

## CPH News and Views

*A semi-monthly column on emerging topics related to healthy workplaces*

### **Issue #2: Why is Cardiovascular Disease a problematic issue for many occupational safety and health investigators?**

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The influence of social and behavioral factors in the workplace, or more accurately the composite elements of working life on cardio-vascular and other chronic diseases, has influenced several major currents in occupational health research. Income, mobility, educational level, and work and family inter-relationships have been particularly emphasized, along with work organization and mismatch between rewards and demands. The current “psychosocial environment” approach with its attention to job control and other social risk factors has probably had its most effective use in explaining patterns of cardiovascular disease (CVD). The two predominant models – demand-control and effort-reward imbalance – have supported internationally accepted survey instruments, inspire cross-disciplinary conceptual platforms and collaborations, and have footings in self-efficacy and social justice theory. Nevertheless, this integration of contextual and life history factors as critical components of workplace associated CVD is not, however, without controversy and presents particular challenges to many occupational health investigators. There are several evident reasons: 1) CVD is so prevalent in the general population that more distant or widespread causes (e.g., societal discrimination based on race or gender, environmental noise) are more difficult to recognize through epidemiologic study than more immediate risk factors; 2) exposure to traditional chemical cardiotoxins (TNT, Hg) is relatively uncommon and play a small attributive role in CVD; 3) SMRs for CVD in large occupational cohort studies are presumed to show a cardio-selective ‘healthy worker effect’ (HWE); 4) variegated regional patterns of CVD pathology dilute the hazard-specific equivalence of toxic workplace exposures; 5) there is limited acceptance of CVD in worker compensation systems, even for stress-related attribution; and 6) macro-social risk attribution to factors involving national wealth and workplace culture tend to elude specific interventions. Because CPH-NEW is sponsoring a cardiovascular disease and stroke education and outreach population and is undertaking an intervention among Corrections Officers, a group with many stress related concerns, the issues around workplace interventions and CVD are cogent.

Several of these reservations about CVD studies in working populations appear to be not entirely correct. Although CVD mortality contributes an increasing proportion to overall death rates in the most technologically developed countries, this occurs in context of declining all cause mortality, particularly in pre-retirement age groups. CVD mortality rates are in comparison higher in developing industrial economies in absolute terms, and because CVD death occurs principally before the age of 60, the contribution to disability adjusted life years (DALY) is larger. While issues such as high-fat diets, smoking, and access to medical treatment are important factors, the demographic realities substantiate that CVD is not a predominantly rich country condition. In addition, while recognized inhaled cardio-toxins are relatively uncommon and contribute modestly to risk, physical and organizational factors such as noise and vibration and shift work emerge as significant predictors of CVD mortality. Even the selectivity of the Healthy Worker Effect may be overstated. In many large cohort studies, CVD mortality is consistently congruent with all cause mortality. Moreover, a 2-3 fold CVD mortality

risk in manual workers compared to administrative workers in some countries suggests that ecological artifacts may blunt risk associations in working cohorts.

A larger problem may stem from the fact that CVD expression may occur at a later point in life history, beyond the tenure of an incumbent employer or health plan. This is a central issue for workplace health promotion (WHP) and occupational disease prevention. Its discussion will continue in a later issue.

For a literature review on these topics, see: Schnall, P. L., Belkic, K., Landsbergis, P., & Baker, D. (Eds.). (2000). The workplace and cardiovascular disease. *Occupational Medicine: State of the Art Reviews*, 15, 1–334.

Abbreviations used:

cardiovascular disease (CVD), standardized mortality ration (SMR), disability adjusted life years (DALY), workplace health promotion (WHP)

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**Recommended websites on related topics:**

- [Job Stress Network](#)
- [Workplace - Institute of Medicine](#)

**Recommended journal articles:**

Belkic, K.L., et al.. [Hypertension at the workplace--an occult disease?](#) The need for work site surveillance. *Adv Psychosom Med*, 2001. 22:116-38.

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Siegrist Jm Marmot M. [Health inequalities and the psychosocial environment - two scientific challenges.](#) *Social Science & Medicine* 2004. 58: 1463-1473.

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Theorell, T. and R.A. Karasek, [Current issues relating to psychosocial job strain and cardiovascular disease research.](#) *J Occup Health Psychol*, 1996. 1(1):9-26.



*CPH-NEW is a Center for Excellence to Promote a Healthier Workforce of the National Institute for Occupational Safety and Health. CPH-News & Views is a semi-monthly column written by Center researchers on emerging topics related to healthy workplaces. These comments reflect thoughts of the individual researchers and do not represent conclusive research summaries, nor do they necessarily reflect a consensus among all Center personnel.*

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