280(1): H401-6.

Pandozi, C., L. Bianconi, M. Villani, A. Castro, G. Altamura, S. Toscano, A. P. Jesi, G. Gentilucci, F. Ammirati, F. Lo Bianco and M. Santini (1997). «Local capture by atrial pacing in spontaneous chronic atrial fibrillation.» *Circulation* 95(10): 2416-22.

3.2 Detection of AF

Binici, Z., T. Intzilakis, O. W. Nielsen, L. Kober and A. Sajadieh (2010). «Excessive Supraventricular Ectopic Activity and Increased Risk of Atrial Fibrillation and Stroke.» *Circulation* 121: 1904-1911.

Brignole M, Vardas P, Hoffman E, Huikuri H, Moya A, Ricci R, Sulke N, Wieling W, Auricchio A, Lip GY, Almendral J, Kirchhof P, Aliot E, Gasparini M, Braunschweig F, Botto GL (2009). Indications for the use of diagnostic implantable and external ECG loop recorders. *Europace*;11(5):671-87.

Glutzer TV, Hellkamp AS, Zimmerman J, Sweeney MO, Yee R, Marinchak R, Cook J, Paraschos A, Love J, Radoslovich G, Lee KL, Lamas GA (2003). Atrial high rate episodes detected by pacemaker diagnostics predict death and stroke: report of the Atrial Diagnostics Ancillary Study of the MOde Selection Trial (MOST). *Circulation*;107(12):1614-9.

Calkins H, Brugada J, Packer DL, Cappato R, Chen SA, Crijns HJ, Damiano RJ, Jr., Davies DW, Haines DE, Haissaguerre M, Iesaka Y, Jackman W, Jais P, Kottkamp H, Kuck KH, Lindsay BD, Marchlinski FE, McCarthy PM, Mont JL, Morady F, Nademanee

- K, Natale A, Pappone C, Prystowsky E, Raviele A, Ruskin JN, Shemin RJ, Calkins H, Brugada J, Chen SA, Prystowsky EN, Kuck KH, Natale A, Haines DE, Marchlinski FE, Calkins H, Davies DW, Lindsay BD, McCarthy PM, Packer DL, Cappato R, Crijns HJ, Damiano RJ, Jr., Haissaguerre M, Jackman WM, Jais P, Iesaka Y, Kottkamp H, Mont L, Morady F, Nademanee K, Pappone C, Raviele A, Ruskin JN, Shemin RJ (2007). HRS/EHRA/ECAS Expert Consensus Statement on Catheter and Surgical Ablation of Atrial Fibrillation: Recommendations for Personnel, Policy, Procedures and Follow-Up: A report of the Heart Rhythm Society (HRS) Task Force on Catheter and Surgical Ablation of Atrial Fibrillation Developed in partnership with the European Heart Rhythm Association (EHRA) and the European Cardiac Arrhythmia Society (ECAS); in collaboration with the American College of Cardiology (ACC), American Heart Association (AHA), and the Society of Thoracic Surgeons (STS). Endorsed and Approved by the governing bodies of the American College of Cardiology, the American Heart Association, the European Cardiac Arrhythmia Society, the European Heart Rhythm Association, the Society of Thoracic Surgeons, and the Heart Rhythm Society. *Europace*;9(6):335-79.
- Fitzmaurice DA, Hobbs FD, Jowett S, Mant J, Murray ET, Holder R, Raftery JP, Bryan S, Davies M, Lip GY, Allan TF (2007). Screening versus routine practice in detection of atrial fibrillation in patients aged 65 or over: cluster randomised controlled trial. *BMJ*;335(7616):383.
- Friberg, L., N. Hammar and M. Rosenqvist (2009). «Stroke in paroxysmal atrial fibrillation: report from the Stockholm Cohort of Atrial Fibrillation.» *Eur Heart J*, published on line Jan 27, 2009.
- Glutzer TV, Daoud EG, Wyse DG, Singer DE, Ezekowitz MD, Hilker C, Miller C, Qi D, Ziegler PD (2009). The relationship between daily atrial tachyarrhythmia burden from implantable device diagnostics and stroke risk: the TRENDS study. *Circ Arrhythm Electrophysiol*;2(5):474-80.
- Hindricks G, Piorowski C, Tanner H, Kobza R, Gerd-Li JH, Carbucicchio C, Kottkamp H (2005). Perception of atrial fibrillation before and after radiofrequency catheter ablation: relevance of asymptomatic arrhythmia recurrence. *Circulation*;112(3):307-13.
- Hindricks G, Pokushalov E, Urban L, Taborsky M, Kuck KH, Lebedev D, Rieger G, Purerfellner H (2010). Performance of a new leadless implantable cardiac monitor in detecting and quantifying atrial fibrillation - results of the XPECT trial. *Circ Arrhythm Electrophysiol*;3(2):141-7.
- Hobbs, F. D., D. A. Fitzmaurice, J. Mant, E. Murray, S. Jowett, S. Bryan, J. Raftery, M. Davies and G. Lip (2005). «A randomised controlled trial and cost-effectiveness study of systematic screening (targeted and total population screening) versus routine practice for the detection of atrial fibrillation in people aged 65 and over. The SAFE study.» *Health Technol Assess* 9(40): iii-iv, ix-x, 1-74.
- Hohnloser, S. H., D. Pajitnev, J. Pogue, J. S. Healey, M. A. Pfeffer, S. Yusuf and S. J. Connolly (2007). «Incidence of stroke in paroxysmal versus sustained atrial fibrillation in patients taking oral anticoagulation or combined antiplatelet therapy: an ACTIVE W Substudy.» *J Am Coll Cardiol* 50(22): 2156-61.
- Israel CW, Gronefeld G, Ehrlich JR, Li YG, Hohnloser SH. Long-term risk of recurrent atrial fibrillation as documented by an implantable monitoring device: implications for optimal patient care. *J Am Coll Cardiol* 2004;43(1):47-52.
- Jabaudon D, Sztajzel J, Sievert K, Landis T, Sztajzel R (2004). Usefulness of ambulatory 7-day ECG monitoring for the detection of atrial fibrillation and flutter after acute stroke and transient ischemic attack. *Stroke*;35(7):1647-51.
- Jahangir A, Lee V, Friedman PA, Trusty JM, Hodge DO, Kopecky SL, Packer DL, Hammill SC, Shen WK, Gersh BJ (2007). Long-term progression and outcomes with aging in patients with lone atrial fibrillation: a 30-year follow-up study. *Circulation*;115(24):3050-6.
- Kirchhof, P., A. Auricchio, J. Bax, H. Crijns, J. Camm, H. C. Diener, A. Goette, G. Hindricks, S. Hohnloser, L. Kappenberger, K. H. Kuck, G. Y. Lip, B. Olsson, T. Meinertz, S. Priori, U. Ravens, G. Steinbeck, E. Svernhage, J. Tijssen, A. Vincent and G. Breithardt (2007). «Outcome parameters for trials in atrial fibrillation: executive summary: Recommendations from a consensus conference organized by the German Atrial Fibrillation Competence NETwork (AFNET) and the European Heart Rhythm Association (EHRA).» *Eur Heart J* 28(22): 2803-2817.
- Kirchhof, P., A. Auricchio, J. Bax, H. Crijns, J. Camm, H. C. Diener, A. Goette, G. Hindricks, S. Hohnloser, L. Kappenberger, K. H. Kuck, G. Y. Lip, B. Olsson, T. Meinertz, S. Priori, U. Ravens, G. Steinbeck, E. Svernhage, J. Tijssen, A. Vincent and G. Breithardt (2007). «Outcome parameters for trials in atrial fibrillation: Recommendations from a consensus conference organized by the German Atrial Fibrillation Competence NETwork and the European Heart Rhythm Association.» *Europace* 9: 1006-23.
- Kirchhof, P., J. Bax, C. Blomstrom-Lundquist, H. Calkins, A. J. Camm, R. Cappato, F. Cosio, H. Crijns, H. C. Diener, A. Goette, C. W. Israel, K. H. Kuck, G. Y. Lip, S. Nattel, R. L. Page, U. Ravens, U. Schotten, G. Steinbeck, P. Vardas, A. Waldo, K. Wegscheider, S. Willems and G. Breithardt (2009). «Early and comprehensive management of atrial fibrillation: executive summary of the proceedings from the 2nd AFNET-EHRA consensus conference 'research perspectives in AF'.» *Eur Heart J* 30(24): 2969-77c.
- Ziegler PD, Koehler JL, Mehra R (2006). Comparison of continuous versus intermittent monitoring of atrial arrhythmias. *Heart Rhythm*;3(12):1445-52.

3.3 “Natural” time course of AF

- Binici Z, Intzilakis T, Nielsen OW, Kober L, Sajadieh A (2010). Excessive Supraventricular Ectopic Activity and Increased Risk of Atrial Fibrillation and Stroke. *Circulation* 121:1904-1911.
- Friberg, L., N. Hammar and M. Rosenqvist (2010). «Stroke in paroxysmal atrial fibrillation: report from the Stockholm Cohort of Atrial Fibrillation.» *Eur Heart J* 31(8): 967-75.
- Gillis, A. M. and M. S. Rose (2000). «Temporal patterns of paroxysmal atrial fibrillation following DDDR pacemaker implantation.» *Am J Cardiol* 85(12): 1445-50.
- Glutzer, T. V., E. G. Daoud, D. G. Wyse, D. E. Singer, M. D. Ezekowitz, C. Hilker, C. Miller, D. Qi and P. D. Ziegler (2009). «The relationship between daily atrial tachyarrhythmia burden from implantable device diagnostics and stroke risk: the TRENDS study.» *Circ Arrhythm Electrophysiol* 2(5): 474-80.
- Glutzer, T. V., A. S. Hellkamp, J. Zimmerman, M. O. Sweeney, R. Yee, R. Marinchak, J. Cook, A. Paraschos, J. Love, G. Radoslovich, K. L. Lee and G. A. Lamas (2003). «Atrial high rate episodes detected by pacemaker diagnostics predict death and stroke: report of the Atrial Diagnostics Ancillary Study of the M-Mode Selection Trial (MOST).» *Circulation* 107(12): 1614-9.
- Hindricks, G., E. Pokushalov, L. Urban, M. Taborsky, K. H. Kuck, D. Lebedev, G. Rieger and H. Purerfellner (2010). «Performance of a new Leadless Implantable Cardiac Monitor in Detecting and Quantifying Atrial Fibrillation - Results of the XPECT Trial.» *Circ Arrhythm Electrophysiol*.
- Hohnloser, S. H., D. Pajitnev, J. Pogue, J. S. Healey, M. A. Pfeffer, S. Yusuf and S. J. Connolly (2007). «Incidence of stroke in paroxysmal versus sustained atrial fibrillation in patients taking oral anticoagulation or combined antiplatelet therapy: an ACTIVE

- W Substudy.» *J Am Coll Cardiol* 50(22): 2156-61.
- Jahangir, A., V. Lee, P. A. Friedman, J. M. Trusty, D. O. Hodge, S. L. Kopecky, D. L. Packer, S. C. Hammill, W. K. Shen and B. J. Gersh (2007). «Long-term progression and outcomes with aging in patients with lone atrial fibrillation: a 30-year follow-up study.» *Circulation* 115(24): 3050-6.
- Kirchhof, P., A. Auricchio, J. Bax, H. Crijns, J. Camm, H. C. Diener, A. Goette, G. Hindricks, S. Hohnloser, L. Kappenberger, K. H. Kuck, G. Y. Lip, B. Olsson, T. Meinertz, S. Priori, U. Ravens, G. Steinbeck, E. Svernhage, J. Tijssen, A. Vincent and G. Breithardt (2007). «Outcome parameters for trials in atrial fibrillation: executive summary: Recommendations from a consensus conference organized by the German Atrial Fibrillation Competence NETwork (AFNET) and the European Heart Rhythm Association (EHRA).» *Eur Heart J* 28(22): 2803-2817.
- Kirchhof, P., A. Auricchio, J. Bax, H. Crijns, J. Camm, H. C. Diener, A. Goette, G. Hindricks, S. Hohnloser, L. Kappenberger, K. H. Kuck, G. Y. Lip, B. Olsson, T. Meinertz, S. Priori, U. Ravens, G. Steinbeck, E. Svernhage, J. Tijssen, A. Vincent and G. Breithardt (2007). «Outcome parameters for trials in atrial fibrillation: Recommendations from a consensus conference organized by the German Atrial Fibrillation Competence NETwork and the European Heart Rhythm Association.» *Europace* 9: 1006-23.
- Saksena, S., D. A. Hettrick, J. L. Koehler, A. Grammatico and L. Padeletti (2007). «Progression of paroxysmal atrial fibrillation to persistent atrial fibrillation in patients with bradyarrhythmias.» *Am Heart J* 154(5): 884-92.
- Yamashita, T., Y. Murakawa, K. Sezaki, M. Inoue, N. Hayami, Y. Shuzui and M. Omata (1997). «Circadian variation of paroxysmal atrial fibrillation.» *Circulation* 96(5): 1537-41.

3.4 ECG techniques to diagnose and monitor AF

- Botto, G. L., L. Padeletti, M. Santini, A. Capucci, M. Gulizia, F. Zolezzi, S. Favale, G. Molon, R. Ricci, M. Biffi, G. Russo, M. Vimercati, G. Corbucci and G. Boriani (2009). «Presence and duration of atrial fibrillation detected by continuous monitoring: crucial implications for the risk of thromboembolic events.» *J Cardiovasc Electrophysiol* 20(3): 241-8.
- Brignole M, Vardas P, Hoffman E, Huikuri H, Moya A, Ricci R, Sulke N, Wieling W, Auricchio A, Lip GY, Almendral J, Kirchhof P, Aliot E, Gasparini M, Braunschweig F, Botto GL (2009). Indications for the use of diagnostic implantable and external ECG loop recorders. *Europace* 11(5):671-87.
- Glutzer TV, Hellkamp AS, Zimmerman J, Sweeney MO, Yee R, Marinchak R, Cook J, Paraschos A, Love J, Radoslovich G, Lee KL, Lamas GA (2003). Atrial high rate episodes detected by pacemaker diagnostics predict death and stroke: report of the Atrial Diagnostics Ancillary Study of the MODe Selection Trial (MOST). *Circulation* 107(12):1614-9.
- Calkins, H., J. Brugada, D. L. Packer, R. Cappato, S. A. Chen, H. J. Crijns, R. J. Damiano, Jr., D. W. Davies, D. E. Haines, M. Haissaguerre, Y. Iesaka, W. Jackman, P. Jais, H. Kottkamp, K. H. Kuck, B. D. Lindsay, F. E. Marchlinski, P. M. McCarthy, J. L. Mont, F. Morady, K. Nademanee, A. Natale, C. Pappone, E. Prystowsky, A. Raviele, J. N. Ruskin, R. J. Shemin, H. Calkins, J. Brugada, S. A. Chen, E. N. Prystowsky, K. H. Kuck, A. Natale, D. E. Haines, F. E. Marchlinski, H. Calkins, D. W. Davies, B. D. Lindsay, P. M. McCarthy, D. L. Packer, R. Cappato, H. J. Crijns, R. J. Damiano, Jr., M. Haissaguerre, W. M. Jackman, P. Jais, Y. Iesaka, H. Kottkamp, L. Mont, F. Morady, K. Nademanee, C. Pappone, A. Raviele, J. N. Ruskin and R. J. Shemin (2007). «HRS/EHRA/ECAS Expert Consensus Statement on Catheter and Surgical

- Ablation of Atrial Fibrillation: Recommendations for Personnel, Policy, Procedures and Follow-Up: A report of the Heart Rhythm Society (HRS) Task Force on Catheter and Surgical Ablation of Atrial Fibrillation Developed in partnership with the European Heart Rhythm Association (EHRA) and the European Cardiac Arrhythmia Society (ECAS); in collaboration with the American College of Cardiology (ACC), American Heart Association (AHA), and the Society of Thoracic Surgeons (STS). Endorsed and Approved by the governing bodies of the American College of Cardiology, the American Heart Association, the European Cardiac Arrhythmia Society, the European Heart Rhythm Association, the Society of Thoracic Surgeons, and the Heart Rhythm Society.» *Europace* 9(6): 335-79.
- Capucci, A., M. Santini, L. Padeletti, M. Gulizia, G. Botto, G. Boriani, R. Ricci, S. Favale, F. Zolezzi, N. Di Belardino, G. Molon, F. Drago, G. Q. Villani, E. Mazzini, M. Vimercati and A. Grammatico (2005). «Monitored atrial fibrillation duration predicts arterial embolic events in patients suffering from bradycardia and atrial fibrillation implanted with antitachycardia pacemakers.» *J Am Coll Cardiol* 46(10): 1913-20.
- Dagres, N., H. Kottkamp, C. Piorkowski, S. Weis, A. Arya, P. Sommer, K. Bode, J. H. Gerds-Li, D. T. Kremastinos and G. Hindricks (2008). «Influence of the duration of Holter monitoring on the detection of arrhythmia recurrences after catheter ablation of atrial fibrillation Implications for patient follow-up.» *Int J Cardiol.* (Published online 06 November 2008) [http://www.internationaljournalofcardiology.com/article/S0167-5273\(08\)01050-4/abstract](http://www.internationaljournalofcardiology.com/article/S0167-5273(08)01050-4/abstract)
- Dorian, P., P. G. Guerra, C. R. Kerr, S. S. O'Donnell, E. Crystal, A. M. Gillis, L. B. Mitchell, D. Roy, A. C. Skanes, M. S. Rose and D. G. Wyse (2009). «Validation of a new simple scale to measure symptoms in atrial fibrillation: the Canadian Cardiovascular Society Severity in Atrial Fibrillation scale.» *Circ Arrhythm Electrophysiol* 2(3): 218-24.
- Glutzer, T. V., E. G. Daoud, D. G. Wyse, D. E. Singer, M. D. Ezekowitz, C. Hilker, C. Miller, D. Qi and P. D. Ziegler (2009). «The relationship between daily atrial tachyarrhythmia burden from implantable device diagnostics and stroke risk: the TRENDS study.» *Circ Arrhythm Electrophysiol* 2(5): 474-80.
- Hanke, T., E. I. Charitos, U. Stierle, A. Karluss, E. Kraatz, B. Graf, A. Hagemann, M. Misfeld and H. H. Sievers (2009). «Twenty-four-hour holter monitor follow-up does not provide accurate heart rhythm status after surgical atrial fibrillation ablation therapy: up to 12 months experience with a novel permanently implantable heart rhythm monitor device.» *Circulation* 120(11 Suppl): S177-84.
- Hindricks, G., E. Pokushalov, L. Urban, M. Taborsky, K. H. Kuck, D. Lebedev, G. Rieger and H. Purerfellner (2010). «Performance of a new Leadless Implantable Cardiac Monitor in Detecting and Quantifying Atrial Fibrillation - Results of the XPECT Trial.» *Circ Arrhythm Electrophysiol*. 2010;3:141-147
- Hohnloser, S. H., A. Capucci, E. Fain, M. R. Gold, I. C. van Gelder, J. Healey, C. W. Israel, C. P. Lau, C. Morillo and S. J. Connolly (2006). «ASymptomatic atrial fibrillation and Stroke Evaluation in pacemaker patients and the atrial fibrillation Reduction atrial pacing Trial (ASSERT).» *Am Heart J* 152(3): 442-7.
- Jabaudon, D., J. Sztajzel, K. Sievert, T. Landis and R. Sztajzel (2004). «Usefulness of ambulatory 7-day ECG monitoring for the detection of atrial fibrillation and flutter after acute stroke and transient ischemic attack.» *Stroke* 35(7): 1647-51.
- Kirchhof, P., A. Auricchio, J. Bax, H. Crijns, J. Camm, H. C. Diener, A. Goette, G. Hindricks, S. Hohnloser, L. Kappenberger, K. H. Kuck, G. Y. Lip, B. Olsson, T. Meinertz, S. Priori, U. Ravens, G. Steinbeck, E. Svernhage, J. Tijssen, A. Vincent and G. Breithardt (2007). «Outcome parameters for trials in atrial fibrillation:

executive summary: Recommendations from a consensus conference organized by the German Atrial Fibrillation Competence NETwork (AFNET) and the European Heart Rhythm Association (EHRA).» *Eur Heart J* 28(22): 2803-2817.

Kirchhof, P., A. Auricchio, J. Bax, H. Crijns, J. Camm, H. C. Diener, A. Goette, G. Hindricks, S. Hohnloser, L. Kappenberger, K. H. Kuck, G. Y. Lip, B. Olsson, T. Meinertz, S. Priori, U. Ravens, G. Steinbeck, E. Svernhage, J. Tijssen, A. Vincent and G. Breithardt (2007). «Outcome parameters for trials in atrial fibrillation: Recommendations from a consensus conference organized by the German Atrial Fibrillation Competence NETwork and the European Heart Rhythm Association.» *Europace* 9: 1006-23.

Kottkamp, H., H. Tanner, R. Kobza, P. Schirdewahn, A. Dorszewski, J. H. Gerds-Li, C. Carbucicchio, C. Piorkowski and G. Hindricks (2004). «Time courses and quantitative analysis of atrial fibrillation episode number and duration after circular plus linear left atrial lesions: trigger elimination or substrate modification: early or delayed cure?» *J Am Coll Cardiol* 44(4): 869-77.

Liao, J., Z. Khalid, C. Scallan, C. Morillo and M. O'Donnell (2007). «Noninvasive cardiac monitoring for detecting paroxysmal atrial fibrillation or flutter after acute ischemic stroke: a systematic review.» *Stroke* 38(11): 2935-40.

Passman, R. S., K. M. Weinberg, M. Freher, P. Denes, A. Schaechter, J. J. Goldberger and A. H. Kadish (2004). «Accuracy of mode switch algorithms for detection of atrial tachyarrhythmias.» *J Cardiovasc Electrophysiol* 15(7): 773-7.

Patten, M., R. Maas, P. Bauer, B. Luderitz, F. Sonntag, M. Dluzniewski, R. Hatala, G. Opolski, H. W. Muller and T. Meinertz (2004). «Suppression of paroxysmal atrial tachyarrhythmias--results of the SOPAT trial.» *Eur Heart J* 25(16): 1395-404.

Piorkowski, C., H. Kottkamp, H. Tanner, R. Kobza, J. C. Nielsen, A. Arya and G. Hindricks (2005). «Value of different follow-up strategies to assess the efficacy of circumferential pulmonary vein ablation for the curative treatment of atrial fibrillation.» *J Cardiovasc Electrophysiol* 16(12): 1286-92.

Purerfellner, H., A. M. Gillis, R. Holbrook and D. A. Hettrick (2004). «Accuracy of atrial tachyarrhythmia detection in implantable devices with arrhythmia therapies.» *Pacing Clin Electrophysiol* 27(7): 983-92.

Sarkar, S., D. Ritscher and R. Mehra (2008). «A detector for a chronic implantable atrial tachyarrhythmia monitor.» *IEEE Trans Biomed Eng* 55(3): 1219-24.

Seidl, K., E. Meisel, E. VanAgt, F. Ottenhoff, M. Hess, B. Hauer, R. Zahn and J. Senges (1998). «Is the atrial high rate episode diagnostic feature reliable in detecting paroxysmal episodes of atrial tachyarrhythmias?» *Pacing Clin Electrophysiol* 21(4 Pt 1): 694-700.

Senatore, G., G. Stabile, E. Bertaglia, G. Donnici, A. De Simone, F. Zoppo, P. Turco, P. Pascotto and M. Fazzari (2005). «Role of transtelephonic electrocardiographic monitoring in detecting short-term arrhythmia recurrences after radiofrequency ablation in patients with atrial fibrillation.» *J Am Coll Cardiol* 45(6): 873-6.

Tayal, A. H., M. Tian, K. M. Kelly, S. C. Jones, D. G. Wright, D. Singh, J. Jarouse, J. Brillman, S. Murali and R. Gupta (2008). «Atrial fibrillation detected by mobile cardiac outpatient telemetry in cryptogenic TIA or stroke.» *Neurology* 71(21): 1696-701.

Ziegler, P. D., T. V. Glotzer, E. G. Daoud, D. G. Wyse, D. E. Singer, M. D. Ezekowitz, J. L. Koehler and C. E. Hilker (2009). «Incidence of Newly Detected Atrial Arrhythmias via Implantable Devices in Patients With a History of Thromboembolic Events.» *Stroke*.

Ziegler, P. D., J. L. Koehler and R. Mehra (2006). «Comparison of continuous versus intermittent monitoring of atrial arrhythmias.» *Heart Rhythm* 3(12): 1445-52.

3.5 Types of AF (No additional references)

3.6 Initial management of patients with AF

Bernhardt, P., H. Schmidt, C. Hammerstingl, B. Luderitz and H. Omran (2005). «Incidence of cerebral embolism after cardioversion of atrial fibrillation: a prospective study with transesophageal echocardiography and cerebral magnetic resonance imaging.» *J Am Soc Echocardiogr* 18(6): 649-53.

Dorian, P., S. S. Cvitkovic, C. R. Kerr, E. Crystal, A. M. Gillis, P. G. Guerra, L. B. Mitchell, D. Roy, A. C. Skanes and D. G. Wyse (2006). «A novel, simple scale for assessing the symptom severity of atrial fibrillation at the bedside: the CCS-SAF scale.» *Can J Cardiol* 22(5): 383-6.

Dorian, P., P. G. Guerra, C. R. Kerr, S. S. O'Donnell, E. Crystal, A. M. Gillis, L. B. Mitchell, D. Roy, A. C. Skanes, M. S. Rose and D. G. Wyse (2009). «Validation of a new simple scale to measure symptoms in atrial fibrillation: the Canadian Cardiovascular Society Severity in Atrial Fibrillation scale.» *Circ Arrhythm Electrophysiol* 2(3): 218-24.

Hindricks, G., E. Pokushalov, L. Urban, M. Taborsky, K. H. Kuck, D. Lebedev, G. Rieger and H. Purerfellner (2010). «Performance of a new Leadless Implantable Cardiac Monitor in Detecting and Quantifying Atrial Fibrillation - Results of the XPECT Trial.» *Circ Arrhythm Electrophysiol*.

Kirchhof, P., A. Auricchio, J. Bax, H. Crijns, J. Camm, H. C. Diener, A. Goette, G. Hindricks, S. Hohnloser, L. Kappenberger, K. H. Kuck, G. Y. Lip, B. Olsson, T. Meinertz, S. Priori, U. Ravens, G. Steinbeck, E. Svernhage, J. Tijssen, A. Vincent and G. Breithardt (2007). «Outcome parameters for trials in atrial fibrillation: executive summary: Recommendations from a consensus conference organized by the German Atrial Fibrillation Competence NETwork (AFNET) and the European Heart Rhythm Association (EHRA).» *Eur Heart J* 28(22): 2803-2817.

Kirchhof, P., A. Auricchio, J. Bax, H. Crijns, J. Camm, H. C. Diener, A. Goette, G. Hindricks, S. Hohnloser, L. Kappenberger, K. H. Kuck, G. Y. Lip, B. Olsson, T. Meinertz, S. Priori, U. Ravens, G. Steinbeck, E. Svernhage, J. Tijssen, A. Vincent and G. Breithardt (2007). «Outcome parameters for trials in atrial fibrillation: Recommendations from a consensus conference organized by the German Atrial Fibrillation Competence NETwork and the European Heart Rhythm Association.» *Europace* 9: 1006-23.

Klein, A. L., R. A. Grimm, R. D. Murray, C. Apperson-Hansen, R. W. Asinger, I. W. Black, R. Davidoff, R. Erbel, J. L. Halperin, D. A. Orsinelli, T. R. Porter and M. F. Stoddard (2001). «Use of transesophageal echocardiography to guide cardioversion in patients with atrial fibrillation.» *N Engl J Med* 344(19): 1411-20.

Omran, H., W. Jung, R. Rabahieh, P. Wirtz, H. Becher, S. Illien, R. Schimpf and B. Luderitz (1999). «Imaging of thrombi and assessment of left atrial appendage function: a prospective study comparing transthoracic and transoesophageal echocardiography.» *Heart* 81(2): 192-8.

3.7 Clinical Follow-up

Benjamin, E. J., P. A. Wolf, R. B. D'Agostino, H. Silbershatz, W. B. Kannel and D. Levy (1998). «Impact of atrial fibrillation on the risk of death: the Framingham Heart Study.» *Circulation* 98(10): 946-52.

Bikkin, M., D. Levy, J. C. Evans, M. G. Larson, E. J. Benjamin, P. A. Wolf and W. P. Castelli (1994). «Left ventricular mass and risk of stroke in an elderly cohort. The Framingham Heart Study.» *JAMA* 272(1): 33-6.

- Dickstein, K., A. Cohen-Solal, G. Filippatos, J. J. McMurray, P. Ponikowski, P. A. Poole-Wilson, A. Stromberg, D. J. van Veldhuisen, D. Atar, A. W. Hoes, A. Keren, A. Mebazaa, M. Nieminen, S. G. Priori, K. Swedberg, A. Vahanian, J. Camm, R. De Caterina, V. Dean, C. Funck-Brentano, I. Hellemans, S. D. Kristensen, K. McGregor, U. Sechtem, S. Silber, M. Tendera, P. Widimsky and J. L. Zamorano (2008). «ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure 2008: the Task Force for the Diagnosis and Treatment of Acute and Chronic Heart Failure 2008 of the European Society of Cardiology. Developed in collaboration with the Heart Failure Association of the ESC (HFA) and endorsed by the European Society of Intensive Care Medicine (ESICM).» *Eur Heart J* 29(19): 2388-442.
- Dorian, P., S. S. Cvitkovic, C. R. Kerr, E. Crystal, A. M. Gillis, P. G. Guerra, L. B. Mitchell, D. Roy, A. C. Skanes and D. G. Wyse (2006). «A novel, simple scale for assessing the symptom severity of atrial fibrillation at the bedside: the CCS-SAF scale.» *Can J Cardiol* 22(5): 383-6.
- Dorian, P., P. G. Guerra, C. R. Kerr, S. S. O'Donnell, E. Crystal, A. M. Gillis, L. B. Mitchell, D. Roy, A. C. Skanes, M. S. Rose and D. G. Wyse (2009). «Validation of a new simple scale to measure symptoms in atrial fibrillation: the Canadian Cardiovascular Society Severity in Atrial Fibrillation scale.» *Circ Arrhythm Electrophysiol* 2(3): 218-24.
- Fabritz, L. and P. Kirchhof (2010). «Predictable and less predictable unwanted cardiac drug effects: Individual pre-disposition and transient precipitating factors.» *Bas Clin Pharm Toxicol* 106: 263-268.
- Fetsch, T., P. Bauer, R. Engberding, H. P. Koch, J. LUKL, T. Meinertz, M. Oeff, L. Seipel, H. J. Trappe, N. Treese and G. Breithardt (2004). «Prevention of atrial fibrillation after cardioversion: results of the PAFAC trial.» *Eur Heart J* 25(16): 1385-94.
- Fitzmaurice, D. A., F. D. Hobbs, S. Jowett, J. Mant, E. T. Murray, R. Holder, J. P. Raftery, S. Bryan, M. Davies, G. Y. Lip and T. F. Allan (2007). «Screening versus routine practice in detection of atrial fibrillation in patients aged 65 or over: cluster randomised controlled trial.» *Bmj*;335(7616):383.
- Haverkamp, W., G. Breithardt, A. J. Camm, M. J. Janse, M. R. Rosen, C. Antzelevitch, D. Escande, M. Franz, M. Malik, A. Moss and R. Shah (2000). «The potential for QT prolongation and proarrhythmia by non-antiarrhythmic drugs: clinical and regulatory implications. Report on a policy conference of the European Society of Cardiology.» *Eur Heart J* 21(15): 1216-31.
- Hindricks, G., C. Piorkowski, H. Tanner, R. Kobza, J. H. Gerds-Li, C. Carbucicchio and H. Kottkamp (2005). «Perception of atrial fibrillation before and after radiofrequency catheter ablation: relevance of asymptomatic arrhythmia recurrence.» *Circulation* 112(3): 307-13.
- Hobbs, F. D., D. A. Fitzmaurice, J. Mant, E. Murray, S. Jowett, S. Bryan, J. Raftery, M. Davies and G. Lip (2005). «A randomised controlled trial and cost-effectiveness study of systematic screening (targeted and total population screening) versus routine practice for the detection of atrial fibrillation in people aged 65 and over. The SAFE study.» *Health Technol Assess* 9(40): iii-iv, ix-x, 1-74.
- Israel, C. W., G. Gronefeld, J. R. Ehrlich, Y. G. Li and S. H. Hohnloser (2004). «Long-term risk of recurrent atrial fibrillation as documented by an implantable monitoring device: implications for optimal patient care.» *J Am Coll Cardiol* 43(1): 47-52.
- Jabaudon, D., J. Sztajzel, K. Sievert, T. Landis and R. Sztajzel (2004). «Usefulness of ambulatory 7-day ECG monitoring for the detection of atrial fibrillation and flutter after acute stroke and transient ischemic attack.» *Stroke* 35(7): 1647-51.
- Jahangir, A., V. Lee, P. A. Friedman, J. M. Trusty, D. O. Hodge, S. L. Kopecky, D. L. Packer, S. C. Hammill, W. K. Shen and B. J. Gersh (2007). «Long-term progression and outcomes with aging in patients with lone atrial fibrillation: a 30-year follow-up study.» *Circulation* 115(24): 3050-6.
- Kirchhof, P., A. Auricchio, J. Bax, H. Crijns, J. Camm, H. C. Diener, A. Goette, G. Hindricks, S. Hohnloser, L. Kappenberger, K. H. Kuck, G. Y. Lip, B. Olsson, T. Meinertz, S. Priori, U. Ravens, G. Steinbeck, E. Svernhage, J. Tijssen, A. Vincent and G. Breithardt (2007). «Outcome parameters for trials in atrial fibrillation: executive summary: Recommendations from a consensus conference organized by the German Atrial Fibrillation Competence NETwork (AFNET) and the European Heart Rhythm Association (EHRA).» *Eur Heart J* 28(22): 2803-2817.
- Kirchhof, P., A. Auricchio, J. Bax, H. Crijns, J. Camm, H. C. Diener, A. Goette, G. Hindricks, S. Hohnloser, L. Kappenberger, K. H. Kuck, G. Y. Lip, B. Olsson, T. Meinertz, S. Priori, U. Ravens, G. Steinbeck, E. Svernhage, J. Tijssen, A. Vincent and G. Breithardt (2007). «Outcome parameters for trials in atrial fibrillation: Recommendations from a consensus conference organized by the German Atrial Fibrillation Competence NETwork and the European Heart Rhythm Association.» *Europace* 9: 1006-23.
- Kirchhof, P., J. Bax, C. Blomstrom-Lundquist, H. Calkins, A. J. Camm, R. Cappato, F. Cosio, H. Crijns, H. C. Diener, A. Goette, C. W. Israel, K. H. Kuck, G. Y. Lip, S. Nattel, R. L. Page, U. Ravens, U. Schotten, G. Steinbeck, P. Vardas, A. Waldo, K. Wegscheider, S. Willems and G. Breithardt (2009). «Early and comprehensive management of atrial fibrillation: executive summary of the proceedings from the 2nd AFNET-EHRA consensus conference 'research perspectives in AF'.» *Eur Heart J* 30(24): 2969-77c.
- Kottkamp, H., H. Tanner, R. Kobza, P. Schirdewahn, A. Dorszewski, J. H. Gerds-Li, C. Carbucicchio, C. Piorkowski and G. Hindricks (2004). «Time courses and quantitative analysis of atrial fibrillation episode number and duration after circular plus linear left atrial lesions: trigger elimination or substrate modification: early or delayed cure?» *J Am Coll Cardiol* 44(4): 869-77.
- Liao, J., Z. Khalid, C. Scallan, C. Morillo and M. O'Donnell (2007). «Noninvasive cardiac monitoring for detecting paroxysmal atrial fibrillation or flutter after acute ischemic stroke: a systematic review.» *Stroke* 38(11): 2935-40.
- Mant, J., D. A. Fitzmaurice, F. D. Hobbs, S. Jowett, E. T. Murray, R. Holder, M. Davies and G. Y. Lip (2007). «Accuracy of diagnosing atrial fibrillation on electrocardiogram by primary care practitioners and interpretative diagnostic software: analysis of data from screening for atrial fibrillation in the elderly (SAFE) trial.» *BMJ* 335(7616): 380.
- Piorkowski, C., H. Kottkamp, H. Tanner, R. Kobza, J. C. Nielsen, A. Arya and G. Hindricks (2005). «Value of different follow-up strategies to assess the efficacy of circumferential pulmonary vein ablation for the curative treatment of atrial fibrillation.» *J Cardiovasc Electrophysiol* 16(12): 1286-92.
- Senatore, G., G. Stabile, E. Bertaglia, G. Donnici, A. De Simone, F. Zoppo, P. Turco, P. Pascotto and M. Fazzari (2005). «Role of transtelephonic electrocardiographic monitoring in detecting short-term arrhythmia recurrences after radiofrequency ablation in patients with atrial fibrillation.» *J Am Coll Cardiol* 45(6): 873-6.
- Singh, B. N., S. N. Singh, D. J. Reda, X. C. Tang, B. Lopez, C. L. Harris, R. D. Fletcher, S. C. Sharma, J. E. Atwood, A. K. Jacobson, H. D. Lewis, Jr., D. W. Raisch and M. D. Ezekowitz (2005). «Amiodarone versus sotalol for atrial fibrillation.» *N Engl J Med* 352(18): 1861-72.
- Stewart, S., C. L. Hart, D. J. Hole and J. J. McMurray (2002). «A population-based study of the long-term risks associated with atrial fibrillation: 20-year follow-up of the Renfrew/Paisley study.» *Am J Med* 113(5): 359-64.

