Letters to the Editor

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The Ethics of Cystic Fibrosis Carrier Screening: Where Do We Stand?

To the Editor:

The recent identification of a first mutation (ΔF508) in the cystic fibrosis (CF) gene now allows CF carrier screening in populations (Kerem et al. 1989). The American Society of Human Genetics recently published a statement indicating that it would be premature to start heterozygote screening unless a number of conditions are met (Caskey et al. 1990). We strongly support this statement for our region.

The Saguenay-Lac-St-Jean (SLSJ) region is a geographically isolated region located in northeastern Quebec. Several autosomal dominant and recessive disorders have a high prevalence, while others frequently found in the region are almost nonexistent elsewhere (De Braekeleer, in press). Among these disorders, CF had, in this population of 285,000, over the period 1975–88, an at-birth prevalence of 1/891 and a carrier rate of 1/15 inhabitants population (M. De Braekeleer, submitted). Therefore, it would be tempting to immediately start screening for carriers in this region. However, for historical, scientific, ethical, and social reasons, we think that such screening would be, here or elsewhere, a mistake which could be detrimental to the individuals and the populations.

The SLSJ region already has lived through a screening experience. Five screenings in families ascertained through propositi with myotonic dystrophy took place during 1977–82; a total of 1,053 presumably affected individuals were seen at home. A retrospective multidisciplinary evaluation of this experience found advantages, notably for research and for medical services which were put in place some years following the first screening (Melançon et al. 1989). However, this evaluation also allowed us to realize the full range of medical, familial, and social problems that may arise following a premature screening, when no infrastructure to receive and follow the patients is available. Although the implications of screening in these two diseases cannot be compared, we think that there is no guarantee that similar problems could not arise in CF carrier screening.

A screening of the ΔF508 mutation would identify only about 56% of the CF carriers in the SLSJ region (Rozen et al. 1990). At the present time, appropriate services for support and follow-up are not yet available to face a wave of hundreds of carriers. On the other hand, what course of action shall we take concerning potential carriers of a not yet identified mutation? What would be the psychological effect of the following speech: "You may be a CF carrier, but we cannot yet confirm whether you carry another mutation; we will check later!" How are we to qualify such "counseling" from an ethical point of view? A feeling of "genetic insecurity" could cause misleading reproductive choices.

A CF carrier screening would definitely be very useful for genetic research. Research is an important value to be promoted, but this value must be subordinated to a more important one, i.e., the person.

CF carrier screening may serve as a model for hetero-

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zygote screening in other autosomal recessive disorders. There is no therapeutic purpose for using it on the carriers. The future generations and the society will be the beneficiaries. We should take the time to reflect on the opportunity, the objectives, the conditions, and the consequences of such heterozygote screenings. What do we want with such screenings for the future: a healthy gene pool? a reduction in health costs? the welfare of persons and populations? This must be clarified.

Finally "a full range of prescreening and follow-up services for the population to be screened should be available before a program is introduced" (United States President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research 1983). This does not yet seem to have been fulfilled everywhere for CF carrier screening.

We need to search for other CF mutations and to wait before starting carrier screening in the populations. However, a ΔF508 carrier screening could be offered on demand to the close relatives of the CF patients.

In conclusion, according to the clinical and ethical principles of beneficence and nonmaleficence, CF carrier screenings might, at the present time, be more harmful than beneficial to the individuals and populations at risk. Therefore, we support the position of The American Society of Human Genetics that "routine CF carrier testing of pregnant women and other individuals is NOT yet the standard of care in medical practice."

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Gestational Age at Maternal Serum Alpha-Fetoprotein Screening and the Detection of Down Syndrome

To the Editor:

Maternal serum alpha-fetoprotein (MSAFP) testing is currently used to screen for Down syndrome in pregnant women, as well as to screen for neural tube defects. However only 15%–20% of all cases are detected (Lustig et al. 1988). At the recent meeting of The American Society of Human Genetics it was suggested that with increasing gestational age (15–20 wk) there is a linear decrease in the strength of the association between MSAFP and fetal Down syndrome (Weyland et al. 1989). This implies that MSAFP screening is more likely to detect Down syndrome in pregnancies which are screened earlier in gestation—say at 15 or 16 wk—compared with pregnancies which are screened later—i.e., at 17–20 wk gestation. Their report was based on only 28 cases of Down syndrome. To evaluate this claim we have examined a series of 113 cases in the California Alpha Fetoprotein Screening Program.

The cases reported here occurred in women who underwent MSAFP screening at 15–20 wk gestation. All cases of Down syndrome were ascertained independently of their MSAFP test results. With the standard approach to analyses of MSAFP, results were adjusted for gestational age on the basis of observations in the population of normal pregnancies (U.K. Collaborative