

# PREVENTION IS THE FOUNDATION OF GOOD HEALTH CARE

*Sven O.E. Ebbesson*

The four papers on the Alaska Siberia Project (ASP; 1-4) represent an attempt to identify and reduce risk factors for type 2 diabetes (DM) and cardiovascular disease (CVD) in Eskimos. The studies reveal that prevention is possible, but requires more attention and effort than currently expended on prevention.

Prevention of these diseases in different populations has been elusive. There is an urgent need for research to identify and characterize ethnic specific risk factors, as well as for developing effective ethnic specific intervention and prevention strategies. Each ethnic group has, over time, responded differently to different accultural pressures and has adopted different paths to disease. One cannot, for example, assume that Inuits have developed the same risk factors as American Indians, or Hispanics living in southern United States. Neither can one assume that behavioral modification to reduce specific risk factors can be accomplished by the same strategies in different populations. Hence, the Alaska Siberia Project came about to a) determine who was affected by DM and CVD among Eskimos, b) identify and characterize associated risk factors and c) to determine to what extent intervention studies based on the identified risk factors might work in this population.

The studies were undertaken with the hope that the data would form the basis for future larger and more conclusive studies. That goal has now been achieved with the funding of the ongoing Genetics of Coronary Artery Disease of Alaska Natives (GOCADAN) study (5), the

Diabetes Prevention Program by the Norton Sound Health Corporation and the planned large-scale intervention and prevention studies for smoking cessation and diet and lifestyle modification.

The Alaska Siberia Project clearly showed that research to reduce risk factors for DM and CVD are possible in this Alaska Native population when communities work with the researchers as partners with good communication and transparency. Over the years, enthusiasm has grown for participatory research in the region to the point that, in the last seven villages screened, 82.6% of the age-eligible participated (6). Reasons for the confidence in the research team by the communities have been the detailed explanation of the study and immediate return and explanation of the research results to participants in personal interviews. Attending physicians were also provided with the clinically relevant data, including immediate alerts.

The challenges of doing research in arctic communities are indeed significant, as snow storms, difficult logistics of working in isolated villages and understanding local culture are far beyond most other research endeavors. The warmth and helpfulness of the Eskimos make up for the difficulties. When we consider, together, that the research is necessary for stemming the tide of increasing prevalence of DM and CVD, it becomes clear that prevention has the highest priority and that health care organizations have to work with the communities to develop effective intervention and prevention

programs based on research. This includes standardized periodic medical examinations and monitoring each individual systematically, addressing issues as they appear. We learned that personal counseling needs to be repeated and that a letter in the mail was not as effective (4).

The ASP studies revealed several ethnic-specific risk factors in Eskimos and provided clues about successful intervention strategies. The studies revealed the exceptional role of specific fats in their diet and the exceptionally high prevalence of smoking.

The most positive results of the ASP studies are perhaps the findings that a high consumption of long-chain (C20-C22)  $\omega$ -3 fatty acids (FAs) in this population is associated with improved CVD risk factors, i.e. low plasma levels of insulin, triglycerides, better glucose tolerance, low blood pressure and high HDL levels. Conversely, plasma concentrations of palmitic acid were found to be elevated in those with impaired glucose tolerance (4), a finding consistent with another study that showed its toxic effects on  $\beta$  cells grown in tissue culture. This finding may be of relevance to other populations with high prevalences of DM and CVD, such as American Indians and Americans obsessed with fast foods containing a large proportion of palmitic acid.

The simplistic intervention study confirmed the roles of these fats on glucose metabolism, suggesting that the dietary balance of specific fats plays a significant role in the development of

glucose intolerance, DM and, hence, CVD. In other words, weight loss and increased physical activity should not be the only factors considered in prevention programs. The initial lessons learned in this study are: 1) high consumption of palmitic acid appears to contribute to IGT, DM and CVD, while 2) long chain  $\omega$ -3 FAs are protective. Larger studies are needed to confirm those preliminary results.

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Sven O E Ebbesson  
3165 Anella Avenue  
Fairbanks, Alaska 99709  
USA  
Email: se6b@virginia.edu