Tayal, A. H., M. Tian, K. M. Kelly, S. C. Jones, D. G. Wright, D. Singh, J. Jarouse, J. Brillman, S. Murali and R. Gupta (2008). «Atrial fibrillation detected by mobile cardiac outpatient telemetry in cryptogenic TIA or stroke.» *Neurology* 71(21): 1696-701.

Recommendations

Dorian, P., P. G. Guerra, C. R. Kerr, S. S. O'Donnell, E. Crystal, A. M. Gillis, L. B. Mitchell, D. Roy, A. C. Skanes, M. S. Rose and D. G. Wyse (2009). «Validation of a new simple scale to measure symptoms in atrial fibrillation: the Canadian Cardiovascular Society Severity in Atrial Fibrillation scale.» *Circ Arrhythm Electrophysiol* 2(3): 218-24.

Fitzmaurice DA, Hobbs FD, Jowett S, Mant J, Murray ET, Holder R, Raftery JP, Bryan S, Davies M, Lip GY, Allan TF (2007). Screening versus routine practice in detection of atrial fibrillation in patients aged 65 or over: cluster randomised controlled trial. *BMJ* 335(7616):383.

Haverkamp W, Breithardt G, Camm AJ, Janse MJ, Rosen MR, Antzelevitch C, Escande D, Franz M, Malik M, Moss A, Shah R (2000). The potential for QT prolongation and proarrhythmia by non-antiarrhythmic drugs: clinical and regulatory implications. Report on a policy conference of the European Society of Cardiology. *Eur Heart J* 21(15):1216-31.

Hobbs, F. D., D. A. Fitzmaurice, J. Mant, E. Murray, S. Jowett, S. Bryan, J. Raftery, M. Davies and G. Lip (2005). «A randomised controlled trial and cost-effectiveness study of systematic screening (targeted and total population screening) versus routine practice for the detection of atrial fibrillation in people aged 65 and over. The SAFE study.» *Health Technol Assess* 9(40): iii-iv, ix-x, 1-74.

Jabaudon D, Sztajzel J, Sievert K, Landis T, Sztajzel R (2004). Usefulness of ambulatory 7-day ECG monitoring for the detection of atrial fibrillation and flutter after acute stroke and transient ischemic attack. *Stroke* 35(7):1647-51.

Kirchhof, P., A. Auricchio, J. Bax, H. Crijns, J. Camm, H. C. Diener, A. Goette, G. Hindricks, S. Hohnloser, L. Kappenberger, K. H. Kuck, G. Y. Lip, B. Olsson, T. Meinertz, S. Priori, U. Ravens, G. Steinbeck, E. Svernhage, J. Tijssen, A. Vincent and G. Breithardt (2007). «Outcome parameters for trials in atrial fibrillation: executive summary: Recommendations from a consensus conference organized by the German Atrial Fibrillation Competence NETWORK (AFNET) and the European Heart Rhythm Association (EHRA).» *Eur Heart J* 28(22): 2803-2817.

Singh BN, Singh SN, Reda DJ, Tang XC, Lopez B, Harris CL, Fletcher RD, Sharma SC, Atwood JE, Jacobson AK, Lewis HD, Jr., Raich DW, Ezekowitz MD (2005). Amiodarone versus sotalol for atrial fibrillation. *N Engl J Med* 352(18):1861-72.

and cerebral magnetic resonance imaging.» *J Am Coll Cardiol* 45(11): 1807-12.

Beyth, R. J., L. M. Quinn and C. S. Landefeld (1998). «Prospective evaluation of an index for predicting the risk of major bleeding in outpatients treated with warfarin.» *Am J Med* 105(2): 91-9.

Biblo, L. A., Z. Yuan, K. J. Quan, J. A. Mackall and A. A. Rimm (2001). «Risk of stroke in patients with atrial flutter.» *Am J Cardiol* 87(3): 346-9, A9.

Binici, Z., T. Intzilakis, O. W. Nielsen, L. Kober and A. Sajadieh (2010). «Excessive Supraventricular Ectopic Activity and Increased Risk of Atrial Fibrillation and Stroke.» *Circulation* 121: 1904-1911.

Chan, K. E., J. M. Lazarus, R. Thadhani and R. M. Hakim (2009). «Anticoagulant and antiplatelet usage associates with mortality among hemodialysis patients.» *J Am Soc Nephrol* 20(4): 872-81.

Chan, K. E., J. M. Lazarus, R. Thadhani and R. M. Hakim (2009). «Warfarin use associates with increased risk for stroke in hemodialysis patients with atrial fibrillation.» *J Am Soc Nephrol* 20(10): 2223-33.

Clark, N. P., D. M. Witt, T. Delate, M. Trapp, D. Garcia, W. Ageno, E. M. Hylek and M. A. Crowther (2008). «Thromboembolic consequences of subtherapeutic anticoagulation in patients stabilized on warfarin therapy: the low INR study.» *Pharmacotherapy* 28(8): 960-7.

Collaboration, A. T. (2002). «Collaborative meta-analysis of randomised trials of antiplatelet therapy for prevention of death, myocardial infarction, and stroke in high risk patients.» *BMJ* 324(7329): 71-86.

Connolly, S. J., J. Eikelboom, M. O'Donnell, J. Pogue and S. Yusuf (2007). «Challenges of establishing new antithrombotic therapies in atrial fibrillation.» *Circulation* 116(4): 449-55.

Connolly, S. J., A. Laupacis, M. Gent, R. S. Roberts, J. A. Cairns and C. Joyner (1991). «Canadian Atrial Fibrillation Anticoagulation (CAFA) Study.» *J Am Coll Cardiol* 18(2): 349-55.

Connolly, S. J., J. Pogue, J. Eikelboom, G. Flaker, P. Commerford, M. G. Franzosi, J. S. Healey and S. Yusuf (2008). «Benefit of oral anticoagulant over antiplatelet therapy in atrial fibrillation depends on the quality of international normalized ratio control achieved by centers and countries as measured by time in therapeutic range.» *Circulation* 118(20): 2029-37.

Connolly, S. J., J. Pogue, R. G. Hart, S. H. Hohnloser, M. Pfeffer, S. Chrolavicius and S. Yusuf (2009). «Effect of clopidogrel added to aspirin in patients with atrial fibrillation.» *N Engl J Med* 360(20): 2066-78.

Conway, D. S. and G. Y. Lip (2004). «Comparison of outcomes of patients with symptomatic peripheral artery disease with and without atrial fibrillation (the West Birmingham Atrial Fibrillation Project).» *Am J Cardiol* 93(11): 1422-5, A10.

Cullinane, M., R. Wainwright, A. Brown, M. Monaghan and H. S. Markus (1998). «Asymptomatic embolization in subjects with atrial fibrillation not taking anticoagulants: a prospective study.» *Stroke* 29(9): 1810-5.

Dagres, N., R. Nieuwlaet, P. E. Vardas, D. Andresen, S. Levy, S. Cobbe, D. T. Kremastinos, G. Breithardt, D. V. Cokkinos and H. J. Crijns (2007). «Gender-related differences in presentation, treatment, and outcome of patients with atrial fibrillation in Europe: a report from the Euro Heart Survey on Atrial Fibrillation.» *J Am Coll Cardiol* 49(5): 572-7.

Davies, M., F. Hobbs, R. Davis, J. Kenkre, A. K. Roalfe, R. Hare, D. Wosornu and R. J. Lancashire (2001). «Prevalence of left-ventricular systolic dysfunction and heart failure in the Echocardiographic Heart of England Screening study: a population based study.» *Lancet* 358(9280): 439-44.

De Caterina R, H. S., Wallentin L, Agnelli G, Bachmann F, Baigent C, Jespersen J, Kristensen SD, Montalescot G, Siegbahn A,

4. Management

4.1 Antithrombotic therapy

Arima, H., R. G. Hart, S. Colman, J. Chalmers, C. Anderson, A. Rodgers, M. Woodward, S. MacMahon and B. Neal (2005). «Perindopril-based blood pressure-lowering reduces major vascular events in patients with atrial fibrillation and prior stroke or transient ischemic attack.» *Stroke* 36(10): 2164-9.

Bayard, Y. L., S. H. Ostermayer and H. Sievert (2008). «Alternatives to warfarin in atrial fibrillation: drugs and devices.» *Heart* 94(9): 1113-6.

Bernhardt, P., H. Schmidt, C. Hammerstingl, B. Luderitz and H. Omran (2005). «Patients with atrial fibrillation and dense spontaneous echo contrast at high risk a prospective and serial follow-up over 12 months with transesophageal echocardiography

- Verheugt FW, Weitz J. (2007). «Anticoagulants in heart disease: current status and perspectives.» *Eur Heart J* 28: 880-913.
- Douketis, J. D., P. B. Berger, A. S. Dunn, A. K. Jaffer, A. C. Spyropoulos, R. C. Becker and J. Ansell (2008). «The perioperative management of antithrombotic therapy: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines (8th Edition).» *Chest* 133(6 Suppl): 299S-339S.
- EAST study group (1993). «Secondary prevention in non-rheumatic atrial fibrillation after transient ischaemic attack or minor stroke. EAST (European Atrial Fibrillation Trial) Study Group.» *Lancet* 342(8882): 1255-62.
- Ezekowitz, M. D., S. L. Bridgers, K. E. James, N. H. Carliner, C. L. Colling, C. C. Gornick, H. Krause-Steinrauf, J. F. Kurtzke, S. M. Nazarian, M. J. Radford and et al. (1992). «Warfarin in the prevention of stroke associated with nonrheumatic atrial fibrillation. Veterans Affairs Stroke Prevention in Nonrheumatic Atrial Fibrillation Investigators.» *N Engl J Med* 327(20): 1406-12.
- Ezekowitz, M. D., K. E. James, S. M. Nazarian, J. Davenport, J. P. Broderick, S. R. Gupta, V. Thadani, M. L. Meyer and S. L. Bridgers (1995). «Silent cerebral infarction in patients with nonrheumatic atrial fibrillation. The Veterans Affairs Stroke Prevention in Nonrheumatic Atrial Fibrillation Investigators.» *Circulation* 92(8): 2178-82.
- Fang, M. C., Y. Chang, E. M. Hylek, J. Rosand, S. M. Greenberg, A. S. Go and D. E. Singer (2004). «Advanced age, anticoagulation intensity, and risk for intracranial hemorrhage among patients taking warfarin for atrial fibrillation.» *Ann Intern Med* 141(10): 745-52.
- Fang, M. C., A. S. Go, Y. Chang, L. Borowsky, N. K. Pomernacki and D. E. Singer (2008). «Comparison of risk stratification schemes to predict thromboembolism in people with nonvalvular atrial fibrillation.» *J Am Coll Cardiol* 51(8): 810-5.
- Fang, M. C., D. E. Singer, Y. Chang, E. M. Hylek, L. E. Henault, N. G. Jensvold and A. S. Go (2005). «Gender differences in the risk of ischemic stroke and peripheral embolism in atrial fibrillation: the Anticoagulation and Risk factors In Atrial fibrillation (ATRIA) study.» *Circulation* 112(12): 1687-91.
- Fatkin, D., D. L. Kuchar, C. W. Thorburn and M. P. Feneley (1994). «Transesophageal echocardiography before and during direct current cardioversion of atrial fibrillation: evidence for «atrial stunning» as a mechanism of thromboembolic complications.» *J Am Coll Cardiol* 23(2): 307-16.
- Feinberg, W. M., J. F. Seeger, R. F. Carmody, D. C. Anderson, R. G. Hart and L. A. Pearce (1990). «Epidemiologic features of asymptomatic cerebral infarction in patients with nonvalvular atrial fibrillation.» *Arch Intern Med* 150(11): 2340-4.
- Flaker, G. C., M. Gruber, S. J. Connolly, S. Goldman, S. Chaparro, A. Vahanian, M. O. Halinen, J. Horrow and J. L. Halperin (2006). «Risks and benefits of combining aspirin with anticoagulant therapy in patients with atrial fibrillation: an exploratory analysis of stroke prevention using an oral thrombin inhibitor in atrial fibrillation (SPORTIF) trials.» *Am Heart J* 152(5): 967-73.
- Fowkes, F. G., J. F. Price, M. C. Stewart, I. Butcher, G. C. Leng, A. C. Pell, P. A. Sandercock, K. A. Fox, G. D. Lowe and G. D. Murray (2010). «Aspirin for prevention of cardiovascular events in a general population screened for a low ankle brachial index: a randomized controlled trial.» *JAMA* 303(9): 841-8.
- Friberg, J., H. Scharling, N. Gadsboll, T. Truelsen and G. B. Jensen (2004). «Comparison of the impact of atrial fibrillation on the risk of stroke and cardiovascular death in women versus men (The Copenhagen City Heart Study).» *Am J Cardiol* 94(7): 889-94.
- Friberg, L., N. Hammar and M. Rosenquist (2009). «Stroke in paroxysmal atrial fibrillation: report from the Stockholm Cohort of Atrial Fibrillation.» *Eur Heart J* published on line Jan 27, 2009.
- Fukuchi, M., J. Watanabe, K. Kumagai, Y. Katori, S. Baba, K. Fukuda, T. Yagi, A. Iguchi, H. Yokoyama, M. Miura, Y. Kagaya, S. Sato, K. Tabayashi and K. Shirato (2001). «Increased von Willebrand factor in the endocardium as a local predisposing factor for thrombogenesis in overloaded human atrial appendage.» *J Am Coll Cardiol* 37(5): 1436-42.
- Gage, B. F., A. D. Waterman, W. Shannon, M. Boechler, M. W. Rich and M. J. Radford (2001). «Validation of clinical classification schemes for predicting stroke: results from the National Registry of Atrial Fibrillation.» *JAMA* 285(22): 2864-70.
- Gage, B. F., Y. Yan, P. E. Milligan, A. D. Waterman, R. Culverhouse, M. W. Rich and M. J. Radford (2006). «Clinical classification schemes for predicting hemorrhage: results from the National Registry of Atrial Fibrillation (NRAF).» *Am Heart J* 151(3): 713-9.
- Gallagher, M. M., B. J. Hennessy, N. Edvardsson, C. M. Hart, M. S. Shannon, O. A. Obel, N. M. Al-Saady and A. J. Camm (2002). «Embolic complications of direct current cardioversion of atrial arrhythmias: association with low intensity of anticoagulation at the time of cardioversion.» *J Am Coll Cardiol* 40(5): 926-33.
- Garcia, D. A., S. Regan, L. E. Henault, A. Upadhyay, J. Baker, M. Othman and E. M. Hylek (2008). «Risk of thromboembolism with short-term interruption of warfarin therapy.» *Arch Intern Med* 168(1): 63-9.
- Go, A. S., M. C. Fang, N. Udaltsova, Y. Chang, N. K. Pomernacki, L. Borowsky and D. E. Singer (2009). «Impact of proteinuria and glomerular filtration rate on risk of thromboembolism in atrial fibrillation: the anticoagulation and risk factors in atrial fibrillation (ATRIA) study.» *Circulation* 119(10): 1363-9.
- Go, A. S., E. M. Hylek, Y. Chang, K. A. Phillips, L. E. Henault, A. M. Capra, N. G. Jensvold, J. V. Selby and D. E. Singer (2003). «Anticoagulation therapy for stroke prevention in atrial fibrillation: how well do randomized trials translate into clinical practice?» *JAMA* 290(20): 2685-92.
- Go, A. S., E. M. Hylek, K. A. Phillips, L. H. Borowsky, L. E. Henault, Y. Chang, J. V. Selby and D. E. Singer (2000). «Implications of stroke risk criteria on the anticoagulation decision in nonvalvular atrial fibrillation: the Anticoagulation and Risk Factors in Atrial Fibrillation (ATRIA) study.» *Circulation* 102(1): 11-3.
- Gomberg-Maitland, M., N. K. Wenger, J. Feyzi, M. Lengyel, A. S. Volgman, P. Petersen, L. Frison and J. L. Halperin (2006). «Anticoagulation in women with non-valvular atrial fibrillation in the stroke prevention using an oral thrombin inhibitor (SPORTIF) trials.» *Eur Heart J* 27(16): 1947-53.
- Gorin, L., L. Fauchier, E. Nonin, A. de Labriolle, K. Haguenoer, P. Cosnay, D. Babuty and B. Charbonnier (2010). «Antithrombotic treatment and the risk of death and stroke in patients with atrial fibrillation and a CHADS2 score=1.» *Thromb Haemost* 104(3):833-840
- Goto, S., D. L. Bhatt, J. Rother, M. Alberts, M. D. Hill, Y. Ikeda, S. Uchiyama, R. D'Agostino, E. M. Ohman, C. S. Liao, A. T. Hirsch, J. L. Mas, P. W. Wilson, R. Corbalan, F. Aichner and P. G. Steg (2008). «Prevalence, clinical profile, and cardiovascular outcomes of atrial fibrillation patients with atherothrombosis.» *Am Heart J* 156(5): 855-63, 863 e2.
- Hart, R. G., D. L. Bhatt, W. Hacke, K. A. Fox, G. J. Hankey, P. B. Berger, T. Hu and E. J. Topol (2008). «Clopidogrel and aspirin versus aspirin alone for the prevention of stroke in patients with a history of atrial fibrillation: subgroup analysis of the CHARISMA randomized trial.» *Cerebrovasc Dis* 25(4): 344-7.
- Hart, R. G., L. A. Pearce and M. I. Aguilar (2007). «Adjusted-dose warfarin versus aspirin for preventing stroke in patients with atrial fibrillation.» *Ann Intern Med* 147(8): 590-2.
- Hart, R. G., L. A. Pearce and M. I. Aguilar (2007). «Meta-analysis:

- antithrombotic therapy to prevent stroke in patients who have nonvalvular atrial fibrillation.» *Ann Intern Med* 146(12): 857-67.
- Hart, R. G., L. A. Pearce, R. McBride, R. M. Rothbart and R. W. Asinger (1999). «Factors associated with ischemic stroke during aspirin therapy in atrial fibrillation: analysis of 2012 participants in the SPAF I-III clinical trials. The Stroke Prevention in Atrial Fibrillation (SPAF) Investigators.» *Stroke* 30(6): 1223-9.
- Hart, R. G., S. B. Tonarelli and L. A. Pearce (2005). «Avoiding central nervous system bleeding during antithrombotic therapy: recent data and ideas.» *Stroke* 36(7): 1588-93.
- Healey, J. S., E. Crystal, A. Lamy, K. Teoh, L. Semelhago, S. H. Hohnloser, I. Cybulsky, L. Abouzahr, C. Sawchuck, S. Carroll, C. Morillo, P. Kleine, V. Chu, E. Lonn and S. J. Connolly (2005). «Left Atrial Appendage Occlusion Study (LAAOS): results of a randomized controlled pilot study of left atrial appendage occlusion during coronary bypass surgery in patients at risk for stroke.» *Am Heart J* 150(2): 288-93.
- Healey, J. S., R. G. Hart, J. Pogue, M. A. Pfeffer, S. H. Hohnloser, R. De Caterina, G. Flaker, S. Yusuf and S. J. Connolly (2008). «Risks and benefits of oral anticoagulation compared with clopidogrel plus aspirin in patients with atrial fibrillation according to stroke risk: the atrial fibrillation clopidogrel trial with irbesartan for prevention of vascular events (ACTIVE-W).» *Stroke* 39(5): 1482-6.
- Hohnloser, S. H., D. Pajitnev, J. Pogue, J. S. Healey, M. A. Pfeffer, S. Yusuf and S. J. Connolly (2007). «Incidence of stroke in paroxysmal versus sustained atrial fibrillation in patients taking oral anticoagulation or combined antiplatelet therapy: an ACTIVE W Substudy.» *J Am Coll Cardiol* 50(22): 2156-61.
- Holmes, D. R., V. Y. Reddy, Z. G. Turi, S. K. Doshi, H. Sievert, M. Buchbinder, C. M. Mullin and P. Sick (2009). «Percutaneous closure of the left atrial appendage versus warfarin therapy for prevention of stroke in patients with atrial fibrillation: a randomised non-inferiority trial.» *Lancet* 374(9689): 534-42.
- Hughes, M. and G. Y. Lip (2007). «Risk factors for anticoagulation-related bleeding complications in patients with atrial fibrillation: a systematic review.» *QJM* 100(10): 599-607.
- Hughes, M. and G. Y. Lip (2008). «Stroke and thromboembolism in atrial fibrillation: a systematic review of stroke risk factors, risk stratification schema and cost effectiveness data.» *Thromb Haemost* 99(2): 295-304.
- Hylek, E. M., L. Frison, L. E. Henault and A. Cupples (2008). «Disparate stroke rates on warfarin among contemporaneous cohorts with atrial fibrillation: potential insights into risk from a comparative analysis of SPORTIF III versus SPORTIF V.» *Stroke* 39(11): 3009-14.
- Hylek, E. M. and D. E. Singer (1994). «Risk factors for intracranial hemorrhage in outpatients taking warfarin.» *Ann Intern Med* 120(11): 897-902.
- Hylek, E. M., S. J. Skates, M. A. Sheehan and D. E. Singer (1996). «An analysis of the lowest effective intensity of prophylactic anticoagulation for patients with nonrheumatic atrial fibrillation.» *N Engl J Med* 335(8): 540-6.
- Hylek EM, Evans-Molina C, Shea C, Henault LE, Regan S. Major hemorrhage and tolerability of warfarin in the first year of therapy among elderly patients with atrial fibrillation. *Circulation* 2007;115(21):2689-96.
- Hylek EM, Go AS, Chang Y, Jensvold NG, Henault LE, Selby JV, Singer DE. Effect of intensity of oral anticoagulation on stroke severity and mortality in atrial fibrillation. *N Engl J Med* 2003;349:1019-26.
- Kalra, L. and G. Y. Lip (2007). «Antithrombotic treatment in atrial fibrillation.» *Heart* 93(1): 39-44.
- Kamp, O., P. M. Verhorst, R. C. Welling and C. A. Visser (1999). «Importance of left atrial appendage flow as a predictor of thromboembolic events in patients with atrial fibrillation.» *Eur Heart J* 20(13): 979-85.
- Klein, A. L., R. A. Grimm, R. D. Murray, C. Apperson-Hansen, R. W. Asinger, I. W. Black, R. Davidoff, R. Erbel, J. L. Halperin, D. A. Orsinelli, T. R. Porter and M. F. Stoddard (2001). «Use of transesophageal echocardiography to guide cardioversion in patients with atrial fibrillation.» *N Engl J Med* 344(19): 1411-20.
- Kopecky, S. L., B. J. Gersh, M. D. McGoon, J. P. Whisnant, D. R. Holmes, Jr., D. M. Ilstrup and R. L. Frye (1987). «The natural history of lone atrial fibrillation. A population-based study over three decades.» *N Engl J Med* 317(11): 669-74.
- Kuijper, P. M., B. A. Hutten, M. H. Prins and H. R. Buller (1999). «Prediction of the risk of bleeding during anticoagulant treatment for venous thromboembolism.» *Arch Intern Med* 159(5): 457-60.
- Lechat, P., H. Lardoux, A. Mallet, P. Sanchez, G. Derumeaux, T. Lecompte, L. Maillard, J. L. Mas, F. Mentre, F. Pousset, L. Lacomblez, G. Pisica, S. Solbes-Latourette, P. Raynaud and P. Chaumet-Riffaud (2001). «Anticoagulant (fluidione)-aspirin combination in patients with high-risk atrial fibrillation. A randomized trial (Fluidione, Fibrillation Auriculaire, Aspirin et Contraste Spontane; FFAACS).» *Cerebrovasc Dis* 12(3): 245-52.
- Lee, B. H., J. S. Park, J. H. Park, J. J. Kwak, E. S. Hwang, S. K. Kim, D. H. Choi, Y. H. Kim and H. N. Pak (2009). «The Effect and Safety of the Antithrombotic Therapies in Patients with Atrial Fibrillation and CHADS Score 1.» *J Cardiovasc Electrophysiol* (21)5:501-507
- Limdi, N. A. and D. L. Veenstra (2008). «Warfarin pharmacogenetics.» *Pharmacotherapy* 28(9): 1084-97.
- Lip, G. Y. (2008). «Don't add aspirin for associated stable vascular disease in a patient with atrial fibrillation receiving anticoagulation.» *BMJ* 336(7644): 614-5.
- Lip, G. Y. (2008). «Paroxysmal atrial fibrillation, stroke risk and thromboprophylaxis.» *Thromb Haemost* 100(1): 11-3.
- Lip, G. Y. (2010). «Anticoagulation therapy and the risk of stroke in patients with Atrial Fibrillation at 'moderate risk' [CHADS2 score=1]: Simplifying stroke risk assessment and thromboprophylaxis in real life clinical practice.» *Thromb Haemost* 103(3).
- Lip, G. Y., L. Frison and M. Grind (2007). «Effect of hypertension on anticoagulated patients with atrial fibrillation.» *Eur Heart J* 28(6): 752-9.
- Lip, G. Y., L. Frison and M. Grind (2008). «Stroke event rates in anticoagulated patients with paroxysmal atrial fibrillation.» *J Intern Med* 264(1): 50-61.
- Lip, G. Y., K. Huber, F. Andreotti, H. Arnesen, K. J. Airaksinen, T. Cuisset, P. Kirchhof and F. Marin (2010). «Management of antithrombotic therapy in atrial fibrillation patients presenting with acute coronary syndrome and/or undergoing percutaneous coronary intervention/ stenting.» *Thromb Haemost* 103(1): 13-28.
- Lip, G. Y., S. Kamath, M. Jafri, A. Mohammed and D. Bareford (2002). «Ethnic differences in patient perceptions of atrial fibrillation and anticoagulation therapy: the West Birmingham Atrial Fibrillation Project.» *Stroke* 33(1): 238-42.
- Lip, G. Y. and H. S. Lim (2007). «Atrial fibrillation and stroke prevention.» *Lancet Neurol* 6(11): 981-93.
- Lip, G. Y., R. Nieuwlaet, R. Pisters, D. A. Lane and H. J. Crijns (2010). «Refining clinical risk stratification for predicting stroke and thromboembolism in atrial fibrillation using a novel risk factor-based approach: the euro heart survey on atrial fibrillation.» *Chest* 137(2): 263-72.
- Man-Son-Hing, M., G. Nichol, A. Lau and A. Laupacis (1999). «Choosing antithrombotic therapy for elderly patients with

- atrial fibrillation who are at risk for falls.» *Arch Intern Med* 159(7): 677-85.
- Mant, J., F. D. Hobbs, K. Fletcher, A. Roalfe, D. Fitzmaurice, G. Y. Lip and E. Murray (2007). «Warfarin versus aspirin for stroke prevention in an elderly community population with atrial fibrillation (the Birmingham Atrial Fibrillation Treatment of the Aged Study, BAFTA): a randomised controlled trial.» *Lancet* 370(9586): 493-503.
- Nieuwlaat, R., A. Capucci, A. J. Camm, S. B. Olsson, D. Andresen, D. W. Davies, S. Cobbe, G. Breithardt, J. Y. Le Heuzey, M. H. Prins, S. Levy and H. J. Crijns (2005). «Atrial fibrillation management: a prospective survey in ESC member countries: the Euro Heart Survey on Atrial Fibrillation.» *Eur Heart J* 26(22): 2422-34.
- Ogawa, H., M. Nakayama, T. Morimoto, S. Uemura, M. Kanauchi, N. Doi, H. Jinnouchi, S. Sugiyama and Y. Saito (2008). «Low-dose aspirin for primary prevention of atherosclerotic events in patients with type 2 diabetes: a randomized controlled trial.» *JAMA* 300(18): 2134-41.
- Ostermayer, S. H., M. Reisman, P. H. Kramer, R. V. Matthews, W. A. Gray, P. C. Block, H. Omran, A. L. Bartorelli, P. Della Bella, C. Di Mario, C. Pappone, P. N. Casale, J. W. Moses, A. Poppas, D. O. Williams, B. Meier, A. Skanes, P. S. Teirstein, M. D. Lesh, T. Nakai, Y. Bayard, K. Billinger, T. Trepels, U. Krumdordf and H. Sievert (2005). «Percutaneous left atrial appendage transcatheter occlusion (PLAATO system) to prevent stroke in high-risk patients with non-rheumatic atrial fibrillation: results from the international multi-center feasibility trials.» *J Am Coll Cardiol* 46(1): 9-14.
- Palareti, G. and B. Cosmi (2009). «Bleeding with anticoagulation therapy - who is at risk, and how best to identify such patients.» *Thromb Haemost* 102(2): 268-78.
- Patrick, A. R., J. Avorn and N. K. Choudhry (2009). «Cost-effectiveness of genotype-guided warfarin dosing for patients with atrial fibrillation.» *Circ Cardiovasc Qual Outcomes* 2(5): 429-36.
- Pengo, V., U. Cucchini, G. Denas, N. Erba, G. Guazzaloca, L. La Rosa, V. De Micheli, S. Testa, R. Frontoni, D. Prisco, G. Nante and S. Iliceto (2009). «Standardized low-molecular-weight heparin bridging regimen in outpatients on oral anticoagulants undergoing invasive procedure or surgery: an inception cohort management study.» *Circulation* 119(22): 2920-7.
- Perez-Gomez, F., E. Alegria, J. Berjon, J. A. Iriarte, J. Zumalde, A. Salvador and L. Mataix (2004). «Comparative effects of antiplatelet, anticoagulant, or combined therapy in patients with valvular and nonvalvular atrial fibrillation: a randomized multicenter study.» *J Am Coll Cardiol* 44(8): 1557-66.
- Petersen, P., G. Boysen, J. Godtfredsen, E. D. Andersen and B. Andersen (1989). «Placebo-controlled, randomised trial of warfarin and aspirin for prevention of thromboembolic complications in chronic atrial fibrillation. The Copenhagen AFASAK study.» *Lancet* 1(8631): 175-9.
- Petersen, P. and J. M. Hansen (1988). «Stroke in thyrotoxicosis with atrial fibrillation.» *Stroke* 19(1): 15-8.
- Pisters R, L. D., Nieuwlaat R, Crijns H, Lip GYH. (2010). «A novel user-friendly score to assess one-year risk of major bleeding in atrial fibrillation.» *Chest* published ahead of print March 18, 2010, doi:10.1378/chest.10-0134
- Rash, A., T. Downes, R. Portner, W. W. Yeo, N. Morgan and K. S. Channer (2007). «A randomised controlled trial of warfarin versus aspirin for stroke prevention in octogenarians with atrial fibrillation (WASPO).» *Age Ageing* 36(2): 151-6.
- Reynolds, M. W., K. Fahrbach, O. Hauch, G. Wygant, R. Estok, C. Cella and L. Nalysnyk (2004). «Warfarin anticoagulation and outcomes in patients with atrial fibrillation: a systematic review and metaanalysis.» *Chest* 126(6): 1938-45.
- Roijs, A., J. Eskilsson and B. Olsson (2000). «Transoesophageal echocardiography-guided cardioversion of atrial fibrillation or flutter. Selection of a low-risk group for immediate cardioversion.» *Eur Heart J* 21(10): 837-47.
- Rose, A. J., A. Ozonoff, L. E. Henault and E. M. Hylek (2008). «Warfarin for atrial fibrillation in community-based practice.» *J Thromb Haemost* 6(10): 1647-54.
- Rubboli, A., J. L. Halperin, K. E. Airaksinen, M. Buerke, E. Eeckhout, S. B. Freedman, A. H. Gershlick, A. Schlitt, H. F. Tse, F. W. Verheugt and G. Y. Lip (2008). «Antithrombotic therapy in patients treated with oral anticoagulation undergoing coronary artery stenting. An expert consensus document with focus on atrial fibrillation.» *Ann Med* 40(6): 428-36.
- Ruiz-Nodar, J. M., F. Marin, J. A. Hurtado, J. Valencia, E. Pinar, J. Pineda, J. R. Gimeno, F. Sogorb, M. Valdes and G. Y. Lip (2008). «Anticoagulant and antiplatelet therapy use in 426 patients with atrial fibrillation undergoing percutaneous coronary intervention and stent implantation implications for bleeding risk and prognosis.» *J Am Coll Cardiol* 51(8): 818-25.
- Sato, H., K. Ishikawa, A. Kitabatake, S. Ogawa, Y. Maruyama, Y. Yokota, T. Fukuyama, Y. Doi, S. Mochizuki, T. Izumi, N. Takekoshi, K. Yoshida, K. Hiramori, H. Origasa, S. Uchiyama, M. Matsumoto, T. Yamaguchi and M. Hori (2006). «Low-dose aspirin for prevention of stroke in low-risk patients with atrial fibrillation: Japan Atrial Fibrillation Stroke Trial.» *Stroke* 37(2): 447-51.
- Sawicki, P. T. (1999). «A structured teaching and self-management program for patients receiving oral anticoagulation: a randomized controlled trial. Working Group for the Study of Patient Self-Management of Oral Anticoagulation.» *JAMA* 281(2): 145-50.
- Schmitt, J., G. Duray, B. J. Gersh and S. H. Hohnloser (2009). «Atrial fibrillation in acute myocardial infarction: a systematic review of the incidence, clinical features and prognostic implications.» *Eur Heart J* 30(9): 1038-45.
- Schomig, A., F. J. Neumann, A. Kastrati, H. Schühlen, R. Blasini, M. Hadamitzky, H. Walter, E. M. Zitzmann-Roth, G. Richardt, E. Alt, C. Schmitt and K. Ulm (1996). «A randomized comparison of antiplatelet and anticoagulant therapy after the placement of coronary-artery stents.» *N Engl J Med* 334(17): 1084-9.
- Schulman, S., R. J. Beyth, C. Kearon and M. N. Levine (2008). «Hemorrhagic complications of anticoagulant and thrombolytic treatment: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines (8th Edition).» *Chest* 133(6 Suppl): 257S-298S.
- Schwarz, U. I., M. D. Ritchie, Y. Bradford, C. Li, S. M. Dudek, A. Frye-Anderson, R. B. Kim, D. M. Roden and C. M. Stein (2008). «Genetic determinants of response to warfarin during initial anticoagulation.» *N Engl J Med* 358(10): 999-1008.
- Serebruany, V. L., S. R. Steinhubl, P. B. Berger, A. I. Malinin, J. S. Baggish, D. L. Bhatt and E. J. Topol (2005). «Analysis of risk of bleeding complications after different doses of aspirin in 192,036 patients enrolled in 31 randomized controlled trials.» *Am J Cardiol* 95(10): 1218-22.
- Seto, T. B., D. A. Taira and W. J. Manning (1999). «Cardioversion in patients with atrial fibrillation and left atrial thrombi on initial transesophageal echocardiography: should transesophageal echocardiography be repeated before elective cardioversion? A cost-effectiveness analysis.» *J Am Soc Echocardiogr* 12(6): 508-16.
- Shireman, T. I., J. D. Mahnken, P. A. Howard, T. F. Kresowik, Q. Hou and E. F. Ellerbeck (2006). «Development of a contemporary bleeding risk model for elderly warfarin recipients.» *Chest* 130(5): 1390-6.
- Sievert, H., M. D. Lesh, T. Trepels, H. Omran, A. Bartorelli,

