

# Featured Research Studies

## Healthy Choices: Transforming Our Hospitals into Environmentally Healthy and Safe Places

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### ABSTRACT

While it is commonly understood that the quality of the air we breath and the water we drink can impact our health, it is often more difficult to recognize that our choices of the health care products, along with the way we dispose of them, and the chemicals we spray on our foods or use to clean and disinfect may actually compromise the environment and consequently our health. This article will guide nurses and other health care professionals as they transform our hospitals into environmentally healthy and safe places by helping them adhere to environmentally preferable purchasing policies, follow environmentally conscious waste management strategies, decrease use of chemical pollutants, promote use of healthy foods, and provide leadership in environmental stewardship

**Key words:** chemical pollutants, environment, environmental stewardship, health, medical waste management, pesticides, precautionary principles, sustainable foods

Full Text:

<http://www.nursingworld.org/MainMenuCategories/ANAMarketplace/ANAPeriodicals/OJIN/TableofContents/Volume122007/May31/HealthyChoices.aspx>

## Elevated Blood Lead Concentrations in Essential Tremor: A Case-Control Study in Mersin, Turkey.

Dogu O, Louis ED, Tamer L, Unal O, Yilmaz A, Kaleagasi H.  
Department of Neurology, Faculty of Medicine, Mersin University, Mersin, Turkey.  
Environ Health Perspect. 2007 Nov;115(11):1564-1568.

**BACKGROUND:** Essential tremor (ET) is one of the most common neurologic disorders. Aside from underlying susceptibility genes, recent studies have also begun to focus on environmental toxic factors. Yet there remains a paucity of information on such factors, making studies of environmental factors important. A recent study in New York City found blood lead concentrations to be elevated in ET cases compared with matched controls. Chronic exposure to lead produces cerebellar damage, and this could predispose individuals to develop ET. **OBJECTIVE:** The aim of this study was to determine whether the elevation in blood lead concentrations observed in a single study in New York was similarly present in ET cases sampled from a completely different geographic region. **METHODS:** Blood lead concentrations were measured in 105 ET cases and 105 controls at Mersin University, Mersin, Turkey. **RESULTS:** The median blood lead concentration was 2.7 mug/dL in ET cases compared with 1.5 mug/dL in controls ( $p < 0.001$ ). In an unadjusted logistic regression model, blood lead concentration was associated with diagnosis: odds ratio (OR) = 4.01; 95% confidence interval (CI), 2.53-6.37;  $p < 0.001$  (i.e., each 1-mug/dL increase in blood lead concentration was associated with a 4-fold increased odds of ET). This association was more robust when cases were compared with a subsample of controls who did not share the same home environment (OR = 8.13; 95% CI, 3.05-21.65;  $p < 0.001$ ). In adjusted models, results were similar. **CONCLUSIONS:** These data replicate those of a previous study in New York and demonstrate an association between the environmental toxicant lead and a common neurologic disorder. PMID: 18007985 [PubMed - as supplied by publisher]

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Clin Physiol Funct Imaging. 2007 Nov 14; [Epub ahead of print]

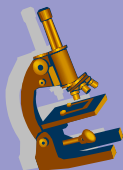
### **Resistance exercise training improves heart rate variability in women with fibromyalgia.**

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Fibromyalgia (FM) is characterized by generalized muscle pain, low muscle strength and autonomic dysfunction. Heart rate (HR) variability (HRV) is reduced in individuals with FM increasing their risk for cardiovascular morbidity and mortality. We tested the hypothesis that resistance exercise training (RET) improves HRV, baroreflex sensitivity (BRS) and muscle strength in women with FM. Women with FM (n = 10) and healthy controls (n = 9), aged 27-60 years, were compared at baseline. Only women with FM underwent supervised RET 2 days per week for 16 weeks. Baseline and post-training measurements included HRV and spontaneous baroreflex sensitivity (BRS, alpha index) from continuous electrocardiogram and blood pressure (BP) recorded with finger plethysmography during 5 min in the supine position. RR interval, total power, log transformed (Ln) squared root of the standard deviation of RR interval (RMSSD), low-frequency power and BRS were lower (P<0.05), and HR and pulse pressure were higher (P<0.05) in women with FM than in healthy controls. After RET, mean (SEM) total power increased (387 +/- 170 ms<sup>2</sup>, P<0.05), RMSSD increased (0.18 +/- 0.08 Ln ms, P<0.05) and Ln of high-frequency power increased (0.54 +/- 0.27 Ln ms<sup>2</sup>, P = 0.08) in women with FM. Upper and lower body muscle strength increased by 63% and 49% (P<0.001), and pain perception decreased by 39% in women with FM. There were no changes in BRS, HR and BP after RET. Our study demonstrates that RET improves total power, cardiac parasympathetic tone, pain perception and muscle strength in women with FM who had autonomic dysfunction before the exercise programme. PMID: 18005081 [PubMed - as supplied by publisher]

