



8th International
Congress on
Circumpolar Health

**Community Health:
Problems and
Solutions in the North**

**Yukon College
Whitehorse Yukon**

May 20 - 25, 1990



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AMELIORATING THE DENTAL MANPOWER SHORTAGE IN CANADA'S NORTH: WHO CARES? J.T. Mayhall, Fac. of Dentistry, University of Toronto, Toronto, Canada. "The Government wants to see Indian Doctors, they want to see Indian Lawyers ...; Indians of all Professions and Trades; and they should be like white people." (T.G. Anderson, 1846) Today, many would agree with the first of this quotation but as for dentists very little has changed; the natives of Canada are still under represented. The second part of the quotation suggests a partial explanation for this: the emphasis has been on adapting the northern residents to the white man's culture rather than on attempting to use the strengths of the North and its residents to cope with the massive problems of oral disease. This paper will suggest cultural, educational, demographic, and financial factors that prevent full participation of the residents of the North in oral health prevention and treatment. It will outline the University of Toronto programs that have been instituted to alleviate the shortages of trained personnel; the dental therapists school and the Indian Health Careers Program. Data from a recent survey suggest that these programs and the varied dental personnel that will accrue from them will allow for a much higher participation rate from northern residents in their oral health.

A REVIEW OF DENTAL DELIVERY SYSTEMS ON BAFFIN ISLAND, N.W.T. W.R. Bedford, Medical Services Branch, Health & Welfare Canada, Ottawa, Canada

In January, 1989, Medical Services Branch of National Health & Welfare contracted with two dental practitioners to assess and evaluate dental treatment provided to the Inuit people living on Baffin Island. There were four dental delivery systems in use (private practitioner contract, McGill University contract, dental locum and dental therapist).

Five communities were selected for study in order to provide an appropriate sample of each of the four systems. Patients for examination were randomly selected from files from each of the five communities. standardized evaluation criteria and forms were developed and reviewed with the two examiners.

Results showed that most fillings were satisfactory regardless of which system provided them but dental therapists produced far more fillings rated excellent.

The failure rate for dentures was very high under all systems running at 50-60%. Dental therapists were not included here as they do not provide denture treatment.

The study team concluded that the dental therapist role should be expanded and that the entire denture treatment program be examined and reorganized.

KIGOUTIAPIK - Meeting THE CHALLENGE OF EFFECTIVE DENTAL HEALTH PROMOTION IN NORTHERN QUEBEC. R. Putugu, M. St-Germain, A.M. Désilets, M.K. May. Kativik Regional Dental Health Task Force. Kativik Regional Board of Health and Social Services, Kuujjuaq (Québec), Canada.

The Kativik region covers the northern third of the land mass of Québec. 14 municipalities are spread along the eastern Hudson Bay coast, South Hudson Strait coast, and the Ungava Bay coastline.

Delivering comprehensive dental health services in such a vast region where the incidence of oral disease is very high, and resources are limited is a challenge in itself. Community oriented health promotion and education is vital.

Kigoutiapik, the puppet came to be when a young dental hygienist, Mrs. Gaétane Houde, faced the challenge of developing and implementing a comprehensive community oriented dental health program for the seven communities of the Hudson Bay region in Northern Quebec.

Native dental health workers are able to expand their practice using the puppet to teach children and parents good dental health practices.

The Kativik Regional Dental Health Task Force, a regrouping of dental health professionals for the region adopted Kigoutiapik as regional spokesperson in 1989. Kigoutiapik is active in dental health promotion, treatment, and community health program. Kigoutiapik has become the favored tool of Inuit practitioners recruited to participate in dental health programs of the region.

AN ORAL HEALTH SURVEY OF HEAD START CHILDREN IN ALASKA, DB Jones, CM Schliffe. The Alaska Area Native Health Service, Anchorage, Alaska.

The Rural Community Action Program which administers a Head Start program in Alaska requested that the Alaska Area Native Health Service Dental Program conduct a survey to determine oral health status and the treatment needs of all Head Start children in Alaska.

Two examiners visited 22 locations within Alaska and examined 708 children. A questionnaire with demographic and behavioral information was completed by the parents of 441 Head Start children.

Results indicated the probability of Alaska Native children experiencing dental caries was four times greater than non Native children. Children living in rural communities have approximately a three-fold higher probability of experiencing dental caries than urban children. The probability of experiencing caries is 90 percent higher in children whose father does not work. For each year increase in a mother's education her child's probability of experiencing caries decreases by approximately 20 percent. The estimated cost of providing needed dental care for approximately 1600 Head Start children in Alaska would be over \$300,000.

Key Words: Head Start, oral health, treatment needs

THE EFFECT OF NON-INSURED HEALTH BENEFITS ON DENTAL TREATMENT PROVIDED IN FOUR COASTAL LABRADOR COMMUNITIES BY SALARIED DENTISTS. J.G. Messer Dental Division, Grenfell Regional Health Services, St. Anthony, Nfld., A0K 4S0, Canada.

In January 1989 just over 2000 members of the Labrador Inuit Association in four Labrador communities became eligible for non-insured health benefits, including dental care.

It was anticipated that the introduction of these benefits would promote an increase in demand for dental care and might influence treatment patterns.

To assess any changes, the period from February to July 1989, after the introduction of the benefits, was compared to the same period in 1988. Throughout both periods the four communities were serviced by the same two salaried dentists. The treatment groups assessed consisted of diagnostic, surgical, restorative, preventive and prosthetic treatment. These groups were used to demonstrate changes in the volume of treatment being provided and also to illustrate any differences in the types of treatment being selected.

The results showed that there were twice the number of patient visits during the period after the health benefits came into effect. The proportion of time spent providing different treatment groups remained fairly consistent with two notable exceptions. There was a slight increase in diagnostic services and a large increase in prosthetic treatment.

It is evident that the introduction of the Non-Insured Health Benefits has an effect on both the quantity and type of treatment being provided.

THE ORAL HEALTH STATUS OF THE INUIT PEOPLE OF THE NORTH SLOPE OF ALASKA, CM Schliffe, DB Jones. The Alaska Area Native Health Service, Anchorage, Alaska.

The Inuit people of the North Slope Borough of Alaska may have the highest rates of dental disease of any Alaska Native population. A survey was conducted in four communities of the North Slope Borough in the winter of 1990. The DMF and dmf indices were used to determine the prevalence of dental caries and the Community Index of Periodontal Needs (CPI/N) Index was used to assess the prevalence of periodontal treatment needs. A sample of three-to-five year-olds, 15-17 year-olds and 35-44 year-olds was selected. A knowledge, attitude and behavior questionnaire was completed by the parents of the three-to-five year-olds and self-administered by the two older age groups. The results of the questionnaire were correlated with the oral health status of the three age groups using regression analysis.

It is anticipated that the survey will show the oral health status of the three age groups to be worse in comparison to these same age groups in the U.S.

The information gained from the survey will be used by the North Slope Borough and the Alaska Area Native Health Service Dental Programs to plan for the expansion of preventive and clinical services for these Alaska Native people.

Key Words: dental caries, periodontal disease, Inuit people

A COLLABORATIVE APPROACH TO DEVELOPING DENTAL HEALTH HUMAN RESOURCES FOR NORTHERN COMMUNITIES. J. Messer, M. Forgay, J. Clovis, B. Graham. Grenfell Regional Health Services, St. Anthony, Nfld., and Dalhousie University, Halifax, N.S. Canada.