- P. Della Bella, T. Nakai, M. Reisman, C. DiMario, P. Block, P. Kramer, D. Fleschenberg, U. Krumsdorf and D. Scherer (2002). «Percutaneous left atrial appendage transcatheter occlusion to prevent stroke in high-risk patients with atrial fibrillation: early clinical experience.» *Circulation* 105(16): 1887-9.
- Singer, D. E., Y. Chang, M. C. Fang, L. H. Borowsky, N. K. Pomernacki, N. Udaltsova and A. S. Go (2009). «Should patient characteristics influence target anticoagulation intensity for stroke prevention in nonvalvular atrial fibrillation?: the ATRIA study.» *Circ Cardiovasc Qual Outcomes* 2(4): 297-304.
- Siu, C. W., M. H. Jim, H. H. Ho, R. Miu, S. W. Lee, C. P. Lau and H. F. Tse (2007). «Transient atrial fibrillation complicating acute inferior myocardial infarction: implications for future risk of ischemic stroke.» *Chest* 132(1): 44-9.
- Siu, C. W., V. Pong, X. Zhang, Y. H. Chan, M. H. Jim, S. Liu, K. H. Yiu, A. W. Kung, C. P. Lau and H. F. Tse (2009). «Risk of ischemic stroke after new-onset atrial fibrillation in patients with hyperthyroidism.» *Heart Rhythm* 6(2): 169-73.
- Sorensen, R., M. L. Hansen, S. Z. Abildstrom, A. Hvelplund, C. Andersson, C. Jorgensen, J. K. Madsen, P. R. Hansen, L. Kober, C. Torp-Pedersen and G. H. Gislason (2009). «Risk of bleeding in patients with acute myocardial infarction treated with different combinations of aspirin, clopidogrel, and vitamin K antagonists in Denmark: a retrospective analysis of nationwide registry data.» *Lancet* 374(9706): 1967-74.
- Stellbrink, C., U. Nixdorff, T. Hofmann, W. Lehmacher, W. G. Daniel, P. Hanrath, C. Geller, A. Mugge, W. Sehnert, C. Schmidt-Lucke and J. A. Schmidt-Lucke (2004). «Safety and efficacy of enoxaparin compared with unfractionated heparin and oral anticoagulants for prevention of thromboembolic complications in cardioversion of nonvalvular atrial fibrillation: the Anticoagulation in Cardioversion using Enoxaparin (ACE) trial.» *Circulation* 109(8): 997-1003.
- Stenestrand, U., J. Lindback and L. Wallentin (2005). «Anticoagulation therapy in atrial fibrillation in combination with acute myocardial infarction influences long-term outcome: a prospective cohort study from the Register of Information and Knowledge About Swedish Heart Intensive Care Admissions (RIKS-HIA).» *Circulation* 112(21): 3225-31.
- Stroke in AF working group (1994). «Risk factors for stroke and efficacy of antithrombotic therapy in atrial fibrillation. Analysis of pooled data from five randomized controlled trials.» *Arch Intern Med* 154(13): 1449-57.
- Stroke in AF working group (1998). «Echocardiographic predictors of stroke in patients with atrial fibrillation: a prospective study of 1066 patients from 3 clinical trials.» *Arch Intern Med* 158(12): 1316-20.
- Stroke prevention in AF investigator. (1998). «Transesophageal echocardiographic correlates of thromboembolism in high-risk patients with nonvalvular atrial fibrillation. The Stroke Prevention in Atrial Fibrillation Investigators Committee on Echocardiography.» *Ann Intern Med* 128(8): 639-47.
- Stroke in AF Investigators (1993). «A differential effect of aspirin in prevention of stroke on atrial fibrillation. The Stroke Prevention in Atrial Fibrillation Investigators. » *J Stroke Cerebrovasc Dis* 3: 181-88.
- Stroke in AF working group Group (2007). «Independent predictors of stroke in patients with atrial fibrillation: a systematic review.» *Neurology* 69(6): 546-54.
- Stroke in AF working group Group (2008). «Comparison of 12 risk stratification schemes to predict stroke in patients with nonvalvular atrial fibrillation.» *Stroke* 39(6): 1901-10.
- Tsivgoulis, G., K. Spengos, N. Zakopoulos, E. Manios, V. Peppes and K. Vemmos (2005). «Efficacy of anticoagulation for secondary stroke prevention in older people with non-valvular atrial fibrillation: a prospective case series study.» *Age Ageing* 34(1): 35-40.
- van Walraven, C., R. G. Hart, S. Connolly, P. C. Austin, J. Mant, F. D. Hobbs, P. J. Koudstaal, P. Petersen, F. Perez-Gomez, J. A. Knottnerus, B. Boode, M. D. Ezekowitz and D. E. Singer (2009). «Effect of age on stroke prevention therapy in patients with atrial fibrillation: the atrial fibrillation investigators.» *Stroke* 40(4): 1410-6.
- Wallentin L, Yusuf S, Ezekowitz MD, Alings M, Flather M, Franzosi MG, Pais P, Dans A, Eikelboom J, Oldgren J, Pogue J, Reilly PA, Yang S, Connolly SJ. Efficacy and safety of dabigatran compared with warfarin at different levels of international normalised ratio control for stroke prevention in atrial fibrillation: an analysis of the RE-LY trial. *Lancet* 2010, published on line August 27th, doi 10.1016/S0140-6736(10)61194-4 [pii]10.1016/S0140-6736(10)61194-4.
- Zabalgaitia, M., J. L. Halperin, L. A. Pearce, J. L. Blackshear, R. W. Asinger and R. G. Hart (1998). «Transesophageal echocardiographic correlates of clinical risk of thromboembolism in nonvalvular atrial fibrillation. Stroke Prevention in Atrial Fibrillation III Investigators.» *J Am Coll Cardiol* 31(7): 1622-6.

Recommendations

- Gage, B. F., A. D. Waterman, W. Shannon, M. Boechler, M. W. Rich and M. J. Radford (2001). «Validation of clinical classification schemes for predicting stroke: results from the National Registry of Atrial Fibrillation.» *Jama* 285(22): 2864-70.
- Hart, R. G., L. A. Pearce and M. I. Aguilar (2007). «Adjusted-dose warfarin versus aspirin for preventing stroke in patients with atrial fibrillation.» *Ann Intern Med* 147(8): 590-2.
- Lip, G. Y., R. Nieuwlaet, R. Pisters, D. A. Lane and H. J. Crijns (2010). «Refining clinical risk stratification for predicting stroke and thromboembolism in atrial fibrillation using a novel risk factor-based approach: the euro heart survey on atrial fibrillation.» *Chest* 137(2): 263-72.
- Singer, D. E., G. W. Albers, J. E. Dalen, M. C. Fang, A. S. Go, J. L. Halperin, G. Y. Lip and W. J. Manning (2008). «Antithrombotic therapy in atrial fibrillation: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines (8th Edition).» *Chest* 133(6 Suppl): 546S-592S.

Recommendations

- Connolly, S. J., J. Pogue, et al. (2009). «Effect of clopidogrel added to aspirin in patients with atrial fibrillation.» *N Engl J Med* 360(20): 2066-2078.
- Stroke in AF working group (2007). «Independent predictors of stroke in patients with atrial fibrillation: a systematic review.» *Neurology* 69(6): 546-554.
- Fang, M. C., A. S. Go, et al. (2006). «Age and the risk of warfarin-associated hemorrhage: the anticoagulation and risk factors in atrial fibrillation study.» *J Am Geriatr Soc* 54(8): 1231-1236.
- Gage, B. F., A. D. Waterman, et al. (2001). «Validation of clinical classification schemes for predicting stroke: results from the National Registry of Atrial Fibrillation.» *Jama* 285(22): 2864-2870.
- Hart, R. G., L. A. Pearce, et al. (2007). «Adjusted-dose warfarin versus aspirin for preventing stroke in patients with atrial fibrillation.» *Ann Intern Med* 147(8): 590-592.
- Hughes, M. and G. Y. Lip (2008). «Stroke and thromboembolism in atrial fibrillation: a systematic review of stroke risk factors, risk stratification schema and cost effectiveness data.» *Thromb Haemostasis* 99(2): 295-304.
- Klein, A. L., R. A. Grimm, et al. (2001). «Use of transesophageal echocardiography to guide cardioversion in patients with atrial fibrillation.» *N Engl J Med* 344(19): 1411-1420.

- Lip, G. Y., K. Huber, et al. (2010). «Management of antithrombotic therapy in atrial fibrillation patients presenting with acute coronary syndrome and/or undergoing percutaneous coronary intervention/ stenting.» *Thromb Haemost* 103(1): 13-28.
- Lip, G. Y., R. Nieuwlaat, et al. (2010). «Refining clinical risk stratification for predicting stroke and thromboembolism in atrial fibrillation using a novel risk factor-based approach: the euro heart survey on atrial fibrillation.» *Chest* 137(2): 263-272.
- Mant, J., F. D. Hobbs, et al. (2007). «Warfarin versus aspirin for stroke prevention in an elderly community population with atrial fibrillation (the Birmingham Atrial Fibrillation Treatment of the Aged Study, BAFTA): a randomised controlled trial.» *Lancet* 370(9586): 493-503.
- Pisters, R., D. A. Lane, et al. (2010). «A novel user-friendly score (HAS-BLED) to assess one-year risk of major bleeding in atrial fibrillation patients: The Euro Heart Survey.» *Chest* published on line March 18th, 2010, doi: chest.10-0134 [pii]10.1378/chest.10-0134
- Poldermans, D., J. J. Bax, et al. (2010). «Guidelines for pre-operative cardiac risk assessment and perioperative cardiac management in non-cardiac surgery: the Task Force for Preoperative Cardiac Risk Assessment and Perioperative Cardiac Management in Non-cardiac Surgery of the European Society of Cardiology (ESC) and endorsed by the European Society of Anaesthesiology (ESA).» *Eur J Anaesthesiol* 27(2): 92-137.
- Singer, D. E., G. W. Albers, et al. (2008). «Antithrombotic therapy in atrial fibrillation: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines (8th Edition).» *Chest* 133(6 Suppl): 546S-592S.
- Vahanian, A., H. Baumgartner, et al. (2007). «Guidelines on the management of valvular heart disease: The Task Force on the Management of Valvular Heart Disease of the European Society of Cardiology.» *Eur Heart J* 28(2): 230-268.

4.2 Rate and rhythm management

4.2.1 Acute rate and rhythm management (No additional references)

4.2.1.1 Acute Rate Control (No references)

4.2.1.2 Pharmacological Conversion

- Abi-Mansour, P., P. A. Carberry, R. J. McCowan, R. W. Henthorn, G. H. Dunn and K. T. Perry (1998). «Conversion efficacy and safety of repeated doses of ibutilide in patients with atrial flutter and atrial fibrillation. Study Investigators.» *Am Heart J* 136(4 Pt 1): 632-42.
- Alboni, P., G. L. Botto, N. Baldi, M. Luzi, V. Russo, L. Gianfranchi, P. Marchi, M. Calzolari, A. Solano, R. Baroffio and G. Gaggioli (2004). «Outpatient treatment of recent-onset atrial fibrillation with the «pill-in-the-pocket» approach.» *N Engl J Med* 351(23): 2384-91.
- Bianconi, L. and M. Mennuni (1998). «Comparison between propafenone and digoxin administered intravenously to patients with acute atrial fibrillation. PAFIT-3 Investigators. The Propafenone in Atrial Fibrillation Italian Trial.» *Am J Cardiol* 82(5): 584-8.
- Boriani, G., M. Biffi, A. Capucci, G. Botto, T. Broffoni, M. Ongari, G. Trisolino, I. Rubino, M. Sanguinetti, A. Branzi and B. Magnani (1998). «Conversion of recent-onset atrial fibrillation to sinus rhythm: effects of different drug protocols.» *Pacing Clin Electrophysiol* 21(11 Pt 2): 2470-4.
- Boriani, G., M. Biffi, A. Capucci, G. L. Botto, T. Broffoni, I. Rubino,

- S. Della Casa, M. Sanguinetti and B. Magnani (1997). «Oral propafenone to convert recent-onset atrial fibrillation in patients with and without underlying heart disease. A randomized, controlled trial.» *Ann Intern Med* 126(8): 621-5.
- Camm AJ, Capucci A, Hohnloser S, Torp-Pedersen C, Van Gelder IC, Mangal B, Beatch GN. A randomized active-controlled study comparing the efficacy and safety of vernakalant to amiodarone in recent onset atrial fibrillation. *J Am Coll Cardiol* 2010; in press.
- Capucci, A., T. Lenzi, G. Boriani, G. Trisolino, N. Binetti, M. Cavazza, G. Fontana and B. Magnani (1992). «Effectiveness of loading oral flecainide for converting recent-onset atrial fibrillation to sinus rhythm in patients without organic heart disease or with only systemic hypertension.» *Am J Cardiol* 70(1): 69-72.
- Chevalier, P., A. Durand-Dubief, H. Burri, M. Cucherat, G. Kirkorian and P. Touboul (2003). «Amiodarone versus placebo and class Ic drugs for cardioversion of recent-onset atrial fibrillation: a meta-analysis.» *J Am Coll Cardiol* 41(2): 255-262.
- DAAF study group (1997). «Intravenous digoxin in acute atrial fibrillation. Results of a randomized, placebo-controlled multicentre trial in 239 patients. The Digitalis in Acute Atrial Fibrillation (DAAF) Trial Group.» *Eur Heart J* 18(4): 649-54.
- Jordaens, L., J. Trouerbach, P. Calle, R. Tavernier, E. Derycke, P. Vertongen, B. Bergez and Y. Vandekerckhove (1997). «Conversion of atrial fibrillation to sinus rhythm and rate control by digoxin in comparison to placebo.» *Eur Heart J* 18(4): 643-8.
- Khan, I. A. (2001). «Single oral loading dose of propafenone for pharmacological cardioversion of recent-onset atrial fibrillation.» *J Am Coll Cardiol* 37(2): 542-7.
- Khan, I. A. (2003). «Oral loading single dose flecainide for pharmacological cardioversion of recent-onset atrial fibrillation.» *Int J Cardiol* 87(2-3): 121-8.
- Kondili, A., A. Kastrati and Y. Popa (1990). «Comparative evaluation of verapamil, flecainide and propafenone for the acute conversion of atrial fibrillation to sinus rhythm.» *Wien Klin Wochenschr* 102(17): 510-3.
- Kowey, P. R., P. Dorian, L. B. Mitchell, C. M. Pratt, D. Roy, P. J. Schwartz, J. Sadowski, D. Sobczyk, A. Bochenek and E. Toft (2009). «Vernakalant hydrochloride for the rapid conversion of atrial fibrillation after cardiac surgery: a randomized, double-blind, placebo-controlled trial.» *Circ Arrhythm Electrophysiol* 2(6): 652-659.
- Martinez-Marcos, F. J., J. L. Garcia-Garmendia, A. Ortega-Carpio, J. M. Fernandez-Gomez, J. M. Santos and C. Camacho (2000). «Comparison of intravenous flecainide, propafenone, and amiodarone for conversion of acute atrial fibrillation to sinus rhythm.» *Am J Cardiol* 86(9): 950-3.
- McNamara, R. L., L. J. Tamariz, J. B. Segal and E. B. Bass (2003). «Management of atrial fibrillation: review of the evidence for the role of pharmacologic therapy, electrical cardioversion, and echocardiography.» *Ann Intern Med* 139(12): 1018-33.
- Naccarelli, G. V., D. L. Wolbrette, L. Bhatta, M. Khan, J. Hynes, S. Samii and J. Luck (2003). «A review of clinical trials assessing the efficacy and safety of newer antiarrhythmic drugs in atrial fibrillation.» *J Interv Card Electrophysiol* 9(2): 215-22.
- Platia, E. V., E. L. Michelson, J. K. Porterfield and G. Das (1989). «Esmolol versus verapamil in the acute treatment of atrial fibrillation or atrial flutter.» *Am J Cardiol* 63(13): 925-9.
- Rehnqvist, N. (1981). «Clinical experience with intravenous metoprolol in supraventricular tachyarrhythmias. A multicentre study.» *Ann Clin Res* 13 Suppl 30: 68-72.
- Reisinger, J., E. Gatterer, G. Heinze, K. Wiesinger, E. Zeindlhofer, M. Gattermeier, G. Poelzl, H. Kratzer, A. Ebner, W. Hohenwallner, K. Lenz, J. Slany and P. Kuhn (1998). «Prospective comparison

- of flecainide versus sotalol for immediate cardioversion of atrial fibrillation.» *Am J Cardiol* 81(12): 1450-4.
- Reisinger, J., E. Gatterer, W. Lang, T. Vanicek, G. Eisserer, T. Bachleitner, C. Niemeth, F. Aicher, W. Grander, G. Heinze, P. Kuhn and P. Siostrzonek (2004). «Flecainide versus ibutilide for immediate cardioversion of atrial fibrillation of recent onset.» *Eur Heart J* 25(15): 1318-24.
- Roy, D., C. M. Pratt, C. Torp-Pedersen, D. G. Wyse, E. Toft, S. Juul-Moller, T. Nielsen, S. L. Rasmussen, I. G. Stiell, B. Coutu, J. H. Ip, E. L. Pritchett and A. J. Camm (2008). «Vernakalant hydrochloride for rapid conversion of atrial fibrillation: a phase 3, randomized, placebo-controlled trial.» *Circulation* 117(12): 1518-1525.
- Sihm, I., F. A. Hansen, J. Rasmussen, A. K. Pedersen and K. Thygesen (1990). «Flecainide acetate in atrial flutter and fibrillation. The arrhythmogenic effects.» *Eur Heart J* 11(2): 145-8.
- Slavik, R. S., J. E. Tisdale and S. Borzak (2001). «Pharmacologic conversion of atrial fibrillation: a systematic review of available evidence.» *Prog Cardiovasc Dis* 44(2): 121-52.
- Stamler, B. S., M. A. Wood and K. A. Ellenbogen (1997). «Antiarrhythmic actions of intravenous ibutilide compared with procainamide during human atrial flutter and fibrillation: electrophysiological determinants of enhanced conversion efficacy.» *Circulation* 96(12): 4298-306.
- Suttorp, M. J., J. H. Kingma, A. H. L. Lie and E. G. Mast (1989). «Intravenous flecainide versus verapamil for acute conversion of paroxysmal atrial fibrillation or flutter to sinus rhythm.» *Am J Cardiol* 63(11): 693-6.
- Vardas, P. E., G. E. Kochiadakis, N. E. Igoumenidis, A. M. Tsatsakis, E. N. Simantirakis and G. I. Chlouverakis (2000). «Amiodarone as a first-choice drug for restoring sinus rhythm in patients with atrial fibrillation: a randomized, controlled study.» *Chest* 117(6): 1538-1545.
- Volgman, A. S., P. A. Carberry, B. Stamler, W. R. Lewis, G. H. Dunn, K. T. Perry, J. T. Vanderlugt and P. R. Kowey (1998). «Conversion efficacy and safety of intravenous ibutilide compared with intravenous procainamide in patients with atrial flutter or fibrillation.» *J Am Coll Cardiol* 31(6): 1414-9.
- Recommendations**
- Alboni, P., G. L. Botto, N. Baldi, M. Luzi, V. Russo, L. Gianfranchi, P. Marchi, M. Calzolari, A. Solano, R. Baroffio and G. Gaggioli (2004). «Outpatient treatment of recent-onset atrial fibrillation with the «pill-in-the-pocket» approach.» *N Engl J Med* 351(23): 2384-2391.
- Bianconi, L., M. Mennuni, V. Lukic, A. Castro, M. Chieffi and M. Santini (1996). «Effects of oral propafenone administration before electrical cardioversion of chronic atrial fibrillation: a placebo-controlled study.» *J Am Coll Cardiol* 28(3): 700-706.
- Fetsch, T., P. Bauer, R. Engberding, H. P. Koch, J. Luki, T. Meinertz, M. Oeff, L. Seipel, H. J. Trappe, N. Treese and G. Breithardt (2004). «Prevention of atrial fibrillation after cardioversion: results of the PAFAC trial.» *Eur Heart J* 25(16): 1385-1394.
- Gulamhusein, S., P. Ko, S. G. Carruthers and G. J. Klein (1982). «Acceleration of the ventricular response during atrial fibrillation in the Wolff-Parkinson-White syndrome after verapamil.» *Circulation* 65(2): 348-354.
- Kirchhof, P., L. Eckardt, P. Loh, K. Weber, R. J. Fischer, K. H. Seidl, D. Böcker, G. Breithardt, W. Haverkamp and M. Borggrefe (2002). «Anterior-posterior versus anterior-lateral electrode positions for external cardioversion of atrial fibrillation: a randomised trial.» *Lancet* 360(9342): 1275-1279.
- Manios, E. G., H. E. Mavrakis, E. M. Kanoupakis, E. M. Kallergis, D. N. Dermizaki, D. C. Kambouraki and P. E. Vardas (2003). «Effects of amiodarone and diltiazem on persistent atrial fibrillation conversion and recurrence rates: a randomized controlled study.» *Cardiovasc Drugs Ther* 17(1): 31-39.
- Oral, H., J. J. Souza, G. F. Michaud, B. P. Knight, R. Goyal, S. A. Strickberger and F. Morady (1999). «Facilitating transthoracic cardioversion of atrial fibrillation with ibutilide pretreatment.» *N Engl J Med* 340(24): 1849-1854.
- Reisinger, J., E. Gatterer, W. Lang, T. Vanicek, G. Eisserer, T. Bachleitner, C. Niemeth, F. Aicher, W. Grander, G. Heinze, P. Kuhn and P. Siostrzonek (2004). «Flecainide versus ibutilide for immediate cardioversion of atrial fibrillation of recent onset.» *Eur Heart J* 25(15): 1318-1324.
- Singh, B. N., S. N. Singh, D. J. Reda, X. C. Tang, B. Lopez, C. L. Harris, R. D. Fletcher, S. C. Sharma, J. E. Atwood, A. K. Jacobson, H. D. Lewis, Jr., D. W. Raisch and M. D. Ezekowitz (2005). «Amiodarone versus sotalol for atrial fibrillation.» *N Engl J Med* 352(18): 1861-1872.
- Stamler, B. S., M. A. Wood and K. A. Ellenbogen (1997). «Antiarrhythmic actions of intravenous ibutilide compared with procainamide during human atrial flutter and fibrillation: electrophysiological determinants of enhanced conversion efficacy.» *Circulation* 96(12): 4298-4306.
- ### 4.2.1.3 “Pill in the pocket” approach
- ### 4.2.1.4 DC Cardioversion
- Abergh, C. I. (1968). «Direct current countershock complications.» *Acta Med Scand* 183: 415-421.
- Botto GL, P. A., Bonini W, Broffoni T, Bonatti R. (1999). «External cardioversion of atrial fibrillation: role of paddle position on technique efficacy and energy requirements.» *Heart* 82: 726-730.
- de Luca, I., M. Sorino, L. De Luca, P. Colonna, B. Del Salvatore and L. Corliano (2005). «Pre- and post-cardioversion transesophageal echocardiography for brief anticoagulation therapy with enoxaparin in atrial fibrillation patients: a prospective study with a 1-year follow-up.» *Int J Cardiol* 102(3): 447-54.
- Cosio, F. G., E. Aliot, G. L. Botto, H. Heidbuchel, C. J. Geller, P. Kirchhof, J. C. De Haro, R. Frank, J. P. Villacastin, J. Vijgen and H. Crijns (2008). «Delayed rhythm control of atrial fibrillation may be a cause of failure to prevent recurrences: reasons for change to active antiarrhythmic treatment at the time of the first detected episode.» *Europace* 10(1): 21-27.
- Glover BM, W. S., McCann CJ, Moore MJ, Manoharan G, Dalzell GW, McAllister A, McClements B, McEneaney DJ, Trouton TG, Mathew TP, Adgey AA. (2008). «Biphasic energy selection for transthoracic cardioversion of atrial fibrillation. The BEST AF Trial.» *Heart Rhythm* 94: 884-887.
- Gorenk B, K. G., Goktekin O, Cavusoglu Y, Birdane A, Unalir A, Ata N, Timuralp B. (2003). «Long-short sequence may predict immediate recurrence of atrial fibrillation after external cardioversion.» *Europace* 5: 11-16.
- Gould L, P. S., Gomes GI, Chokshi AB. (1981). «Pacemaker failure following external defibrillation.» *Pacing Clin Electrophysiol* 4: 575-577.
- Gurevitz OT, A. N., Malouf JF, Chandrasekaran K, Rosales AG, Ballman KV, Hammill SC, White RD, Gersh BJ, Friedman PA. (2005). «Comparative efficacy of monophasic and biphasic waveforms for transthoracic cardioversion of atrial fibrillation and atrial flutter.» *Am Heart J* 149: 316-321.
- Kirchhof, P., J. Bax, C. Blomstrom-Lundquist, H. Calkins, A. J. Camm, R. Cappato, F. Cosio, H. Crijns, H. C. Diener, A. Goette, C. W. Israel, K. H. Kuck, G. Y. Lip, S. Nattel, R. L. Page, U. Ravens, U. Schotten, G. Steinbeck, P. Vardas, A. Waldo, K. Wegscheider, S. Willems and G. Breithardt (2009). «Early and comprehensive management of atrial fibrillation: executive summary of the

proceedings from the 2nd AFNET-EHRA consensus conference 'research perspectives in AF'.» *Eur Heart J* 30(24): 2969-77c.

Kirchhof, P., J. Bax, C. Blomstrom-Lundquist, H. Calkins, A. J. Camm, R. Cappato, F. Cosio, H. Crijns, H. C. Diener, A. Goette, C. W. Israel, K. H. Kuck, G. Y. Lip, S. Nattel, R. L. Page, U. Ravens, U. Schotten, G. Steinbeck, P. Vardas, A. Waldo, K. Wegscheider, S. Willems and G. Breithardt (2009). «Early and comprehensive management of atrial fibrillation: Proceedings from the 2nd AFNET/EHRA consensus conference on atrial fibrillation entitled 'research perspectives in atrial fibrillation'.» *Europace* 11(7): 860-85.

Kirchhof, P., L. Eckardt, P. Loh, K. Weber, R. J. Fischer, K. H. Seidl, D. Böcker, G. Breithardt, W. Haverkamp and M. Borggrefe (2002). «Anterior-posterior versus anterior-lateral electrode positions for external cardioversion of atrial fibrillation: a randomised trial.» *Lancet* 360(9342): 1275-9.

Klein, A. L., R. A. Grimm, R. D. Murray, C. Apperson-Hansen, R. W. Asinger, I. W. Black, R. Davidoff, R. Erbel, J. L. Halperin, D. A. Orsinelli, T. R. Porter and M. F. Stoddard (2001). «Use of transesophageal echocardiography to guide cardioversion in patients with atrial fibrillation.» *N Engl J Med* 344(19): 1411-20.

Klein, A. L., R. D. Murray and R. A. Grimm (2001). «Role of transesophageal echocardiography-guided cardioversion of patients with atrial fibrillation.» *J Am Coll Cardiol* 37(3): 691-704.

Kosior, D. A., B. Wozakowska-Kaplon, M. Jasik, M. Kiliszek, D. Rabczenko and G. Opolski (2005). «Amiodarone after unsuccessful direct-current cardioversion of persistent atrial fibrillation.» *Kardiologia* 63(6): 585-92; discussion 593-4.

Levine PA, B. S., Fletcher RD, Talbot P. (1983). «Adverse acute and chronic effects of electrical defibrillation and cardioversion on implanted unipolar cardiac pacing systems.» *Am Coll Cardiol* 1: 1413-1422.

Lown, B., R. Amarasinghem and J. Neumann (1962). «New method for termination cardiac arrhythmias: use of synchronized capacitor discharge.» *JAMA* 182: 548-555.

Lown B, K. R., Williams J. (1965). «Cardioversion and digitalis drugs: changed threshold to electric shock in digitalized animals.» *Circ Res* 17: 519-531.

Lown, B., M. Perlroth, S. Kaidbey, T. Abe and D. E. Harken (1963). «Cardioversion of atrial fibrillation. A report on the treatment of 65 episodes in 59 patients.» *N Engl J Med* 269: 325-31.

Mittal, S., S. Ayati, K. M. Stein, D. Schwartzman, D. Cavlovich, P. J. Tchou, S. M. Markowitz, D. J. Slotwiner, M. A. Scheiner and B. B. Lerman (2000). «Transthoracic cardioversion of atrial fibrillation: comparison of rectilinear biphasic versus damped sine wave monophasic shocks.» *Circulation* 101(11): 1282-7.

Seto, T. B., D. A. Taira and W. J. Manning (1999). «Cardioversion in patients with atrial fibrillation and left atrial thrombi on initial transesophageal echocardiography: should transesophageal echocardiography be repeated before elective cardioversion? A cost-effectiveness analysis.» *J Am Soc Echocardiogr* 12(6): 508-16.

Timmermans C, R. L., Smeets JL, Wellens HJ. (1998). «Immediate reinitiation of atrial fibrillation following internal atrial defibrillation.» *J Cardiovasc Electrophysiol* 9: 122-128.

Van Noord, T., I. C. Van Gelder and H. J. Crijns (2002). «How to enhance acute outcome of electrical cardioversion by drug therapy: importance of immediate reinitiation of atrial fibrillation.» *J Cardiovasc Electrophysiol* 13(8): 822-5.

Varounis C, D. N., Maounis T, Panagiotakos D, Cokkinos DV (2007). «Atrial premature complexes and heart rate have prognostic significance in 1-month atrial fibrillation recurrence after electrical cardioversion.» *Europace* 9: 633-637.

Recommendations

Bianconi, L., M. Mennuni, V. Lukic, A. Castro, M. Chieffi and M. Santini (1996). «Effects of oral propafenone administration before electrical cardioversion of chronic atrial fibrillation: a placebo-controlled study.» *J Am Coll Cardiol* 28(3): 700-6.

Capucci, A., G. Q. Villani, D. Aschieri, A. Rosi and M. F. Piepoli (2000). «Oral amiodarone increases the efficacy of direct-current cardioversion in restoration of sinus rhythm in patients with chronic atrial fibrillation.» *Eur Heart J* 21(1): 66-73.

Chew, H. C. and S. H. Lim (2007). «Broad complex atrial fibrillation.» *Am J Emerg Med* 25(4): 459-63.

Fetsch, T., P. Bauer, R. Engberding, H. P. Koch, J. Lukl, T. Meinertz, M. Oeff, L. Seipel, H. J. Trappe, N. Treese and G. Breithardt (2004). «Prevention of atrial fibrillation after cardioversion: results of the PAFAC trial.» *Eur Heart J* 25(16): 1385-94.

Gulamhusein, S., P. Ko, S. G. Carruthers and G. J. Klein (1982). «Acceleration of the ventricular response during atrial fibrillation in the Wolff-Parkinson-White syndrome after verapamil.» *Circulation* 65(2): 348-54.

Kirchhof, P., L. Eckardt, P. Loh, K. Weber, R. J. Fischer, K. H. Seidl, D. Böcker, G. Breithardt, W. Haverkamp and M. Borggrefe (2002). «Anterior-posterior versus anterior-lateral electrode positions for external cardioversion of atrial fibrillation: a randomised trial.» *Lancet* 360(9342): 1275-9.

Manios, E. G., H. E. Mavrakis, E. M. Kanoupakis, E. M. Kallergis, D. N. Dermitzaki, D. C. Kambouraki and P. E. Vardas (2003). «Effects of amiodarone and diltiazem on persistent atrial fibrillation conversion and recurrence rates: a randomized controlled study.» *Cardiovasc Drugs Ther* 17(1): 31-9.

Schatz, I., G. J. Ordog, R. Karody and V. Bhasin (1987). «Wolff-Parkinson-White syndrome presenting in atrial fibrillation.» *Ann Emerg Med* 16(5): 574-8.

Singh, B. N., S. N. Singh, D. J. Reda, X. C. Tang, B. Lopez, C. L. Harris, R. D. Fletcher, S. C. Sharma, J. E. Atwood, A. K. Jacobson, H. D. Lewis, Jr., D. W. Raisch and M. D. Ezekowitz (2005). «Amiodarone versus sotalol for atrial fibrillation.» *N Engl J Med* 352(18): 1861-72.

Vijayalakshmi, K., V. J. Whittaker, A. Sutton, P. Campbell, R. A. Wright, J. A. Hall, A. A. Harcombe, N. J. Linker, M. J. Stewart, A. Davies and M. A. de Belder (2006). «A randomized trial of prophylactic antiarrhythmic agents (amiodarone and sotalol) in patients with atrial fibrillation for whom direct current cardioversion is planned.» *Am Heart J* 151(4): 863 e1-6.

4.3 Long-term Management

4.3.1 Rate and Rhythm Control

AFFIRM Investigators. (2002). «A comparison of rate control and rhythm control in patients with atrial fibrillation.» *N Engl J Med* 347: 1825-1833.

Carlsson, J., S. Miketic, J. Windeler, A. Cuneo, S. Haun, S. Micus, S. Walter, U. Tebbe and S. Investigators (2003). «Randomized trial of rate-control versus rhythm-control in persistent atrial fibrillation.» *J Am Coll Cardiol* 41: 1690-6.

Corley, S. D., A. E. Epstein, J. P. DiMarco, M. J. Domanski, N. Geller, H. L. Greene, R. A. Josephson, J. C. Kellen, R. C. Klein, A. D. Krahn, M. Mickel, L. B. Mitchell, J. D. Nelson, Y. Rosenberg, E. Schron, L. Shemanski, A. L. Waldo and D. G. Wyse (2004). «Relationships between sinus rhythm, treatment, and survival in the Atrial Fibrillation Follow-Up Investigation of Rhythm Management (AFFIRM) Study.» *Circulation* 109(12): 1509-13.

