

POGO Research Unit Supported Projects (Pillar: Epidemiology)

Last modified: November 26, 2009

The Effect of Folic Acid Fortification of Flour on the Incidence of Childhood Cancers

Co-PIs: Grupp, S. and Koren, G.

Ongoing: This study extends the investigation of the action of folate supplementation to other tumours, such as the embryonal tumours (rhabdomyosarcoma and Wilms' tumour), brain tumours (medulloblastoma and astrocytoma), and acute lymphoblastic leukemia.

The Effect of Maternal Nutritional Status During Gestation on the Incidence of Hepatoblastoma and ALL in the Offspring

PI: French, A.

Completed: This study investigated the impact of folic acid fortification on embryonal tumours other than neuroblastoma. The research was designed to evaluate whether the demonstrated impact of folic acid fortification on lowering the incidence of neuroblastoma reflected a more general impact on childhood malignancies.

The Effect of Maternal Nutritional Status During Gestation on the Incidence of Neuroblastoma in the Offspring

PI: French, A.

Completed: In recent years, supplementation of flour with folic acid for purposes of prevention of neural tube defects has been the norm in Ontario. Folic acid plays a role in the embryology of neural crest tissue from which neuroblastoma is derived. This study examined the epidemiology of neuroblastoma in Ontario in the wake of such supplementation, based on a biologically plausible role for folic acid in the oncogenesis of neuroblastoma. The population capture enabled by POGONIS was critical to the feasibility of the study.

Incidence Trends and Projections for Childhood Cancer in Ontario

Co-PIs: Agha, M. and Greenberg, M.L.

Completed: The study was undertaken in keeping with POGO's mandate to accurately record and project the incidence of childhood cancer and its implications. The exercise examined data accrued to POGO's childhood cancer database, which has gathered standardized information from all five

pediatric oncology programs in Ontario since 1985. The 1985 to 1993 dataset was analyzed and reported internally in 1995. In 1996, data for 1994 and 1995 was analyzed and reported in 1997. In March 2000, the dataset originally examined was expanded by two additional years (1996 and 1997) and re-analyzed, resulting in updated projections to 2000 and 2005. A further analysis by Epidemiologist Dr. Mohammad Agha has been completed. Both projections have come from the recent, actual accrual of new cases – validating both the methodology and the data sources and suggesting that the projections are accurate and reliable for use in planning for the upcoming years.

A Molecular Epidemiologic Case-Control Study of Pediatric Brain Tumours in Ontario

PI: McLaughlin, J.

Completed: Funded by the National Cancer Institute of Canada (NCIC), this study was facilitated and enabled by the POGO network with monitoring by the POGO Research Unit Steering Committee for compliance and co-operation. It evaluated the relationship between environmental exposures and the genetic ability at a molecular level to metabolize and detoxify the mediators of those exposures. The study was dependent on capturing the population cohort provided via POGONIS.

POGO-OCR Matching Exercise

PI: Greenberg, M.L.

Completed: In collaboration with the Ontario Cancer Registry (OCR), POGO initiated and carried out a study comparing the registrations of incident cases of cancer in children (<18 years at diagnosis) in the POGO and OCR databases for the calendar years 1990 and 1991. The exercise followed a previous comparison of POGO and OCR data for the period 1985-1991, also initiated by POGO, which led to the removal of approximately 400 cases from the OCR. At the time, POGO used the Manchester Classification system and OCR used the ICD-9. The review carried out an in-depth analysis of POGO and OCR cases. All cases were reviewed for authenticity (true cancers) and diagnostic accuracy (appropriate coding) by two pediatric oncologists, Drs. Ronnie Barr and Mark Greenberg, who reached consensus.

Radiation Burden Arising from Diagnostic Tests in Children and Adolescents with Malignant Lymphoma

PI: Barr, R. and Webber, C.

Ongoing: During the process of the diagnosis and treatment of malignant lymphoma, a patient may undergo many tests that involve exposure to radiation from x-rays. In addition, a patient is likely to receive injections of radioactive pharmaceuticals for certain nuclear medicine procedures. Exposure even to small amounts of radiation or radioactivity carries a certain risk because of the possibility of cancer induction. Any x-ray or nuclear medicine procedure is performed only if it is considered that the potential benefit to the patient in terms of diagnostic information outweighs the small risk to the patient. To place the hazard in perspective, the risk associated with having one chest x-ray is equivalent to the risk associated with traveling 80 km by automobile. However, the risks associated with a CT scan or a gallium nuclear medicine scan are greater than the risks associated with a chest x-ray.

Since patients suffering from malignant lymphoma will receive a number of CT scans and nuclear medicine procedures, it is important to assess the aggregate risk that such patients may ultimately suffer from a second malignancy that was caused by radiation exposure during the diagnosis and treatment of their first malignancy. This radiation audit is particularly important in children because of the greater impact of radiation in children compared to adults.

Studies to Determine the Presence of SV40 Viral Sequences and Anti-SV40 Antibodies in Patients with Osteosarcoma

PI: Malkin, D.

Completed: This study evaluating the incidence of the SV40 virus in tumour cells, antibodies to SV40 virus, and inherited abnormalities of the p53 tumour suppressor gene and their interaction in one of the most common tumours of adolescence examined the biological, epidemiological, and clinical characteristics of a large cohort of osteosarcoma patients and their banked tissue, including all such patients identified through the POGONIS database. All patients in the Ontario childhood population were included in this study.