

Epidemiology 2003; 14(4):437-441

# Maternal Occupational Exposure to Extremely Low Frequency Magnetic Fields During Pregnancy and Childhood Leukemia

Claire Infante-Rivard ; Jan Erik Deadman

## Background:

Pregnancy is a target period for events that could induce childhood leukemia. There has been little attention to possible effects of maternal occupational exposure to extremely low frequency magnetic fields (ELF-MF) during pregnancy.

## Methods:

We conducted a population-based, case-control study of 491 incident cases of acute lymphoblastic leukemia in children 0-9 years of age, matched on age and sex to 491 healthy controls. Cases were diagnosed in the Province of Québec between 1980 and 1993. Mothers were interviewed to obtain detailed prenatal occupational history; individual exposure to ELF-MF was estimated based on a method we recently developed. We used 3 metrics for analyzing exposure: cumulative, average and maximum levels. Analyses were carried out among all study women and among working women only.

## Results:

Comparing the highest 10% of exposed mothers to the others, the risk of leukemia among offspring was moderately increased by using any metric, in all women and among working women only. The highest odds ratio of 2.5 (95% confidence interval = 1.2-5.0) was found for maximum exposure attained in an occupation ( $\geq 0.4$  microtesla).

## Conclusions:

Our results are compatible with an increased risk of childhood leukemia among children whose mothers were exposed to the highest occupational levels of ELF-MF during pregnancy.

Key Words acute lymphoblastic leukemia; electromagnetic fields; child; maternal exposure; occupational exposure

From the \*Joint Departments of Epidemiology, Biostatistics, and Occupational Health, Faculty of Medicine, McGill University, Montréal, Canada; and †Research Center, Centre Hospitalier Universitaire Mère-Enfant, Hôpital Sainte-Justine, Montréal, Canada.

The study was funded by the National Health and Welfare Research and Development Program Grant, Leukemia Research Fund of Canada, and the "Fonds de la Recherche en Santé du Québec-Hydro-Québec Program". Professor Infante-Rivard holds a Canada Research Chair-James McGill Professorship from McGill University.

Correspondence: Claire Infante-Rivard, Joint Departments of Epidemiology, Biostatistics, and

Occupational Health, Faculty of Medicine, McGill University, 1130 Pine Avenue West, Montréal, Québec, Canada H3A 1A3. E-mail: [claire.infante-rivard@mcgill.ca](mailto:claire.infante-rivard@mcgill.ca).

Submitted 12 September 2002;

final version accepted 14 January 2003.

Epidemiology 2003; 14(4):437-441

Copyright © 2003 Lippincott Williams & Wilkins

All rights reserved