Cosio, F. G., E. Aliot, G. L. Botto, H. Heidbuchel, C. J. Geller, P. Kirchhof, J. C. De Haro, R. Frank, J. P. Villacastin, J. Vijgen and H. Crijns (2008). «Delayed rhythm control of atrial fibrillation

- may be a cause of failure to prevent recurrences: reasons for change to active antiarrhythmic treatment at the time of the first detected episode.» *Europace* 10(1): 21-7.
- Curtis, A. B., B. J. Gersh, S. D. Corley, J. P. DiMarco, M. J. Domanski, N. Geller, H. L. Greene, J. C. Kellen, M. Mickel, J. D. Nelson, Y. Rosenberg, E. Schron, L. Shemanski, A. L. Waldo and D. G. Wyse (2005). «Clinical factors that influence response to treatment strategies in atrial fibrillation: the Atrial Fibrillation Follow-up Investigation of Rhythm Management (AFFIRM) study.» *Am Heart J* 149(4): 645-9.
- Dorian, P., P. G. Guerra, C. R. Kerr, S. S. O'Donnell, E. Crystal, A. M. Gillis, L. B. Mitchell, D. Roy, A. C. Skanes, M. S. Rose and D. G. Wyse (2009). «Validation of a new simple scale to measure symptoms in atrial fibrillation: the Canadian Cardiovascular Society Severity in Atrial Fibrillation scale.» *Circ Arrhythm Electrophysiol* 2(3): 218-24.
- Dorian, P., W. Jung, D. Newman, M. Paquette, K. Wood, G. M. Ayers, J. Camm, M. Akhtar and B. Luderitz (2000). «The impairment of health-related quality of life in patients with intermittent atrial fibrillation: implications for the assessment of investigational therapy.» *J Am Coll Cardiol* 36(4): 1303-9.
- Gronefeld, G. C., J. Lilienthal, K. H. Kuck and S. H. Hohnloser (2003). «Impact of rate versus rhythm control on quality of life in patients with persistent atrial fibrillation. Results from a prospective randomized study.» *Eur Heart J* 24(15): 1430-6.
- Hagens, V. E., A. V. Ranchor, E. Van Sonderen, H. A. Bosker, O. Kamp, J. G. Tijssen, J. H. Kingma, H. J. Crijns and I. C. Van Gelder (2004). «Effect of rate or rhythm control on quality of life in persistent atrial fibrillation. Results from the Rate Control Versus Electrical Cardioversion (RACE) Study.» *J Am Coll Cardiol* 43(2): 241-7.
- Hagens, V. E., D. J. Van Veldhuisen, O. Kamp, M. Rienstra, H. A. Bosker, N. J. Veeger, J. G. P. Tijssen, H. J. Crijns and I. C. Van Gelder (2005). «Effect of rate and rhythm control on left ventricular function and cardiac dimensions in patients with persistent atrial fibrillation: Results from the RACE Control versus Electrical cardioversion for persistent atrial fibrillation (RACE) study.» *Heart Rhythm* 2: 19-24.
- Hohnloser, S. H., K. H. Kuck and J. Lilienthal (2000). «Rhythm or rate control in atrial fibrillation--Pharmacological Intervention in Atrial Fibrillation (PIAF): a randomised trial.» *Lancet* 356(9244): 1789-94.
- Hsu, L. F., P. Jais, P. Sanders, S. Garrigue, M. Hocini, F. Sacher, Y. Takahashi, M. Rotter, J. L. Pasquie, C. Scavee, P. Bordachar, J. Clementy and M. Haissaguerre (2004). «Catheter ablation for atrial fibrillation in congestive heart failure.» *N Engl J Med* 351(23): 2373-83.
- Jenkins, L. S., M. Brodsky, E. Schron, M. Chung, T. Rocco, Jr., E. Lader, M. Constantine, R. Sheppard, D. Holmes, D. Mateski, L. Floden, M. Prasun, H. L. Greene and L. Shemanski (2005). «Quality of life in atrial fibrillation: the Atrial Fibrillation Follow-up Investigation of Rhythm Management (AFFIRM) study.» *Am Heart J* 149(1): 112-20.
- Khan, M. N., P. Jais, J. Cummings, L. Di Biase, P. Sanders, D. O. Martin, J. Kautzner, S. Hao, S. Themistoclakis, R. Fanelli, D. Potenza, R. Massaro, O. Wazni, R. Schweikert, W. Saliba, P. Wang, A. Al-Ahmad, S. Beheiry, P. Santarelli, R. C. Starling, A. Dello Russo, G. Pelargonio, J. Brachmann, V. Schibgilla, A. Bonso, M. Casella, A. Raviele, M. Haissaguerre and A. Natale (2008). «Pulmonary-vein isolation for atrial fibrillation in patients with heart failure.» *N Engl J Med* 359(17): 1778-85.
- Kirchhof, P., A. Auricchio, J. Bax, H. Crijns, J. Camm, H. C. Diener, A. Goette, G. Hindricks, S. Hohnloser, L. Kappenberger, K. H. Kuck, G. Y. Lip, B. Olsson, T. Meinertz, S. Priori, U. Ravens, G. Steinbeck, E. Svernhage, J. Tijssen, A. Vincent and G. Breithardt (2007). «Outcome parameters for trials in atrial fibrillation: Recommendations from a consensus conference organized by the German Atrial Fibrillation Competence NETwork and the European Heart Rhythm Association.» *Europace* 9: 1006-23.
- Kirchhof, P., J. Bax, C. Blomstrom-Lundquist, H. Calkins, A. J. Camm, R. Cappato, F. Cosio, H. Crijns, H. C. Diener, A. Goette, C. W. Israel, K. H. Kuck, G. Y. Lip, S. Nattel, R. L. Page, U. Ravens, U. Schotten, G. Steinbeck, P. Vardas, A. Waldo, K. Wegscheider, S. Willems and G. Breithardt (2009). «Early and comprehensive management of atrial fibrillation: executive summary of the proceedings from the 2nd AFNET-EHRA consensus conference 'research perspectives in AF'.» *Eur Heart J* 30(24): 2969-77c.
- Opolski, G., A. Torbicki, D. A. Kosior, M. Szulc, B. Wozakowska-Kaplon, P. Kolodziej and P. Achremczyk (2004). «Rate control vs rhythm control in patients with nonvalvular persistent atrial fibrillation: the results of the Polish How to Treat Chronic Atrial Fibrillation (HOT CAFE) Study.» *Chest* 126(2): 476-86.
- Rienstra, M., I. C. Van Gelder, V. E. Hagens, N. J. Veeger, D. J. Van Veldhuisen and H. J. Crijns (2006). «Mending the rhythm does not improve prognosis in patients with persistent atrial fibrillation: a subanalysis of the RACE study.» *Eur Heart J* 27(3): 357-64.
- Roy, D., M. Talajic, S. Nattel, D. G. Wyse, P. Dorian, K. L. Lee, M. G. Bourassa, J. M. Arnold, A. E. Buxton, A. J. Camm, S. J. Connolly, M. Dubuc, A. Ducharme, P. G. Guerra, S. H. Hohnloser, J. Lambert, J. Y. Le Heuzey, G. O'Hara, O. D. Pedersen, J. L. Rouleau, B. N. Singh, L. W. Stevenson, W. G. Stevenson, B. Thibault and A. L. Waldo (2008). «Rhythm control versus rate control for atrial fibrillation and heart failure.» *N Engl J Med* 358(25): 2667-77.
- Schotten, U., S. Verheule, P. Kirchhof and A. Goette (2011). «Pathophysiological Mechanisms of Atrial Fibrillation - A Translational Appraisal.» *Physiol Rev* in press, will be published in the January 2011 issue.
- Singh, S. N., X. C. Tang, B. N. Singh, P. Dorian, D. J. Reda, C. L. Harris, R. D. Fletcher, S. C. Sharma, J. E. Atwood, A. K. Jacobson, H. D. Lewis, Jr., B. Lopez, D. W. Raisch and M. D. Ezekowitz (2006). «Quality of life and exercise performance in patients in sinus rhythm versus persistent atrial fibrillation: a Veterans Affairs Cooperative Studies Program Substudy.» *J Am Coll Cardiol* 48(4): 721-30.
- Thrall, G., D. Lane, D. Carroll and G. Y. Lip (2006). «Quality of life in patients with atrial fibrillation: a systematic review.» *Am J Med* 119(5): 448 e1-19.
- Van Gelder, I., V. E. Hagens, H. A. Bosker, H. Kingma, O. Kamp, T. Kingma, S. A. Said, J. I. Darmanata, A. J. M. Timmermans, J. G. P. Tijssen and H. J. Crijns (2002). «A comparison of rate control and rhythm control in patients with recurrent persistent atrial fibrillation.» *N Engl J Med* 347: 1834-1840.
- Van Gelder, I. C., H. J. Crijns, R. G. Tieleman, J. Bruggemann, P. J. De Kam, A. T. Gosselink, F. W. Verheugt and K. I. Lie (1996). «Chronic atrial fibrillation. Success of serial cardioversion therapy and safety of oral anticoagulation.» *Arch Intern Med* 156(22): 2585-92.

Recommendations

- Shelton, R. J., A. L. Clark, K. Goode, A. S. Rigby, T. Houghton, G. C. Kaye and J. G. Cleland (2009). «A randomised, controlled study of rate versus rhythm control in patients with chronic atrial fibrillation and heart failure: (CAFE-II Study).» *Heart* 95(11): 924-30.
- AFFIRM Investigators. (2002). «A comparison of rate control and rhythm control in patients with atrial fibrillation.» *N Engl J Med* 347: 1825-1833.
- Hsu, L. F., P. Jais, et al. (2004). «Catheter ablation for atrial

- fibrillation in congestive heart failure.» *N Engl J Med* 351(23): 2373-2383.
- Khan, M. N., P. Jais, et al. (2008). «Pulmonary-vein isolation for atrial fibrillation in patients with heart failure.» *N Engl J Med* 359(17): 1778-1785.
- Kirchhof, P., A. Auricchio, et al. (2007). «Outcome parameters for trials in atrial fibrillation: executive summary: Recommendations from a consensus conference organized by the German Atrial Fibrillation Competence NETwork (AFNET) and the European Heart Rhythm Association (EHRA).» *Eur Heart J* 28(22): 2803-2817.
- Roy, D., M. Talajic, et al. (2008). «Rhythm control versus rate control for atrial fibrillation and heart failure.» *N Engl J Med* 358(25): 2667-2677.
- Singh, B. N., S. N. Singh, et al. (2005). «Amiodarone versus sotalol for atrial fibrillation.» *N Engl J Med* 352(18): 1861-1872.
- Talajic, M., P. Khairy, et al. (2010). «Maintenance of sinus rhythm and survival in patients with heart failure and atrial fibrillation.» *J Am Coll Cardiol* 55(17): 1796-1802.
- Van Gelder, I., V. E. Hagens, et al. (2002). «A comparison of rate control and rhythm control in patients with recurrent persistent atrial fibrillation.» *N Engl J Med* 347: 1834-1840.
- Wilber, D. J., C. Pappone, et al. (2010). «Comparison of antiarrhythmic drug therapy and radiofrequency catheter ablation in patients with paroxysmal atrial fibrillation: a randomized controlled trial.» *JAMA* 303(4): 333-340.
- 4.3.2 Long-term Rate Control
(No additional references)**
- 4.3.3 Pharmacological Rate Control**
- AFFIRM Investigators. (2002). «A comparison of rate control and rhythm control in patients with atrial fibrillation.» *N Engl J Med* 347: 1825-1833.
- Ahmed, S., M. Rienstra, H. J. Crijns, T. P. Links, A. C. Wiesfeld, H. L. Hillege, H. A. Bosker, D. J. Lok, D. J. Van Veldhuisen and I. C. Van Gelder (2008). «Continuous vs episodic prophylactic treatment with amiodarone for the prevention of atrial fibrillation: a randomized trial.» *JAMA* 300(15): 1784-92.
- Clemo, H. F., M. A. Wood, D. M. Gilligan and K. A. Ellenbogen (1998). «Intravenous amiodarone for acute heart rate control in the critically ill patient with atrial tachyarrhythmias.» *Am J Cardiol* 81(5): 594-8.
- Cooper, H. A., D. A. Bloomfield, D. E. Bush, M. S. Katcher, M. Rawlins, J. D. Sacco and M. Chandler (2004). «Relation between achieved heart rate and outcomes in patients with atrial fibrillation (from the Atrial Fibrillation Follow-up Investigation of Rhythm Management [AFFIRM] Study).» *Am J Cardiol* 93(10): 1247-53.
- Davy, J.-M., M. Herold, C. Hoglund, A. Timmermans, A. M. Alings, D. Radzik and L. van Kempen (2008). «Dronedarone for the control of ventricular rate in permanent atrial fibrillation: The Efficacy and safety of dRonedArone for The cOntrol of ventricular rate during atrial fibrillation (ERATO) study.» *Am H J* 527: 527e1.-527e9.
- Farshi, R., D. Kistner, J. S. Sarma, J. A. Longmate and B. N. Singh (1999). «Ventricular rate control in chronic atrial fibrillation during daily activity and programmed exercise: a crossover open-label study of five drug regimens.» *J Am Coll Cardiol* 33(2): 304-10.
- Fuster, V., L. E. Ryden, D. S. Cannom, H. J. Crijns, A. B. Curtis, K. A. Ellenbogen, J. L. Halperin, J. Y. Le Heuzey, G. N. Kay, J. E. Lowe, S. B. Olsson, E. N. Prystowsky, J. L. Tamargo, S. Wann, S. C. Smith, Jr., A. K. Jacobs, C. D. Adams, J. L. Anderson, E. M. Antman, J. L. Halperin, S. A. Hunt, R. Nishimura, J. P. Ornato, R. L. Page, B. Riegel, S. G. Priori, J. J. Blanc, A. Budaj, A. J. Camm, V. Dean, J. W. Deckers, C. Despres, K. Dickstein, J. Lekakis, K. McGregor, M. Metra, J. Morais, A. Ostterspey, J. L. Tamargo and J. L. Zamorano (2006). «ACC/AHA/ESC 2006 guidelines for the management of patients with atrial fibrillation: full text: A report of the American College of Cardiology/American Heart Association Task Force on practice guidelines and the European Society of Cardiology Committee for Practice Guidelines (Writing Committee to Revise the 2001 Guidelines for the Management of Patients With Atrial Fibrillation) Developed in collaboration with the European Heart Rhythm Association and the Heart Rhythm Society.» *Europace* 8(9): 651-745.
- Gulamhusein, S., P. Ko and G. J. Klein (1983). «Ventricular fibrillation following verapamil in the Wolff-Parkinson-White syndrome.» *Am Heart J* 106(1 Pt 1): 145-7.
- Hou, Z. Y., M. S. Chang, C. Y. Chen, M. S. Tu, S. L. Lin, H. T. Chiang and R. L. Woosley (1995). «Acute treatment of recent-onset atrial fibrillation and flutter with a tailored dosing regimen of intravenous amiodarone. A randomized, digoxin-controlled study.» *Eur Heart J* 16(4): 521-8.
- Hsu, L. F., P. Jais, P. Sanders, S. Garrigue, M. Hocini, F. Sacher, Y. Takahashi, M. Rotter, J. L. Pasquie, C. Scavee, P. Bordachar, J. Clementy and M. Haissaguerre (2004). «Catheter ablation for atrial fibrillation in congestive heart failure.» *N Engl J Med* 351(23): 2373-83.
- Khan, M. N., P. Jais, J. Cummings, L. Di Biase, P. Sanders, D. O. Martin, J. Kautzner, S. Hao, S. Themistoclakis, R. Fanelli, D. Potenza, R. Massaro, O. Wazni, R. Schweikert, W. Saliba, P. Wang, A. Al-Ahmad, S. Beheiry, P. Santarelli, R. C. Starling, A. Dello Russo, G. Pelargonio, J. Brachmann, V. Schibgilla, A. Bonso, M. Casella, A. Raviele, M. Haissaguerre and A. Natale (2008). «Pulmonary-vein isolation for atrial fibrillation in patients with heart failure.» *N Engl J Med* 359(17): 1778-85.
- Khand, A. U., A. C. Rankin, W. Martin, J. Taylor, I. Gemmell and J. G. Cleland (2003). «Carvedilol alone or in combination with digoxin for the management of atrial fibrillation in patients with heart failure?» *J Am Coll Cardiol* 42(11): 1944-51.
- Kirchhof, P., A. Auricchio, J. Bax, H. Crijns, J. Camm, H. C. Diener, A. Goette, G. Hindricks, S. Hohnloser, L. Kappenberger, K. H. Kuck, G. Y. Lip, B. Olsson, T. Meinertz, S. Priori, U. Ravens, G. Steinbeck, E. Svernhage, J. Tijssen, A. Vincent and G. Breithardt (2007). «Outcome parameters for trials in atrial fibrillation: executive summary: Recommendations from a consensus conference organized by the German Atrial Fibrillation Competence NETwork (AFNET) and the European Heart Rhythm Association (EHRA).» *Eur Heart J* 28(22): 2803-2817.
- Lewis, R. V., J. McMurray and D. G. McDevitt (1989). «Effects of atenolol, verapamil, and xamoterol on heart rate and exercise tolerance in digitalised patients with chronic atrial fibrillation.» *J Cardiovasc Pharmacol* 13(1): 1-6.
- McGovern, B., H. Garan and J. N. Ruskin (1986). «Precipitation of cardiac arrest by verapamil in patients with Wolff-Parkinson-White syndrome.» *Ann Intern Med* 104(6): 791-4.
- Olshansky, B., L. E. Rosenfeld, A. L. Warner, A. J. Solomon, G. O'Neill, A. Sharma, E. Platia, G. K. Feld, T. Akiyama, M. A. Brodsky and H. L. Greene (2004). «The Atrial Fibrillation Follow-up Investigation of Rhythm Management (AFFIRM) study: approaches to control rate in atrial fibrillation.» *J Am Coll Cardiol* 43(7): 1201-8.
- Roy, D., M. Talajic, S. Nattel, D. G. Wyse, P. Dorian, K. L. Lee, M. G. Bourassa, J. M. Arnold, A. E. Buxton, A. J. Camm, S. J. Connolly, M. Dubuc, A. Ducharme, P. G. Guerra, S. H. Hohnloser, J. Lambert, J. Y. Le Heuzey, G. O'Hara, O. D. Pedersen, J. L.

- Rouleau, B. N. Singh, L. W. Stevenson, W. G. Stevenson, B. Thibault and A. L. Waldo (2008). «Rhythm control versus rate control for atrial fibrillation and heart failure.» *N Engl J Med* 358(25): 2667-77.
- Segal, J. B., R. L. McNamara, M. R. Miller, N. Kim, S. N. Goodman, N. R. Powe, K. Robinson, D. Yu and E. B. Bass (2000). «The evidence regarding the drugs used for ventricular rate control.» *J Fam Pract* 49(1): 47-59.
- Shelton, R. J., A. L. Clark, K. Goode, A. S. Rigby, T. Houghton, G. C. Kaye and J. G. Cleland (2009). «A randomised, controlled study of rate versus rhythm control in patients with chronic atrial fibrillation and heart failure: (CAFE-II Study).» *Heart* 95(11): 924-30.
- Singh, B. N., S. J. Connolly, H. J. Crijns, D. Roy, P. R. Kowey, A. Capucci, D. Radzik, E. M. Aliot and S. H. Hohnloser (2007). «Dronedarone for maintenance of sinus rhythm in atrial fibrillation or flutter.» *N Engl J Med* 357(10): 987-99.
- Tamariz, L. J. and E. B. Bass (2004). «Pharmacological rate control of atrial fibrillation.» *Cardiol Clin* 22(1): 35-45.
- Van Gelder, I., V. E. Hagens, H. A. Bosker, H. Kingma, O. Kamp, T. Kingma, S. A. Said, J. I. Darmanata, A. J. M. Timmermanns, J. G. P. Tijssen and H. J. Crijns (2002). «A comparison of rate control and rhythm control in patients with recurrent persistent atrial fibrillation.» *N Engl J Med* 347: 1834-1840.
- Van Gelder IC, Groenveld HF, Crijns HJ, Tuininga YS, Tijssen JG, Alings AM, Hillege HL, Bergsma-Kadijk JA, Cornel JH, Kamp O, Tukkie R, Bosker HA, Van Veldhuisen DJ, Van den Berg MP. Lenient versus strict rate control in patients with atrial fibrillation. *N Engl J Med* 2010;362(15):1363-73.
- ### Recommendations
- Davy, J. M., M. Herold, et al. (2008). «Dronedarone for the control of ventricular rate in permanent atrial fibrillation: the Efficacy and safety of dRonedArone for the cOntrol of ventricular rate during atrial fibrillation (ERATO) study.» *Am Heart J* 156(3): 527 e521-529.
- Gulamhusein, S., P. Ko, et al. (1982). «Acceleration of the ventricular response during atrial fibrillation in the Wolff-Parkinson-White syndrome after verapamil.» *Circulation* 65(2): 348-354.
- Hohnloser, S. H., H. J. Crijns, et al. (2009). «Effect of dronedarone on cardiovascular events in atrial fibrillation.» *N Engl J Med* 360(7): 668-678.
- Hou, Z. Y., M. S. Chang, et al. (1995). «Acute treatment of recent-onset atrial fibrillation and flutter with a tailored dosing regimen of intravenous amiodarone. A randomized, digoxin-controlled study.» *Eur Heart J* 16(4): 521-528.
- Murgatroyd, F. D., S. M. Gibson, et al. (1999). «Double-blind placebo-controlled trial of digoxin in symptomatic paroxysmal atrial fibrillation.» *Circulation* 99(21): 2765-2770.
- Redfearn, D. P., A. D. Krahn, et al. (2005). «Use of medications in Wolff-Parkinson-White syndrome.» *Expert Opin Pharmacother* 6(6): 955-963.
- Segal, J. B., R. L. McNamara, et al. (2000). «The evidence regarding the drugs used for ventricular rate control.» *J Fam Pract* 49(1): 47-59.
- Van Gelder, I. C., H. F. Groenveld, et al. (2010). «Lenient versus strict rate control in patients with atrial fibrillation.» *N Engl J Med* 362(15): 1363-1373.
- paroxysmal atrial fibrillation. Barcelona Discussion Group. Working Group on Arrhythmias of the European Society of Cardiology.» *Europace* 1(1): 8-13.
- Brignole, M., M. Gammage, E. Puggioni, P. Alboni, A. Raviele, R. Sutton, P. Vardas, M. G. Bongiorno, L. Bergfeldt, C. Menozzi and G. Musso (2005). «Comparative assessment of right, left, and biventricular pacing in patients with permanent atrial fibrillation.» *Eur Heart J* 26(7): 712-22.
- Brignole, M., L. Gianfranchi, C. Menozzi, P. Alboni, G. Musso, M. G. Bongiorno, M. Gasparini, A. Raviele, G. Lolli, N. Paparella and S. Acquareone (1997). «Assessment of atrioventricular junction ablation and DDDR mode-switching pacemaker versus pharmacological treatment in patients with severely symptomatic paroxysmal atrial fibrillation: a randomized controlled study.» *Circulation* 96(8): 2617-24.
- Brignole, M., C. Menozzi, L. Gianfranchi, G. Musso, R. Mureddu, N. Bottoni and G. Lolli (1998). «Assessment of atrioventricular junction ablation and VVIR pacemaker versus pharmacological treatment in patients with heart failure and chronic atrial fibrillation: a randomized, controlled study.» *Circulation* 98(10): 953-60.
- Cleland, J. G., J. C. Daubert, E. Erdmann, N. Freemantle, D. Gras, L. Kappenberger and L. Tavazzi (2005). «The effect of cardiac resynchronization on morbidity and mortality in heart failure.» *N Engl J Med* 352(15): 1539-49.
- de Teresa, E., J. J. Gomez-Doblas, G. Lamas, J. Alzueta, I. Fernandez-Lozano, E. Cobo, X. Navarro, F. Navarro-Lopez and M. Stockburger (2007). «Preventing ventricular dysfunction in pacemaker patients without advanced heart failure: rationale and design of the PREVENT-HF study.» *Europace* 9(6): 442-6.
- Doshi, R. N., E. G. Daoud, C. Fellows, K. Turk, A. Duran, M. H. Hamdan and L. A. Pires (2005). «Left ventricular-based cardiac stimulation post AV nodal ablation evaluation (the PAVE study).» *J Cardiovasc Electrophysiol* 16(11): 1160-5.
- Feld, G. K., R. P. Fleck, O. Fujimura, D. L. Prothro, T. D. Bahnson and M. Ibarra (1994). «Control of rapid ventricular response by radiofrequency catheter modification of the atrioventricular node in patients with medically refractory atrial fibrillation.» *Circulation* 90(5): 2299-307.
- Funck, R. C., J. J. Blanc, H. H. Mueller, C. Schade-Brittinger, C. Bailleul and B. Maisch (2006). «Biventricular stimulation to prevent cardiac desynchronization: rationale, design, and endpoints of the 'Biventricular Pacing for Atrioventricular Block to Prevent Cardiac Desynchronization (BioPace)' study.» *Europace* 8(8): 629-35.
- Gasparini, M., A. Auricchio, M. Metra, F. Regoli, C. Fantoni, B. Lamp, A. Curnis, J. Vogt and C. Klersy (2008). «Long-term survival in patients undergoing cardiac resynchronization therapy: the importance of performing atrio-ventricular junction ablation in patients with permanent atrial fibrillation.» *Eur Heart J* 29(13): 1644-52.
- Khan, M. N., P. Jais, J. Cummings, L. Di Biase, P. Sanders, D. O. Martin, J. Kautzner, S. Hao, S. Themistoclakis, R. Fanelli, D. Potenza, R. Massaro, O. Wazni, R. Schweikert, W. Saliba, P. Wang, A. Al-Ahmad, S. Beheiry, P. Santarelli, R. C. Starling, A. Dello Russo, G. Pelargonio, J. Brachmann, V. Schibgilla, A. Bonso, M. Casella, A. Raviele, M. Haissaguerre and A. Natale (2008). «Pulmonary-vein isolation for atrial fibrillation in patients with heart failure.» *N Engl J Med* 359(17): 1778-85.
- Leon, A. R., J. M. Greenberg, N. Kanuru, C. M. Baker, F. V. Mera, A. L. Smith, J. J. Langberg and D. B. DeLurgio (2002). «Cardiac resynchronization in patients with congestive heart failure and chronic atrial fibrillation: effect of upgrading to biventricular pacing after chronic right ventricular pacing.» *J Am Coll Cardiol* 39(8): 1258-63.
- ### 4.3.4 Atrioventricular node ablation and modification
- Brignole, M., M. Gammage, L. Jordaens and R. Sutton (1999). «Report of a study group on ablate and pace therapy for

Morady, F., C. Hasse, S. A. Strickberger, K. C. Man, E. Daoud, F. Bogun, R. Goyal, M. Harvey, B. P. Knight, R. Weiss and M. Bahu (1997). «Long-term follow-up after radiofrequency modification of the atrioventricular node in patients with atrial fibrillation.» *J Am Coll Cardiol* 29(1): 113-21.

Twidale, N., T. McDonald, K. Nave and A. Seal (1998). «Comparison of the effects of AV nodal ablation versus AV nodal modification in patients with congestive heart failure and uncontrolled atrial fibrillation.» *Pacing Clin Electrophysiol* 21(4 Pt 1): 641-51.

Wilkoff, B. L., J. R. Cook, A. E. Epstein, H. L. Greene, A. P. Hallstrom, H. Hsia, S. P. Kutalek and A. Sharma (2002). «Dual-chamber pacing or ventricular backup pacing in patients with an implantable defibrillator: the Dual Chamber and VVI Implantable Defibrillator (DAVID) Trial.» *JAMA* 288(24): 3115-23.

Williamson, B. D., K. C. Man, E. Daoud, M. Niebauer, S. A. Strickberger and F. Morady (1994). «Radiofrequency catheter modification of atrioventricular conduction to control the ventricular rate during atrial fibrillation.» *N Engl J Med* 331(14): 910-7.

Recommendations

Auricchio A, Metra M, Gasparini M, Lamp B, Klersy C, Curnis A, Fantoni C, Gronda E, Vogt J. Long-term survival of patients with heart failure and ventricular conduction delay treated with cardiac resynchronization therapy. *Am J Cardiol* 2007;99(2):232-8.

Dong K, Shen WK, Powell BD, Dong YX, Rea RF, Friedman PA, Hodge DO, Wiste HJ, Webster T, Hayes DL, Cha YM. Atrioventricular nodal ablation predicts survival benefit in patients with atrial fibrillation receiving cardiac resynchronization therapy. *Heart Rhythm* 2010 7(9):1240-5.

Gasparini M, Auricchio A, Metra M, Regoli F, Fantoni C, Lamp B, Curnis A, Vogt J, Klersy C. Long-term survival in patients undergoing cardiac resynchronization therapy: the importance of performing atrio-ventricular junction ablation in patients with permanent atrial fibrillation. *Eur Heart J* 2008;29(13):1644-52.

Ozcan C, Jahangir A, Friedman PA, Patel PJ, Munger TM, Rea RF, Lloyd MA, Packer DL, Hodge DO, Gersh BJ, Hammill SC, Shen WK. Long-term survival after ablation of the atrioventricular node and implantation of a permanent pacemaker in patients with atrial fibrillation. *N Engl J Med* 2001;344(14):1043-51.

Upadhyay GA, Choudhry NK, Auricchio A, Ruskin J, Singh JP. Cardiac resynchronization in patients with atrial fibrillation: a meta-analysis of prospective cohort studies. *J Am Coll Cardiol* 2008;52(15):1239-46.

Weerasooriya R, Davis M, Powell A, Szili-Torok T, Shah C, Whalley D, Kanagaratnam L, Heddle W, Leitch J, Perks A, Ferguson L, Bulsara M. The Australian intervention randomized control of rate in atrial fibrillation trial (AIRCRAFT). *J Am Coll Cardiol* 2003;41(10):1697-702.

4.3.5 Long-term rhythm control

4.3.5.1 Antiarrhythmic drugs to maintain sinus rhythm

Anderson, J. L., E. M. Gilbert, B. L. Alpert, R. W. Henthorn, A. L. Waldo, A. K. Bhandari, R. W. Hawkinson and E. L. Pritchett (1989). «Prevention of symptomatic recurrences of paroxysmal atrial fibrillation in patients initially tolerating antiarrhythmic therapy. A multicenter, double-blind, crossover study of flecainide and placebo with transtelephonic monitoring. Flecainide Supraventricular Tachycardia Study Group.» *Circulation* 80(6): 1557-70.

Bardy GH, Lee KL, Mark DB, Poole JE, Packer DL, Boineau R,

Domanski M, Troutman C, Anderson J, Johnson G, McNulty SE, Clapp-Channing N, Davidson-Ray LD, Fraulo ES, Fishbein DP, Luceri RM, Ip JH. Amiodarone or an implantable cardioverter-defibrillator for congestive heart failure. *N Engl J Med* 2005;352(3):225-37.

Blanc, J. J., C. Voinov and M. Maarek (1999). «Comparison of oral loading dose of propafenone and amiodarone for converting recent-onset atrial fibrillation. PARSIFAL Study Group.» *Am J Cardiol* 84(9): 1029-32.

Boriani, G., M. Biffi, A. Capucci, G. L. Botto, T. Broffoni, I. Rubino, S. Della Casa, M. Sanguinetti and B. Magnani (1997). «Oral propafenone to convert recent-onset atrial fibrillation in patients with and without underlying heart disease. A randomized, controlled trial.» *Ann Intern Med* 126(8): 621-5.

Camm AJ, Capucci A, Hohnloser S, Torp-Pedersen C, Van Gelder IC, Mangal B, Beatch GN. A randomized active-controlled study comparing the efficacy and safety of vernakalant to amiodarone in recent onset atrial fibrillation. *J Am Coll Cardiol* 2010;in press.

Clementy, J., M. N. Dulhoste, C. Laiter, I. Denjoy and P. Dos Santos (1992). «Flecainide acetate in the prevention of paroxysmal atrial fibrillation: a nine-month follow-up of more than 500 patients.» *Am J Cardiol* 70(5): 44A-49A.

Connolly, S. J. (1999). «Evidence-based analysis of amiodarone efficacy and safety.» *Circulation* 100(19): 2025-34.

Connolly, S. J., H. J. Crijns, C. Torp-Pedersen, M. van Eickels, C. Gaudin, R. L. Page and S. H. Hohnloser (2009). «Analysis of stroke in ATHENA: a placebo-controlled, double-blind, parallel-arm trial to assess the efficacy of dronedarone 400 mg BID for the prevention of cardiovascular hospitalization or death from any cause in patients with atrial fibrillation/atrial flutter.» *Circulation* 120(13): 1174-80.

Coplen, S. E., E. M. Antman, J. A. Berlin, P. Hewitt and T. C. Chalmers (1990). «Efficacy and safety of quinidine therapy for maintenance of sinus rhythm after cardioversion. A meta-analysis of randomized control trials.» *Circulation* 82(4): 1106-16.

Crijns, H. J., A. T. Gosselink, et al. (1996). «Propafenone versus disopyramide for maintenance of sinus rhythm after electrical cardioversion of chronic atrial fibrillation: a randomized, double-blind study. PRODIS Study Group.» *Cardiovasc Drugs Ther* 10(2): 145-152.

Echt, D. S., P. R. Liebson, L. B. Mitchell, R. W. Peters, D. Obias-Manno, A. H. Barker, D. Arensberg, A. Baker, L. Friedman, H. L. Greene and et al. (1991). «Mortality and morbidity in patients receiving encainide, flecainide, or placebo. The Cardiac Arrhythmia Suppression Trial.» *N Engl J Med* 324(12): 781-8.

Elming, H., B. Brendorp, S. Pehrson, O. D. Pedersen, L. Kober and C. Torp-Petersen (2004). «A benefit-risk assessment of class III antiarrhythmic agents.» *Expert Opin Drug Saf* 3(6): 559-77.

Fabritz, L. and P. Kirchhof (2010). «Predictable and less predictable unwanted cardiac drug effects: Individual pre-disposition and transient precipitating factors.» *Bas Clin Pharm Toxicol* 106: 263-268.

Fetsch, T., P. Bauer, R. Engberding, H. P. Koch, J. Lukl, T. Meinertz, M. Oeff, L. Seipel, H. J. Trappe, N. Treese and G. Breithardt (2004). «Prevention of atrial fibrillation after cardioversion: results of the PAFAC trial.» *Eur Heart J* 25(16): 1385-94.

Freemantle, N., S. Mitchell, M. Orme, L. Eckert and M. R. Reynolds (2009). «Morbidity and Mortality Associated With Anti-Arrhythmic Drugs in Atrial Fibrillation: A Systematic Review and Mixed Treatment Meta-Analysis (abstract).» *Circulation* 120: S691-2.