Despite existing innovative approaches, a continuing problem in the delivery of dental health services in northern communities is an adequate supply of skilled personnel. Both the amount and scope of services are affected. At the same time, dental and dental hygiene educators are concerned that patient pools in dental faculty clinics tend to be homogeneous. They fail to provide a range of clinical, social, and cultural experiences which reflect the dental health needs of Canada's population as a whole and some high risk groups in particular. In the spring of 1989, Grenfell Regional Health Services and the Faculty of Dentistry at Dalhousie University undertook a pilot externship program at St. Anthony, Newfoundland, for senior dental hygiene and dental students. The dental and dental hygiene students spent three weeks at the St. Anthony clinic, providing services appropriate to their abilities as health professionals about to enter practice. Dentists at the St. Anthony clinic selected patients and provided supervision. Although productivity was not the primary goal, a significant amount of dental care was provided. Students were enthusiastic about the experience and eager to recruit their successors in the project. Full implementation is planned for 1989/90.

Objectives of the program include enhancement of dental hygiene and dental education for selected students, an evaluation of the effect of the program on attitudes to working in a remote community, and the enhancement of dental health services provided at the St. Anthony clinic.

FRUSTRATIONS IN DELIVERING A DENTAL SERVICE TO THE NORTH COAST OF LABRADOR. M. ZAMMIT. Grenfell Regional Health Services, Goose Bay, Labrador, Canada.

The frustrations in delivering a dental service to the seven isolated communities that make up the North Coast of Labrador, seem to be, in whole or in part, in common with other isolated communities in the Canadian Arctic. This study is the author's subjective view of the frustrations encountered in subarctic Northern Labrador, between 1987-89. They are classified, for the purposes of this study, into factors that are: (a) dentist-related; (b) travel-related; (c) clinic-related; (d) patient-related; (e) culturally and environmentally-related; but are in fact, all inter-related. Stemming from these frustrations, is job-related stress.

Dentists with varying personalities and work capacities, are able to contribute, individually or collectively, towards the better dental health of the native people. A complete knowledge of these frustrations, will help in the understanding and acceptance of the system's limitations; patient types; the expectations and goals to aim for; the obstacles to confront on a daily basis. Having an attitude that the travel stations are also 'home', will help the individual dentist cope with social deprivation, and carry on with the task of delivering a dental service under unusual circumstances.

PERMANENT TOOTH SIZES IN RELATION TO MATERNAL SMOKING. L. Alvesalo, T. Heikkinen, P. Pirttiniemi, R. Osborne. University of Oulu, Finland and University of Wisconsin, USA.

The purpose of this study was to examine the possible association between maternal smoking during pregnancy and permanent tooth crown sizes of the offsprings.

The study is based on the data collected in National Collaborative Perinatal Research Project / Genetic-Odontometric Study of Pre- and Neonatal Growth where pregnancies of about 60 000 mothers and children's health were followed by regular medical tests and examinations. Out of 2 159 women included in the dental study there were 40% whites, 60% blacks, 52% non-smokers and 48% smokers. The age range of children was from 5 to 15 years and tooth crown size measurements were made on their dental casts. Measurements included both mesio-distal and labio-lingual dimensions and compared according to race, sex and mothers' smoking habit. For statistical testing the t-test was applied.

The results indicated decreased labio-lingual tooth size of first mandibular permanent molars in black girls whose mothers were smokers. This trend was similar but weaker in boys. In white girls whose mothers were smokers there was tendency towards labiolingually smaller first molar size and lower second incisors showed mesio-distally smaller size.

This study was supported by contract N01-NS-2-2302 from the National Institute of Neurological Disorders and Stroke.

DENTAL THERAPISTS AND THE DELIVERY OF DENTAL CARE IN CANADA'S NORTHWEST TERRITORIES. P.T. McDermott, J.T. Mayhall, J.L. Leake. Faculty of Dentistry, University of Toronto, Toronto, Ontario, Canada, M5G 1G6.

One obstacle to the delivery of health care in remote regions has been the recruitment of health care professionals to work in these areas. In Canada's Northwest Territories, one solution to this problem was the establishment of a Dental Therapist Training Program in 1972, to train indigenous peoples to provide primary health care in the Northwest Territories. A review of this program, based upon limited data, indicates that while dental therapists have proven to be a viable solution to the manpower problem, the delivery of an organized dental care program in the Northwest Territories remains in a state of infancy. In spite of an active preventive program, a state of dental ill health continues to exist and an unacceptably high number of teeth are being lost by extraction. Further data are required to accurately evaluate the current state of oral health in the Northwest Territories and the long-term impact of the current preventive program.

DECIDUOUS TOOTH SIZES IN RELATION TO MATERNAL SMOKING. T. Heikkinen, L. Alvesalo, P. Pirttiniemi, R. Osborne. University of Oulu, Finland and University of Wisconsin, USA.

The aim of this study was to examine early growth in children of smoking and non-smoking mothers using teeth as developmental indicators. Human odontogenesis begins with the formation of deciduous incisors at about four weeks in utero and all tooth crowns apart from third molars reach their final size between the ages of two months and 8 years.

The study is based on the data collected in National Collaborative Perinatal Research Project / Genetic-Odontometric Study of Pre- and Neonatal Growth where pregnancies of about 60 000 mothers and children's health were followed. Out of 2 159 women included in the dental study there were 40% whites, 60% blacks, 52% non-smokers and 48% smokers. The age range of children was from 5 to 15 years and deciduous tooth crown size measurements were made on their dental casts. Measurements were compared between smokers'/non-smokers' children according to race and sex and mothers' smoking habits during pregnancy. For statistical testing the t-test was applied.

The results indicated decreased labio-lingual dimension in maxillary and mandibular second deciduous molars in girls whose mothers were smokers. Smaller size was evident especially in black girls.

This study was supported by contract N01-NS-2-2302 from the National Institute of Neurological Disorders and Stroke.

A STUDY TO ESTABLISH PARAMETERS FOR THE USE OF PIT AND FISSURE SEALANTS IN A GROUP OF INDIAN CHILDREN WITH HIGH CARIES RATES. O. Odium and C. Lachance. Faculty of Dentistry, University of Manitoba, Winnipeg, CANADA.

Children in many native communities in Canada have high rates of dental decay. Preventive programs can be designed that focus on the precise area of the teeth that are at greatest risk e.g. pit and fissure sealants may be the preventive system of choice for children in these communities. This study was designed to describe the parameters of caries occurrence in the molars of elementary school children at a reserve school to facilitate a more focussed approach to preventive program planning. Children in Kindergarten, Grades 1 and 2 were examined and notation made on eruption stage, occlusal fissure and smooth surface status first permanent molars. 100 children were examined. Age ranged from 5 years 6 months to 8 years 6 months. Eruption of the molars varied greatly and not until age 8 did a cohort have all molars fully erupted. The percentage of erupted teeth considered at-risk but not showing occlusal caries ranged from 31.70 percent. Tooth showing evidence of caries increased significantly with age. Only 2 children showed evidence of caries on the proximal surfaces. Buccal and palatal pits were at significant risk for caries, being very deep 50% showing frank caries by the age of 7. The eruption profile indicated an irregular and late eruption of the molars with a 100% eruption first appearing in the 8 year old cohort. The figures for occlusal and buccal/palatal pit areas considered at-risk are sufficient to indicate the use of sealants, early appearance of caries in the post eruptive period confirms this need. The short time span between eruption and development of lesions requiring full restoration is a complicating issue. Frequent screening and the development of a system for sealant placement that is minimally traumatic could be very successful in communities with these caries patterns.

MENTAL HEALTH PROBLEMS AND SERVICES IN GREENLAND.
I. Lyng. Queen Ingrid's Hospital. Nuuk, Greenland.

Mental health problems in Greenland are analyzed from the point of view of the health service. Greenland's health service system is shortly described with emphasis on the pathways to psychiatric treatment and care. There are four levels of in-patient care of the mentally ill: 1) a local district hospital, 2) the central hospital in Nuuk with a 25-bed psychiatric ward, 3) an ordinary Danish mental hospital, 4) a special hospital for dangerous mentally ill patients from all Denmark. Yearly admission rates are analyzed as to age sex and diagnoses and surveys of the in-patient populations are presented. The number of beds with psychiatric patients from Greenland has been rather stable for some years, but an increasing part of the long-stay patients in Danish mental hospitals are males detained because of serious criminal offence committed in a psychotic state of mind.

