

# Work environment: An opportunity for ground-breaking collaborations in cardiovascular disease prevention

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Following the successful previous conferences held in Tokyo in 2013, Cracow in 2009, Newport Beach in 2005, Dusseldorf in 2002, Tel Aviv in 1998 and Copenhagen in 1994, the 7th International Commission on Occupational Health (ICOH) Conference on Work Environment and Cardiovascular Diseases will be held in Varese (Italy) in May 2017. To celebrate more than 20 years of this initiative, the Scientific Committee on Cardiology (SCC) in Occupational Health has decided to publish the congress proceedings in this supplement issue of the journal. Why? Our goal is to revitalise collaborations between scientists, occupational health physicians, cardiologists, rehabilitation and public health prevention specialists. In the last few decades, these branches of the health sciences have progressively taken diverging paths limiting productive collaboration.

At present, clinical and public health specialists concentrate predominantly on individual-level interventions and appear to be less interested in understanding and improving the work environment. As physical demands and chemical exposures decrease in post-industrialised societies, so do the risks of cardiovascular diseases (CVDs). In addition, some recently published papers<sup>1</sup> may convey the message that psychosocial job exposures are of limited importance in cardiovascular risk prediction and assessment.

In the 2016 European guidelines on CVD prevention in clinical practice,<sup>2</sup> contributions from work settings are limited to population-level health promotion interventions adapted to the work setting, aiming to promote healthy lifestyles, including healthy diet, physical activity, avoidance of tobacco and alcohol abuse, supported by varying levels of scientific evidence. Referring to level of evidence I only, the suggested approach recommends companies to 'promote coherent and comprehensive health policy and nutritional education to stimulate the health awareness of employees; policy on healthy choices including tobacco

cessation/prevention, bans on smoking to reduce passive smoking and increase quit rates, limiting excessive alcohol intake'. Only at level of evidence IIA (moderate), the European Society of Cardiology recommends physical activity at work, providing 'a set time for physical activity during work hours'. In addition, interventions to reduce the adverse impact of physical work demands or psychosocial work exposures are poorly recognised in these guidelines. Regarding the secondary and tertiary prevention of CVD, intervention measures addressing adverse working conditions are not fully integrated into the standard cardiac rehabilitation programmes.

Occupational physicians and epidemiologists, as well as work organisation psychologists and sociologists,

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have developed an extensive knowledge base of strategies to improve occupational health and safety, and work organisation and to reduce work-related stressors.<sup>3,4</sup> However, there have been no published work-site intervention studies designed to reduce hard endpoints (death, coronary heart disease (CHD) and stroke) by reducing occupational risk factors.<sup>5</sup> Such studies are hampered by difficult access to large stable working populations and the need for long follow-up times to assess these outcomes. It is often more feasible to assess CVD risk factors as endpoints (e.g. blood pressure, cigarette smoking, obesity), newer biomarkers (e.g. heart rate variability, DNA methylation adducts, or lipid and glucose metabolic markers), or earlier asymptomatic stages of CVDs (e.g. morphological or functional changes of peripheral arteries measured by ultrasound or exercise stress tests).

The ICOH SCC felt that the time has come to propose to the scientific community, in particular to cardiologists involved in prevention, the potential to lessen the burden of CVD in a new alliance of patient-centred and environment-centred interventions in an effective comprehensive prevention approach with the workplace as a primary target. For this reason, the conference was subtitled 'Bridging the gap between knowledge and preventive interventions at the workplace to reduce cardiovascular diseases'. We hope that this publication of the conference abstracts will help spread interest in recognising and considering work-related risk factors and their relevance in the primary, secondary, and tertiary prevention of CVD.

The ICOH SCC is a committee of researchers, cardiologists, occupational health physicians and public health professionals throughout the world concerned about the impact of work and work-related factors on cardiovascular health. The SCC's mission is to identify work-related risk factors for CVDs, including both the physical and psychosocial work environment, examine the interplay of social class, work and health, to assist in the development of interventions to reduce the mortality, morbidity and economic burden associated with unhealthy jobs. The SCC examines links between economic globalisation, the changing nature of work and the risk of CVDs. The SCC focuses on research, work-site interventions, the promotion of public health and supports public policies that improve working conditions both locally and globally.

In particular, these conference papers focus on new scientific evidence and state-of-the-art reviews addressing: the identification of the physical, chemical and psychosocial work environment as risk factors for CVDs; the interplay of social class, work and health; effective workplace intervention programmes for the prevention of CVD as well as for a safe return to work after cardiovascular events; the development of supporting

public policies that improve working conditions both locally and globally.

Following the conference scientific programme, reported abstracts are ordered starting from keynotes, plenary and semi-plenary papers, and oral and poster presentations. Important keynote addresses include: Johannes Siegrist addressing the implications for CVD of work stress and health in the context of economic globalisation and the 2008 global economic crisis<sup>6</sup> and Robert Karasek proposing a further developed 'multi-level associationalist demand-control' theory and a revised job content questionnaire (JCQ2) in an attempt to address the complexity of work in the global economy. New scientific reports strengthening evidence of the associations between psychosocial job exposures and CVD are now available. First, a new paper of the IPD-Consortium focusing on the additive effects of effort-reward imbalance (ERI) at work and job strain (high demand-low control work) on the incidence of coronary events is reported by Nico Dragano and Mika Kivimaki. Marco M Ferrario, based on a recently published paper,<sup>7</sup> further explores key methodological aspects of the association between JCQ and CHD incidence, to help overcome major biases, which may explain some earlier inconsistent results. Hynek Pikhart's report focuses on new results on the relationship between ERI/JCD and CVD/CHD mortality in central and eastern European cohorts. Akizumi Tsutsumi reviews recent findings on the work environment and strokes.

Niklas Krause, using data from the Kuopio Ischemic Heart Disease Risk Factor Study, reports on the effects of occupational and leisure time physical activity, fitness on progression of atherosclerosis, CHD incidence, and mortality. The moderating effects of leisure time physical activity, hypertension and influence at work on the relationships between occupational physical activity and the risk of ischaemic heart disease in women, are addressed by Karen Allesøe. The study by Peter Smith and colleagues examines the effects of prolonged occupational standing as a cardiovascular risk factor, demonstrating that the effects of prolonged standing are greater than those of prolonged sitting, despite the latter receiving more attention. The protocol of a cardiovascular observational study on 2000 people investigating the association between objective diurnal measurements of sitting time and cardiometabolic risk factors will be presented by Melker Johansson. Els Clays in her study focuses on objective measures of occupational physical activities in blue-collar jobs, and the role of psychosocial job resources in the performance of physical work tasks.

Tage S Kristensen reviews his 30-year experience conducting and researching workplace interventions and their impact on the reduction of job stressors and

other CVD risk factors. Peter Angerer presents evidence of short-term and long-term effects of work stressor interventions; and Andreas Holtermann on the effects on CVD risk factors of worksite Randomised Clinical Trial interventions including physical exercise or reductions of sedentary work. Jian Li addresses a practical issue for cardiologists, with his research on what happens after return to work in workers with CVD, tracking trajectories between work stressors and recurrent CVD events. Chantal Brisson will present the results on the effectiveness of a workplace intervention targeted to reduce adverse psychosocial work factors and thus reduce blood pressure levels and hypertension. Paul Landsbergis will discuss workplace interventions designed to reduce psychosocial work stressors among primary and secondary school teachers and among social workers who are working under 'new public management'.

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