Haverkamp, W., G. Breithardt, A. J. Camm, M. J. Janse, M. R. Rosen, C. Antzelevitch, D. Escande, M. Franz, M. Malik, A. Moss and R. Shah (2000). «The potential for QT prolongation

- and proarrhythmia by non-antiarrhythmic drugs: clinical and regulatory implications. Report on a policy conference of the European Society of Cardiology.» *Eur Heart J* 21(15): 1216-31.
- Hohnloser, S. H., H. J. Crijns, M. van Eickels, C. Gaudin, R. L. Page, C. Torp-Pedersen and S. J. Connolly (2009). «Effect of dronedarone on cardiovascular events in atrial fibrillation.» *N Engl J Med* 360(7): 668-78.
- Hoy, S. M. and S. J. Keam (2009). «Dronedarone.» *Drugs* 69(12): 1647-63.
- Kääb, S., M. Hinterseer, M. Näbauer and G. Steinbeck (2003). «Sotalol testing unmasks altered repolarization in patients with suspected acquired long-QT-syndrome-a case-control pilot study using i.v. sotalol.» *Eur Heart J* 24(7): 649-57.
- Karlson, B. W., I. Torstensson, et al. (1988). «Disopyramide in the maintenance of sinus rhythm after electroconversion of atrial fibrillation. A placebo-controlled one-year follow-up study.» *Eur Heart J* 9(3): 284-290.
- Kirchhof, P., M. R. Franz, A. Bardai and A. M. Wilde (2009). «Giant T-U Waves Precede Torsades de Pointes in Long QT Syndrome A Systematic Electrocardiographic Analysis in Patients With Acquired and Congenital QT Prolongation.» *J Am Coll Cardiol* 54(2): 143-149.
- Kober, L., C. Torp-Pedersen, J. J. McMurray, O. Gotzsche, S. Levy, H. Crijns, J. Amlie and J. Carlsen (2008). «Increased mortality after dronedarone therapy for severe heart failure.» *N Engl J Med* 358(25): 2678-87.
- Kowey PR, Dorian P, Mitchell LB, Pratt CM, Roy D, Schwartz PJ, Sadowski J, Sobczyk D, Bochenek A, Toft E. Vernakalant hydrochloride for the rapid conversion of atrial fibrillation after cardiac surgery: a randomized, double-blind, placebo-controlled trial. *Circ Arrhythm Electrophysiol* 2009; 2(6):652-659.
- Kuhlkamp, V., A. Schirdewan, K. Stangl, M. Homberg, M. Ploch and O. A. Beck (2000). «Use of metoprolol CR/XL to maintain sinus rhythm after conversion from persistent atrial fibrillation: a randomized, double-blind, placebo-controlled study.» *J Am Coll Cardiol* 36(1): 139-46.
- Lafuente-Lafuente, C., S. Mouly, M. A. Longas-Tejero and J. F. Bergmann (2007). «Antiarrhythmics for maintaining sinus rhythm after cardioversion of atrial fibrillation.» *Cochrane Database Syst Rev*(4): CD005049.
- Lafuente-Lafuente, C., S. Mouly, M. A. Longas-Tejero, I. Mahe and J. F. Bergmann (2006). «Antiarrhythmic drugs for maintaining sinus rhythm after cardioversion of atrial fibrillation: a systematic review of randomized controlled trials.» *Arch Intern Med* 166(7): 719-28.
- Le Heuzey, J., G. M. De Ferrari, D. Radzik, M. Santini, J. Zhu and J. M. Davy (2010). «A Short-Term, Randomized, Double-Blind, Parallel-Group Study to Evaluate the Efficacy and Safety of Dronedarone versus Amiodarone in Patients with Persistent Atrial Fibrillation: The DIONYSOS Study.» *J Cardiovasc Electrophysiol* 2010; 21 : 597 - 605
- Lee, S. H., S. A. Chen, C. E. Chiang, C. T. Tai, Z. C. Wen, S. P. Wang and M. S. Chang (1996). «Comparisons of oral propafenone and quinidine as an initial treatment option in patients with symptomatic paroxysmal atrial fibrillation: a double-blind, randomized trial.» *J Intern Med* 239(3): 253-60.
- Levi, G., C. Proto and A. Rovetta (1973). «Double-blind evaluation of practolol and quinidine in the treatment of chronic atrial fibrillation.» *Cardiology* 58(6): 364-8.
- Lewalter, T. «Comparative efficacy of dronedarone and amiodarone for the maintenance of sinus rhythm in patients with atrial fibrillation.» *J Am Coll Cardiol* 55(10): 1051-2; author reply 1052-3.
- McNamara, R. L., E. B. Bass, M. R. Miller, J. B. Segal, S. N. Goodman, N. L. Kim, K. A. Robinson and N. R. Powe (2001). Management of new onset atrial fibrillation (evidence report/ Technology assessment), Agency for Healthcare Research and Quality: Publication No AHRQ 01-E026.
- Nasr, I. A., A. Bouzamondo, J. S. Hulot, O. Dubourg, J. Y. Le Heuzey and P. Lechat (2007). «Prevention of atrial fibrillation onset by beta-blocker treatment in heart failure: a meta-analysis.» *Eur Heart J* 28(4): 457-62.
- Patten, M., R. Maas, P. Bauer, B. Luderitz, F. Sonntag, M. Dlugniewski, R. Hatala, G. Opolski, H. W. Muller and T. Meinertz (2004). «Suppression of paroxysmal atrial tachyarrhythmias--results of the SOPAT trial.» *Eur Heart J* 25(16): 1395-404.
- Piccini, J. P., V. Hasselblad, E. D. Peterson, J. B. Washam, R. M. Califf and D. F. Kong (2009). «Comparative efficacy of dronedarone and amiodarone for the maintenance of sinus rhythm in patients with atrial fibrillation.» *J Am Coll Cardiol* 54(12): 1089-95.
- Pietersen, A. H. and H. Hellemann (1991). «Usefulness of flecainide for prevention of paroxysmal atrial fibrillation and flutter. Danish-Norwegian Flecainide Multicenter Study Group.» *Am J Cardiol* 67(8): 713-7.
- Roy, D., M. Talajic, P. Dorian, S. Connolly, M. J. Eisenberg, M. Green, T. Kus, J. Lambert, M. Dubuc, P. Gagne, S. Nattel and B. Thibault (2000). «Amiodarone to prevent recurrence of atrial fibrillation. Canadian Trial of Atrial Fibrillation Investigators.» *N Engl J Med* 342(13): 913-20.
- Roy D, Pratt CM, Torp-Pedersen C, Wyse DG, Toft E, Juul-Moller S, Nielsen T, Rasmussen SL, Stiell IG, Coutu B, Ip JH, Pritchett EL, Camm AJ. Vernakalant hydrochloride for rapid conversion of atrial fibrillation: a phase 3, randomized, placebo-controlled trial. *Circulation* 2008; 117(12):1518-1525.
- Singh, B. N., S. J. Connolly, H. J. Crijns, D. Roy, P. R. Kowey, A. Capucci, D. Radzik, E. M. Aliot and S. H. Hohnloser (2007). «Dronedarone for maintenance of sinus rhythm in atrial fibrillation or flutter.» *N Engl J Med* 357(10): 987-99.
- Singh, B. N., S. N. Singh, D. J. Reda, X. C. Tang, B. Lopez, C. L. Harris, R. D. Fletcher, S. C. Sharma, J. E. Atwood, A. K. Jacobson, H. D. Lewis, Jr., D. W. Raisch and M. D. Ezekowitz (2005). «Amiodarone versus sotalol for atrial fibrillation.» *N Engl J Med* 352(18): 1861-72.
- Singh, D., E. Cingolani, G. A. Diamon and S. Kaul (2010). «Dronedarone for atrial fibrillation: have we expanded the antiarrhythmic armamentarium.» *J Am Coll Cardiol* 55: 1569-76.
- Kirchhof, P., T. Fetsch, P. Hanrath, T. Meinertz, G. Steinbeck, W. Lehman and G. Breithardt (2005). «Targeted pharmacological reversal of electrical remodeling after cardioversion--rationale and design of the Flecainide Short-Long (Flec-SL) trial.» *Am Heart J* 150(5): 899, e1-e6.
- Sodermark, T., B. Jonsson, A. Olsson, L. Oro, H. Wallin, O. Edhag, A. Sjogren, M. Danielsson and G. Rosenhamer (1975). «Effect of quinidine on maintaining sinus rhythm after conversion of atrial fibrillation or flutter. A multicentre study from Stockholm.» *Br Heart J* 37(5): 486-92.
- Suttorp, M. J., J. H. Kingma, A. H. L. Lie and E. G. Mast (1989). «Intravenous flecainide versus verapamil for acute conversion of paroxysmal atrial fibrillation or flutter to sinus rhythm.» *Am J Cardiol* 63(11): 693-6.

Recommendations

- Crijns, H. J., A. T. Gosselink, et al. (1996). «Propafenone versus disopyramide for maintenance of sinus rhythm after electrical cardioversion of chronic atrial fibrillation: a randomized, double-blind study. PRODIS Study Group.» *Cardiovasc Drugs Ther* 10(2): 145-152.
- Fetsch, T., P. Bauer, et al. (2004). «Prevention of atrial fibrillation after cardioversion: results of the PAFAC trial.» *Eur Heart J* 25(16): 1385-1394.

- Hohnloser, S. H., H. J. Crijns, et al. (2009). «Effect of dronedarone on cardiovascular events in atrial fibrillation.» *N Engl J Med* 360(7): 668-678.
- Karlson, B. W., I. Torstensson, et al. (1988). «Disopyramide in the maintenance of sinus rhythm after electroconversion of atrial fibrillation. A placebo-controlled one-year follow-up study.» *Eur Heart J* 9(3): 284-290.
- Kober, L., C. Torp-Pedersen, et al. (2008). «Increased mortality after dronedarone therapy for severe heart failure.» *N Engl J Med* 358(25): 2678-2687.
- Lafuente-Lafuente, C., S. Mouly, et al. (2007). «Antiarrhythmics for maintaining sinus rhythm after cardioversion of atrial fibrillation.» *Cochrane Database Syst Rev*(4): CD005049.
- Piccini, J. P., V. Hasselblad, et al. (2009). «Comparative efficacy of dronedarone and amiodarone for the maintenance of sinus rhythm in patients with atrial fibrillation.» *J Am Coll Cardiol* 54(12): 1089-1095.
- Roy, D., M. Talajic, et al. (2000). «Amiodarone to prevent recurrence of atrial fibrillation. Canadian Trial of Atrial Fibrillation Investigators.» *N Engl J Med* 342(13): 913-920.
- Singh, B. N., S. J. Connolly, et al. (2007). «Dronedarone for maintenance of sinus rhythm in atrial fibrillation or flutter.» *N Engl J Med* 357(10): 987-999.
- Singh, B. N., S. N. Singh, et al. (2005). «Amiodarone versus sotalol for atrial fibrillation.» *N Engl J Med* 352(18): 1861-1872.
- Singh, D., E. Cingolani, et al. (2010). «Dronedarone for atrial fibrillation: have we expanded the antiarrhythmic armamentarium.» *J Am Coll Cardiol* 55: 1569-1576.
- Singh, S. N., R. D. Fletcher, et al. (1995). «Amiodarone in patients with congestive heart failure and asymptomatic ventricular arrhythmia. Survival Trial of Antiarrhythmic Therapy in Congestive Heart Failure.» *N Engl J Med* 333(2): 77-82.
- Van Gelder, I. C., H. J. Crijns, et al. (1989). «Efficacy and safety of flecainide acetate in the maintenance of sinus rhythm after electrical cardioversion of chronic atrial fibrillation or atrial flutter.» *Am J Cardiol* 64(19): 1317-1321.
- ### 4.3.5.2 Left atrial catheter ablation
- Ahmed, H., P. Neuzil, A. d'Avila, Y. M. Cha, M. Laragy, K. Mares, W. R. Brugge, D. G. Forcione, J. N. Ruskin, D. L. Packer and V. Y. Reddy (2009). «The esophageal effects of cryoenergy during cryoablation for atrial fibrillation.» *Heart Rhythm* 6(7): 962-9.
- Arentz, T., R. Weber, G. Burkle, C. Herrera, T. Blum, J. Stockinger, J. Minners, F. J. Neumann and D. Kalusche (2007). «Small or large isolation areas around the pulmonary veins for the treatment of atrial fibrillation? Results from a prospective randomized study.» *Circulation* 115(24): 3057-63.
- Blanc, J. J., J. Almendral, M. Brignole, M. Fatemi, K. Gjesdal, E. Gonzalez-Torrecilla, P. Kulakowski, G. Y. Lip, D. Shah and C. Wolpert (2008). «Consensus document on antithrombotic therapy in the setting of electrophysiological procedures.» *Europace* 10(5): 513-527.
- Calkins, H., J. Brugada, D. L. Packer, R. Cappato, S. A. Chen, H. J. Crijns, R. J. Damiano, Jr., D. W. Davies, D. E. Haines, M. Haissaguerre, Y. Iesaka, W. Jackman, P. Jais, H. Kottkamp, K. H. Kuck, B. D. Lindsay, F. E. Marchlinski, P. M. McCarthy, J. L. Mont, F. Morady, K. Nademanee, A. Natale, C. Pappone, E. Prystowsky, A. Raviele, J. N. Ruskin, R. J. Shemin, H. Calkins, J. Brugada, S. A. Chen, E. N. Prystowsky, K. H. Kuck, A. Natale, D. E. Haines, F. E. Marchlinski, H. Calkins, D. W. Davies, B. D. Lindsay, P. M. McCarthy, D. L. Packer, R. Cappato, H. J. Crijns, R. J. Damiano, Jr., M. Haissaguerre, W. M. Jackman, P. Jais, Y. Iesaka, H. Kottkamp, L. Mont, F. Morady, K. Nademanee, C. Pappone, A. Raviele, J. N. Ruskin and R. J. Shemin (2007). «HRS/EHRA/ECAS Expert Consensus Statement on Catheter and Surgical Ablation of Atrial Fibrillation: Recommendations for Personnel, Policy, Procedures and Follow-Up: A report of the Heart Rhythm Society (HRS) Task Force on Catheter and Surgical Ablation of Atrial Fibrillation Developed in partnership with the European Heart Rhythm Association (EHRA) and the European Cardiac Arrhythmia Society (ECAS); in collaboration with the American College of Cardiology (ACC), American Heart Association (AHA), and the Society of Thoracic Surgeons (STS). Endorsed and Approved by the governing bodies of the American College of Cardiology, the American Heart Association, the European Cardiac Arrhythmia Society, the European Heart Rhythm Association, the Society of Thoracic Surgeons, and the Heart Rhythm Society.» *Europace* 9(6): 335-79.
- Calkins, H., M. R. Reynolds, P. Spector, M. Sondhi, Y. Xu, A. Martin, C. J. Williams and I. Sledge (2009). «Treatment of atrial fibrillation with antiarrhythmic drugs or radiofrequency ablation: two systematic literature reviews and meta-analyses.» *Circ Arrhythm Electrophysiol* 2(4): 349-61.
- Cappato, R., H. Calkins, S. A. Chen, W. Davies, Y. Iesaka, J. Kalman, Y. H. Kim, G. Klein, A. Natale, D. Packer and A. Skanes (2009). «Prevalence and causes of fatal outcome in catheter ablation of atrial fibrillation.» *J Am Coll Cardiol* 53(19): 1798-803.
- Cappato, R., H. Calkins, S. A. Chen, W. Davies, Y. Iesaka, J. Kalman, Y. H. Kim, G. Klein, D. Packer and A. Skanes (2005). «Worldwide survey on the methods, efficacy, and safety of catheter ablation for human atrial fibrillation.» *Circulation* 111(9): 1100-5.
- Chae, S., H. Oral, E. Good, S. Dey, A. Wimmer, T. Crawford, D. Wells, J. F. Sarrazin, N. Chalfoun, M. Kuhne, J. Fortino, E. Huether, T. Lemerand, F. Pelosi, F. Bogun, F. Morady and A. Chugh (2007). «Atrial tachycardia after circumferential pulmonary vein ablation of atrial fibrillation: mechanistic insights, results of catheter ablation, and risk factors for recurrence.» *J Am Coll Cardiol* 50(18): 1781-7.
- Chen, J., P. I. Hoff, K. S. Erga, O. Rossvoll and O. J. Ohm (2005). «A clinical study of patients with and without recurrence of paroxysmal atrial fibrillation after pulmonary vein isolation.» *Pacing Clin Electrophysiol* 28 Suppl 1: S86-9.
- Chierchia, G. B., C. de Asmundis, S. A. Muller-Burri, A. Sarkozy, L. Capulzini, G. Paparella, S. Chierchia, M. Roos and P. Brugada (2009). «Early recovery of pulmonary vein conduction after cryoballoon ablation for paroxysmal atrial fibrillation: a prospective study.» *Europace* 11(4): 445-9.
- Crawford, T. C., A. Wimmer, S. Dey, N. Chalfoun, D. Wells, J. F. Sarrazin, M. Kuhne, M. Frederick, K. Jongnarangsin, E. Good, A. Chugh, F. Bogun, F. Pelosi, Jr., F. Morady and H. Oral (2008). «Mechanism of recurrence after radiofrequency catheter ablation of atrial fibrillation guided by complex fractionated atrial electrograms.» *J Interv Card Electrophysiol* 21(1): 27-33.
- Danik, S., P. Neuzil, A. d'Avila, Z. J. Malchano, S. Kralovec, J. N. Ruskin and V. Y. Reddy (2008). «Evaluation of catheter ablation of periatrial ganglionic plexi in patients with atrial fibrillation.» *Am J Cardiol* 102(5): 578-83.
- Deisenhofer, I., H. Estner, T. Reents, S. Fichtner, A. Bauer, J. Wu, C. Kolb, B. Zrenner, C. Schmitt and G. Hessling (2009). «Does electrogram guided substrate ablation add to the success of pulmonary vein isolation in patients with paroxysmal atrial fibrillation? A prospective, randomized study.» *J Cardiovasc Electrophysiol* 20(5): 514-21.
- Ernst, S., F. Ouyang, F. Lober, M. Antz and K. H. Kuck (2003). «Catheter-induced linear lesions in the left atrium in patients with atrial fibrillation: an electroanatomic study.» *J Am Coll Cardiol* 42(7): 1271-82.
- Estner, H. L., G. Hessling, G. Ndrepepa, A. Luik, C. Schmitt, A. Konietzko, E. Ucer, J. Wu, C. Kolb, A. Pflaumer, B. Zrenner and

- I. Deisenhofer (2008). «Acute effects and long-term outcome of pulmonary vein isolation in combination with electrogram-guided substrate ablation for persistent atrial fibrillation.» *Am J Cardiol* 101(3): 332-7.
- Gerstenfeld, E. P., D. J. Callans, S. Dixit, A. M. Russo, H. Nayak, D. Lin, W. Pulliam, S. Siddique and F. E. Marchlinski (2004). «Mechanisms of organized left atrial tachycardias occurring after pulmonary vein isolation.» *Circulation* 110(11): 1351-7.
- Haissaguerre, M., P. Jais, D. C. Shah, T. Arentz, D. Kalusche, A. Takahashi, S. Garrigue, M. Hocini, J. T. Peng and J. Clementy (2000). «Catheter ablation of chronic atrial fibrillation targeting the reinitiating triggers.» *J Cardiovasc Electrophysiol* 11(1): 2-10.
- Haissaguerre, M., P. Jais, D. C. Shah, A. Takahashi, M. Hocini, G. Quiniou, S. Garrigue, A. LeMouroux, P. LeMetayer and J. Clementy (1998). «Spontaneous initiation of atrial fibrillation by ectopic beats originating in the pulmonary veins.» *N Engl J Med* 339: 659-666.
- Haissaguerre, M., P. Sanders, M. Hocini, L. F. Hsu, D. C. Shah, C. Scavee, Y. Takahashi, M. Rotter, J. L. Pasquie, S. Garrigue, J. Clementy and P. Jais (2004). «Changes in atrial fibrillation cycle length and inducibility during catheter ablation and their relation to outcome.» *Circulation* 109(24): 3007-13.
- Haissaguerre, M., P. Sanders, M. Hocini, Y. Takahashi, M. Rotter, F. Sacher, T. Rostock, L. F. Hsu, P. Bordachar, S. Reuter, R. Roudaut, J. Clementy and P. Jais (2005). «Catheter ablation of long-lasting persistent atrial fibrillation: critical structures for termination.» *J Cardiovasc Electrophysiol* 16(11): 1125-37.
- Haissaguerre, M., D. C. Shah, P. Jais, M. Hocini, T. Yamane, I. Deisenhofer, M. Chauvin, S. Garrigue and J. Clementy (2000). «Electrophysiological breakthroughs from the left atrium to the pulmonary veins.» *Circulation* 102(20): 2463-5.
- Hocini, M., P. Jais, P. Sanders, Y. Takahashi, M. Rotter, T. Rostock, L. F. Hsu, F. Sacher, S. Reuter, J. Clementy and M. Haissaguerre (2005). «Techniques, evaluation, and consequences of linear block at the left atrial roof in paroxysmal atrial fibrillation: a prospective randomized study.» *Circulation* 112(24): 3688-96.
- Hou, Y., B. J. Scherlag, J. Lin, Y. Zhang, Z. Lu, K. Truong, E. Patterson, R. Lazzara, W. M. Jackman and S. S. Po (2007). «Ganglionated plexi modulate extrinsic cardiac autonomic nerve input: effects on sinus rate, atrioventricular conduction, refractoriness, and inducibility of atrial fibrillation.» *J Am Coll Cardiol* 50(1): 61-8.
- Hsu, L. F., P. Jais, P. Sanders, S. Garrigue, M. Hocini, F. Sacher, Y. Takahashi, M. Rotter, J. L. Pasquie, C. Scavee, P. Bordachar, J. Clementy and M. Haissaguerre (2004). «Catheter ablation for atrial fibrillation in congestive heart failure.» *N Engl J Med* 351(23): 2373-83.
- Jais, P., B. Cauchemez, L. Macle, E. Daoud, P. Khairy, R. Subbiah, M. Hocini, F. Extramiana, F. Sacher, P. Bordachar, G. Klein, R. Weerasooriya, J. Clementy and M. Haissaguerre (2008). «Catheter ablation versus antiarrhythmic drugs for atrial fibrillation: the A4 study.» *Circulation* 118(24): 2498-505.
- Jais, P., M. Hocini, L. F. Hsu, P. Sanders, C. Scavee, R. Weerasooriya, L. Macle, F. Raybaud, S. Garrigue, D. C. Shah, P. Le Metayer, J. Clementy and M. Haissaguerre (2004). «Technique and results of linear ablation at the mitral isthmus.» *Circulation* 110(19): 2996-3002.
- Jais, P., D. C. Shah, M. Haissaguerre, A. Takahashi, T. Lavergne, M. Hocini, S. Garrigue, S. S. Barold, P. Le Metayer and J. Clementy (1999). «Efficacy and safety of septal and left-atrial linear ablation for atrial fibrillation.» *Am J Cardiol* 84(9A): I39R-I46R.
- Khan, M. N., P. Jais, J. Cummings, L. Di Biase, P. Sanders, D. O. Martin, J. Kautzner, S. Hao, S. Themistoclakis, R. Fanelli, D. Potenza, R. Massaro, O. Wazni, R. Schweikert, W. Saliba, P. Wang, A. Al-Ahmad, S. Beheiry, P. Santarelli, R. C. Starling, A. Dello Russo, G. Pelargonio, J. Brachmann, V. Schibgilla, A. Bonso, M. Casella, A. Raviele, M. Haissaguerre and A. Natale (2008). «Pulmonary-vein isolation for atrial fibrillation in patients with heart failure.» *N Engl J Med* 359(17): 1778-85.
- Khaykin, Y., X. Wang, A. Natale, O. M. Wazni, A. C. Skanes, K. H. Humphries, C. R. Kerr, A. Verma and C. A. Morillo (2009). «Cost comparison of ablation versus antiarrhythmic drugs as first-line therapy for atrial fibrillation: an economic evaluation of the RAAFT pilot study.» *J Cardiovasc Electrophysiol* 20(1): 7-12.
- Kirchhof, P. (2009). «Can we improve outcomes in AF patients by early therapy?» *BMC Med* 7: 72.
- Kirchhof, P., A. Auricchio, J. Bax, H. Crijns, J. Camm, H. C. Diener, A. Goette, G. Hindricks, S. Hohnloser, L. Kappenberger, K. H. Kuck, G. Y. Lip, B. Olsson, T. Meinertz, S. Priori, U. Ravens, G. Steinbeck, E. Svernhage, J. Tijssen, A. Vincent and G. Breithardt (2007). «Outcome parameters for trials in atrial fibrillation: Recommendations from a consensus conference organized by the German Atrial Fibrillation Competence NETwork and the European Heart Rhythm Association.» *Europace* 9: 1006-23.
- Kirchhof, P., J. Bax, C. Blomstrom-Lundquist, H. Calkins, A. J. Camm, R. Cappato, F. Cosio, H. Crijns, H. C. Diener, A. Goette, C. W. Israel, K. H. Kuck, G. Y. Lip, S. Nattel, R. L. Page, U. Ravens, U. Schotten, G. Steinbeck, P. Vardas, A. Waldo, K. Wegscheider, S. Willems and G. Breithardt (2009). «Early and comprehensive management of atrial fibrillation: Proceedings from the 2nd AFNET/EHRA consensus conference on atrial fibrillation entitled 'research perspectives in atrial fibrillation'.» *Europace* 11(7): 860-85.
- Krittayaphong, R., O. Raungrattanaamporn, K. Bhuripanyo, C. Sriratanasathavorn, S. Pooranawattanukul, K. Punlee and C. Kangkagate (2003). «A randomized clinical trial of the efficacy of radiofrequency catheter ablation and amiodarone in the treatment of symptomatic atrial fibrillation.» *J Med Assoc Thai* 86 Suppl 1: S8-16.
- Lemery, R., D. Birnie, A. S. Tang, M. Green and M. Gollob (2006). «Feasibility study of endocardial mapping of ganglionated plexuses during catheter ablation of atrial fibrillation.» *Heart Rhythm* 3(4): 387-96.
- Lewalter, T., D. Burkhardt, H. Bielik, J. Schrickel, A. Yang, N. Shlevkov, R. Schimpf, J. O. Schwab and B. Luderitz (2002). «Circumferential pulmonary vein mapping and ablation in focal atrial fibrillation: single catheter technique.» *J Interv Card Electrophysiol* 7(2): 165-70.
- Lin, Y. J., C. T. Tai, T. Kao, S. L. Chang, W. Wongcharoen, L. W. Lo, T. C. Tuan, A. R. Udyavar, Y. J. Chen, S. Higa, K. C. Ueng and S. A. Chen (2008). «Consistency of complex fractionated atrial electrograms during atrial fibrillation.» *Heart Rhythm* 5(3): 406-12.
- Mansour, M., J. Ruskin and D. Keane (2004). «Efficacy and safety of segmental ostial versus circumferential extra-ostial pulmonary vein isolation for atrial fibrillation.» *J Cardiovasc Electrophysiol* 15(5): 532-7.
- Marrouche, N. F. and J. Brachmann (2009). «Catheter ablation versus standard conventional treatment in patients with left ventricular dysfunction and atrial fibrillation (CASTLE-AF) - study design.» *Pacing Clin Electrophysiol* 32(8): 987-94.
- Marrouche, N. F., D. O. Martin, O. Wazni, A. M. Gillinov, A. Klein, M. Bhargava, E. Saad, D. Bash, H. Yamada, W. Jaber, R. Schweikert, P. Tchou, A. Abdul-Karim, W. Saliba and A. Natale (2003). «Phased-array intracardiac echocardiography monitoring during pulmonary vein isolation in patients with atrial fibrillation: impact on outcome and complications.» *Circulation* 107(21): 2710-6.
- Mesas, C. E., C. Pappone, C. C. Lang, F. Gugliotta, T. Tomita,

- G. Vicedomini, S. Sala, G. Paglino, S. Gulletta, A. Ferro and V. Santinelli (2004). «Left atrial tachycardia after circumferential pulmonary vein ablation for atrial fibrillation: electroanatomic characterization and treatment.» *J Am Coll Cardiol* 44(5): 1071-9.
- Metzner, A., K. R. Chun, K. Neven, A. Fuernkranz, F. Ouyang, M. Antz, R. Tilz, T. Zerm, B. Koektuerk, E. Wissner, I. Koester, S. Ernst, S. Boczor, K. H. Kuck and B. Schmidt «Long-term clinical outcome following pulmonary vein isolation with high-intensity focused ultrasound balloon catheters in patients with paroxysmal atrial fibrillation.» *Europace* 12(2): 188-93.
- Nademanee, K., J. McKenzie, E. Kosar, M. Schwab, B. Sunsaneewitayakul, T. Vasavakul, C. Khunnawat and T. Ngarmukos (2004). «A new approach for catheter ablation of atrial fibrillation: mapping of the electrophysiologic substrate.» *J Am Coll Cardiol* 43(11): 2044-53.
- Nademanee, K., M. C. Schwab, E. M. Kosar, M. Karwecki, M. D. Moran, N. Visessook, A. D. Michael and T. Ngarmukos (2008). «Clinical outcomes of catheter substrate ablation for high-risk patients with atrial fibrillation.» *J Am Coll Cardiol* 51(8): 843-9.
- Neumann, T., J. Vogt, B. Schumacher, A. Dorszewski, M. Kuniss, H. Neuser, K. Kurzdin, A. Berkowitsch, M. Koller, J. Heintze, U. Scholz, U. Wetzel, M. A. Schneider, D. Horstkotte, C. W. Hamm and H. F. Pitschner (2008). «Circumferential pulmonary vein isolation with the cryoballoon technique results from a prospective 3-center study.» *J Am Coll Cardiol* 52(4): 273-8.
- Nilsson, B., X. Chen, S. Pehrson, L. Kober, J. Hilden and J. H. Svendsen (2006). «Recurrence of pulmonary vein conduction and atrial fibrillation after pulmonary vein isolation for atrial fibrillation: a randomized trial of the ostial versus the extraostial ablation strategy.» *Am Heart J* 152(3): 537 e1-8.
- Noheria, A., A. Kumar, J. V. Wylie, Jr. and M. E. Josephson (2008). «Catheter ablation vs antiarrhythmic drug therapy for atrial fibrillation: a systematic review.» *Arch Intern Med* 168(6): 581-6.
- Oakes, R. S., T. J. Badger, E. G. Kholmovski, N. Akoum, N. S. Burgon, E. N. Fish, J. J. Blauer, S. N. Rao, E. V. DiBella, N. M. Segerson, M. Dacarett, J. Windfelder, C. J. McGann, D. Parker, R. S. MacLeod and N. F. Marrouche (2009). «Detection and quantification of left atrial structural remodeling with delayed-enhancement magnetic resonance imaging in patients with atrial fibrillation.» *Circulation* 119(13): 1758-67.
- Oral, H., A. Chugh, K. Yoshida, J. F. Sarrazin, M. Kuhne, T. Crawford, N. Chalfoun, D. Wells, W. Boonyapisit, S. Veerareddy, S. Billakanty, W. S. Wong, E. Good, K. Jongnarangsin, F. Pelosi, Jr., F. Bogun and F. Morady (2009). «A randomized assessment of the incremental role of ablation of complex fractionated atrial electrograms after antral pulmonary vein isolation for long-lasting persistent atrial fibrillation.» *J Am Coll Cardiol* 53(9): 782-9.
- Oral, H., B. P. Knight, H. Tada, M. Ozaydin, A. Chugh, S. Hassan, C. Scharf, S. W. Lai, R. Greenstein, F. Pelosi, Jr., S. A. Strickberger and F. Morady (2002). «Pulmonary vein isolation for paroxysmal and persistent atrial fibrillation.» *Circulation* 105(9): 1077-81.
- Oral, H., C. Pappone, A. Chugh, E. Good, F. Bogun, F. Pelosi, Jr., E. R. Bates, M. H. Lehmann, G. Vicedomini, G. Augello, E. Agricola, S. Sala, V. Santinelli and F. Morady (2006). «Circumferential pulmonary-vein ablation for chronic atrial fibrillation.» *N Engl J Med* 354(9): 934-41.
- Ouyang, F., M. Antz, S. Ernst, H. Hachiya, H. Mavrakis, F. T. Deger, A. Schaumann, J. Chun, P. Falk, D. Hennig, X. Liu, D. Bansch and K. H. Kuck (2005). «Recovered pulmonary vein conduction as a dominant factor for recurrent atrial tachyarrhythmias after complete circular isolation of the pulmonary veins: lessons from double Lasso technique.» *Circulation* 111(2): 127-35.
- Ouyang, F., D. Bansch, S. Ernst, A. Schaumann, H. Hachiya, M. Chen, J. Chun, P. Falk, A. Khanedani, M. Antz and K. H. Kuck (2004). «Complete isolation of left atrium surrounding the pulmonary veins: new insights from the double-Lasso technique in paroxysmal atrial fibrillation.» *Circulation* 110(15): 2090-6.
- Ouyang, F., S. Ernst, J. Chun, D. Bansch, Y. Li, A. Schaumann, H. Mavrakis, X. Liu, F. T. Deger, B. Schmidt, Y. Xue, J. Cao, D. Hennig, H. Huang, K. H. Kuck and M. Antz (2005). «Electrophysiological findings during ablation of persistent atrial fibrillation with electroanatomic mapping and double Lasso catheter technique.» *Circulation* 112(20): 3038-48.
- Packer D, Irwin JM, Champagne J, Guerra PG, Dubuc M, Wheelan KR, Kowal RC, Reddy V, Lehmann JW, Holcomb RG, Ruskin J. Cryoballoon ablation of pulmonary veins for paroxysmal atrial fibrillation. First results of the North American arctic front STOP-AF pivotal trial (abstract). *JACC* 2010; presented on March 15, 2010 at ACC -Late-Breaking Clinical Trials II: Cardiac Arrhythmias Presentation 3015-6.
- Pappone, C., G. Augello, S. Sala, F. Gugliotta, G. Vicedomini, S. Gulletta, G. Paglino, P. Mazzone, N. Sora, I. Greiss, A. Santagostino, L. LiVolsi, N. Pappone, A. Radinovic, F. Manguso and V. Santinelli (2006). «A randomized trial of circumferential pulmonary vein ablation versus antiarrhythmic drug therapy in paroxysmal atrial fibrillation: the APAF Study.» *J Am Coll Cardiol* 48(11): 2340-7.
- Pappone, C., F. Manguso, G. Vicedomini, F. Gugliotta, O. Santinelli, A. Ferro, S. Gulletta, S. Sala, N. Sora, G. Paglino, G. Augello, E. Agricola, A. Zangrillo, O. Alfieri and V. Santinelli (2004). «Prevention of iatrogenic atrial tachycardia after ablation of atrial fibrillation: a prospective randomized study comparing circumferential pulmonary vein ablation with a modified approach.» *Circulation* 110(19): 3036-42.
- Pappone, C., S. Rosanio, G. Oreto, M. Tocchi, F. Gugliotta, G. Vicedomini, A. Salvati, C. Dicandia, P. Mazzone, V. Santinelli, S. Gulletta and S. Chierchia (2000). «Circumferential radiofrequency ablation of pulmonary vein ostia: A new anatomic approach for curing atrial fibrillation.» *Circulation* 102(21): 2619-28.
- Po, S. S., H. Nakagawa and W. M. Jackman (2009). «Localization of left atrial ganglionated plexi in patients with atrial fibrillation.» *J Cardiovasc Electrophysiol* 20(10): 1186-9.
- Reddy, V. Y., P. Neuzil, S. Themistoclakis, S. B. Danik, A. Bonso, A. Rossillo, A. Raviele, R. Schweikert, S. Ernst, K. H. Kuck and A. Natale (2009). «Visually-guided balloon catheter ablation of atrial fibrillation: experimental feasibility and first-in-human multicenter clinical outcome.» *Circulation* 120(1): 12-20.
- Rostock, T., M. Rotter, P. Sanders, Y. Takahashi, P. Jais, M. Hocini, L. F. Hsu, F. Sacher, J. Clementy and M. Haissaguerre (2006). «High-density activation mapping of fractionated electrograms in the atria of patients with paroxysmal atrial fibrillation.» *Heart Rhythm* 3(1): 27-34.
- Satomi, K., D. Bansch, R. Tilz, J. Chun, S. Ernst, M. Antz, H. Greden, K. H. Kuck and F. Ouyang (2008). «Left atrial and pulmonary vein macroreentrant tachycardia associated with double conduction gaps: a novel type of man-made tachycardia after circumferential pulmonary vein isolation.» *Heart Rhythm* 5(1): 43-51.
- Shah, D. C., H. Sunthorn, H. Burri and P. Gentil-Baron (2007). «Evaluation of an individualized strategy of cavotricuspid isthmus ablation as an adjunct to atrial fibrillation ablation.» *J Cardiovasc Electrophysiol* 18(9): 926-30.
- Sohara, H., H. Takeda, H. Ueno, T. Oda and S. Satake (2009). «Feasibility of the radiofrequency hot balloon catheter for isolation of the posterior left atrium and pulmonary veins for the treatment of atrial fibrillation.» *Circ Arrhythm Electrophysiol* 2(3): 225-32.
- Stabile, G., E. Bertaglia, G. Senatore, A. De Simone, F. Zoppo, G.