The findings are discussed in relation to the traditional culture, social changes and cultural conflict.

The survey raises important questions: How to meet the needs for psychiatric treatment before the breaking of relations is made irreversible? Is it possible and/or advisable to stop the process of expulsion or escape and try to contain the sufferings in the society?

THE SYSTEM OF MENTAL HEALTH SERVICES FOR TREATY INDIANS IN ALBERTA. Maria Carey, Director of Mental Health Services, Medical Services Branch, Health and Welfare, Alberta Canada.

An outline will be made of the system of services for Treaty Indians in the Alberta Region, with a population of 50,000 of which more than 5,000 are clientele.

An analysis of data and trends such as demographic, epidemiologic, diagnostic, therapeutic, length of therapy and costs involved will be presented.

The computerized data base system in use will be discussed.

This system is the first one in Canada for Treaty Indians.

THE DEVELOPMENT OF A MENTAL HEALTH NETWORK IN THE BAFFIN REGION. Eric Hood, Clarke Institute of Psychiatry, University of Toronto, Toronto, Ontario Canada. Florence Flynn, Baffin Regional Health Board, Iqaluit, N.W.T., Canada.

In 1987, the Baffin Regional Health Board, conscious of the serious psychosocial and mental health and mental difficulties in the area, formulated a plan for the evolution of a coordinated system for mental health care. Health and social service personnel already provided basic care, with support from community groups and visiting psychiatric consultants. However, a variety of stressors, including rapid cultural change, lack of employment, economic privation, overcrowding and substance abuse contribute to an increased demand for mental health services, both clinical and preventive.

Because of economic and personnel limitations to hiring a large number of mental health professionals, a community-based and health-oriented plan was developed to meet the region's needs in culturally appropriate ways.

Major objectives, will be presented and developed, including: fostering local initiatives; training indigenous counsellors; coordinating community interagency networks and regional services; increasing emphasis on preventive and educational aspects of mental health care.

The presentation will include the evolution of the proposal over the past three years, with particular attention to the development of a mental health team and its work at the regional and community levels.

THE DEVELOPMENT AND EVOLUTION OF MENTAL HEALTH SERVICES IN THE SIOUX LOOKOUT ZONE OVER A NINETEEN YEAR PERIOD. H.A. Armstrong. The Department of Psychiatry, University of Toronto, Canada.

This paper reviews the development and current status of mental health and psychiatric services to Canadian Native Indians and Inuit people living in remote areas.

Despite massive evidence of high morbidity and mortality due to mental health related causes, such services are limited in number, scope, and staffing. Problems in travel, accommodation, language, culture, staff retention, training and recruitment plague these services.

The University of Toronto Sioux Lookout Mental Health Program which serves 14,000 Cree and Ojibway Natives on about 30 reserves will be presented. This program provides training, supervision and support, to indigenous mental health workers, and a regular rotation of professionals to the people who live in small communities scattered over 100,000 sq mi. of boreal forest, and is now launching into a period of public education and community development.

SERVICE SYSTEM FOR ALASKANS WITH COMBINED SUBSTANCE ABUSE AND MENTAL DISORDERS. W. W. Richards, M.D., Chief, Area Mental Health Section, Alaska Area Native Health Service, 250 Gambell Street, Anchorage, Alaska 99501.

This paper describes new Statewide programs being developed in Alaska to help meet the special treatment needs of "dual diagnosis" clients. There are over 500 people in Alaska with a combination of severe mental disorders plus chronic substance abuse problems.

In April of 1988 there was a State Supreme Court decision ruling that "chronic alcoholics with psychoses" must be included among the beneficiaries of a Mental Health Lands Trust. Special funding was made available to provide needed services for this difficult-to-treat group.

Case examples of the types of treatment difficulties that this group encounters are presented. The service system is then described.

It includes emergency service patrols, detoxification services, and then specialized assessments and treatment plans. Long-term care facilities for extended treatment, followed by regional intermediate care programs and a case manager system for long-term support and rehabilitation, will be needed. A symptom check-list suitable for use by para-professionals to assist with case-finding, tracking over time, and evaluation, is described. Other circumpolar regions faced with dual diagnosis patients should be interested in this model.

DEVELOPING COMMUNITY MENTAL HEALTH SERVICES FOR INDIGENOUS PEOPLE OF NORTHERN ONTARIO. J. A. Ward, Psychiatric Consultant to Moose Factory Zone and Associate Professor of Psychiatry, University of Western Ontario, London, Ontario, Canada.

The three common approaches to providing mental health services to isolated communities have been to, first, rely on provincial or state mental institutions, second, to provide "fly-in" service where professionals are not acquainted with the centre or languages are sent, or third to appoint local indigenous mental health workers hired by local band or tribal council. None of these three models of service have been effective. To establish an adequate service, the mental health system must deal with a number of issues. The first of these is communication and cooperation with all agencies and workers at the local level. The second is the setting up of a support network of health facilities and professionals to provide supervision, training and back up. The front line community staff must be workers who are familiar with both the language and culture of their communities. Such workers can be recruited locally and they can be trained in the basic skills required for front line work. Professionals must be available both by personal contact and by telephone to provide immediate consultation in difficult situations. The system requires both initial and on-going planning with adequate input and feedback from the community served. The system may best be served if it is responsible to a larger organization such as a council of bands or tribes of the whole area. Backing by University Health Science Centres is also important.

ETHNICITY AND DRUG-TAKING BEHAVIOR AMONG ALASKAN YOUTH: IMPLICATIONS FOR THEORY AND RESEARCH. Bernard Segal, Center for Alcohol and Addiction Studies, University of Alaska Anchorage, Anchorage, AK 99508.

The present research specifically focused on gaining an understanding of the relationship between drug-taking behavior and ethnicity. An examination of the relationship between ethnicity and drug-taking behavior among ethnic groups showed that more Whites reported trying a drug or used alcohol than any other group. Alaska Natives showed the second highest level, while prevalence levels among the remaining groups were essentially comparable.

A study of the proportion of youth within each of the different ethnic groups, however, revealed different patterns of use. Drug involvement within ethnic groups was found to be very high for Alaska Natives, American Indians, Hispanics, and students of mixed backgrounds. Blacks and Asian-Pacific Islanders reported much less use, a finding consistent with other research. Exploratory inferential analyses were also undertaken to explain more fully some of the differences found.

The implications for further research and prevention are discussed. It was concluded that there is a special need to understanding drug-taking behavior in terms of the meaning it may have within a subculture or ethnic group, rather than approaching the problem from a deviancy perspective.

ADDICTIVE BEHAVIOR IN CONDITIONS OF THE NORTH. C.P. Korolenko, N.L. Bochkareva, T.A. Donskikh, Medical Institute, Novosibirsk, USSR.

Addictive behavior is defined as a fixed in consciousness desire to escape of reality by means of changing one's mental state artificially. The development of addictive behavior causes the distortion of emotional contacts.

The analysis of the addictive behavior in the North showed the significance of some personal and environmental factors that correspond to the appearance of the addictive attitudes. They include: Icarus Complex (fascination for fire, enuresis, high ambition, ascensionism), partial sensory deprivation, the loss of contacts with people. The development of the prominent addictive attitudes induces the specific type of personality changes - the formation of addictive personality. One of its traits is the possibility to replace easily one type of addiction by another in consequence of common addictive mechanisms. The significance of the long periods of hypostimulations in this period was investigated. It was noted that the hypostimulation causes, in particular, emotional changes, autistic attitudes increase the imagination. These traits correspond to the formation of basic addictive mechanisms common to various forms of addictive behavior.

