

Overall research theme:

Cardiovascular risk prevention and rehabilitation

Latest update:

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Senior staff member(s):	Position(s):	Degrees:	E-mail addresses:
Mogens L Larsen	Senior Consultant	MD, Dr. Med. Sci.	Mogens.Larsen@aas.auh.dk

Department/institution/address/telephone/fax:

Department of Medicine and Cardiology
Aarhus Amtssygehus, Aarhus University Hospital
8000 Aarhus C

phone 89497654 fax 89497619

Characteristics of the research group:

The department work together with different research groups in the field of cardiovascular risk prevention and rehabilitation.

(1) We have established our own laboratory working with molecular biology with special interest in familial hypercholesterolemia (FH) and other genetic dyslipidemias (Professor Ole Færgeman and Mogens Lytken Larsen). A unique feature is the combination of the laboratory and the largest Lipid Clinic in Denmark taking care of more than 300 families with FH and a set up with a genetic field worker and a national and international network.

(2) We have established a cardiac rehabilitation clinic seeing more than 300 new patients every year after myocardial infarction. A unique background for evaluating, testing and implementing secondary prevention strategies.

(3) Our out patient clinic is well organized, and we are able to provide the clinical setting for investigations in cooperation with more basic research institutions in the field of hypertension (professor Michael Mulvany) and atherosclerosis (professor Erling Falk).

Running projects: Titles and abstracts:

Investigation of Familial Hypercholesterolemia (FH) families without LDL-receptor mutations or ApoB mutations (ph.d. student Dorte Damgaard)

To test the hypothesis that the phenotype of FH can be caused by mutations in one or more genes other than the LDL receptor or apoB genes. We shall

- 1) Identify a set of Danish FH families in which DNA sequencing has not revealed mutations in the gene of the LDL receptor and in which mutations in the apoB gene have not been found.
- 2) in families thus identified, test for linkage to the LDL receptor and apoB genes to ensure that mutations in these genes have not been missed and
- 3) Test for linkage to the third FH locus and any other loci identified by time of such analysis (by other researchers). Two other candidate genes are the autosomal recessive hypercholesterolemia gene (ARH) and the 7-alpha hydroxylase (CYP7A1) gene.

The project thus aims at increasing our knowledge about the genetic background for heterozygous familial hypercholesterolemia and additional molecular insight into pathology.

Epidemiology and genetics of acute coronary syndromes in Aarhus (ph.d. student Kirsten Melgaard)

A prospective survey of all ACS patients aged 30-69 years living in Aarhus admitted to hospital during 2 years. The aims are:

- 1) To measure the incidence and attack rate of ACS in patients aged 30-69 living in Aarhus
- 2) To monitor relapses and one year mortality of ACS
- 3) To estimate the degree to which the potential for primary and secondary prevention of coronary heart disease has been exploited in general practice and in hospitals.
- 4) To analyse socioeconomic status in ACS patients and the effect on cardiac rehabilitation.
- 5) To establish a biobank of DNA and cells to be used for studies of ACS.

Resting resistance as a determinant of minimal vascular resistance during antihypertensive treatment in patients shifted from betablocker to angiotensin II receptor antagonist (ph.d. student Ole N Mathiasen)

During antihypertensive therapy the attainment of structural improvements in resistance artery will critically depend on the degree of vasodilatation induced, and so the effect on MVR will relate to the effect on RVR and TPR, independently of any eventual blood pressure reduction. We are testing the hypothesis in a prospective manner by examining the effect of 6 months of antihypertensive treatment shift on relevant parameters in essential hypertension.

Differentiated Cardiac Rehabilitation – preventing social inequalities in health among patients with myocardial infarction (projekt co-ordinator Lucette Meillier. Ph.d.)

Based on literature low socio economic status (SES) has an important impact on prognosis in patients following AMI. In this study we are evaluating the effect of an extended rehabilitation programme offered to patients with low SES. For a two year period all patients with AMI are evaluated in stratified according to SES. The patients will be followed for two years

Recent publications related to the projects described above:

Jensen HK, Jensen LG, Holst HU, Andreasen PH, Hansen PS, Larsen ML, Kølvrå S, Bolund L, Gregersen N, Færgeman O. Normolipidemia and hypercholesterolemia in persons heterozygous for the same I592+5G A splice site mutation in the low-density lipoprotein receptor gene. **Clin Genet** **1999;56:378-388**.

Rejnmark L, Buus NH, Vestergaard P, Andreasen F, Larsen ML, Mosekilde L. Statins decrease bone turnover in postmenopausal women: a cross-sectional study. **Eur J Clin Invest** **2002;32 (8): 581-589**
Pedersen SS, Middel B, Larsen ML. The role of personality variables and social support in distress and perceived health in patients following myocardial infarction. **Journal of Psychosomatic Research** **2002;53:1171-1175**

Kanstrup H, Refsgaard J, Engberg M, Lassen JF, Larsen ML, Lauritzen T. Cholesterol reduction following health screening in general practice. **Scand J Prim Health Care** **2002;20:219-223**

Olsson AG, Eriksson M, Johnson O, Kjellström, Lanke J, Larsen ML, Pedersen T et al. A 52-week, multicenter, randomized, parallel-group, double-blind, double-dummy study to assess the efficacy of atorvastatin and simvastatin in reaching low-density lipoprotein cholesterol and triglyceride targets: The Treat-to-Target (3T) Study. **Clinical Therapeutics** **2003;25:119-138**

Larsen ML. Heart Attack: Management strategy Posthospital. In: A Colour Handbook of Ischaemic Heart Disease (eds. Falk E, Shah PK, Feyter Pj) Manson Publishing (**in press**).