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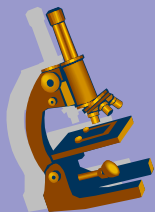
### **Human carboxylesterases and their role in xenobiotic and endobiotic metabolism.**

Ross MK, Crow JA. J Biochem Mol Toxicol. 2007;21(4):187-96.

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Carboxylesterases (CEs) are traditionally regarded as xenobiotic metabolizing enzymes that hydrolyze esterified xenobiotics to alcohol and carboxylic acid products. However, there is a growing appreciation for the role of CEs in the processing of endobiotics, including cholesteryl esters and triacylglycerols. Human liver microsomes (HLMs) are often used in reaction phenotyping studies to discern interindividual variability in xenobiotic metabolism. The two major CE isoforms expressed in human liver are hCE1 and hCE2. These two isoforms are different gene products. We have begun studies to evaluate the CE phenotype" of human liver samples, i.e. to determine both the levels of hCE1 and hCE2 protein and the hydrolytic activity of each. We have previously shown that there is little variation in hCE1 protein expression in HLM samples from 11 individuals [a 1.3-fold difference between the highest and lowest individuals; coefficient of variation (CV), 9%]. hCE2 protein expression in individual HLMs is only slightly more variable than hCE1 (2.3-fold difference between the highest and lowest individuals; CV, 36%). However, hCE1 protein is found in 46-fold higher amounts in HLMs than hCE2 protein (64.4 +/- 16.5 microg hCE1/mg microsomal protein compared to 1.4 +/- 0.2 microg hCE2/mg microsomal protein). The hydrolytic activity specifically attributable to hCE1 and hCE2 in individual HLMs was measured using bioresmethrin (a pyrethroid insecticide hydrolyzed specifically by hCE1, but not by hCE2) and procaine (an analgesic drug hydrolyzed by hCE2, but not by hCE1). The hydrolytic activity of individual HLMs toward bioresmethrin and procaine did not correlate with the protein content of hCE1 and hCE2. Thus, the mere abundance of CE proteins is not a good predictor of CE activity in HLMs. Identification of the factors that lead to altered CE activities in HLMs will be important to characterize since several pharmaceutical agents, environmental toxicants, and endobiotics are metabolized by these enzymes. PMID: 17936933

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J Leukoc Biol. 2007 Feb;81(2):474-82. Epub 2006 Nov 1.

### **Thimerosal induces TH2 responses via influencing cytokine secretion by human dendritic cells.**

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Thimerosal is an organic mercury compound that is used as a preservative in vaccines and pharmaceutical products. Recent studies have shown a TH2-skewing effect of mercury, although the underlying mechanisms have not been identified. In this study, we investigated whether thimerosal can exercise a TH2-promoting effect through modulation of functions of dendritic cells (DC). Thimerosal, in a concentration-dependent manner, inhibited the secretion of LPS-induced proinflammatory cytokines TNF-alpha, IL-6, and IL-12p70 from human monocyte-derived DC. However, the secretion of IL-10 from DC was not affected. These thimerosal-exposed DC induced increased TH2 (IL-5 and IL-13) and decreased TH1 (IFN-gamma) cytokine secretion from the T cells in the absence of additional thimerosal added to the coculture. Thimerosal exposure of DC led to the depletion of intracellular glutathione (GSH), and addition of exogenous GSH to DC abolished the TH2-promoting effect of thimerosal-treated DC, restoring secretion of TNF-alpha, IL-6, and IL-12p70 by DC and IFN-gamma secretion by T cells. These data suggest that modulation of TH2 responses by mercury and thimerosal, in particular, is through depletion of GSH in DC.

PMID: 17079650 [PubMed - indexed for MEDLINE]

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