ALCOHOLIC BEHAVIOR AND GENETIC PREDISPOSITION. Bernard Segal, Lawrence K. Duffy, Svetlana A. Kurilovitch, Alexei V. Avksentyuk, Center for Alcohol and Addiction Studies, University of Alaska Anchorage, Anchorage, AK 99508; Department of Bio-Chemistry, University of Alaska Fairbanks, Fairbanks, AK 99701; and Institute of Internal Medicine, Novosibirsk, 630003, USSR.

Alcoholism is a complex phenomena which involves a multiplicity of medical behavior factors that need to be addressed if causes are to be understood and effective rehabilitation is to be achieved. Contemporary research is emphasizing physiological and genetic studies of alcoholism in an effort to obtain physiological descriptions of the processes of drug tolerance, dependence, and withdrawal, and to identify genetic markers to determine who may be at risk for alcoholism. This research represents an initial effort to determine the interrelationships between biological and behavioral variables as they specifically relate to alcoholism. The findings of the research are discussed with respect to their implications concerning (a) genetic predisposition to alcoholism, (b) the link between genetic predisposition and behavioral indices in order to identify and predict people at risk for alcoholism, and (c) comparability of findings from a similar study initiated by research counterparts in Novosibirsk, USSR.

This project is part of the Alaska-Siberian Medical Research Program.

ALCOHOL-RELATED MORTALITY IN FINNISH LAPLAND. S. N  yh   Department of Public Health Science, University of Oulu, Finland.

The consumption of alcoholic beverages, especially strong drinks, is known to be high in Finnish Lapland. This study was carried out to see whether mortality from alcohol-related causes is high in this region and to identify the problem areas.

The data consisted of information extracted from all death certificates for the period 1961-1985 in which alcoholism, alcohol poisoning, alcohol psychosis, liver cirrhosis or pancreatitis was recorded as the underlying cause. The total number of cases in Lapland was 588, of which 81 % were males. The male deaths were usually due to alcohol poisoning (53 % of all alcohol-related deaths) but female deaths to liver cirrhosis (49 % of cases).

The distinctive feature for Lapland was the high male mortality from alcohol poisoning (SMR 126, compared with the whole of Finland) and also chronic alcoholism (SMR 118). Male alcohol poisoning was particularly common in the commune of Inari in the extreme north of Lapland (SMR 270) and chronic alcoholism in the towns of Kemi (SMR 211) and Rovaniemi (SMR 205). A special case was Kittil  , a rural commune noted for high mortality from alcohol poisoning and alcoholism. The findings conform to the common notion that alcohol is used excessively in these localities.

A STUDY OF MORTALITY RELATED TO ALCOHOL USE AMONG THE STATUS INDIAN POPULATION OF SASKATCHEWAN. E. L. Szabo, Community Health Services, Indian and Northern Health, Medical Services Branch, Department of National Health and Welfare, Ottawa, Canada.

A review of 851 Status Indian deaths in Saskatchewan was conducted for the years 1985, 1986, and 1987 to determine the extent to which alcohol was a potentially contributing factor in death.

From the available data, violent and traumatic and alcohol related deaths (based on the International Classification of Diseases, Category XXVII. Injury and Poisoning) represented 331 (38.9% of deaths within the study population) were further researched by review of coroners' reports and other supporting data.

Preliminary analysis of data shows that a large percentage of all deaths analyzed in the study population were associated with alcohol and that in the majority of cases, blood alcohol levels were in excess of 0.8 mg% from samples taken either from the deceased, the individual responsible for the death (if driver of vehicle) or both.

A PRACTICAL GUIDE TO IMPLEMENTING A MOBILE COMMUNITY TREATMENT PROCESS FOR ALCOHOL AND DRUG ABUSE BASED ON EXPERIENCE IN THREE SMALL ISOLATED NON-TREATY SETTLEMENTS. J. Kreise, B. Chamberlin, Saskatchewan Alcohol and Drug Abuse Commission, Box 5000, La Ronge, Sask. Can. S0J 1L0.

The process rationale, philosophy, assumption, objective advantages and strategies are briefly outlined. Particular attention is paid to the criteria for determining community readiness and commitment, preparing the communities, preparing other helping agencies and the media, after-care and follow-up steps and evaluation.

Tips on developing a treatment team which develops locally appropriate rehabilitation programming and a community activity team which develops locally requested chemical free activities are also given.

A process flow chart and an organizational graph are presented. Schedules for a day-patient rehabilitation program and for a community activities program held in conjunction are also presented.

Professional program models for teachers, health staff, Social Services, clergy, an intricate part of the community activities program are outlined. A Basic Addiction Information Program for the general public is also offered.

To date communities have reported a reduction in nighttime noise levels, a reduction in the number of party hours, increased school attendance, improved community circles, reduction in instances of family violence and a general disapproval of public drunkenness.

BACTERIAL MENINGITIS IN ARCTIC POPULATIONS. L.E. Nicolle, University of Manitoba, Winnipeg, Canada.

Bacterial meningitis is a significant health problem in certain northern populations. Haemophilus influenzae type b (Hib) is the most common infecting organism, with sporadic community outbreaks of N. meningitidis serogroup B also reported. For the NWT Canadian Inuit the rate of H. influenzae meningitis is reported to be 359.5/100,000, compared to 23.2 for the Canadian population as a whole. As many as 10% of all Inuit children experience one episode of meningitis. Alaskan Eskimo children under 5 years of age reported rates of Hib disease of 705/100,000, Indian children 401 and non-native children 129. In the North American Arctic 85-95% of Hib disease occurs in children under two years of age.

The introduction of Hib vaccines in the last decade has made control of this significant illness a realistic goal. The initial polysaccharide vaccine was efficacious only for children over 2 years. New vaccines, including the conjugate vaccine PRP-D, are partially effective in children under 2 years, but clinical trials have led to conflicting results. A vaccine trial in Finland suggested 95% efficacy, but no significant protection was observed when the conjugate vaccine was studied in a well designed trial in high risk Alaskan natives. Further clinical trials with this and other vaccines should determine how effective vaccination will ultimately be in decreasing disease in these extremely high risk populations. Other approaches such as bacterial polysaccharide immune globulin for the prevention of Hib and pneumococcal disease provide further opportunities for intervention.

THE EPIDEMIOLOGY OF THE INFECTIOUS DISEASES IN LAPLAND IN THE YEARS 1987-1989. L. Soininen, Provincial Government of Lapland, Rovaniemi, Finland.

The reporting of infections is done by medical doctors and if possible after laboratory verifying. The reports are sent to Central Hospital, Provincial Government and Central Board of Health. There are the statistics made. Here are the statistics of the Provincial Government of Lapland presented. The population is 200 000.

The incidence (1/100 000) of Tuberculosis was in 1987 30, in 1988 24 and 1989 10 (1/2 Year statistics). In the whole Finland the numbers were 1987 16 and in 1988 12.

Salmonella incidences were 1987 70, 1988 110. The increase was 55%. In whole Finland it was 42%. 93% of infections were imported.

Veneral diseases: In Lapland there are 2 HIV-positive persons. Gonorrhea incidence was in 1987 81, 1988 71 and 1989 66 (1/2 Year). Chlamydia incidence was in 1987 304, 1988 289 and 1989 280.

Measles epidemic was in Western Lapland from Dec. 1988 to March 1989. 147 cases were reported. All were nonvaccinated and born before 1975, when the vaccination against measles began in Finland. Varicella epidemic was in May-Aug. 1989 in Kemi district. Some cases of Pertussis are reported during the first half of 1989. One infant has died on pertussis.