- Donnici, P. Turco, P. Pascotto, M. Fazzari and D. F. Vitale (2006). «Catheter ablation treatment in patients with drug-refractory atrial fibrillation: a prospective, multi-centre, randomized, controlled study (Catheter Ablation For The Cure Of Atrial Fibrillation Study).» *Eur Heart J* 27(2): 216-21.
- Steinwender, C., S. Honig, F. Leisch and R. Hofmann (2010). «One-year follow-up after pulmonary vein isolation using a single mesh catheter in patients with paroxysmal atrial fibrillation.» *Heart Rhythm* 7(3): 333-339.
- Tilz, R. R., K. R. Chun, B. Schmidt, A. Fuernkranz, E. Wissner, I. Koester, D. Baensch, S. Boczor, B. Koektuerk, A. Metzner, T. Zerm, S. Ernst, M. Antz, K. H. Kuck and F. Ouyang (2010). «Catheter Ablation of Long-Standing Persistent Atrial Fibrillation: A Lesson from Circumferential Pulmonary Vein Isolation.» *J Cardiovasc Electrophysiol* published on line June 28th ; DOI: 10.1111/j.1540-8167.2010.01799.x
- Van Belle, Y., P. Janse, D. Theuns, T. Szili-Torok and L. Jordaens (2008). «One year follow-up after cryoballoon isolation of the pulmonary veins in patients with paroxysmal atrial fibrillation.» *Europace* 10(11): 1271-6.
- Wazni, O., N. F. Marrouche, D. O. Martin, A. M. Gillinov, W. Saliba, E. Saad, A. Klein, M. Bhargava, D. Bash, R. Schweikert, D. Erciyes, A. Abdul-Karim, J. Brachman, J. Gunther, E. Pisano, D. Potenza, R. Fanelli and A. Natale (2003). «Randomized study comparing combined pulmonary vein-left atrial junction disconnection and cavotricuspid isthmus ablation versus pulmonary vein-left atrial junction disconnection alone in patients presenting with typical atrial flutter and atrial fibrillation.» *Circulation* 108(20): 2479-83.
- Wazni, O. M., N. F. Marrouche, D. O. Martin, A. Verma, M. Bhargava, W. Saliba, D. Bash, R. Schweikert, J. Brachmann, J. Gunther, K. Gutleben, E. Pisano, D. Potenza, R. Fanelli, A. Ravele, S. Themistoclakis, A. Rossillo, A. Bonso and A. Natale (2005). «Radiofrequency ablation vs antiarrhythmic drugs as first-line treatment of symptomatic atrial fibrillation: a randomized trial.» *Jama* 293(21): 2634-40.
- Wilber, D. J., C. Pappone, P. Neuzil, A. De Paola, F. Marchlinski, A. Natale, L. Macle, E. G. Daoud, H. Calkins, B. Hall, V. Reddy, G. Augello, M. R. Reynolds, C. Vinekar, C. Y. Liu, S. M. Berry and D. A. Berry (2010). «Comparison of antiarrhythmic drug therapy and radiofrequency catheter ablation in patients with paroxysmal atrial fibrillation: a randomized controlled trial.» *JAMA* 303(4): 333-40.
- Willems, S., H. Klemm, T. Rostock, B. Brandstrup, R. Ventura, D. Steven, T. Risius, B. Lutomsy and T. Meinertz (2006). «Substrate modification combined with pulmonary vein isolation improves outcome of catheter ablation in patients with persistent atrial fibrillation: a prospective randomized comparison.» *Eur Heart J* 27(23): 2871-8.
- Wright, M., M. Haissaguerre, S. Knecht, S. Matsuo, M. D. O'Neill, I. Nault, N. Lellouche, M. Hocini, F. Sacher and P. Jais (2008). «State of the art: catheter ablation of atrial fibrillation.» *J Cardiovasc Electrophysiol* 19(6): 583-92.
- Yamada, T., Y. Murakami, T. Okada, M. Okamoto, T. Shimizu, J. Toyama, Y. Yoshida, N. Tsuboi, T. Ito, M. Muto, T. Kondo, Y. Inden, M. Hirai and T. Murohara (2006). «Incidence, location, and cause of recovery of electrical connections between the pulmonary veins and the left atrium after pulmonary vein isolation.» *Europace* 8(3): 182-8.
- Yokoyama, K., H. Nakagawa, K. A. Seres, E. Jung, J. Merino, Y. Zou, A. Ikeda, J. V. Pitha, R. Lazzara and W. M. Jackman (2009). «Canine model of esophageal injury and atrial-esophageal fistula after applications of forward-firing high-intensity focused ultrasound and side-firing unfocused ultrasound in the left atrium and inside the pulmonary vein.» *Circ Arrhythm Electrophysiol* 2(1): 41-9.
- ## Recommendations
- Blanc, J. J., J. Almendral, et al. (2008). «Consensus document on antithrombotic therapy in the setting of electrophysiological procedures.» *Europace* 10(5): 513-527.
- Calkins, H., J. Brugada, et al. (2007). «HRS/EHRA/ECAS Expert Consensus Statement on Catheter and Surgical Ablation of Atrial Fibrillation: Recommendations for Personnel, Policy, Procedures and Follow-Up: A report of the Heart Rhythm Society (HRS) Task Force on Catheter and Surgical Ablation of Atrial Fibrillation Developed in partnership with the European Heart Rhythm Association (EHRA) and the European Cardiac Arrhythmia Society (ECAS); in collaboration with the American College of Cardiology (ACC), American Heart Association (AHA), and the Society of Thoracic Surgeons (STS). Endorsed and Approved by the governing bodies of the American College of Cardiology, the American Heart Association, the European Cardiac Arrhythmia Society, the European Heart Rhythm Association, the Society of Thoracic Surgeons, and the Heart Rhythm Society.» *Europace* 9(6): 335-379.
- Calkins, H., M. R. Reynolds, et al. (2009). «Treatment of atrial fibrillation with antiarrhythmic drugs or radiofrequency ablation: two systematic literature reviews and meta-analyses.» *Circ Arrhythm Electrophysiol* 2(4): 349-361.
- Hsu, L. F., P. Jais, et al. (2004). «Catheter ablation for atrial fibrillation in congestive heart failure.» *N Engl J Med* 351(23): 2373-2383.
- Khan, M. N., P. Jais, et al. (2008). «Pulmonary-vein isolation for atrial fibrillation in patients with heart failure.» *N Engl J Med* 359(17): 1778-1785.
- Nair, G. M., P. B. Nery, et al. (2009). «A systematic review of randomized trials comparing radiofrequency ablation with antiarrhythmic medications in patients with atrial fibrillation.» *J Cardiovasc Electrophysiol* 20(2): 138-144.
- Noheria, A., A. Kumar, et al. (2008). «Catheter ablation vs antiarrhythmic drug therapy for atrial fibrillation: a systematic review.» *Arch Intern Med* 168(6): 581-586.
- Piccini, J. P., R. D. Lopes, et al. (2009). «Pulmonary vein isolation for the maintenance of sinus rhythm in patients with atrial fibrillation: a meta-analysis of randomized, controlled trials.» *Circ Arrhythm Electrophysiol* 2(6): 626-633.
- Wilber, D. J., C. Pappone, et al. (2010). «Comparison of antiarrhythmic drug therapy and radiofrequency catheter ablation in patients with paroxysmal atrial fibrillation: a randomized controlled trial.» *JAMA* 303(4): 333-340.
- ### 4.3.5.3 Surgical ablation
- Abreu Filho, C. A., L. A. Lisboa, L. A. Dallan, G. S. Spina, M. Grinberg, M. Scanavacca, E. A. Sosa, J. A. Ramires and S. A. Oliveira (2005). «Effectiveness of the maze procedure using cooled-tip radiofrequency ablation in patients with permanent atrial fibrillation and rheumatic mitral valve disease.» *Circulation* 112(9 Suppl): I20-5.
- Ad, N., S. D. Barnett, C. K. Haan, S. M. O'Brien, S. Milford-Beland and A. M. Speir (2009). «Does preoperative atrial fibrillation increase the risk for mortality and morbidity after coronary artery bypass grafting?» *J Thorac Cardiovasc Surg* 137(4): 901-6.
- Akpınar, B., I. Sanisoglu, M. Guden, E. Sagbas, B. Caynak and Z. Bayramoglu (2006). «Combined off-pump coronary artery bypass grafting surgery and ablative therapy for atrial fibrillation: early and mid-term results.» *Ann Thorac Surg* 81(4): 1332-7.
- Albrecht, A., R. A. Kalil, L. Schuch, R. Abrahao, J. R. Sant'Anna, G. de Lima and I. A. Nesralla (2009). «Randomized study of surgical isolation of the pulmonary veins for correction of permanent

- atrial fibrillation associated with mitral valve disease.» *J Thorac Cardiovasc Surg* 138(2): 454-9.
- Berruezo, A., D. Tamborero, L. Mont, B. Benito, J. M. Tolosana, M. Sitges, B. Vidal, G. Arriagada, F. Mendez, M. Matiello, I. Molina and J. Brugada (2007). «Pre-procedural predictors of atrial fibrillation recurrence after circumferential pulmonary vein ablation.» *Eur Heart J* 28(7): 836-41.
- Beukema, W. P., H. T. Sie, A. R. Misier, P. P. Delnoy, H. J. Wellens and A. Elvan (2008). «Intermediate to long-term results of radiofrequency modified Maze procedure as an adjunct to open-heart surgery.» *Ann Thorac Surg* 86(5): 1409-14.
- Calkins, H., J. Brugada, D. L. Packer, R. Cappato, S. A. Chen, H. J. Crijns, R. J. Damiano, Jr., D. W. Davies, D. E. Haines, M. Haissaguerre, Y. Iesaka, W. Jackman, P. Jais, H. Kottkamp, K. H. Kuck, B. D. Lindsay, F. E. Marchlinski, P. M. McCarthy, J. L. Mont, F. Morady, K. Nademanee, A. Natale, C. Pappone, E. Prystowsky, A. Raviele, J. N. Ruskin, R. J. Shemin, H. Calkins, J. Brugada, S. A. Chen, E. N. Prystowsky, K. H. Kuck, A. Natale, D. E. Haines, F. E. Marchlinski, H. Calkins, D. W. Davies, B. D. Lindsay, P. M. McCarthy, D. L. Packer, R. Cappato, H. J. Crijns, R. J. Damiano, Jr., M. Haissaguerre, W. M. Jackman, P. Jais, Y. Iesaka, H. Kottkamp, L. Mont, F. Morady, K. Nademanee, C. Pappone, A. Raviele, J. N. Ruskin and R. J. Shemin (2007). «HRS/EHRA/ECAS Expert Consensus Statement on Catheter and Surgical Ablation of Atrial Fibrillation: Recommendations for Personnel, Policy, Procedures and Follow-Up: A report of the Heart Rhythm Society (HRS) Task Force on Catheter and Surgical Ablation of Atrial Fibrillation Developed in partnership with the European Heart Rhythm Association (EHRA) and the European Cardiac Arrhythmia Society (ECAS); in collaboration with the American College of Cardiology (ACC), American Heart Association (AHA), and the Society of Thoracic Surgeons (STS). Endorsed and Approved by the governing bodies of the American College of Cardiology, the American Heart Association, the European Cardiac Arrhythmia Society, the European Heart Rhythm Association, the Society of Thoracic Surgeons, and the Heart Rhythm Society.» *Europace* 9(6): 335-79.
- Castella, M., D. Pereda, C. A. Mestres, F. Gomez, E. Quintana and J. Mulet «Thoracoscopic pulmonary vein isolation in patients with atrial fibrillation and failed percutaneous ablation.» *J Thorac Cardiovasc Surg*.
- Chilukuri, K., D. Dalal, J. E. Marine, D. Scherr, C. A. Henrikson, A. Cheng, S. Nazarian, D. Spragg, R. Berger and H. Calkins (2009). «Predictive value of obstructive sleep apnoea assessed by the Berlin Questionnaire for outcomes after the catheter ablation of atrial fibrillation.» *Europace* 11(7): 896-901.
- Cox, J. L., J. P. Boineau, et al. (1991). «Operations for atrial fibrillation.» *Clin Cardiol* 14(10): 827-834.
- Cox, J. L., J. P. Boineau, et al. (1991). «Successful surgical treatment of atrial fibrillation. Review and clinical update.» *JAMA* 266(14): 1976-1980.
- Damiano, R. J., Jr., S. L. Gaynor, M. Bailey, S. Prasad, J. L. Cox, J. P. Boineau and R. P. Schuessler (2003). «The long-term outcome of patients with coronary disease and atrial fibrillation undergoing the Cox maze procedure.» *J Thorac Cardiovasc Surg* 126(6): 2016-21.
- Doukas, G., N. J. Samani, C. Alexiou, M. Oc, D. T. Chin, P. G. Stafford, L. L. Ng and T. J. Spt (2005). «Left atrial radiofrequency ablation during mitral valve surgery for continuous atrial fibrillation: a randomized controlled trial.» *JAMA* 294(18): 2323-9.
- Edgerton, J. R., J. H. McClelland, D. Duke, M. W. Gerdisch, B. M. Steinberg, S. H. Bronleewe, S. L. Prince, M. A. Herbert, S. Hoffman and M. J. Mack (2009). «Minimally invasive surgical ablation of atrial fibrillation: six-month results.» *J Thorac Cardiovasc Surg* 138(1): 109-13; discussion 114.
- Gaita F, Riccardi R, Caponi D, Shah D, Garberoglio L, Vivalda L, Dulio A, Chiecchio A, Manasse E, Gallotti R. Linear cryoablation of the left atrium versus pulmonary vein cryoisolation in patients with permanent atrial fibrillation and valvular heart disease: correlation of electroanatomic mapping and long-term clinical results. *Circulation* 2005;111(2):136-42.
- Gaita F, Riccardi R, Gallotti R. Surgical approaches to atrial fibrillation. *Card Electrophysiol Rev* 2002;6(4):401-5.
- Gillinov, A. M., E. H. Blackstone and P. M. McCarthy (2002). «Atrial fibrillation: current surgical options and their assessment.» *Ann Thorac Surg* 74(6): 2210-7.
- Gillinov, A. M., J. Sirak, E. H. Blackstone, P. M. McCarthy, J. Rajeswaran, G. Pettersson, F. J. Sabik, 3rd, L. G. Svensson, J. L. Navia, D. M. Cosgrove, N. Marrouche and A. Natale (2005). «The Cox maze procedure in mitral valve disease: predictors of recurrent atrial fibrillation.» *J Thorac Cardiovasc Surg* 130(6): 1653-60.
- Groh, M. A., O. A. Binns, H. G. Burton, 3rd, S. W. Ely and A. M. Johnson (2007). «Ultrasonic cardiac ablation for atrial fibrillation during concomitant cardiac surgery: long-term clinical outcomes.» *Ann Thorac Surg* 84(6): 1978-83.
- Moten, S. C., E. Rodriguez, R. C. Cook, L. W. Nifong and W. R. Chitwood, Jr. (2007). «New ablation techniques for atrial fibrillation and the minimally invasive cryo-maze procedure in patients with lone atrial fibrillation.» *Heart Lung Circ* 16 Suppl 3: S88-93.
- Ngaage, D. L., H. V. Schaff, C. J. Mullany, S. Barnes, J. A. Dearani, R. C. Daly, T. A. Orszulak and T. M. Sundt, 3rd (2007). «Influence of preoperative atrial fibrillation on late results of mitral repair: is concomitant ablation justified?» *Ann Thorac Surg* 84(2): 434-42; discussion 442-3.
- Pokushalov, E. (2008). «The role of autonomic denervation during catheter ablation of atrial fibrillation.» *Curr Opin Cardiol* 23(1): 55-9.
- Schneeberger, E. W. and R. M. Osterday (2007). «Lateral placement of bipolar clamp facilitates pulmonary vein isolation.» *Ann Thorac Surg* 84(4): 1412-3.
- von Oppell, U. O., N. Masani, P. O'Callaghan, R. Wheeler, G. Dimitrakakis and S. Schifflers (2009). «Mitral valve surgery plus concomitant atrial fibrillation ablation is superior to mitral valve surgery alone with an intensive rhythm control strategy.» *Eur J Cardiothorac Surg* 35(4): 641-50.
- Wolf, R. K., E. W. Schneeberger, R. Osterday, D. Miller, W. Merrill, J. B. Flege, Jr. and A. M. Gillinov (2005). «Video-assisted bilateral pulmonary vein isolation and left atrial appendage exclusion for atrial fibrillation.» *J Thorac Cardiovasc Surg* 130(3): 797-802.
- Wudel, J. H., P. Chaudhuri and J. J. Hiller (2008). «Video-assisted epicardial ablation and left atrial appendage exclusion for atrial fibrillation: extended follow-up.» *Ann Thorac Surg* 85(1): 34-8.

Recommendations

- Cox JL, Boineau JP, Schuessler RB, Ferguson TB, Jr., Cain ME, Lindsay BD, Corr PB, Kater KM, Lappas DG. Successful surgical treatment of atrial fibrillation. Review and clinical update. *JAMA* 1991;266(14):1976-80.
- Gaita F, Riccardi R, Gallotti R. Surgical approaches to atrial fibrillation. *Card Electrophysiol Rev* 2002;6(4):401-5.
- Ngaage, D. L., H. V. Schaff, C. J. Mullany, S. Barnes, J. A. Dearani, R. C. Daly, T. A. Orszulak and T. M. Sundt, 3rd (2007). «Influence of preoperative atrial fibrillation on late results of mitral repair: is concomitant ablation justified?» *Ann Thorac Surg* 84(2): 434-42; discussion 442-3.

4.4 Upstream Therapy

- Adabag, A. S., D. B. Nelson and H. E. Bloomfield (2007). «Effects of statin therapy on preventing atrial fibrillation in coronary disease and heart failure.» *Am Heart J* 154(6): 1140-5.
- Al Chekakie, M. O., J. G. Akar, F. Wang, H. Al Muradi, J. Wu, P. Santucci, N. Varma and D. J. Wilber (2007). «The effects of statins and renin-angiotensin system blockers on atrial fibrillation recurrence following antral pulmonary vein isolation.» *J Cardiovasc Electrophysiol* 18(9): 942-6.
- Almroth, H., N. Hoglund, K. Boman, A. Englund, S. Jensen, B. Kjellman, P. Tornvall and M. Rosenqvist (2009). «Atorvastatin and persistent atrial fibrillation following cardioversion: a randomized placebo-controlled multicentre study.» *Eur Heart J* 30(7): 827-33.
- Anand, K., A. N. Mooss, T. T. Hee and S. M. Mohiuddin (2006). «Meta-analysis: inhibition of renin-angiotensin system prevents new-onset atrial fibrillation.» *Am Heart J* 152(2): 217-22.
- Belluzzi, F., L. Sernesi, P. Preti, F. Salinaro, M. L. Fonte and S. Perlini (2009). «Prevention of recurrent lone atrial fibrillation by the angiotensin-II converting enzyme inhibitor ramipril in normotensive patients.» *J Am Coll Cardiol* 53(1): 24-9.
- Brouwer, I. A., J. Heeringa, J. M. Geleijnse, P. L. Zock and J. C. Witteman (2006). «Intake of very long-chain n-3 fatty acids from fish and incidence of atrial fibrillation. The Rotterdam Study.» *Am Heart J* 151(4): 857-62.
- Calo, L., L. Bianconi, F. Colivicchi, F. Lamberti, M. L. Loricchio, E. de Ruvo, A. Meo, C. Pandozi, M. Staibano and M. Santini (2005). «N-3 Fatty acids for the prevention of atrial fibrillation after coronary artery bypass surgery: a randomized, controlled trial.» *J Am Coll Cardiol* 45(10): 1723-8.
- Cardin, S., D. Li, N. Thorin-Trescases, T. K. Leung, E. Thorin and S. Nattel (2003). «Evolution of the atrial fibrillation substrate in experimental congestive heart failure: angiotensin-dependent and -independent pathways.» *Cardiovasc Res* 60(2): 315-25.
- Connolly, S., S. Yusuf, A. Budaj, J. Camm, S. Chrolavicius, P. J. Commerford, M. Flather, K. A. Fox, R. Hart, S. Hohnloser, C. Joyner, M. Pfeffer, I. Anand, H. Arthur, A. Avezum, M. Bethala-Sithya, M. Blumenthal, L. Ceremuzynski, R. De Caterina, R. Diaz, G. Flaker, G. Frangin, M. G. Franzosi, C. Gaudin, S. Golitsyn, S. Goldhaber, C. Granger, D. Halon, A. Hermosillo, D. Hunt, P. Jansky, N. Karatzas, M. Keltai, F. Lanas, C. P. Lau, J. Y. Le Heuzey, B. S. Lewis, J. Morais, C. Morillo, A. Oto, E. Paolasso, R. J. Peters, M. Pfisterer, L. Piegas, T. Pipillis, C. Proste, E. Sitkei, K. Swedberg, D. Synhorst, M. Talajic, V. Tregou, V. Valentin, W. van Mieghem, W. Weintraub and J. Varigos (2006). «Rationale and design of ACTIVE: the atrial fibrillation clopidogrel trial with irbesartan for prevention of vascular events.» *Am Heart J* 151(6): 1187-93.
- Dernellis, J. and M. Panaretou (2005). «Effect of C-reactive protein reduction on paroxysmal atrial fibrillation.» *Am Heart J* 150(5): 1064.
- Dickinson, M., A. Hellkamp, J. Ip, J. Anderson, G. Johnson, S. Singh, J. Poole, D. Mark, K. Lee and G. Bardy (2006). «Statin therapy was associated with reduced atrial fibrillation and flutter in heart failure patients in SCD-HeFT.» *Heart Rhythm* 3(3): S49 (abstract).
- Disertori, M., R. Latini, S. Barlera, M. G. Franzosi, L. Staszewsky, A. P. Maggioni, D. Lucci, G. Di Pasquale and G. Tognoni (2009). «Valsartan for prevention of recurrent atrial fibrillation.» *N Engl J Med* 360(16): 1606-17.
- Ducharme, A., K. Swedberg, M. A. Pfeffer, A. Cohen-Solal, C. B. Granger, A. P. Maggioni, E. L. Michelson, J. J. McMurray, L. Olsson, J. L. Rouleau, J. B. Young, B. Olofsson, M. Puu and S. Yusuf (2006). «Prevention of atrial fibrillation in patients with symptomatic chronic heart failure by candesartan in the Candesartan in Heart failure: Assessment of Reduction in Mortality and morbidity (CHARM) program.» *Am Heart J* 152(1): 86-92.
- Erdogan, A., M. Bayer, D. Kollath, H. Greiss, R. Voss, T. Neumann, W. Franzen, A. Most, K. Mayer and H. Tillmanns (2007). «Omega AF study: polyunsaturated fatty acids (PUFA) for prevention of atrial fibrillation relapse after successful external cardioversion.» *Heart Rhythm* 6(4): S185-S186 (abstract).
- Fauchier, L., B. Pierre, A. de Labriolle, C. Grimard, N. Zannad and D. Babuty (2008). «Antiarrhythmic effect of statin therapy and atrial fibrillation a meta-analysis of randomized controlled trials.» *J Am Coll Cardiol* 51(8): 828-35.
- Fogari, R., G. Derosa, I. Ferrari, L. Corradi, A. Zoppi, P. Lazzari, T. Santoro, P. Preti and A. Mugellini (2008). «Effect of valsartan and ramipril on atrial fibrillation recurrence and P-wave dispersion in hypertensive patients with recurrent symptomatic lone atrial fibrillation.» *Am J Hypertens* 21(9): 1034-9.
- Fogari, R., G. Derosa, A. Zoppi, A. Mugellini, P. Lazzari, P. Preti and L. Corradi (2008). «Atorvastatin Addition to Losartan or to Atenolol and Recurrence of Paroxysmal Atrial Fibrillation in Hypertension.» *Circulation* 118(18): S828-S828.
- Frost, L. and P. Vestergaard (2005). «n-3 Fatty acids consumed from fish and risk of atrial fibrillation or flutter: the Danish Diet, Cancer, and Health Study.» *Am J Clin Nutr* 81(1): 50-4.
- Garcia-Fernandez, A., F. Marin, L. Mainar, V. Roldan and J. G. Martinez (2006). «Effect of statins on preventing recurrence of atrial fibrillation after electrical cardioversion.» *Am J Cardiol* 98(9): 1299-300.
- Gillis, A. M., M. Morck, D. V. Exner, A. Soo, M. S. Rose, R. S. Sheldon, H. J. Duff, K. M. Kavanagh, L. B. Mitchell and D. G. Wyse (2008). «Beneficial effects of statin therapy for prevention of atrial fibrillation following DDDR pacemaker implantation.» *Eur Heart J* 29(15): 1873-80.
- Goette, A., P. Hoffmanns, W. Enayati, U. Meltendorf, J. C. Geller and H. U. Klein (2001). «Effect of successful electrical cardioversion on serum aldosterone in patients with persistent atrial fibrillation.» *Am J Cardiol* 88(8): 906-9, A8.
- Goette, A., U. Lendeckel and H. U. Klein (2002). «Signal transduction systems and atrial fibrillation.» *Cardiovasc Res* 54(2): 247-58.
- Goette A, Schon N, Kirchhof P, Breithardt G, Fetsch T, Klein HU, Steinbeck G, Wegscheider K, Meinertz T. ANTIPAF: Angiotensin II-antagonist in paroxysmal atrial fibrillation trial (hot line abstract). *Eur HJ* 2010: ESC Stockholm 2010 Congress reports, Session number: 708009 – 708010, Hot Line III sessions - Cardiovascular disease and rhythm disturbances final Program Number 3772. <http://www.escardio.org/congresses/esc-2010/congress-reports/Pages/708-5-ANTIPAF.aspx>
- Hanna, I. R., B. Heeke, H. Bush, L. Brosius, D. King-Hageman, S. C. Dudley, Jr., J. F. Beshai and J. J. Langberg (2006). «Lipid-lowering drug use is associated with reduced prevalence of atrial fibrillation in patients with left ventricular systolic dysfunction.» *Heart Rhythm* 3(8): 881-6.
- Haywood, L. J., C. E. Ford, R. S. Crow, B. R. Davis, B. M. Massie, P. T. Einhorn and A. Williard (2009). «Atrial fibrillation at baseline and during follow-up in ALLHAT (Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial).» *J Am Coll Cardiol* 54(22): 2023-31.
- Healey, J. S., A. Baranchuk, E. Crystal, C. A. Morillo, M. Garfinkle, S. Yusuf and S. J. Connolly (2005). «Prevention of atrial fibrillation with angiotensin-converting enzyme inhibitors and angiotensin receptor blockers: a meta-analysis.» *J Am Coll Cardiol* 45(11): 1832-9.
- Heidarsdottir, R., D. O. Arnar, G. V. Skuladottir, B. Torfason, V.

- Edvardsson, G. Gottskalksson, R. Palsson and O. S. Indridason (2010). «Does treatment with n-3 polyunsaturated fatty acids prevent atrial fibrillation after open heart surgery?» *Europace* 12(3): 356-63.
- Heidt, M. C., M. Vician, S. K. Stracke, T. Stadlbauer, M. T. Grebe, A. Boening, P. R. Vogt and A. Erdogan (2009). «Beneficial effects of intravenously administered N-3 fatty acids for the prevention of atrial fibrillation after coronary artery bypass surgery: a prospective randomized study.» *Thorac Cardiovasc Surg* 57(5): 276-80.
- Humphries, K. H., M. Lee, R. Sheldon, K. Ramanathan, P. Dorian, M. Green and C. R. Kerr (2007). «Statin use and recurrence of atrial fibrillation after successful cardioversion.» *Am Heart J* 154(5): 908-13.
- Izzo, R., G. de Simone, V. Trimarco, M. Chinali, R. Giudice, A. Vasta, C. S. Cimmino, N. De Luca and B. Trimarco (2008). «Statins Therapy and Atrial Fibrillation in Hypertensive Patients.» *Circulation* 118(18): S802-S802.
- Jibrini, M. B., J. Molnar and R. R. Arora (2008). «Prevention of atrial fibrillation by way of abrogation of the renin-angiotensin system: a systematic review and meta-analysis.» *Am J Ther* 15(1): 36-43.
- Kourliouros, A., A. De Souza, N. Roberts, A. Marciniak, A. Tsiouris, O. Valencia, J. Camm and M. Jahangiri (2008). «Dose-related effect of statins on atrial fibrillation after cardiac surgery.» *Ann Thorac Surg* 85(5): 1515-20.
- Kourliouros, A., I. Savelieva, A. Kiotsekoglou, M. Jahangiri and J. Camm (2009). «Current concepts in the pathogenesis of atrial fibrillation.» *Am Heart J* 157(2): 243-52.
- L'Allier, P. L., A. Ducharme, P. F. Keller, H. Yu, M. C. Guertin and J. C. Tardif (2004). «Angiotensin-converting enzyme inhibition in hypertensive patients is associated with a reduction in the occurrence of atrial fibrillation.» *J Am Coll Cardiol* 44(1): 159-64.
- Li, G. R., H. Y. Sun, X. H. Zhang, L. C. Cheng, S. W. Chiu, H. F. Tse and C. P. Lau (2009). «Omega-3 polyunsaturated fatty acids inhibit transient outward and ultra-rapid delayed rectifier K⁺ currents and Na⁺ current in human atrial myocytes.» *Cardiovasc Res* 81(2): 286-93.
- Liakopoulos, O. J., Y. H. Choi, E. W. Kuhn, T. Wittwer, M. Borys, N. Madershahian, G. Wassmer and T. Wahlers (2009). «Statins for prevention of atrial fibrillation after cardiac surgery: a systematic literature review.» *J Thorac Cardiovasc Surg* 138(3): 678-686 e1.
- Liu, T., G. Li, L. Li and P. Korantzopoulos (2007). «Association between C-reactive protein and recurrence of atrial fibrillation after successful electrical cardioversion: a meta-analysis.» *J Am Coll Cardiol* 49(15): 1642-8.
- Liu, T., L. Li, P. Korantzopoulos, E. Liu and G. Li (2008). «Statin use and development of atrial fibrillation: A systematic review and meta-analysis of randomized clinical trials and observational studies.» *Int J Cardiol* 126(2): 160-170.
- Macchia, A., S. Monte, F. Pellegrini, M. Romero, D. Ferrante, H. Doval, A. D'Ettore, A. P. Maggioni and G. Tognoni (2008). «Omega-3 fatty acid supplementation reduces one-year risk of atrial fibrillation in patients hospitalized with myocardial infarction.» *Eur J Clin Pharmacol* 64(6): 627-34.
- Madrid, A. H., M. G. Bueno, J. M. Rebollo, I. Marin, G. Pena, E. Bernal, A. Rodriguez, L. Cano, J. M. Cano, P. Cabeza and C. Moro (2002). «Use of irbesartan to maintain sinus rhythm in patients with long-lasting persistent atrial fibrillation: a prospective and randomized study.» *Circulation* 106(3): 331-6.
- Madrid, A. H., I. M. Marin, C. E. Cervantes, E. B. Morell, J. E. Estevez, G. Moreno, J. R. Parajon, J. Peng, L. Limon, S. Nannini and C. Moro (2004). «Prevention of recurrences in patients with lone atrial fibrillation. The dose-dependent effect of angiotensin II receptor blockers.» *J Renin Angiotensin Aldosterone Syst* 5(3): 114-20.
- Maggioni, A. P., G. Fabbri, D. Lucci, R. Marchioli, M. G. Franzosi, R. Latini, G. L. Nicolosi, M. Porcu, F. Cosmi, S. Stefanelli, G. Tognoni and L. Tavazzi (2009). «Effects of rosuvastatin on atrial fibrillation occurrence: ancillary results of the GISSI-HF trial.» *Eur Heart J* 30(19): 2327-36.
- Marchetti, G., R. Roncuzzi, S. Urbinati, D. Vivoli, A. Barbieri and A. Zaniboni (2008). «Pretreatment with Mineralcorticoid Receptor Antagonists Plus Beta Blockers and Angiotensin Converting Enzyme Inhibitors Increases the Proportion of Patients in Sinus Rhythm after Electrical Cardioversion for Persistent Atrial Fibrillation and Heart Failure.» *Circulation* 118(18): S923-S923.
- Massie BM, Carson PE, McMurray JJ, Komajda M, McKelvie R, Zile MR, Anderson S, Donovan M, Iverson E, Staiger C, Ptaszynska A. Irbesartan in patients with heart failure and preserved ejection fraction. *N Engl J Med* 2008;359(23):2456-67.
- McLean, D. S., S. Ravid, M. Blazing, B. Gersh, A. Shui and C. P. Cannon (2008). «Effect of statin dose on incidence of atrial fibrillation: data from the Pravastatin or Atorvastatin Evaluation and Infection Therapy-Thrombolysis in Myocardial Infarction 22 (PROVE IT-TIMI 22) and Aggrastat to Zocor (A to Z) trials.» *Am Heart J* 155(2): 298-302.
- Miceli, A., C. Fino, B. Fiorani, M. Yeatman, P. Narayan, G. D. Angelini and M. Caputo (2009). «Effects of preoperative statin treatment on the incidence of postoperative atrial fibrillation in patients undergoing coronary artery bypass grafting.» *Ann Thorac Surg* 87(6): 1853-8.
- Milliez, P., X. Girerd, P. F. Plouin, J. Blacher, M. E. Safar and J. J. Mourad (2005). «Evidence for an increased rate of cardiovascular events in patients with primary aldosteronism.» *J Am Coll Cardiol* 45(8): 1243-8.
- Mithani, S., M. S. Akbar, D. J. Johnson, M. Kuskowski, K. K. Apple, J. Bonawitz-Conlin, H. B. Ward, R. F. Kelly, E. O. McFalls, H. E. Bloomfield, J. M. Li and S. Adabag (2009). «Dose dependent effect of statins on postoperative atrial fibrillation after cardiac surgery among patients treated with beta blockers.» *J Cardiothorac Surg* 4: 61.
- Mozaffarian, D., B. M. Psaty, E. B. Rimm, R. N. Lemaitre, G. L. Burke, M. F. Lyles, D. Lefkowitz and D. S. Siscovick (2004). «Fish intake and risk of incident atrial fibrillation.» *Circulation* 110(4): 368-73.
- Nodari, S., M. Triggiani, A. Foresti, G. Milesi, N. Berlinghieri and M. Gheorghide (2010). «Use of n-3 polyunsaturated fatty acids to maintain sinus rhythm after conversion from persistent atrial fibrillation: a prospective randomized study (abstract).» *J Am Coll Cardiol* 55: 1023-24.
- Patel, D., P. Mohanty, L. Di Biase, Y. Wang, M. H. Shaheen, J. E. Sanchez, R. P. Horton, G. J. Gallinghouse, J. D. Zagrodzky, S. M. Bailey, J. D. Burkhardt, W. R. Lewis, A. Diaz, S. Beheiry, R. Hongo, A. Al-Ahmad, P. Wang, R. Schweikert and A. Natale (2010). «The impact of statins and renin-angiotensin-aldosterone system blockers on pulmonary vein antrum isolation outcomes in post-menopausal females.» *Europace* 12(3): 322-30.
- Patel, D., M. Shaheen, P. Venkatraman, L. Armaganijan, J. E. Sanchez, R. P. Horton, L. Di Biase, P. Mohanty, R. Canby, S. M. Bailey, J. D. Burkhardt, G. J. Gallinghouse, J. D. Zagrodzky, M. Kozeluhova and A. Natale (2009). «Omega-3 polyunsaturated Fatty Acid supplementation reduced atrial fibrillation recurrence after pulmonary vein antrum isolation.» *Indian Pacing Electrophysiol J* 9(6): 292-8.
- Patti, G., M. Chello, D. Candura, V. Pasceri, A. D'Ambrosio, E. Covino and G. Di Sciascio (2006). «Randomized trial of atorvastatin for reduction of postoperative atrial fibrillation in

