Determinants — and determination

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Editorial

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If your particular miserable little packet of genes should happen to be propelled into the world in an aboriginal community in Canada, your chance of surviving for the next 365 days is only half of what it would be had you been born almost anywhere else in the country.[1] This is not your fault, nor that of your newly assembled genes. It is a consequence of inadequate living conditions, an impressive but tragic example of the importance of what we dispassionately refer to as "determinants of health."

Born a Cree in the beautiful and rugged country of northern Quebec, your mother will have been poisoned by mercury-contaminated fish from hydroelectric reservoirs; if her mercury levels are high enough (and they often are), your nervous system will be sluggish and damaged.[2] Not a good start in life, and certainly not the fault of your mother.

The inequities that imperil your health will not, of course, be limited to the first year of your life. They will persist. As study stacked on study has shown, aboriginal communities have, compared with the general Canadian population, markedly higher prevalence rates of chronic disease — non-insulin-dependent diabetes mellitus, heart disease, stroke, cancer, renal failure — and third-world incidence rates of tuberculosis, sexually transmitted disease, otitis media and hearing impairment. And then there are the "social" illnesses relating to violence, suicide, substance abuse and injury.[3,4]

The Cree and other aboriginal peoples in Canada have struggled with the determinants of health for a long time, perhaps forever. They knew about them long before Hubert L. Laframbroise included lifestyle, environment and health care organization in his framework for the Lalonde report in 1974.[5,6] When the Cree signed, not without pain, the James Bay and Northern Quebec Agreement in 1975, which cleared the way for massive hydroelectric development projects, they hoped that the $150 million compensation and other entitlements promised in return for the relocation of entire communities and for giving up rights to much of their land would lead to improvements in the broader determinants of their welfare. And indeed there were a few improvements in housing. Some sanitation systems were built, and for the first time most of the villages built adequate systems to get clean water. A few jobs were created during the projects, but when the dams were finished most of these disappeared.

Perhaps among the least of the evils they faced was that of methylmercury poisoning. Mercury is a potent neurotoxin, as experience in Minamata and Iraq has made tragically apparent. In Canada, mercury contamination has resulted from industrial pollution and wherever lands have been flooded to create the massive reservoirs needed for hydroelectric projects. Present naturally in the soil, mercury becomes methylated by bacteria as organic matter decomposes in flooded land and thus enters the food chain, moving upward from smaller to larger fish and, eventually, to the people who consume them. No-fault compensation has been offered to several groups of aboriginal people affected by mercury contamination, including the Grassy Narrows and Islington Lake bands in Ontario.

The advice given to the James Bay Cree by the federal government — to refrain from eating fish from the reservoirs altogether — was misguided. Fish is an important source of protein in the Cree traditional diet and is thought to promote cardiovascular health and normal neurologic development. Securing this food source is an integral part of Cree culture and lifestyle. The Cree tackled the problem themselves by means of an educational program to encourage the popu-

lation to eat species of fish that had lower levels of mercury and to eat small fish in place of the larger ones they preferred. They embarked on this program with resolve. Those most at risk (women of childbearing age and children) were particularly encouraged to eat safer fish.

In this issue (page 1439) Charles Dumont and colleagues show that this effort has had an effect. Methylmercury levels have fallen overall. In 1988, 38.5% of the study population had mercury levels in excess of tolerable limits; by 1993/94 this proportion had fallen to 11.5%. Among women of childbearing age, 10.0% had levels in excess of the world standard in 1988, whereas only 1.6% had excessive levels in 1993/94. It is likely that some neurologic damage to children has been avoided or lessened, even though new evidence indicates that acceptable levels might need to be lowered still further. Recent federal guidelines for maximum tolerable daily intakes of mercury have lowered the "safe" limit for intake of mercury for women of childbearing age and for children to 0.2 µg/kg body weight per day.[7]

But methylmercury is really a small problem for this courageous nation. The inequities they face compared with other Canadians with respect to housing, education, employment and other determinants of health can only be remedied by fundamental changes in the political and economic relationships between the Cree (and other aboriginal peoples) and the federal and provincial goverments. Another $150 million won't solve them.

There are encouraging economic opportunities for the Cree on the horizon. Hydro Quebec is interested in expanding its sources of electric power, and mining and forestry companies are in negotiation with the Cree as well. These developments are not without risk to the environment and to the traditional way of life of the Cree. However, options are being discussed, including the formation of real business partnerships and shared ownership and investments that will give the Cree greater control over their communities and their future. These fundamental changes may eventually mean that the chance event of being born on the shores of James Bay is not more risky than being born anywhere else in Canada.

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