AN UNUSUAL EPIDEMIC OF ISONIAZID RESISTANT TUBERCULOSIS IN A WESTERN ALASKA ESKIMO VILLAGE-PORTENTS FOR THE FUTURE? J.R. Krevans Jr. Yukon-Kuskokwim Delta Regional Hospital, Bethel, Alaska, USA. United States Public Health Service.

An outbreak of tuberculosis involving at least 94 converters from a single source case is described. The source was a 14 year old Yupik Eskimo who converted his PPD skin test at age 2 and was treated with isoniazid (INH) for one year at age 3; his father's organism was INH resistant at that time. All previous PPD negative individuals in the source's home were infected, 77 of 159 previously uninfected schoolmates were infected. Other contagion points included neighbors, teen center, and possibly sporting events; at least 5 converters from a nearby town were at a basketball tournament in the affected village. Investigation of these converters is not complete; they are not included in the 94 above.

Ocular, pulmonary, and pericardial disease was seen; one patient presented with Erythema nodosum.

Contributing factors to the epidemic include cavitary disease, stoicism, poor ventilation, isolation, weather delays of the investigation, two false negative sputums, and the young age of the source case. Prophylactic and treatment chemotherapy has been supervised by a village based aide.

Acute Lower Respiratory Disease Epidemiology in the Arctic-Out of the Cold and Dark? Davidson M. Parkinson, A. Bullock, L. Gellin, B. Ettel, R. Arctic Investigations Program, Anchorage AK., USA

Increased incidence and severity of lower respiratory tract infections among circumpolar residents, in particular Indian and Eskimo infant populations, have been long observed with reports of viral outbreaks occurring most frequently in fall, winter, and spring seasons. New respiratory disease agents, Chlamydia pneumoniae and Legionella spp. have been implicated in foci of adult disease in circumpolar regions but their contribution to endemic disease levels remains unknown. Disease surveillance in Alaska, has followed leads from recent mortality data indicating a greater than twofold higher age-adjusted death rate from pneumonia/influenza in Alaska Natives (Eskimo and Indian) compared to non-Natives with infant rates over ten times higher. Higher endemic levels of invasive infections due to the pneumococcus and Haemophilus influenzae appear statewide in both Alaska Native infants (rate ratios=5.8) and adults (rate ratios=6.7 and 2.6 respectively).

A seasonal pattern of pneumococcal disease in Alaska is characterized by more disease in summer months when compared to the remainder of the year for rural Natives than either urban non-Natives or Natives. Although traditionally considered to occur indoors, upper airway infections have not consistently been associated with poor housing in circumpolar regions. Larger family sizes and higher smoking rates among Canadian Indians and Alaska Natives than other ethnicities, increased hospitalizations for respiratory infections among children of smoking parents in Finland, and documented tobacco smoke exposure in Alaska Native children suggest that indoor air quality may influence respiratory infections at all ages. An increase in certain pneumococcal serotypes may partially explain disease rates in Alaska Native adults but the role of widespread iron deficiency anemia in all age groups remains to be defined. The limitations of classical seroepidemiology and microbiology for assigning an etiologic agent to specific pneumonias and their array of predisposing cofactors may soon be overcome with the application of antigen and DNA detection systems under development in Alaska and elsewhere.

ELIMINATION OF TUBERCULOSIS IN ALASKA: WISHFUL THINKING OR REALISTIC GOAL? M.E. Jones, J.P. Middaugh, Section of Epidemiology, Alaska Department of Health & Social Services, Anchorage, Alaska, U.S.A.

During the second quarter of this century, death rates among Alaska (AK) Natives attributable to tuberculosis (TB) were among the highest ever recorded for the disease (655 per 100,000 during 1926-30). Intensive case-finding efforts, a short-lived BCG vaccination program, and intensive direct supervision of treatment of persons with TB infection or disease following the introduction of chemotherapy in the early 1950's resulted in a rapid decline in TB morbidity and mortality rates and in rates of infection in children. The rate of tuberculin reactivity among Yukon-Kuskokwim Eskimo children under age 4 years fell from 34.4% during 1949-51 to only 1.7% in 1960. AK's TB incidence rate has fallen from 400 per 100,000 in 1952 to 9.5 cases per 100,000 in 1988; incidence rates are highest among AK Natives and Asian immigrants. Data to be presented will show that a substantial proportion of AK's TB cases are persons who were infected remotely or who received treatment during the early years of chemotherapy. The high rates of tuberculous infection among AK Natives during the first half of this century will result in persistent TB morbidity in AK. Established TB control measures must be aggressively applied if TB is ever to be eradicated from AK.

HAEMOPHILUS INFLUENZAE TYPE B DISEASE IN ALASKA, 1983-1988. A.P. Lanier, G.W. Letson, L.R. Bullock, G. Brennenman, Arctic Investigations Program, Anchorage, AK, USA.

Haemophilus influenzae type b (Hib) is the leading cause of bacterial meningitis in children. Alaska Natives have been reported to have the highest incidence of invasive Hib disease in North America. Statewide laboratory based surveillance of Hib has been maintained in Alaska since 1980. A case was defined by a bacterial culture positive for Hib from a sterile body fluid, or LPA positive for Hib in serum, CSF, or urine. This report describes the data for the time period 1983-1988 in children under 5 years of age.

A total of 475 cases were identified, 232 (49%) of which were meningitis. Epiglottitis occurred almost exclusively in non-Natives. Although Alaska Natives comprise only 16% of the total Alaska population, 237 (50%) of the 475 cases were in Natives. The Native/non-Native ratios for this time period were 4.4 for all Hib disease and 3.7 for meningitis. A larger proportion of cases in Alaska Natives are diagnosed under 1 year of age than in the non-Natives (66% vs 51%). Comparison of rates of disease for the 1983-1988 period with those of 1980-1982 showed a decline in rates for Natives and non-Natives in nearly every age category. This decline was not accounted for by the vaccine usage in older children. Despite the high incidence rates mortality was low in both Natives and non-Natives for all Hib disease (1.7%, 2.1%) and meningitis alone (3.8%, 3.2%) respectively. Despite an apparent slight decrease in rates of Hib disease in Alaska in the latter part of the 1980's, rates continue to be excessive among Natives demonstrating the continued need for a vaccine effective in very young infants.

THE LAUNCH OF A NATIONWIDE INFANT *HAEMOPHILUS INFLUENZAE* TYPE B IMMUNIZATION PROGRAMME IN ICELAND. *Ólafur Ólafsson** and *Kristín Jónsdóttir†*. *Directorate General of Public Health in Iceland, Reykjavik, Iceland. †Department of Bacteriology, University of Iceland, Reykjavik, Iceland.

The incidence of *Haemophilus influenzae* meningitis, among children aged 0-5 years, is higher in Iceland (247,000 inhabitants, annual birth rate 4000) than reported estimates from other European countries.

In a laboratory-based prospective surveillance study, 124 cases of *H. influenzae* meningitis among children under 5 years of age were found in Iceland during the period 1974-1987, an incidence of 44.2 cases per 100,000 per year. One child died, one is severely damaged, both physically and mentally, and two slightly damaged. Six have hearing defects (one totally deaf); one developed epilepsy. The age distribution of the disease revealed the highest incidence to be between the ages of 6 and 18 months.

In the same study there were 65 cases of *H. influenzae* septicaemia without meningitis in the age group 5 months - 14 years. Of these 51 had focal infections, the majority being cellulitis and epiglottitis.

Since 1984, discussions have concerned the possibility of immunization against *H. influenzae*. During 1986, information from Finland about the results of *H. influenzae* type b (Hib) immunization among infants accelerated the process. After several meetings with representatives from Connaught, and in co-operation with the Board of Infectious Diseases, GPs and specialists in paediatrics, the Director General recommended to the Minister of Health that a nationwide programme of Hib immunization for 3-, 4-, 6-, and 14-month-old children should be launched not later than May 1989.