- patients undergoing cardiac surgery: results of the ARMYDA-3 (Atorvastatin for Reduction of MYocardial Dysrhythmia After cardiac surgery) study.» *Circulation* 114(14): 1455-61.
- Pellegrini, C. N., E. Vittinghoff, F. Lin, S. B. Hulley and G. M. Marcus (2009). «Statin use is associated with lower risk of atrial fibrillation in women with coronary disease: the HERS trial.» *Heart* 95(9): 704-8.
- Ramani, G., M. Zahid, C. B. Good, A. Macioce and A. F. Sonel (2007). «Comparison of frequency of new-onset atrial fibrillation or flutter in patients on statins versus not on statins presenting with suspected acute coronary syndrome.» *Am J Cardiol* 100(3): 404-5.
- Richter, B., M. Derntl, M. Marx, P. Lercher and H. D. Gossinger (2007). «Therapy with angiotensin-converting enzyme inhibitors, angiotensin II receptor blockers, and statins: no effect on ablation outcome after ablation of atrial fibrillation.» *Am Heart J* 153(1): 113-9.
- Salehian, O., J. Healey, B. Stambler, K. Alnemer, K. Almerri, J. Grover, I. Bata, J. Mann, J. Matthew, J. Pogue, S. Yusuf, G. Dagenais and E. Lonn (2007). «Impact of ramipril on the incidence of atrial fibrillation: results of the Heart Outcomes Prevention Evaluation study.» *Am Heart J* 154(3): 448-53.
- Santangeli, P., G. Ferrante, G. Pelargonio, A. Dello Russo, M. Casella, S. Bartoletti, L. Di Biase, F. Crea and A. Natale (2010). «Usefulness of statins in preventing atrial fibrillation in patients with permanent pacemaker: a systematic review.» *Europace* 12(5): 649-54.
- Saravanan, P., B. Bridgewater, A. L. West, S. C. O'Neill, P. C. Calder and N. C. Davidson (2009). «Omega-3 fatty acid supplementation does not reduce risk of atrial fibrillation after coronary artery bypass surgery: a randomized, double-blind, placebo-controlled clinical trial.» *Circ Arrhythm Electrophysiol* 3(1): 46-53.
- Savelieva, I. and J. Camm (2007). «Is there any hope for angiotensin-converting enzyme inhibitors in atrial fibrillation?» *Am Heart J* 154(3): 403-6.
- Savelieva, I. and J. Camm (2008). «Statins and polyunsaturated fatty acids for treatment of atrial fibrillation.» *Nat Clin Pract Cardiovasc Med* 5(1): 30-41.
- Savelieva, I. and A. John Camm (2004). «Atrial fibrillation and heart failure: natural history and pharmacological treatment.» *Europace* 5 Suppl 1: S5-19.
- Savelieva, I., A. Kourliouros and J. Camm (2009). «Primary and secondary prevention of atrial fibrillation with statins and polyunsaturated fatty acids: review of evidence and clinical relevance.» *Naunyn Schmiedebergs Arch Pharmacol*.
- Savelieva, I., A. Kourliouros and J. Camm (2010). «Primary and secondary prevention of atrial fibrillation with statins and polyunsaturated fatty acids: review of evidence and clinical relevance.» *Naunyn Schmiedebergs Arch Pharmacol* 381(3): 1-13.
- Schaer, B. A., C. Schneider, S. S. Jick, D. Conen, S. Osswald and C. R. Meier (2010). «Risk for incident atrial fibrillation in patients who receive antihypertensive drugs: a nested case-control study.» *Ann Intern Med* 152(2): 78-84.
- Schmieder, R. E., S. E. Kjeldsen, S. Julius, G. T. McInnes, A. Zanchetti and T. A. Hua (2008). «Reduced incidence of new-onset atrial fibrillation with angiotensin II receptor blockade: the VALUE trial.» *J Hypertens* 26(3): 403-11.
- Schneider, M. P., T. A. Hua, et al. (2010). «Prevention of atrial fibrillation by Renin-Angiotensin system inhibition a meta-analysis.» *J Am Coll Cardiol* 55(21): 2299-2307.
- Subramaniam, K., C. G. Koch, A. Bashour, M. O'Connor, M. Xu, A. M. Gillinov and N. J. Starr (2008). «Preoperative statin intake and morbid events after isolated coronary artery bypass grafting.» *J Clin Anesth* 20(1): 4-11.
- Tsai, C. T., F. T. Chiang, C. D. Tseng, J. J. Hwang, K. T. Kuo, C. K. Wu, C. C. Yu, Y. C. Wang, L. P. Lai and J. L. Lin (2010). «Increased expression of mineralocorticoid receptor in human atrial fibrillation and a cellular model of atrial fibrillation.» *J Am Coll Cardiol* 55(8): 758-70.
- Tveit, A., M. Grundtvig, T. Gundersen, P. Vanberg, A. G. Semb, E. Holt and L. Gullestad (2004). «Analysis of pravastatin to prevent recurrence of atrial fibrillation after electrical cardioversion.» *Am J Cardiol* 93(6): 780-2.
- Tveit, A., I. Seljeflot, I. Grundvold, M. Abdelnoor, P. Smith and H. Arnesen (2007). «Effect of candesartan and various inflammatory markers on maintenance of sinus rhythm after electrical cardioversion for atrial fibrillation.» *Am J Cardiol* 99(11): 1544-8.
- Ueng, K. C., T. P. Tsai, W. C. Yu, C. F. Tsai, M. C. Lin, K. C. Chan, C. Y. Chen, D. J. Wu, C. S. Lin and S. A. Chen (2003). «Use of enalapril to facilitate sinus rhythm maintenance after external cardioversion of long-standing persistent atrial fibrillation. Results of a prospective and controlled study.» *Eur Heart J* 24(23): 2090-8.
- Vedre, A., H. S. Gurm, J. B. Froehlich, E. Kline-Rogers, G. Montalescot, J. M. Gore, D. Brieger, A. L. Quill and K. A. Eagle (2009). «Impact of prior statin therapy on arrhythmic events in patients with acute coronary syndromes (from the Global Registry of Acute Coronary Events [GRACE]).» *Am J Cardiol* 104(12): 1613-7.
- Virani, S. S., V. Nambi, M. Razavi, V. V. Lee, M. Elayda, J. M. Wilson and C. M. Ballantyne (2008). «Preoperative statin therapy is not associated with a decrease in the incidence of postoperative atrial fibrillation in patients undergoing cardiac surgery.» *Am Heart J* 155(3): 541-6.
- Virtanen, J. K., J. Mursu, S. Voutilainen and T. P. Tuomainen (2009). «Serum long-chain n-3 polyunsaturated fatty acids and risk of hospital diagnosis of atrial fibrillation in men.» *Circulation* 120(23): 2315-21.
- Wachtell, K., B. Horneftam, M. Lehto, D. J. Slotwiner, E. Gerdt, M. H. Olsen, P. Aurup, B. Dahlöf, H. Ibsen, S. Julius, S. E. Kjeldsen, L. H. Lindholm, M. S. Nieminen, J. Rokkedal and R. B. Devereux (2005). «Cardiovascular morbidity and mortality in hypertensive patients with a history of atrial fibrillation: The Losartan Intervention For End Point Reduction in Hypertension (LIFE) study.» *J Am Coll Cardiol* 45(5): 705-11.
- Wachtell, K., M. Lehto, E. Gerdt, M. H. Olsen, B. Horneftam, B. Dahlöf, H. Ibsen, S. Julius, S. E. Kjeldsen, L. H. Lindholm, M. S. Nieminen and R. B. Devereux (2005). «Angiotensin II receptor blockade reduces new-onset atrial fibrillation and subsequent stroke compared to atenolol: the Losartan Intervention For End Point Reduction in Hypertension (LIFE) study.» *J Am Coll Cardiol* 45(5): 712-9.
- Yang, S. S., W. Han, H. Y. Zhou, G. Dong, B. C. Wang, H. Huo, N. Wei, Y. Cao, G. Zhou, C. H. Xiu and W. M. Li (2008). «Effects of spironolactone on electrical and structural remodeling of atrium in congestive heart failure dogs.» *Chin Med J (Engl)* 121(1): 38-42.
- Yin, Y., D. Dalal, Z. Liu, J. Wu, D. Liu, X. Lan, Y. Dai, L. Su, Z. Ling, Q. She, K. Luo, K. Woo and J. Dong (2006). «Prospective randomized study comparing amiodarone vs. amiodarone plus losartan vs. amiodarone plus perindopril for the prevention of atrial fibrillation recurrence in patients with lone paroxysmal atrial fibrillation.» *Eur Heart J* 27(15): 1841-6.
- Young-Xu, Y., S. Jabbour, R. Goldberg, C. M. Blatt, T. Graboyes, B. Bilchik and S. Ravid (2003). «Usefulness of statin drugs in protecting against atrial fibrillation in patients with coronary artery disease.» *Am J Cardiol* 92(12): 1379-83.

Yusuf, S., K. Teo, C. Anderson, J. Pogue, L. Dyal, I. Copland, H. Schumacher, G. Dagenais and P. Sleight (2008). «Effects of the angiotensin-receptor blocker telmisartan on cardiovascular events in high-risk patients intolerant to angiotensin-converting enzyme inhibitors: a randomised controlled trial.» *Lancet* 372(9644): 1174-83.

Zheng, B., J. Kang, Y. Tian, R. Tang, D. Long, R. Yu, H. He, M. Zhang, L. Shi, H. Tao, X. Liu, J. Dong and C. Ma (2009). «Angiotensin-converting enzyme inhibitors and angiotensin II receptor blockers have no beneficial effect on ablation outcome in chronic persistent atrial fibrillation.» *Acta Cardiol* 64(3): 335-40.

Recommendations

Belluzzi, F., L. Sernesi, et al. (2009). «Prevention of recurrent lone atrial fibrillation by the angiotensin-II converting enzyme inhibitor ramipril in normotensive patients.» *J Am Coll Cardiol* 53(1): 24-29.

Ducharme, A., K. Swedberg, et al. (2006). «Prevention of atrial fibrillation in patients with symptomatic chronic heart failure by candesartan in the Candesartan in Heart failure: Assessment of Reduction in Mortality and morbidity (CHARM) program.» *Am Heart J* 152(1): 86-92.

Healey, J. S., A. Baranchuk, et al. (2005). «Prevention of atrial fibrillation with angiotensin-converting enzyme inhibitors and angiotensin receptor blockers: a meta-analysis.» *J Am Coll Cardiol* 45(11): 1832-1839.

Jibrini, M. B., J. Molnar, et al. (2008). «Prevention of atrial fibrillation by way of abrogation of the renin-angiotensin system: a systematic review and meta-analysis.» *Am J Ther* 15(1): 36-43.

Liakopoulos, O. J., Y. H. Choi, et al. (2009). «Statins for prevention of atrial fibrillation after cardiac surgery: a systematic literature review.» *J Thorac Cardiovasc Surg* 138(3): 678-686 e671.

Liu, T., L. Li, et al. (2008). «Statin use and development of atrial fibrillation: A systematic review and meta-analysis of randomized clinical trials and observational studies.» *Int J Cardiol* 126(2): 160-170.

Madrid, A. H., M. G. Bueno, et al. (2002). «Use of irbesartan to maintain sinus rhythm in patients with long-lasting persistent atrial fibrillation: a prospective and randomized study.» *Circulation* 106(3): 331-336.

Patti, G., M. Chello, et al. (2006). «Randomized trial of atorvastatin for reduction of postoperative atrial fibrillation in patients undergoing cardiac surgery: results of the ARMYDA-3 (Atorvastatin for Reduction of MYocardial Dysrhythmia After cardiac surgery) study.» *Circulation* 114(14): 1455-1461.

Schmieder, R. E., S. E. Kjeldsen, et al. (2008). «Reduced incidence of new-onset atrial fibrillation with angiotensin II receptor blockade: the VALUE trial.» *J Hypertens* 26(3): 403-411.

Schneider, M. P., T. A. Hua, et al. (2010). «Prevention of atrial fibrillation by Renin-Angiotensin system inhibition: a meta-analysis.» *J Am Coll Cardiol* 55(21): 2299-2307.

Ueng, K. C., T. P. Tsai, et al. (2003). «Use of enalapril to facilitate sinus rhythm maintenance after external cardioversion of long-standing persistent atrial fibrillation. Results of a prospective and controlled study.» *Eur Heart J* 24(23): 2090-2098.

Yin, Y., D. Dalal, et al. (2006). «Prospective randomized study comparing amiodarone vs. amiodarone plus losartan vs. amiodarone plus perindopril for the prevention of atrial fibrillation recurrence in patients with lone paroxysmal atrial fibrillation.» *Eur Heart J* 27(15): 1841-1846.

5. Specific populations

5.1 Heart failure

Bertini M, Borleffs JW, Delgado V, Ng AA, Piers SR, Shanks M, Antoni LM, Biffi M, Boriani G, Schalij M, Bax JJ, Van de Veire N. Prediction of Atrial Fibrillation in Patients with Implantable Cardioverter-Defibrillator and Heart Failure. *Eur J Heart Fail* 2010; doi:10.1093/eurjhf/hfq126.

Cleland, J. G., J. Ghosh, N. Freemantle, G. C. Kaye, M. Nasir, A. L. Clark and A. P. Coletta (2004). «Clinical trials update and cumulative meta-analyses from the American College of Cardiology: WATCH, SCD-HeFT, DINAMIT, CASINO, INSPIRE, STRATUS-US, RIO-Lipids and cardiac resynchronisation therapy in heart failure.» *Eur J Heart Fail* 6(4): 501-8.

David, D., E. D. Segni, H. O. Klein and E. Kaplinsky (1979). «Inefficacy of digitalis in the control of heart rate in patients with chronic atrial fibrillation: beneficial effect of an added beta adrenergic blocking agent.» *Am J Cardiol* 44(7): 1378-82.

Dickstein, K., A. Cohen-Solal, G. Filippatos, J. J. McMurray, P. Ponikowski, P. A. Poole-Wilson, A. Stromberg, D. J. van Veldhuisen, D. Atar, A. W. Hoes, A. Keren, A. Mebazaa, M. Nieminen, S. G. Priori, K. Swedberg, A. Vahanian, J. Camm, R. De Caterina, V. Dean, C. Funck-Brentano, I. Hellemans, S. D. Kristensen, K. McGregor, U. Sechtem, S. Silber, M. Tendera, P. Widimsky and J. L. Zamorano (2008). «ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure 2008: the Task Force for the Diagnosis and Treatment of Acute and Chronic Heart Failure 2008 of the European Society of Cardiology. Developed in collaboration with the Heart Failure Association of the ESC (HFA) and endorsed by the European Society of Intensive Care Medicine (ESICM).» *Eur Heart J* 29(19): 2388-442.

Farshi, R., D. Kistner, J. S. Sarma, J. A. Longmate and B. N. Singh (1999). «Ventricular rate control in chronic atrial fibrillation during daily activity and programmed exercise: a crossover open-label study of five drug regimens.» *J Am Coll Cardiol* 33(2): 304-10.

Fauchier, L., C. Grimard, B. Pierre, E. Nonin, L. Gorin, B. Rauzy, P. Cosnay, D. Babuty and B. Charbonnier (2009). «Comparison of beta blocker and digoxin alone and in combination for management of patients with atrial fibrillation and heart failure.» *Am J Cardiol* 103(2): 248-254.

Gorin, L., L. Fauchier, E. Nonin, A. de Labriolle, K. Haguenoer, P. Cosnay, D. Babuty and B. Charbonnier (2010) «Antithrombotic treatment and the risk of death and stroke in patients with atrial fibrillation and a CHADS2 score=1.» *Thromb Haemost* 103(3). Published on line

Hsu, L. F., P. Jais, P. Sanders, S. Garrigue, M. Hocini, F. Sacher, Y. Takahashi, M. Rotter, J. L. Pasquie, C. Scavee, P. Bordachar, J. Clementy and M. Haissaguerre (2004). «Catheter ablation for atrial fibrillation in congestive heart failure.» *N Engl J Med* 351(23): 2373-83.

Khan, M. N., P. Jais, J. Cummings, L. Di Biase, P. Sanders, D. O. Martin, J. Kautzner, S. Hao, S. Themistoclakis, R. Fanelli, D. Potenza, R. Massaro, O. Wazni, R. Schweikert, W. Saliba, P. Wang, A. Al-Ahmad, S. Beheiry, P. Santarelli, R. C. Starling, A. Dello Russo, G. Pelargonio, J. Brachmann, V. Schibgilla, A. Bonso, M. Casella, A. Raviele, M. Haissaguerre and A. Natale (2008). «Pulmonary-vein isolation for atrial fibrillation in patients with heart failure.» *N Engl J Med* 359(17): 1778-85.

Lewis, R. V., E. Laing, T. A. Moreland, E. Service and D. G. McDewitt (1988). «A comparison of digoxin, diltiazem and their combination in the treatment of atrial fibrillation.» *Eur Heart J* 9(3): 279-83.

- Nasr, I. A., A. Bouzamondo, J. S. Hulot, O. Dubourg, J. Y. Le Heuzey and P. Lechat (2007). «Prevention of atrial fibrillation onset by beta-blocker treatment in heart failure: a meta-analysis.» *Eur Heart J* 28(4): 457-62.
- Neuberger, H. R., C. Mewis, D. J. van Veldhuisen, U. Schotten, I. C. van Gelder, M. A. Allesie and M. Böhm (2007). «Management of atrial fibrillation in patients with heart failure.» *Eur Heart J* 28(21): 2568-77.
- Roy, D., M. Talajic, et al. (2008). «Rhythm control versus rate control for atrial fibrillation and heart failure.» *N Engl J Med* 358(25): 2667-2677.
- Stevenson, W. G. and L. W. Stevenson (1999). «Atrial fibrillation in heart failure.» *N Engl J Med* 341(12): 910-1.

Recommendations

- Chevalier P, Durand-Dubief A, Burri H, Cucherat M, Kirkorian G, Touboul P. Amiodarone versus placebo and class Ic drugs for cardioversion of recent-onset atrial fibrillation: a meta-analysis. *J Am Coll Cardiol* 2003;41(2):255-62.
- Deedwania PC, Singh BN, Ellenbogen K, Fisher S, Fletcher R, Singh SN. Spontaneous conversion and maintenance of sinus rhythm by amiodarone in patients with heart failure and atrial fibrillation: observations from the veterans affairs congestive heart failure survival trial of antiarrhythmic therapy (CHF-STAT). The Department of Veterans Affairs CHF-STAT Investigators. *Circulation* 1998;98(23):2574-9.
- Dong K, Shen WK, Powell BD, Dong YX, Rea RF, Friedman PA, Hodge DO, Wiste HJ, Webster T, Hayes DL, Cha YM. Atrioventricular nodal ablation predicts survival benefit in patients with atrial fibrillation receiving cardiac resynchronization therapy. *Heart Rhythm* 2010 7(9):1240-5. Published on line Feb 15t, doi:10.1016/j.hrthm.2010.02.011.
- Farshi R, Kistner D, Sarma JS, Longmate JA, Singh BN. Ventricular rate control in chronic atrial fibrillation during daily activity and programmed exercise: a crossover open-label study of five drug regimens. *J Am Coll Cardiol* 1999;33(2):304-10.
- Fauchier L, Grimard C, Pierre B, Nonin E, Gorin L, Rauzy B, Cosnay P, Babuty D, Charbonnier B. Comparison of beta blocker and digoxin alone and in combination for management of patients with atrial fibrillation and heart failure. *Am J Cardiol* 2009;103(2):248-54.
- Gasparini M, Auricchio A, Metra M, Regoli F, Fantoni C, Lamp B, Curnis A, Vogt J, Klersy C. Long-term survival in patients undergoing cardiac resynchronization therapy: the importance of performing atrio-ventricular junction ablation in patients with permanent atrial fibrillation. *Eur Heart J* 2008;29(13):1644-52.
- Gasparini M, Regoli F, Galimberti P, Ceriotti C, Cappelleri A. Cardiac resynchronization therapy in heart failure patients with atrial fibrillation. *Europace* 2009;11 Suppl 5:v82-6.
- Hohnloser SH, Crijns HJ, van Eickels M, Gaudin C, Page RL, Torp-Pedersen C, Connolly SJ. Effect of dronedarone on cardiovascular events in atrial fibrillation. *N Engl J Med* 2009;360(7):668-78.
- Hsu LF, Jais P, Sanders P, Garrigue S, Hocini M, Sacher F, Takahashi Y, Rotter M, Pasquie JL, Scavee C, Bordachar P, Clementy J, Haissaguerre M. Catheter ablation for atrial fibrillation in congestive heart failure. *N Engl J Med* 2004;351(23):2373-83.
- Khan MN, Jais P, Cummings J, Di Biase L, Sanders P, Martin DO, Kautzner J, Hao S, Themistoclakis S, Fanelli R, Potenza D, Massaro R, Wazni O, Schweikert R, Saliba W, Wang P, Al-Ahmad A, Beheiry S, Santarelli P, Starling RC, Dello Russo A, Pelargonio G, Brachmann J, Schibgilla V, Bonso A, Casella M, Raviele A, Haissaguerre M, Natale A. Pulmonary-vein isolation for atrial fibrillation in patients with heart failure. *N Engl J Med* 2008;359(17):1778-85.
- Khand AU, Rankin AC, Martin W, Taylor J, Gemmell I, Cleland

- JG. Carvedilol alone or in combination with digoxin for the management of atrial fibrillation in patients with heart failure? *J Am Coll Cardiol* 2003;42(11):1944-51.
- Kumar, A. (1996). «Intravenous amiodarone for therapy of atrial fibrillation and flutter in critically ill patients with severely depressed left ventricular function.» *South Med J* 89(8): 779-785.
- Manios EG, Mavrikakis HE, Kanoupakis EM, Kallergis EM, Dermitzaki DN, Kambouraki DC, Vardas PE. Effects of amiodarone and diltiazem on persistent atrial fibrillation conversion and recurrence rates: a randomized controlled study. *Cardiovasc Drugs Ther* 2003;17(1):31-9.
- Shelton RJ, Clark AL, Goode K, Rigby AS, Houghton T, Kaye GC, Cleland JG. A randomised, controlled study of rate versus rhythm control in patients with chronic atrial fibrillation and heart failure: (CAFE-II Study). *Heart* 2009;95(11):924-30.
- Singh BN, Singh SN, Reda DJ, Tang XC, Lopez B, Harris CL, Fletcher RD, Sharma SC, Atwood JE, Jacobson AK, Lewis HD, Jr., Raisch DW, Ezekowitz MD. Amiodarone versus sotalol for atrial fibrillation. *N Engl J Med* 2005;352(18):1861-72.

5.2 Athletes

- Alboni, P., G. L. Botto, N. Baldi, M. Luzi, V. Russo, L. Gianfranchi, P. Marchi, M. Calzolari, A. Solano, R. Baroffio and G. Gaggioli (2004). «Outpatient treatment of recent-onset atrial fibrillation with the «pill-in-the-pocket» approach.» *N Engl J Med* 351(23): 2384-91.
- Baldesberger, S., U. Bauersfeld, R. Candinas, B. Seifert, M. Zuber, M. Ritter, R. Jenni, E. Oechslin, P. Luthi, C. Scharf, B. Marti and C. H. Attenhofer Jost (2008). «Sinus node disease and arrhythmias in the long-term follow-up of former professional cyclists.» *Eur Heart J* 29(1): 71-8.
- Brembilla-Perrot, B., P. Houriez, D. Beurrier, O. Claudon, A. Terrier de la Chaise and P. Louis (2001). «Predictors of atrial flutter with 1:1 conduction in patients treated with class I antiarrhythmic drugs for atrial tachyarrhythmias.» *Int J Cardiol* 80(1): 7-15.
- Calvo, N., L. Mont, D. Tamborero, A. Berrueto, G. Viola, E. Guasch, M. Nadal, D. Andreu, B. Vidal, M. Sitges and J. Brugada «Efficacy of circumferential pulmonary vein ablation of atrial fibrillation in endurance athletes.» *Europace* 12(1): 30-6.
- Elosua, R., A. Arquer, L. Mont, A. Sambola, L. Molina, E. Garcia-Moran, J. Brugada and J. Marrugat (2006). «Sport practice and the risk of lone atrial fibrillation: a case-control study.» *Int J Cardiol* 108(3): 332-7.
- Furlanello, F., A. Bertoldi, M. Dallago, A. Galassi, F. Fernando, A. Biffi, P. Mazzone, C. Pappone and S. Chierchia (1998). «Atrial fibrillation in elite athletes.» *J Cardiovasc Electrophysiol* 9(8 Suppl): S63-8.
- Furlanello, F., P. Lupo, M. Pittalis, S. Foresti, L. Vitali-Serdoz, P. Francia, G. De Ambroggi, P. Ferrero, S. Nardi, G. Inama, L. De Ambroggi and R. Cappato (2008). «Radiofrequency Catheter Ablation of Atrial Fibrillation in Athletes Referred for Disabling Symptoms Preventing Usual Training Schedule and Sport Competition.» *J Cardiovasc Electrophysiol*.
- Heidbuchel, H., W. Anne, R. Willems, B. Adriaenssens, F. Van de Werf and H. Ector (2006). «Endurance sports is a risk factor for atrial fibrillation after ablation for atrial flutter.» *Int J Cardiol* 107(1): 67-72.
- Heidbuchel, H., D. Corrado, A. Biffi, E. Hoffmann, N. Panhuyzen-Goedkoop, J. Hoogsteen, P. Delise, P. I. Hoff and A. Pelliccia (2006). «Recommendations for participation in leisure-time physical activity and competitive sports of patients with arrhythmias and potentially arrhythmogenic conditions. Part

- II: ventricular arrhythmias, channelopathies and implantable defibrillators.» *Eur J Cardiovasc Prev Rehabil* 13(5): 676-86.
- Karjalainen, J., U. M. Kujala, J. Kaprio, S. Sarna and M. Viitasalo (1998). «Lone atrial fibrillation in vigorously exercising middle aged men: case-control study.» *BMJ* 316(7147): 1784-5.
- Molina, L., L. Mont, J. Marrugat, A. Berrueto, J. Brugada, J. Bruguera, C. Rebato and R. Elosua (2008). «Long-term endurance sport practice increases the incidence of lone atrial fibrillation in men: a follow-up study.» *Europace* 10(5): 618-23.
- Mont, L., R. Elosua and J. Brugada (2008). «Endurance sport practice as a risk factor for atrial fibrillation and atrial flutter.» *Europace* 11(1): 11-17.
- Mont, L., R. Elosua and J. Brugada (2009). «Endurance sport practice as a risk factor for atrial fibrillation and atrial flutter.» *Europace* 11(1): 11-7.
- Mont, L., A. Sambola, J. Brugada, M. Vacca, J. Marrugat, R. Elosua, C. Pare, M. Azqueta and G. Sanz (2002). «Long-lasting sport practice and lone atrial fibrillation.» *Eur Heart J* 23(6): 477-82.
- Mozaffarian, D., C. D. Furberg, B. M. Psaty and D. Siscovick (2008). «Physical activity and incidence of atrial fibrillation in older adults: the cardiovascular health study.» *Circulation* 118(8): 800-7.
- Nabar, A., L. M. Rodriguez, C. Timmermans, A. van den Dool, J. L. Smeets and H. J. Wellens (1999). «Effect of right atrial isthmus ablation on the occurrence of atrial fibrillation: observations in four patient groups having type I atrial flutter with or without associated atrial fibrillation.» *Circulation* 99(11): 1441-5.
- Reithmann, C., U. Dorwarth, M. Dugas, A. Hahnefeld, S. Ramamurthy, T. Remp, G. Steinbeck and E. Hoffmann (2003). «Risk factors for recurrence of atrial fibrillation in patients undergoing hybrid therapy for antiarrhythmic drug-induced atrial flutter.» *Eur Heart J* 24(13): 1264-72.
- Stabile, G., A. De Simone, P. Turco, V. La Rocca, P. Nocerino, C. Astarita, F. Maresca, C. De Matteis, T. Di Napoli, E. Stabile and D. F. Vitale (2001). «Response to flecainide infusion predicts long-term success of hybrid pharmacologic and ablation therapy in patients with atrial fibrillation.» *J Am Coll Cardiol* 37(6): 1639-44.
- Sullivan, M. L., C. M. Martinez and E. J. Gallagher (1999). «Atrial fibrillation and anabolic steroids.» *J Emerg Med* 17(5): 851-7.
- Swanson, D. R. (2006). «Atrial fibrillation in athletes: implicit literature-based connections suggest that overtraining and subsequent inflammation may be a contributory mechanism.» *Med Hypotheses* 66(6): 1085-92.
- Turitto, G., P. Akhrass, M. Leonardi, C. Saponieri, A. Sette and N. El-Sherif (2009). «Atrial flutter with spontaneous 1:1 atrioventricular conduction in adults: an uncommon but frequently missed cause for syncope/presyncope.» *Pacing Clin Electrophysiol* 32(1): 82-90.

5.3 Valvular heart disease

- Iung, B., G. Baron, E. G. Butchart, F. Delahaye, C. Gohlke-Barwolf, O. W. Levang, P. Tornos, J. L. Vanoverschelde, F. Vermeer, E. Boersma, P. Ravaud and A. Vahanian (2003). «A prospective survey of patients with valvular heart disease in Europe: The Euro Heart Survey on Valvular Heart Disease.» *Eur Heart J* 24(13): 1231-43.
- Vahanian, A., H. Baumgartner, J. Bax, E. Butchart, R. Dion, G. Filippatos, F. Flachskampf, R. Hall, B. Iung, J. Kasprzak, P. Nataf, P. Tornos, L. Torracca and A. Wenink (2007). «Guidelines on the management of valvular heart disease: The Task Force on the Management of Valvular Heart Disease of the European Society of Cardiology.» *Eur Heart J* 28(2): 230-68.

5.4 Acute coronary syndromes

- Bassand, J. P., C. W. Hamm, D. Ardissino, E. Boersma, A. Budaj, F. Fernandez-Aviles, K. A. Fox, D. Hasdai, E. M. Ohman, L. Wallentin and W. Wijns (2007). «Guidelines for the diagnosis and treatment of non-ST-segment elevation acute coronary syndromes.» *Eur Heart J* 28(13): 1598-660.
- Crenshaw, B. S., S. R. Ward, C. B. Granger, A. L. Stebbins, E. J. Topol and R. M. Califf (1997). «Atrial fibrillation in the setting of acute myocardial infarction: the GUSTO-I experience. Global Utilization of Streptokinase and TPA for Occluded Coronary Arteries.» *J Am Coll Cardiol* 30(2): 406-13.
- Echt DS, Liebson PR, Mitchell LB, Peters RW, Obias-Manno D, Barker AH, Arensberg D, Baker A, Friedman L, Greene HL, Huther ML, Richardson DW, Investigators at C. Mortality and morbidity in patients receiving encainide, flecainide, or placebo. The Cardiac Arrhythmia Suppression Trial. *N Engl J Med* 1991;324(12):781-8.
- Kinjo, K., H. Sato, Y. Ohnishi, E. Hishida, D. Nakatani, H. Mizuno, M. Fukunami, Y. Koretsune, H. Takeda and M. Hori (2003). «Prognostic significance of atrial fibrillation/atrial flutter in patients with acute myocardial infarction treated with percutaneous coronary intervention.» *Am J Cardiol* 92(10): 1150-4.
- Kober, L., K. Swedberg, J. J. McMurray, M. A. Pfeffer, E. J. Velazquez, R. Diaz, A. P. Maggioni, V. Mareev, G. Opolski, F. Van de Werf, F. Zannad, G. Ertl, S. D. Solomon, S. Zelenkofske, J. L. Rouleau, J. D. Leimberger and R. M. Califf (2006). «Previously known and newly diagnosed atrial fibrillation: a major risk indicator after a myocardial infarction complicated by heart failure or left ventricular dysfunction.» *Eur J Heart Fail* 8(6): 591-8.
- Lehto, M., S. Snapinn, K. Dickstein, K. Swedberg and M. S. Nieminen (2005). «Prognostic risk of atrial fibrillation in acute myocardial infarction complicated by left ventricular dysfunction: the OPTIMAAL experience.» *Eur Heart J* 26(4): 350-6.
- Lip, G. Y., K. Huber, F. Andreotti, H. Arnesen, K. J. Airaksinen, T. Cuisset, P. Kirchhof and F. Marin (2010). «Management of antithrombotic therapy in atrial fibrillation patients presenting with acute coronary syndrome and/or undergoing percutaneous coronary intervention/ stenting.» *Thromb Haemost* 103(1): 13-28.
- McMurray, J., L. Kober, M. Robertson, H. Dargie, W. Colucci, J. Lopez-Sendon, W. Remme, D. N. Sharpe and I. Ford (2005). «Antiarrhythmic effect of carvedilol after acute myocardial infarction: results of the Carvedilol Post-Infarct Survival Control in Left Ventricular Dysfunction (CAPRICORN) trial.» *J Am Coll Cardiol* 45(4): 525-30.
- Pedersen, O. D., H. Bagger, L. Kober and C. Torp-Pedersen (1999). «Trandolapril reduces the incidence of atrial fibrillation after acute myocardial infarction in patients with left ventricular dysfunction.» *Circulation* 100(4): 376-80.
- Rubboli, A., J. L. Halperin, K. E. Juhani Airaksinen, M. Buerke, E. Eeckhout, S. B. Freedman, A. H. Gershlick, A. Schlitt, H. Fat Tse, F. W. Verheugt and G. Y. Lip (2008). «Antithrombotic therapy in patients treated with oral anticoagulation undergoing coronary artery stenting. An expert consensus document with focus on atrial fibrillation.» *Ann Med* 40(6): 428-36.
- Schmitt, J., G. Duray, et al. (2009). «Atrial fibrillation in acute myocardial infarction: a systematic review of the incidence, clinical features and prognostic implications.» *Eur Heart J* 30(9): 1038-1045.
- Van de Werf, F., J. Bax, A. Betriu, C. Blomstrom-Lundqvist, F. Crea, V. Falk, G. Filippatos, K. Fox, K. Huber, A. Kastrati, A. Rosengren, P. G. Steg, M. Tubaro, F. Verheugt, F. Weidinger, M. Weis, A. Vahanian, J. Camm, R. De Caterina, V. Dean, K.

Dickstein, C. Funck-Brentano, I. Hellemans, S. D. Kristensen, K. McGregor, U. Sechtem, S. Silber, M. Tendera, P. Widimsky, J. L. Zamorano, F. V. Aguirre, N. Al-Attar, E. Alegria, F. Andreotti, W. Benzer, O. Breithardt, N. Danchin, C. Di Mario, D. Dudek, D. Gulba, S. Halvorsen, P. Kaufmann, R. Kornowski, G. Y. Lip and F. Rutten (2008). «Management of acute myocardial infarction in patients presenting with persistent ST-segment elevation: the Task Force on the Management of ST-Segment Elevation Acute Myocardial Infarction of the European Society of Cardiology.» *Eur Heart J* 29(23): 2909-45.

5.5 Diabetes Mellitus

Benjamin, E. J., D. Levy, S. M. Vaziri, R. B. D'Agostino, A. J. Belanger and P. A. Wolf (1994). «Independent risk factors for atrial fibrillation in a population-based cohort. The Framingham Heart Study.» *JAMA* 271(11): 840-4.

Du, X., T. Ninomiya, B. de Galan, E. Abadir, J. Chalmers, A. Pillai, M. Woodward, M. Cooper, S. Harrap, P. Hamet, N. Poulter, G. Y. Lip and A. Patel (2009). «Risks of cardiovascular events and effects of routine blood pressure lowering among patients with type 2 diabetes and atrial fibrillation: results of the ADVANCE study.» *Eur Heart J* 30(9): 1128-35.

Krahn, A. D., J. Manfreda, R. B. Tate, F. A. Mathewson and T. E. Cuddy (1995). «The natural history of atrial fibrillation: incidence, risk factors, and prognosis in the Manitoba Follow-Up Study.» *Am J Med* 98(5): 476-84.

Levy, S., M. Maarek, P. Coumel, L. Guize, J. Lekieffre, J. L. Medvedowsky and A. Sebaoun (1999). «Characterization of different subsets of atrial fibrillation in general practice in France: the ALFA study. The College of French Cardiologists.» *Circulation* 99(23): 3028-35.

