

*Overall research theme:*

Development of hypertension and subclinical cardiovascular damage and the effect of blocking the Renin-Angiotensin-Aldosterone System

*Latest update:*

June, 2008

| <i>Senior staff member(s):</i> | <i>Position(s):</i>           | <i>Degrees:</i> | <i>E-mail addresses:</i>   |
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*Characteristics of the research group:*

The research group have a long tradition of cooperating with the Research Centre for Prevention and Health in Glostrup and the Department of Clinical Physiology and Nuclear Medicine at Glostrup University Hospital combining epidemiological, physiological and clinical research in order to increase the understanding of development and treatment of hypertension and subclinical cardiovascular damage.

*Running projects: Titles and abstracts:*

**Obesity and hypertension (half finished)**

**Different tools for risk stratification and the importance of subclinical cardiovascular damage and new cardiovascular risk markers (just started).**

We are comparing the prognostic value of the risk stratification table from the European Society of Hypertension with that of HeartScore developed by the European Society of Cardiology. Secondly, we are testing the additive prognostic value of different measures of subclinical cardiovascular damage as well as different new cardiovascular risk markers.

**Factors of importance for development of subclinical and clinical cardiovascular disease in women (planned to be started 2009).**

Based on 26 years of follow-up, we are planning to investigate gender differences in development of subclinical and clinical cardiovascular disease in order to increase the understanding of the pathogenesis and thereby perhaps be able to suggest future gender specific treatment strategies.

**Factors of importance for changes in and development of subclinical cardiovascular damage (planned to be started 2009).**

Based on 16 years of follow-up, we are planning to investigate the importance of traditional as well as new cardiovascular risk factors for changes in subclinical cardiovascular damage in order to increase the understanding of the pathogenesis and thereby increasing the possibility of finding more effective treatment strategies.

**Effect of blocking the Renin-Angiotensin-Aldosterone System on subclinical cardiovascular damage in subjects with high normal blood pressure as well as in patients with hypertension (planned to be started 2009).**

**Factors of importance for development of hypertension including gene polymorphisms (planned to be started 2010).**

*Recent publications related to the projects described above:*

- Olsen MH, Wachtell K, Tuxen C, Fossum E, Bang L, Hall C, Ibsen H, Rokkedal J, Devereux RB, Hildebrandt P. N-terminal proBrain Natriuretic Peptide Predict Cardiovascular Events in Patients with Hypertension and Left Ventricular Hypertrophy. A LIFE Substudy. *J Hypertens* 2004; 22(8):1597-1604.
- Olsen MH, Wachtell K, Bella JN, Liu JE, Boman K, Gerds E, Papademetriou V, Nieminen MS, Rokkedal J, Dahlöf B, Devereux RB. Effect of losartan versus atenolol on aortic valve sclerosis (a LIFE substudy). *Am J Cardiol* 2004; 94(8):1076-1080.
- Olsen MH, Wachtell K, Bella JN, Gerds E, Palmieri V, Nieminen M, Smith G, Kjeldsen SE, Dahlöf B, Ibsen H, Devereux RB. Aortic valve sclerosis relates to cardiovascular events in patients with hypertension (a LIFE substudy). *Am J Cardiol* 2005; 95(1):132-136.
- Olsen MH, Christensen MK, Wachtell K, Tuxen C, Hjerkin E, Bang LE, Wiinberg N, Christensen MK, Rokkedal J, Hildebrandt P, Palmieri V, Frandsen E, Kjeldsen SE, Dige-Petersen H, Ibsen H, Jensen LT. Markers of collagen synthesis is related to blood pressure and vascular hypertrophy: a LIFE substudy. *J Hum Hypertens* 2005; 19(4):301-7.
- Olsen MH, Wachtell K, Tuxen C, Fossum E, Bang L, Hall C, Ibsen H, Rokkedal J, Devereux RB, Hildebrandt P. Opposite Effects of Losartan and Atenolol on Natriuretic Peptides in Patients with Hypertension and Left Ventricular Hypertrophy. A LIFE Study. *J Hypertension* 2005; 23(5):1083-90.
- Olsen MH, Fossum E, Wachtell K, Høiegggen A, Hjerkin E, Kjeldsen SE, Dige-Petersen H, Julius S, Ibsen H. Long-term treatment with losartan versus atenolol improves insulin sensitivity in hypertension: ICARUS, a LIFE substudy. *J Hypertens* 2005; 23(4):891-8.
- Olsen MH, Wachtell K, Neland K, Rokkedal J, Ibsen H, Dige-Petersen H. Losartan and not Atenolol Reduce Carotid Artery Hypertrophy in Essential Hypertension. A LIFE Substudy. *Blood Pressure* 2005;14(3):177-83.
- Olsen MH, Wachtell K, Bella JN, Palmieri V, Gerds E, Nieminen MS, Smith G, Dahlöf B, Ibsen H, Devereux RB. Aortic Valve Sclerosis and Albuminuria Independently Predict Cardiovascular Events in Hypertension. A LIFE Substudy. *Am J Hypertension* 2005;18:1430-36.
- Olsen MH, Hansen TW, Christensen MK, Gustafsson F, Rasmussen S, Wachtell K, Borch-Johnsen K, Ibsen H, Jørgensen T, Hildebrandt P. Nt-pro brain natriuretic peptide is inversely related to metabolic cardiovascular risk factors and the metabolic syndrome. *Hypertension* 2005;46:1-7
- Olsen MH, Christensen MK, Hansen TW, Gustafsson F, Rasmussen S, Wachtell K, Borch-Johnsen K, Ibsen H, Jørgensen T, Hildebrandt P. High sensitivity C-reactive protein is related to cardiovascular damage, but not independently of cardiovascular risk factors. *J Hypertens* 2006;24(4):655-61
- Olsen MH, Wachtell K, Dahlöf B, Devereux RB, Ibsen H, Kjeldsen SE, Lindholm LH, Lyle PA, Nieminen MS. The effect of losartan compared with atenolol on the incidence of revascularization in patients with hypertension and electrocardiographic left ventricular hypertrophy. The LIFE study. *J Hum Hypertens* 2006;20(6):460-4
- Olsen MH, Wachtell K, Ibsen H, Lindholm LH, Dahlöf B, Devereux RB, Kjeldsen SE, Oikarinen L, Okin PM. Reductions in albuminuria and in electrocardiographic left ventricular hypertrophy independently improve prognosis in hypertension: the LIFE study. *J Hypertens* 2006;24(4):775-81
- Olsen MH, Wachtell K, Nielsen OW, Hall C, Wergeland R, Ibsen H, Kjeldsen SE, Devereux RB, Dahlöf B, Hildebrandt PR. N-terminal brain natriuretic peptide predicted cardiovascular events stronger than high-sensitivity C-reactive protein in hypertension: a LIFE substudy. *J Hypertens* 2006;24(8):1531-9
- Olsen MH, Hansen TW, Christensen MK, Rasmussen S, Wachtell K, Borch-Johnsen K, Ibsen H, Jørgensen T, Hildebrandt P. N-terminal pro brain natriuretic peptide, but not high sensitivity C-reactive protein improves cardiovascular risk prediction in the general population. *European Heart Journal* 2007;28:1374-81
- Olsen MH, Hansen TW, Christensen MK, Gustafsson F, Rasmussen S, Wachtell K, Ibsen H, Christian Torp-Pedersen, Hildebrandt P. Cardiovascular risk prediction by N-terminal pro brain natriuretic peptide and high sensitivity C-reactive protein is affected by age and gender. *J Hypertension* 2008;26(1):26-34