The action was widely introduced to health personnel and lay people, by meetings, papers and information to every home in Iceland. So far the action is running smoothly and every health centre in Iceland has access to the vaccine.

Now when this is written, > 70% of eligible children have been vaccinated. Further information on the incidence of Hib, will be given at the conference.

Antibody (Ab) to *H. influenzae* type b (Hib) capsular polysaccharide (pp) in Maternal (m) and cord (c) sera from Inuit(I) Indian(II) and Caucasian(C) populations in the NWT and Manitoba. D. Quenker, G. Siber, B. Law and M. Moffatt, University of Manitoba, Winnipeg, Canada and Dana Farber Cancer Institute, Boston.

The incidence of Hib meningitis is higher among Inuit and Indian children than Caucasians, and occurs at a much earlier age. The basis for these differences is unknown but may be due to both environmental and genetic factors. To determine whether there are differences in the amount of passive IgG anti-Hib Ab transferred to newborn infants from the mothers we collected sera from 32 Caucasian, 31 Inuit and 14 Indian maternal-infant pairs. Hib Ab's were measured by a FARR radioimmunoassay. The lower limit of hib ab detection was 0.11 ug/ml. Geometric mean titers (GMT) were calculated using an assigned value of 0.55ug/ml for sera with undetectable Ab. The results are shown in the table:

| | Hib Ab GMT(ug/ml) | | % Cord sera with | | C/M |
|---------------|-------------------|---------|-------------------|-----|-------|
| | | | >0.15ug/ml>1ug/ml | | Ratio |
| Cauc (n=32) | 0.65 | 0.23 | 56% | 12% | .36 |
| Indian (n=14) | 0.48 * | 0.18 ** | 57% | 0% | **.38 |
| Inuit (n=31) | 1.43 | 0.45 | 82% | 32% | .32 |

Inuit vs Cau/Native Indian as shown: * p<.01; ** p<.05.

The high Hib Ab levels among Inuit may indicate a high level of exposure to Hib pp or cross reacting antigens such as *E. coli* K100 capsule. The results do not account for the high incidence of Hib meningitis among I during the first 6 mo. of life. Racially-related differences in the distribution of IgG subtypes, half-life of maternally transferred Ab or post-neonatal exposure to Hib may account for the apparent discrepancy between high levels of passively acquired immunity and early onset of invasive disease in Inuit infants.

THE COST EFFECTIVENESS OF VILLAGE BASED TESTING FOR GROUP A STREPTOCOCCAL PHARYNGITIS IN WESTERN ALASKA. J.T. WYCKOFF, Streptococcal Surveillance Program, Yukon Kuskokwim Health Corporation, Bethel, Alaska, USA.

Group A streptococcal pharyngitis and its nonsuppurative sequel, acute rheumatic fever, remain major public health problems within the native population of Southwestern Alaska. The preventive medicine efforts are concentrated through a centralized laboratory for diagnostic testing of throat specimens mailed to the lab from rural village clinics. In the effort to reduce turn-around time and effect more rapid treatment, a sample of village health aides were trained to perform the same rapid strep test employed in the lab. Although the feasibility of village based strep testing by health aides was acceptable, problems of health aide attrition and logistics proved to be prohibitive when considering many cost factors against the established centralized system. The establishment of rapid strep testing in remote villages is considered as a model for other applications and the cost-effectiveness necessarily evaluated with an organized and efficient system already in place.

SAFETY AND IMMUNOGENICITY OF *HAEMOPHILUS INFLUENZAE* TYPE B CONJUGATE VACCINE IN NORTHWEST TERRITORIES INFANTS. David Klaloch, Health and Welfare Canada, Yellowknife, NWT.

Haemophilus influenzae type b (Hib) meningitis is the most frequently reported cause of meningitis in the NWT, and occurs at much higher rates, and at a younger age than elsewhere in Canada.

In June 1987, the Bureau of Biologics of Health and Welfare Canada and the Science Institute of the NWT authorized a study to confirm the safety and immunogenicity of the Connaught conjugate vaccine for native infants aged 2-4 months in the NWT. Study group infants received diphtheria, pertussis and tetanus vaccine (DPT) at 2, 4 and 6 months, and at the same time but at a different site, Hib conjugate vaccine (PRP-D). The Control group received DPT. Blood samples were drawn from both groups before the first dose of vaccine, and one month after the third dose.

The safety of PRP-D for Dene and Inuit infants has been demonstrated. However, the potential for reducing the incidence of Hib disease through immunization with PRP-D is substantially less for Dene or Inuit infants than for other infants. This is related to the earlier age at onset of Hib disease, and, for Inuit infants, a diminished antibody response to PRP-D.

ANTI-PRP LEVELS AFTER 3 DOSES OF PRP-D

| Percent at or above indicated levels | Dene | Inuit | Other | All |
|--------------------------------------|------|-------|-------|------|
| ug/ml | | | | |
| 0.05 | 64.9 | 52.5 | 90.0 | 60.4 |
| 0.15 | 39.5 | 44.1 | 80.0 | 30.9 |
| 1.0 | 29.7 | 18.6 | 20.0 | 22.6 |

Surveillance and Prevention of Pneumococcal Disease in Northwest Alaska: a Demonstration Project. Chamberlaine C, Kennedy S, Davidson M, Taylor G, Parkinson A, Williams M, Spika J, Lanier A. Alaska Area Native Health Service, Maniilaq Association, Arctic Investigations Program, Centers for Disease Control, Kotzebue and Anchorage, Alaska; Atlanta, Georgia; USA

Following a report in June 1987 of 13 cases of invasive pneumococcal disease during the preceding 12 months in Alaska Natives(Inupiaq) from the Nana region, including 4 deaths in adults, (estimated yearly morbidity rate 20x average US and Scandinavian communities), a three year program to increase surveillance and prevention of this disease was begun. Review of all patients with x-ray proven pneumonia during 1986 indicated that 90% did not have blood cultures obtained. Manual search of vaccination records and computer matching of additional vaccination records and validated chronic disease diagnoses to a comprehensive population data base(7432 living/anytime residents) indicated that only 30% of 1,487 residents with predisposing chronic underlying diseases were vaccinated. In addition, given new guidelines specifically for the immunization of Alaska Natives, including healthy individuals >5% years of age and high risk individuals immunized >5 years ago, a target population of 1321 individuals requiring vaccination was established.

During the first year of surveillance, only 19% of all patients with pneumonia confirmed by x-ray did not receive a blood culture and the total number of blood cultures performed was almost five-fold higher than in 1986. During the second year, 30% of patients with pneumonia failed to receive blood cultures, of whom 65% were infants <24 months of age. The age-adjusted yearly rate for invasive pneumococcal disease for 1986-1988 was 138/100,000 and the infant rate for 1987 was 2800/100,000, 7 and 17 times higher, respectively, than contemporary US rates. Disease rates in this region were the second highest adult and highest infant rates of 8 Alaska Native regions surveyed and represent near-optimal blood culturing practices. At the beginning of the last program year, 971 individuals remained to be vaccinated or revaccinated and future maintenance of a strong surveillance and prevention program within the existing health care delivery system is anticipated.

TOXIGENIC DIPHTHERIA IN TWO ISOLATED NORTHERN COMMUNITIES

C.R. Wilson, R. I. Casson, B.A. Wherrett, N. Fraser
Queen's University, Kingston, Ont. K7L 5E9, and Department of National Health and Welfare, Canada.

Two isolated small indigenous communities in Northwestern Ontario experienced outbreaks of gravis toxigenic *C. diphtheriae* isolates from throat swabs. No serious illness was experienced.