5.6 The Elderly

Fitzmaurice, D. A., F. D. Hobbs, S. Jowett, J. Mant, E. T. Murray, R. Holder, J. P. Raftery, S. Bryan, M. Davies, G. Y. Lip and T. F. Allan (2007). «Screening versus routine practice in detection of atrial fibrillation in patients aged 65 or over: cluster randomised controlled trial.» *Bmj* 335:383 doi: 10.1136/bmj.39280.660567.55

Gorin L, Fauchier L, Nonin E, de Labriolle A, Haguenoer K, Cosnay P, Babuty D, Charbonnier B. Antithrombotic treatment and the risk of death and stroke in patients with atrial fibrillation and a CHADS2 score=1. *Thromb Haemost* 2010;103(3).

Heeringa, J., D. A. van der Kuip, A. Hofman, J. A. Kors, G. van Herpen, B. H. Stricker, T. Stijnen, G. Y. Lip and J. C. Witteman (2006). «Prevalence, incidence and lifetime risk of atrial fibrillation: the Rotterdam study.» *Eur Heart J* 27(8): 949-53.

Langenberg, M., B. S. Hellemans, J. W. van Ree, F. Vermeer, J. Lodder, H. J. Schouten and J. A. Knottnerus (1996). «Atrial fibrillation in elderly patients: prevalence and comorbidity in general practice.» *BMJ* 313(7071): 1534 ff.

Lip, G. Y., R. G. Hart and D. Conway (2002). «Antithrombotic therapy for atrial fibrillation.» *BMJ* 325: 1022-25.

Mant, J., F. D. Hobbs, K. Fletcher, A. Roalfe, D. Fitzmaurice, G. Y. Lip and E. Murray (2007). «Warfarin versus aspirin for stroke prevention in an elderly community population with atrial fibrillation (the Birmingham Atrial Fibrillation Treatment of the Aged Study, BAFTA): a randomised controlled trial.» *Lancet* 370(9586): 493-503.

Salpeter, S., T. Ormiston and E. Salpeter (2002). «Cardioselective beta-blockers for reversible airway disease.» *Cochrane Database Syst Rev*(4): CD002992.

Salpeter, S. S., T. Ormiston, E. Salpeter, P. Poole and C. Cates (2002). «Cardioselective beta-blockers for chronic obstructive

pulmonary disease.» *Cochrane Database Syst Rev*(2): CD003566.

Segal, J. B., R. L. McNamara, M. R. Miller, N. Kim, S. N. Goodman, N. R. Powe, K. Robinson, D. Yu and E. B. Bass (2000). «The evidence regarding the drugs used for ventricular rate control.» *J Fam Pract* 49(1): 47-59.

van Walraven, C., R. G. Hart, S. Connolly, P. C. Austin, J. Mant, F. D. Hobbs, P. J. Koudstaal, P. Petersen, F. Perez-Gomez, J. A. Knottnerus, B. Boode, M. D. Ezekowitz and D. E. Singer (2009). «Effect of age on stroke prevention therapy in patients with atrial fibrillation: the atrial fibrillation investigators.» *Stroke* 40(4): 1410-6.

Recommendations

Fitzmaurice, D. A., F. D. Hobbs, S. Jowett, J. Mant, E. T. Murray, R. Holder, J. P. Raftery, S. Bryan, M. Davies, G. Y. Lip and T. F. Allan (2007). «Screening versus routine practice in detection of atrial fibrillation in patients aged 65 or over: cluster randomised controlled trial.» *BMJ* 335(7616): 383.

5.7 Pregnancy

Barbour, L. A., J. L. Oja and L. K. Schultz (2004). «A prospective trial that demonstrates that dalteparin requirements increase in pregnancy to maintain therapeutic levels of anticoagulation.» *Am J Obstet Gynecol* 191(3): 1024-9.

Bartalena, L., F. Bogazzi, L. E. Braverman and E. Martino (2001). «Effects of amiodarone administration during pregnancy on neonatal thyroid function and subsequent neurodevelopment.» *J Endocrinol Invest* 24(2): 116-30.

Bates, S. M., I. A. Greer, I. Pabinger, S. Sofaer and J. Hirsh (2008). «Venous thromboembolism, thrombophilia, antithrombotic therapy, and pregnancy: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines (8th Edition).» *Chest* 133(6 Suppl): 844S-886S.

Bayliss, H., D. Churchill, M. Beevers and D. G. Beevers (2002). «Anti-hypertensive drugs in pregnancy and fetal growth: evidence for «pharmacological programming» in the first trimester?» *Hypertens Pregnancy* 21(2): 161-74.

Bonow, R. O., B. A. Carabello, C. Kanu, A. C. de Leon, Jr., D. P. Faxon, M. D. Freed, W. H. Gaasch, B. W. Lytle, R. A. Nishimura, P. T. O'Gara, R. A. O'Rourke, C. M. Otto, P. M. Shah, J. S. Shanewise, S. C. Smith, Jr., A. K. Jacobs, C. D. Adams, J. L. Anderson, E. M. Antman, V. Fuster, J. L. Halperin, L. F. Hiratzka, S. A. Hunt, R. Nishimura, R. L. Page and B. Riegel (2006). «ACC/AHA 2006 guidelines for the management of patients with valvular heart disease: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (writing committee to revise the 1998 Guidelines for the Management of Patients With Valvular Heart Disease): developed in collaboration with the Society of Cardiovascular Anesthesiologists: endorsed by the Society for Cardiovascular Angiography and Interventions and the Society of Thoracic Surgeons.» *Circulation* 114(5): e84-231.

Butters, L., S. Kennedy and P. C. Rubin (1990). «Atenolol in essential hypertension during pregnancy.» *BMJ* 301(6752): 587-9.

Chan, W. S., S. Anand and J. S. Ginsberg (2000). «Anticoagulation of pregnant women with mechanical heart valves: a systematic review of the literature.» *Arch Intern Med* 160(2): 191-6.

Dimitrakakis, C., P. Papageorgiou, I. Papageorgiou, A. Antzaklis, N. Sakarelou and S. Michalas (2000). «Absence of transplacental passage of the low molecular weight heparin enoxaparin.» *Haemostasis* 30(5): 243-8.

Eliahou, H. E., D. S. Silverberg, et al. (1978). «Propranolol for the

- treatment of hypertension in pregnancy.» *Br J Obstet Gynaecol* 85(6): 431-436.
- Gyamfi, C., R. Cohen, M. T. Desancho and S. Gaddipati (2005). «Prophylactic dosing adjustment in pregnancy based upon measurements of anti-factor Xa levels.» *J Matern Fetal Neonatal Med* 18(5): 329-31.
- Karthikeyan, V. J. and G. Y. Lip (2007). «Hypertension in pregnancy: pathophysiology and management strategies.» *Curr Pharm Des* 13(25): 2567-79.
- Lepercq, J., J. Conard, A. Borel-Derlon, J. Y. Darmon, O. Boudignat, C. Francoual, P. Priollet, C. Cohen, N. Yvelin, J. F. Schved, M. Tournaire and J. Y. Borg (2001). «Venous thromboembolism during pregnancy: a retrospective study of enoxaparin safety in 624 pregnancies.» *BJOG* 108(11): 1134-40.
- Lydakis, C., G. Y. Lip, M. Beevers and D. G. Beevers (1999). «Atenolol and fetal growth in pregnancies complicated by hypertension.» *Am J Hypertens* 12(6): 541-7.
- Magee, L. A., E. Elran, S. B. Bull, A. Logan and G. Koren (2000). «Risks and benefits of beta-receptor blockers for pregnancy hypertension: overview of the randomized trials.» *Eur J Obstet Gynecol Reprod Biol* 88(1): 15-26.
- Michael, C. A. (1982). «The evaluation of labetalol in the treatment of hypertension complicating pregnancy.» *Br J Clin Pharmacol* 13(1 Suppl): 127S-131S.
- Nanson, J., D. Elcock, M. Williams and C. D. Deakin (2001). «Do physiological changes in pregnancy change defibrillation energy requirements?» *Br J Anaesth* 87(2): 237-9.
- Plomp, T. A., T. Vulsma and J. J. de Vijlder (1992). «Use of amiodarone during pregnancy.» *Eur J Obstet Gynecol Reprod Biol* 43(3): 201-7.
- Pruyn, S. C., J. P. Phelan and G. C. Buchanan (1979). «Long-term propranolol therapy in pregnancy: maternal and fetal outcome.» *Am J Obstet Gynecol* 135(4): 485-9.
- Silversides, C. K., L. Harris, K. Haberler, M. Sermer, J. M. Colman and S. C. Siu (2006). «Recurrence rates of arrhythmias during pregnancy in women with previous tachyarrhythmia and impact on fetal and neonatal outcomes.» *Am J Cardiol* 97(8): 1206-12.
- van Engelen, A. D., O. Weijtens, J. I. Brenner, C. S. Kleinman, J. A. Copel, P. Stoutenbeek and E. J. Meijboom (1994). «Management outcome and follow-up of fetal tachycardia.» *J Am Coll Cardiol* 24(5): 1371-5.
- Recommendations**
- Bates, S. M., I. A. Greer, I. Pabinger, S. Sofaer and J. Hirsh (2008). «Venous thromboembolism, thrombophilia, antithrombotic therapy, and pregnancy: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines (8th Edition).» *Chest* 133(6 Suppl): 844S-886S.
- 5.8 Post-operative AF**
- Bagshaw, S. M., P. D. Galbraith, L. B. Mitchell, R. Sauve, D. V. Exner and W. A. Ghali (2006). «Prophylactic amiodarone for prevention of atrial fibrillation after cardiac surgery: a meta-analysis.» *Ann Thorac Surg* 82(5): 1927-37.
- Buckley, M. S., P. E. Nolan, Jr., M. K. Slack, J. E. Tisdale, D. E. Hilleman and J. G. Copeland (2007). «Amiodarone prophylaxis for atrial fibrillation after cardiac surgery: meta-analysis of dose response and timing of initiation.» *Pharmacotherapy* 27(3): 360-8.
- Burgess, D. C., M. J. Kilborn and A. C. Keech (2006). «Interventions for prevention of post-operative atrial fibrillation and its complications after cardiac surgery: a meta-analysis.» *Eur Heart J* 27(23): 2846-57.
- Chung, M. K., R. S. Augustini, C. R. Asher, D. P. Pool, T. A. Grady, M. Zikri, S. M. Buehner, M. Weinstock and P. M. McCarthy (2000). «Ineffectiveness and potential proarrhythmia of atrial pacing for atrial fibrillation prevention after coronary artery bypass grafting.» *Ann Thorac Surg* 69(4): 1057-63.
- Crystal, E., S. J. Connolly, K. Sleik, T. J. Ginger and S. Yusuf (2002). «Interventions on prevention of postoperative atrial fibrillation in patients undergoing heart surgery: a meta-analysis.» *Circulation* 106(1): 75-80.
- Daoud, E. G., R. Snow, J. D. Hummel, S. J. Kalbfleisch, R. Weiss and R. Augustini (2003). «Temporary atrial epicardial pacing as prophylaxis against atrial fibrillation after heart surgery: a meta-analysis.» *J Cardiovasc Electrophysiol* 14(2): 127-32.
- Dunning J, Treasure T, Versteegh M, Nashef SA. Guidelines on the prevention and management of de novo atrial fibrillation after cardiac and thoracic surgery. *Eur J Cardiothorac Surg* 2006;30(6):852-72.
- Ho, K. M. and J. A. Tan (2009). «Benefits and risks of corticosteroid prophylaxis in adult cardiac surgery: a dose-response meta-analysis.» *Circulation* 119(14): 1853-1866.
- Kulik, A., M. Ruel, M. E. Bourke, L. Sawyer, J. Penning, H. J. Nathan, T. G. Mesana and P. Bedard (2004). «Postoperative naproxen after coronary artery bypass surgery: a double-blind randomized controlled trial.» *Eur J Cardiothorac Surg* 26(4): 694-700.
- Lahtinen, J., F. Biancari, E. Salmela, M. Mosorin, J. Satta, P. Rainio, J. Rimpilainen, M. Lepojarvi and T. Juvonen (2004). «Postoperative atrial fibrillation is a major cause of stroke after on-pump coronary artery bypass surgery.» *Ann Thorac Surg* 77(4): 1241-4.
- Liakopoulos, O. J., Y. H. Choi, P. L. Haldenwang, J. Strauch, T. Wittwer, H. Dorge, C. Stamm, G. Wassmer and T. Wahlers (2008). «Impact of preoperative statin therapy on adverse postoperative outcomes in patients undergoing cardiac surgery: a meta-analysis of over 30,000 patients.» *Eur Heart J* 29(12): 1548-59.
- Marik, P. E. and R. Fromm (2009). «The efficacy and dosage effect of corticosteroids for the prevention of atrial fibrillation after cardiac surgery: a systematic review.» *J Crit Care* 24(3): 458-63.
- Mathew, J. P., M. L. Fontes, I. C. Tudor, J. Ramsay, P. Duke, C. D. Mazer, P. G. Barash, P. H. Hsu and D. T. Mangano (2004). «A multicenter risk index for atrial fibrillation after cardiac surgery.» *JAMA* 291(14): 1720-9.
- Miceli, A., C. Fino, B. Fiorani, M. Yeatman, P. Narayan, G. D. Angelini and M. Caputo (2009). «Effects of preoperative statin treatment on the incidence of postoperative atrial fibrillation in patients undergoing coronary artery bypass grafting.» *Ann Thorac Surg* 87(6): 1853-8.
- Miller, S., E. Crystal, M. Garfinkle, C. Lau, I. Lashevsky and S. J. Connolly (2005). «Effects of magnesium on atrial fibrillation after cardiac surgery: a meta-analysis.» *Heart* 91(5): 618-23.
- Mitchell, L. B., E. Crystal, B. Heilbron and P. Page (2005). «Atrial fibrillation following cardiac surgery.» *Can J Cardiol* 21 Suppl B: 45B-50B.
- Mitchell, L. B., D. V. Exner, D. G. Wyse, C. J. Connolly, G. D. Prystai, A. J. Bayes, W. T. Kidd, T. Kieser, J. J. Burgess, A. Ferland, C. L. MacAdams and A. Maitland (2005). «Prophylactic Oral Amiodarone for the Prevention of Arrhythmias that Begin Early after Revascularization, Valve Replacement, or Repair: PAPABEAR: a randomized controlled trial.» *JAMA* 294(24): 3093-100.
- Mithani, S., M. S. Akbar, D. J. Johnson, M. Kuskowski, K. K. Apple, J. Bonawitz-Conlin, H. B. Ward, R. F. Kelly, E. O. McFalls, H. E. Bloomfield, J. M. Li and S. Adabag (2009). «Dose dependent effect of statins on postoperative atrial fibrillation after cardiac surgery among patients treated with beta blockers.» *J Cardiothorac Surg*

4: 61.

- Mohr, R., A. Smolinsky and D. A. Goor (1981). «Prevention of supraventricular tachyarrhythmia with low-dose propranolol after coronary bypass.» *J Thorac Cardiovasc Surg* 81(6): 840-5.
- Patel, A. A., C. M. White, E. L. Gillespie, J. Kluger and C. I. Coleman (2006). «Safety of amiodarone in the prevention of postoperative atrial fibrillation: a meta-analysis.» *Am J Health Syst Pharm* 63(9): 829-37.
- Price, J., R. Tee, B. K. Lam, P. Hendry, M. S. Green and F. D. Rubens (2009). «Current use of prophylactic strategies for postoperative atrial fibrillation: a survey of Canadian cardiac surgeons.» *Ann Thorac Surg* 88(1): 106-10.
- Rho, R. W. (2009). «The management of atrial fibrillation after cardiac surgery.» *Heart* 95(5): 422-9.
- Subramaniam, K., C. G. Koch, A. Bashour, M. O'Connor, M. Xu, A. M. Gillinov and N. J. Starr (2008). «Preoperative statin intake and morbid events after isolated coronary artery bypass grafting.» *J Clin Anesth* 20(1): 4-11.
- Villareal, R. P., R. Hariharan, B. C. Liu, B. Kar, V. V. Lee, M. Elayda, J. A. Lopez, A. Rasekh, J. M. Wilson and A. Massumi (2004). «Postoperative atrial fibrillation and mortality after coronary artery bypass surgery.» *J Am Coll Cardiol* 43(5): 742-8.
- Virani, S. S., V. Nambi, M. Razavi, V. V. Lee, M. Elayda, J. M. Wilson and C. M. Ballantyne (2008). «Preoperative statin therapy is not associated with a decrease in the incidence of postoperative atrial fibrillation in patients undergoing cardiac surgery.» *Am Heart J* 155(3): 541-6.
- White, C. M., J. Kluger, K. Lertsburapa, O. Faheem and C. I. Coleman (2007). «Effect of preoperative angiotensin converting enzyme inhibitor or angiotensin receptor blocker use on the frequency of atrial fibrillation after cardiac surgery: a cohort study from the atrial fibrillation suppression trials II and III.» *Eur J Cardiothorac Surg* 31(5): 817-20.
- Wilkes, N. J., S. V. Mallett, T. Peachey, C. Di Salvo and R. Walesby (2002). «Correction of ionized plasma magnesium during cardiopulmonary bypass reduces the risk of postoperative cardiac arrhythmia.» *Anesth Analg* 95(4): 828-34, table of contents.

Recommendations

- Bagshaw SM, Galbraith PD, Mitchell LB, Sauve R, Exner DV, Ghali WA. Prophylactic amiodarone for prevention of atrial fibrillation after cardiac surgery: a meta-analysis. *Ann Thorac Surg* 2006;82(5):1927-37.
- Burgess DC, Kilborn MJ, Keech AC. Interventions for prevention of post-operative atrial fibrillation and its complications after cardiac surgery: a meta-analysis. *Eur Heart J* 2006;27(23):2846-57.
- Crystal E, Garfinkle MS, Connolly SS, Ginger TT, Sleik K, Yusuf SS. Interventions for preventing post-operative atrial fibrillation in patients undergoing heart surgery. *Cochrane Database Syst Rev* 2004(4):CD003611.
- Daoud, E. G. (2004). «Management of atrial fibrillation in the post-cardiac surgery setting.» *Cardiol Clin* 22(1): 159-166.
- Mathew JP, Fontes ML, Tudor IC, Ramsay J, Duke P, Mazer CD, Barash PG, Hsu PH, Mangano DT. A multicenter risk index for atrial fibrillation after cardiac surgery. *JAMA* 2004;291(14):1720-9.

5.9 Hyperthyroidism

- Agner, T., T. Almdal, B. Thorsteinsson and E. Agner (1984). «A reevaluation of atrial fibrillation in thyrotoxicosis.» *Dan Med Bull* 31(2): 157-9.
- Clozel, J. P., N. Danchin, P. Genton, J. L. Thomas and F. Cherrier (1984). «Effects of propranolol and of verapamil on heart rate

and blood pressure in hyperthyroidism.» *Clin Pharmacol Ther* 36(1): 64-9.

- Kurt, I. H., T. Yigit and B. M. Karademir (2008). «Atrial fibrillation due to late amiodarone-induced thyrotoxicosis.» *Clin Drug Investig* 28(8): 527-31.
- Nakazawa, H. K., K. Sakurai, N. Hamada, N. Momotani and K. Ito (1982). «Management of atrial fibrillation in the post-thyrotoxic state.» *Am J Med* 72(6): 903-6.
- Parmar, M. S. (2005). «Thyrotoxic atrial fibrillation.» *MedGenMed* 7(1): 74.
- Petersen, P. and J. M. Hansen (1988). «Stroke in thyrotoxicosis with atrial fibrillation.» *Stroke* 19(1): 15-8.
- Schreiber, D. H. and M. S. DeFreest (2006). «Paroxysmal atrial fibrillation precipitated by amiodarone-induced thyrotoxicosis five months after cessation of therapy.» *J Emerg Med* 31(1): 61-4.

Recommendations

- Lip, G. Y. and H. S. Lim (2007). «Atrial fibrillation and stroke prevention.» *Lancet Neurol* 6(11): 981-93.

5.10 Wolff-Parkinson-White syndrome

- Antz, M., C. Weiss, M. Volkmer, J. Hebe, S. Ernst, F. Ouyang and K. H. Kuck (2002). «Risk of sudden death after successful accessory atrioventricular pathway ablation in resuscitated patients with Wolff-Parkinson-White syndrome.» *J Cardiovasc Electrophysiol* 13(3): 231-6.
- Blomstrom-Lundqvist, C., M. M. Scheinman, E. M. Aliot, J. S. Alpert, H. Calkins, A. J. Camm, W. B. Campbell, D. E. Haines, K. H. Kuck, B. B. Lerman, D. D. Miller, C. W. Shaeffer, W. G. Stevenson, G. F. Tomaselli, E. M. Antman, S. C. Smith, Jr., D. P. Faxon, V. Fuster, R. J. Gibbons, G. Gregoratos, L. F. Hiratzka, S. A. Hunt, A. K. Jacobs, R. O. Russell, Jr., S. G. Priori, J. J. Blanc, A. Budaj, E. F. Burgos, M. Cowie, J. W. Deckers, M. A. Garcia, W. W. Klein, J. Lekakis, B. Lindahl, G. Mazzotta, J. C. Morais, A. Oto, O. Smiseth and H. J. Trappe (2003). «ACC/AHA/ESC guidelines for the management of patients with supraventricular arrhythmias--executive summary. a report of the American college of cardiology/American heart association task force on practice guidelines and the European society of cardiology committee for practice guidelines (writing committee to develop guidelines for the management of patients with supraventricular arrhythmias) developed in collaboration with NASPE-Heart Rhythm Society.» *J Am Coll Cardiol* 42(8): 1493-531.
- Calkins, H., P. Yong, J. M. Miller, B. Olshansky, M. Carlson, J. P. Saul, S. K. Huang, L. B. Liem, L. S. Klein, S. A. Moser, D. A. Bloch, P. Gillette and E. Prystowsky (1999). «Catheter ablation of accessory pathways, atrioventricular nodal reentrant tachycardia, and the atrioventricular junction: final results of a prospective, multicenter clinical trial. The Atakr Multicenter Investigators Group.» *Circulation* 99(2): 262-70.
- Pappone, C., V. Santinelli, F. Manguso, G. Augello, O. Santinelli, G. Vicedomini, S. Gulletta, P. Mazzone, V. Tortoriello, A. Pappone, C. Dicandia and S. Rosanio (2003). «A randomized study of prophylactic catheter ablation in asymptomatic patients with the Wolff-Parkinson-White syndrome.» *N Engl J Med* 349(19): 1803-11.
- Priori, S. G., E. Aliot, C. Blomstrom-Lundqvist, L. Bossaert, G. Breithardt, P. Brugada, A. J. Camm, R. Cappato, S. M. Cobbe, C. Di Mario, B. J. Maron, W. J. McKenna, A. K. Pedersen, U. Ravens, P. J. Schwartz, M. Trusz-Gluza, P. Vardas, H. J. Wellens and D. P. Zipes (2001). «Task Force on Sudden Cardiac Death of the European Society of Cardiology.» *Eur Heart J* 22(16): 1374-450.
- Timmermans, C., J. L. Smeets, L. M. Rodriguez, G. Vrouchos, A.

- van den Dool and H. J. Wellens (1995). «Aborted sudden death in the Wolff-Parkinson-White syndrome.» *Am J Cardiol* 76(7): 492-4.
- Todd, D. M., G. J. Klein, A. D. Krahn, A. C. Skanes and R. Yee (2003). «Asymptomatic Wolff-Parkinson-White syndrome: is it time to revisit guidelines?» *J Am Coll Cardiol* 41(2): 245-8.
- Wellens, H. J. (2005). «Should catheter ablation be performed in asymptomatic patients with Wolff-Parkinson-White syndrome? When to perform catheter ablation in asymptomatic patients with a Wolff-Parkinson-White electrocardiogram.» *Circulation* 112(14): 2201-7; discussion 2216.

Recommendations

- Blomstrom-Lundqvist, C., M. M. Scheinman, E. M. Aliot, J. S. Alpert, H. Calkins, A. J. Camm, W. B. Campbell, D. E. Haines, K. H. Kuck, B. B. Lerman, D. D. Miller, C. W. Shaeffer, W. G. Stevenson, G. F. Tomaselli, E. M. Antman, S. C. Smith, Jr., D. P. Faxon, V. Fuster, R. J. Gibbons, G. Gregoratos, L. F. Hiratzka, S. A. Hunt, A. K. Jacobs, R. O. Russell, Jr., S. G. Priori, J. J. Blanc, A. Budaj, E. F. Burgos, M. Cowie, J. W. Deckers, M. A. Garcia, W. W. Klein, J. Lekakis, B. Lindahl, G. Mazzotta, J. C. Morais, A. Oto, O. Smiseth and H. J. Trappe (2003). «ACC/AHA/ESC guidelines for the management of patients with supraventricular arrhythmias--executive summary. a report of the American college of cardiology/American heart association task force on practice guidelines and the European society of cardiology committee for practice guidelines (writing committee to develop guidelines for the management of patients with supraventricular arrhythmias) developed in collaboration with NASPE-Heart Rhythm Society.» *J Am Coll Cardiol* 42(8): 1493-531.
- Wellens, H. J. (2005). «Should catheter ablation be performed in asymptomatic patients with Wolff-Parkinson-White syndrome? When to perform catheter ablation in asymptomatic patients with a Wolff-Parkinson-White electrocardiogram.» *Circulation* 112(14): 2201-7; discussion 2216.

5.11 Hypertrophic Cardiomyopathy

- Bunch, T. J., T. M. Munger, P. A. Friedman, S. J. Asirvatham, P. A. Brady, Y. M. Cha, R. F. Rea, W. K. Shen, B. D. Powell, S. R. Ommen, K. H. Monahan, J. M. Haroldson and D. L. Packer (2008). «Substrate and procedural predictors of outcomes after catheter ablation for atrial fibrillation in patients with hypertrophic cardiomyopathy.» *J Cardiovasc Electrophysiol* 19(10): 1009-14.
- Callans, D. J. (2008). «Ablation of atrial fibrillation in the setting of hypertrophic cardiomyopathy.» *J Cardiovasc Electrophysiol* 19(10): 1015-6.
- Cannan, C. R., G. S. Reeder, K. R. Bailey, L. J. Melton, 3rd and B. J. Gersh (1995). «Natural history of hypertrophic cardiomyopathy. A population-based study, 1976 through 1990.» *Circulation* 92(9): 2488-95.
- Chen, M. S., P. M. McCarthy, H. M. Lever, N. G. Smedira and B. L. Lytle (2004). «Effectiveness of atrial fibrillation surgery in patients with hypertrophic cardiomyopathy.» *Am J Cardiol* 93(3): 373-5.
- Di Donna, P., I. Olivotto, S. D. Delcre, D. Caponi, M. Scaglione, I. Nault, A. Montefusco, F. Girolami, F. Cecchi, M. Haissaguerre and F. Gaita (2010). «Efficacy of catheter ablation for atrial fibrillation in hypertrophic cardiomyopathy: impact of age, atrial remodelling, and disease progression.» *Europace* 12(3): 347-55.
- Gaita, F., P. Di Donna, I. Olivotto, M. Scaglione, I. Ferrero, A. Montefusco, D. Caponi, M. R. Conte, S. Nistri and F. Cecchi (2007). «Usefulness and safety of transcatheter ablation of atrial fibrillation in patients with hypertrophic cardiomyopathy.» *Am J*

- Cardiol* 99(11): 1575-81.
- Kilicaslan, F., A. Verma, E. Saad, S. Themistoclakis, A. Bonso, A. Raviele, H. Bozbas, M. W. Andrews, S. Beheiry, S. Hao, J. E. Cummings, N. F. Marrouche, D. Lakkireddy, O. Wazni, H. Yamaji, L. C. Saenz, W. Saliba, R. A. Schweikert and A. Natale (2006). «Efficacy of catheter ablation of atrial fibrillation in patients with hypertrophic obstructive cardiomyopathy.» *Heart Rhythm* 3(3): 275-80.
- Kuhn, H., T. Lawrenz, F. Lieder, C. Leuner, C. Strunk-Mueller, L. Obergassel, M. Bartelsmeier and C. Stellbrink (2008). «Survival after transcatheter ablation of septal hypertrophy in hypertrophic obstructive cardiomyopathy (TASH): a 10 year experience.» *Clin Res Cardiol* 97(4): 234-43.
- Lin, G., R. A. Nishimura, B. J. Gersh, D. Phil, S. R. Ommen, M. J. Ackerman and P. A. Brady (2009). «Device complications and inappropriate implantable cardioverter defibrillator shocks in patients with hypertrophic cardiomyopathy.» *Heart* 95(9): 709-14.
- Losi, M. A., S. Betocchi, M. Aversa, R. Lombardi, M. Miranda, G. D'Alessandro, A. Cacace, C. G. Tocchetti, G. Barbati and M. Chiariello (2004). «Determinants of atrial fibrillation development in patients with hypertrophic cardiomyopathy.» *Am J Cardiol* 94(7): 895-900.
- Maron, B. J. (2002). «Hypertrophic cardiomyopathy: a systematic review.» *JAMA* 287(10): 1308-20.
- Maron, B. J., S. A. Casey, L. C. Poliac, T. E. Gohman, A. K. Almquist and D. M. Aeppli (1999). «Clinical course of hypertrophic cardiomyopathy in a regional United States cohort.» *JAMA* 281(7): 650-5.
- Olivotto, I., F. Cecchi, S. A. Casey, A. Dolara, J. H. Traverse and B. J. Maron (2001). «Impact of atrial fibrillation on the clinical course of hypertrophic cardiomyopathy.» *Circulation* 104(21): 2517-24.
- Olivotto, I., R. Gistri, P. Petrone, E. Pedemonte, D. Vargiu and F. Cecchi (2003). «Maximum left ventricular thickness and risk of sudden death in patients with hypertrophic cardiomyopathy.» *J Am Coll Cardiol* 41(2): 315-21.
- Sherrid, M. V., I. Barac, W. J. McKenna, P. M. Elliott, S. Dickie, L. Chojnowska, S. Casey and B. J. Maron (2005). «Multicenter study of the efficacy and safety of disopyramide in obstructive hypertrophic cardiomyopathy.» *J Am Coll Cardiol* 45(8): 1251-8.
- Williams, L. and M. Frenneaux (2007). «Syncope in hypertrophic cardiomyopathy: mechanisms and consequences for treatment.» *Europace* 9(9): 817-22.
- Woo, A., W. G. Williams, R. Choi, E. D. Wigle, E. Rozenblyum, K. Fedwick, S. Siu, A. Ralph-Edwards and H. Rakowski (2005). «Clinical and echocardiographic determinants of long-term survival after surgical myectomy in obstructive hypertrophic cardiomyopathy.» *Circulation* 111(16): 2033-41.

Recommendations

- Maron, B. J., I. Olivotto, P. Bellone, M. R. Conte, F. Cecchi, B. P. Flygenring, S. A. Casey, T. E. Gohman, S. Bongioanni and P. Spirito (2002). «Clinical profile of stroke in 900 patients with hypertrophic cardiomyopathy.» *J Am Coll Cardiol* 39(2): 301-7.

5.12 Pulmonary disease

- Barranco, F., M. Sanchez, J. Rodriguez and M. Guerrero (1994). «Efficacy of flecainide in patients with supraventricular arrhythmias and respiratory insufficiency.» *Intensive Care Med* 20(1): 42-4.
- Chen, J., M. J. Radford, Y. Wang, T. A. Marciniak and H. M. Krumholz (2001). «Effectiveness of beta-blocker therapy after

- acute myocardial infarction in elderly patients with chronic obstructive pulmonary disease or asthma.» *J Am Coll Cardiol* 37(7): 1950-6.
- Fuso, L., R. A. Incalzi, R. Pistelli, R. Muzzolon, S. Valente, G. Pagliari, F. Gliozzi and G. Ciappi (1995). «Predicting mortality of patients hospitalized for acutely exacerbated chronic obstructive pulmonary disease.» *Am J Med* 98(3): 272-7.
- Salpeter, S., T. Ormiston and E. Salpeter (2002). «Cardioselective beta-blockers for reversible airway disease.» *Cochrane Database Syst Rev*(4): CD002992.
- Shih, H. T., C. R. Webb, W. A. Conway, E. Peterson, B. Tilley and S. Goldstein (1988). «Frequency and significance of cardiac arrhythmias in chronic obstructive lung disease.» *Chest* 94(1): 44-8.



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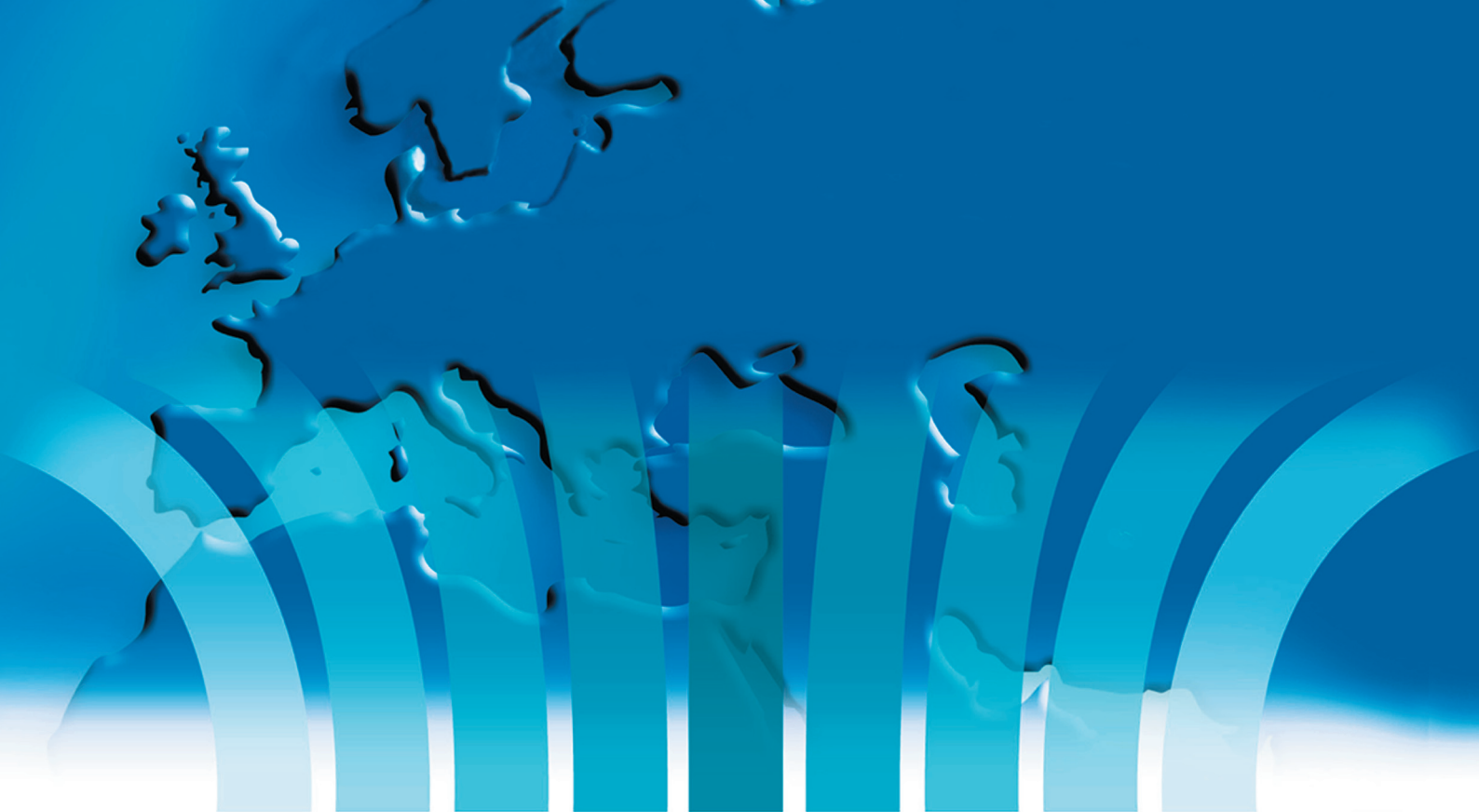
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