In the first community of 1240 people, 60% of children 1-5 years of age & 83% of those 6-20 years of age were fully immunized prior to the outbreak. 50 isolates of diphtheria were obtained; 44(88%) were gravis toxigenic str and 6 (12%) were mitis nontoxigenic. The sites of positive culture were: throat 18(36%), ear 15(30%), nose 15 (30%), skin 2(4%). Ten persons (20%) had sore throats but no pseudomembranes; 15(30%) had ear symptoms, 2(4%) had skin infections, 23(46%) were asymptomatic carriers. Of those with positive cultures, 41(82%) were fully immunized, 7(14%) were partially immunized, 1 (2%) had lapsed immunization and 1(2%) was unimmunized.

In the second community of 1100, 17 isolates of *C. diphtheriae* were obtained from throat and nasal cultures; all were of the gravis toxigenic strains. Again, no serious illness was seen. 11(65%) were fully immunized, 4(26%) were partially immunized, and two infants (9%) were unimmunized.

In spite of what might be expected to be low host resistance because of poor socioeconomic conditions, no classic diphtheria was seen. A secondary virulence factor in toxigenic strains of *C. diphtheriae* has been postulated, and may have been absent in these isolates. Natural immunity from cutaneous disease or herd immunity from a relatively well immunized population may all have been protective. The importance of maintaining adequate immunization rates against diphtheria is apparent.

MATERNAL & CHILD HEALTH IN CANADA'S NORTH: DEVELOPMENTAL & NUTRITIONAL CONSIDERATIONS. M.E.K. Moffatt Physical health of Indian and Inuit infants in Canada has improved during the past two decades. Survival rates of newborn infants are now close to those for non-aboriginal infants. The infant mortality rate has fallen from around 70 per 1000 to the current (1985) rate of 20, (still about twice as high as that of non-native children). In Manitoba, the risk of an Indian child dying before 15 years of age is still 3 times that for a non-native child. Poverty and lack of economic opportunity play a significant role.

Along with poverty come some forms of morbidity which may prejudice the development of children. Aboriginal children are hospitalized 3 times as often as other children and the trauma of hospitalization may affect a child's development. Very high rates of suicide among Aboriginal young people suggest that there are mental health problems. There are few direct care supports and access to mental health counsellors is limited.

Nutritional problems abound. The Nutrition Canada Survey (1971-72) raised concerns about total energy intake of pregnant women, iron deficiency, and vitamins A and D in dietary intakes of native people. No major studies have been conducted since 1973. Two thirds of Indian children in some communities suffer from iron deficiency between 6-24 months. This may affect behaviour and development. Vitamin D deficiency rickets still occur and may cause seizures and interfere with reproduction in females in later life. Dental caries, particularly the nursing bottle type, are almost ubiquitous in some communities. The caries and the habits that lead to them, affect the intake of other nutrients. We have no national nutrition policy and there has been very little research into the effects of these problems. As physical health problems diminish, attention must turn to nutritional and mental health problems.

COMPLEX EVALUATION OF NATIVE AND ALIEN POPULATION CHILDREN HEALTH STATUS IN PRIAMURIE REGION. V.K. Kozlov, Institute of Mother and Child Health Care, Khabarovsk, USSR

The aim of this report is to demonstrate that the morbidity rate of native and alien children is related to ecological peculiarities of the region and depends on the perinatal condition of the child.

On the basis of current concepts of molecular and ultrastructural pathology (D.K. Sackisov, 1987) throwing light on the nature of preclinical period of a disease, the author studied the characteristic of perinatal background from an ecological point of view. A wide scale complex of ecological, clinic-biochemical, immunological, haematological and cytochemical investigations has been carried out. Multivariate statistical analysis of the investigation results made it possible to define risk factors of diseases development. An indirect integral influence of the regional ecological factors complex on immune system through enzymes status of immune competent blood cells changes was demonstrated. The deficiency of functional intraleucocyte microbicidal system and myeloperoxidase H_2O_2 , haloxides caused by region biogeochemical peculiarity with relatively low iodides availability in the environment is revealed. The significant extent of children with iron deficiency status, iron deficiency anemia, elements deficiency (or content disproportion) are also noted. These changes are mainly caused by feeding pattern shift from protein-lipid components to "European".

The comparative perinatal status investigation results of native and alien population children in Priamurie, show a defined trend of immunological, haematological, cytochemical and biochemical indices defining the possible development of a number of diseases and giving a sufficient basis for prophylactic medical examination scientific methods development.

COMPARATIVE STUDIES OF LACTOFERRIN FROM ALASKAN AND SIBERIAN NATIVES. Nikolai Tsireinokov¹ and John P. Harrington²

¹Institute of Clinical and Experimental Medicine, Siberian Branch, Academy of Medical Sciences, USSR, ²Department of Chemistry, University of South Alabama, Mobile, Alabama, USA.

Lactoferrin is an iron-binding glycoprotein found in human milk and other external secretions. *In vitro* experiments have indicated that lactoferrin plays a major role within the bacteriostatic system of milk and the regulation of iron within other physiological processes. This protein, by binding iron, decreases growth rates of iron-dependent bacteria in milk. Its bacteriostatic activity is coupled to the specific antibacterial antibodies in milk while this effect is lost by denaturation of this protein or saturating lactoferrin with iron. Over the past several years we have been studying in our laboratories this antibacterial role of lactoferrin and the various biochemical factors affecting the binding and release of iron and other metal ions from lactoferrin. These investigations have been extended to determine a possible differential expression of lactoferrin in the milk of Alaskan and Siberian natives. In addition, a study of the potential inhibitory role of lactoferrin on lipid peroxidation of human milk lipid components is presently underway.

This project is part of the Alaska-Siberian Medical Research Program.

INFANT AND CHILD MORTALITY IN GREENLAND IS TOO HIGH. P. Bjerregaard, J. Misfeldt. Danish Institute for Clinical Epidemiology, Copenhagen, Denmark, and Chief Medical Officer, Nuuk, Greenland.

The purpose of the presentation is to describe a recently started intervention study in Greenland and to invite colleagues, in particular from other Inuit areas, to form a collaborative working group on infant and child health. The aim of the study is to give a detailed description of infant and child mortality in Greenland, to evaluate how the deaths might have been averted and to identify population groups at particular risk, with a view to improving health care delivery and facilitating specifically targeted preventive interventions.

Infant mortality is 4 times as high in Greenland as in Denmark and mortality in the 1-14 year old 2.5 times as high. All deaths in children will be scrutinized retrospectively for the period 1987-1989 and prospectively for 1990-1993 by a reference group of health care professionals and compared with a control group of living children of the same age. Deaths will be analyzed according to a sociomedical disease model and emphasis will be laid on the identification of factors inside and outside the health sector which in the actual case can be regarded as contributing to the fatal outcome.

THE NATIONAL DATABASE ON BREASTFEEDING AMONG INDIAN AND INUIT WOMEN: 1988 RESULTS. N. Langner, J. Steckle. University of Ottawa and Medical Services Branch, Health and Welfare Canada, Ottawa, Canada.

The National Database on Breastfeeding among Indian and Inuit Women collected data on over 3000 births in 7 regions of Canada in 1988. Survey questions included feeding methods from birth to age 6 months, vitamin D and fluoride supplementation, maternal diabetes, weight gain during pregnancy, and smoking. Diabetes was present in 5.7% of mothers during pregnancy. Forty-nine percent of women smoked during pregnancy, ranging from 29% in Yukon and Pacific to 61% in Quebec. Overall, 59% of women breastfed at birth, ranging from 90% in Yukon to 18% in Quebec. By 6 months, 28% of the infants were still receiving some breast milk. Compared with a previous survey in 1983 initiation rates have increased in the Pacific from 68% to 81%, in the Yukon from 82% to 90% and in the Atlantic from 21% to 30%. There was minimal change in other regions. Positive predictors for breastfeeding are age, residence in the north or west, and non-smoking. Predominant reasons for stopping breast feeding were insufficient milk, returning to work or school, and cracked nipples. Vitamin D supplementation was given to 22% of breastfed infants and 19% of bottle fed infants at 6 months. Fluoride supplementation was highest in the Pacific (37%) and in Manitoba (30%).

These findings demonstrate significant regional disparities in Native choices of maternal-child health practices. Native infant supplementation with vitamin D and fluoride is insufficient.

ANTECEDENTS OF RICKETS IN A MANITOBA NATIVE COMMUNITY J. Lebrun¹, M. Moffatt, B. Postl

Too little attention has been paid to nutritional deficits in Canadian Aboriginal children. Vitamin D deficiency rickets still occurs and is particularly prevalent in the Island Lake area of Northeastern Manitoba. To determine the risk factors and to assist in the development of a preventive program we undertook a cross-sectional survey of 80 randomly selected infants aged 0-24 months from this area. Information was collected on diet, gestational history, sunlight exposure and vitamin supplements. Serum levels of Vit D, Ca^{++} , PO_4 , and alkaline phosphatase were measured in both mothers and infants. Low 25(OH) Vit D were found in 89% of the children and 93% of mothers. Means were 26.0 and 19.8 nmol/L respectively (normal 34-105 nmol/L). Low Vit D status (defined as < 20 nmol/L) was predicted by long duration of breast feeding (> 26 weeks predicting low Vit D; $\chi^2=19.1, p<.001$), limited use of milk or formula ($\chi^2=17.9, p<.001$), and serum PO_4 < 1.85 mmol/L ($\chi^2=7.2, p=.007$). In multiple linear regression, the duration of bottle feeding, the amount of Vit D from supplements and serum levels of alkaline phosphatase and serum PO_4 were the strongest predictors. Breast feeding dropped out of the equation in favour of amount of milk feeds. Serum PO_4 < 1.85 mmol/L predicted low VitD status with a sensitivity of 88% and a specificity of 44%. A public health program for this community should provide counselling on rickets, nutrition education and Vit D supplements for all infants. Case finding should be targeted at infants who receive little or no cow's milk, using serum PO_4 as an inexpensive screen for those at risk for low Vit. D. A comparison of Vit D status in other native communities would be desirable.

THE EPIDEMIOLOGY OF INSULIN-DEPENDENT DIABETES MELLITUS (IDDM) IN NORDIC POPULATIONS. H.K. Akerblom. The Children's Hospital, II Department of Pediatrics, University of Helsinki, Helsinki, Finland.

Recent epidemiological research has documented extraordinary differences in the incidence of IDDM: genetic background is important, and the place of living of the child. IDDM incidence is correlated e.g. with the distance from the equator (Larante et al.: *Diabetes Care* 1985;8(suppl.1):101). Over 20-fold differences exist between the highest and lowest incidences worldwide. The incidence rates of IDDM in children in the Nordic countries are among the highest in the world.

The incidence in 0-14-year-old children in Finland was higher than anywhere else, 35.0/100,000/yr. in 1984-86 (Knuutila et al.: *Acta Med. Scand.* 1988; 223(suppl.1):15), followed by that in Sweden, 25.1/100,000/yr. in 1977-86 (Dahlquist et al.: *Diabetologia* 1989;22:2). The mean annual incidence in Norway for 1978-82 in the same age group was 22.7/100,000 (Joner and Sæviik: *Diabetologia* 1989;22:19). Lower incidences have been reported in the northern parts of Finland and Norway compared to the rest of the countries. IDDM is rare among Lapps, who live in the northern parts of the Nordic countries (Kirjaranta and Eriksson: *Nord. Congr. Acta Med. Scand.* 1976; 110:141). Secular increases in incidence rates have occurred in all three of the high incidence Nordic countries over the last 10-20 years. Epidemiological research in the Nordic populations joined with other fields of science gives a challenging chance to elucidate the roles of genetics and environment in the etiology of IDDM.

SALIVA COTININE CONCENTRATIONS IN YOUNG CHILDREN IN RURAL ALASKA. R.A. Etzel, D. Jones, C. Schliffe, J. Lyke, E. Dunaway, J. Middaugh. Alaska Native Health Service, Rural Alaska Community Action Program, Alaska Department of Health and Social Services, Anchorage, AK, Centers for Disease Control, Atlanta, GA, USA 30333

Passive smoking results in an increased risk of lower respiratory illness and chronic otitis media in young children. Both are major problems among Alaska Native children. The objective of this survey was to measure cotinine, a metabolite of nicotine, to quantify the tobacco exposure of Alaska Native children between the ages of 3 and 5 years. We collected saliva samples from 86 of the 106 children enrolled in preschool programs in two rural villages and measured cotinine by radioimmunoassay. The median saliva cotinine concentration was 2.55 ng/ml (range 0 to 263.9 ng/ml). Cotinine was detected in the saliva of 95% of the children, although 64% lived in homes where no smoking was reported. 80% of the children had cotinine concentrations less than 10 ng/ml, suggesting that they were passively exposed to tobacco smoke. 15% of the children had cotinine concentrations over 10 ng/ml. Values this high are unlikely to have occurred from passive smoking alone; use of chewing tobacco may be contributory. These data suggest that young Alaska Native children have significant exposures to tobacco products.

PERINATAL IRON STATUS IN THE NORTH - INFLUENCE OF RACE, DIET AND SUPPLEMENTATION. J.C. Godel, H. Pabst, P. Hodges, K. Johnson, R. Hodges, T. Fellows, M. Ng. Department of Pediatrics, University of Alberta, Edmonton, Canada.

Plasma ferritin levels were obtained during pregnancy, at delivery and at followup from 91 maternal-child pairs from 10 settlements in the Inuvik Zone of the Northwest Territories. Mean maternal levels prenatally, at delivery and at followup were 27.6±32.0, 30.4±24.0 and 44.7±56.1 ng/ml respectively, with infant cord levels of 172.0±96.5 ng/ml, and followup levels of 83.6±99.8 ng/ml. A significant percentage of maternal levels were less than 15 ng/ml; 46.3% prenatally, 25.3% at delivery, and 19% at followup.

Inuit mothers had the lowest ferritin levels, 25.14±26.1 ng/ml compared to those of white, 44.6±41.0 (p=.003), or Indian mothers, 34.7±24.0 (p=.02). Tuktoyaktuk, an Inuit community, had the lowest mean levels, 17.1±17.5 ng/ml.

Women on unsupplemented "traditional" diets had lower levels of ferritin than those on unsupplemented "southern" or on "transitional" diets. Supplementation during pregnancy not only significantly increased the maternal ferritin on followup, but also significantly increased that of the infant. Breast feeding increased this level slightly but not significantly.

These observations suggest that iron deficiency as reflected by low ferritin levels is common during pregnancy in the north, especially among Inuit women. Prenatal iron supplementation is important in preventing subsequent deficiency in both mother and her infant.

PROBLEMS OF VISION IN A YOUNG GENERATION OF NATIVE PEOPLES IN THE NORTH V. Ph. Bezany, Institute of Northern Medical Problems, Siberian Department of the USSR Academy of Medical Sciences, Krasnoyarsk, USSR. From centuries past, native people in the North had a reputation for marksmen, skillful hunters and reindeer-breeders. Unfortunately, today different defects of the functional state and development of the eye have been revealed in these populations. Sixty to seventy percent of children leaving boarding-schools have a pathology of vision.

Many years of study established that the main reason for this situation is the contradictions between ethno-ecological peculiarities of visual perception and the regimes and techniques of teaching and of information transmission which were formed in the period of revolution in science and technique. The ethno-ecological peculiarities of their perception are: deep disposition of the centres of visual analysis to natural sensory images, to the movement, space and a wide panorama view as well as to white and blue colors. Neurodynamic processes between an image system and a verbal one were found to be reduced.

It was established that the construction of a school with no regards for the ethno-ecological peculiarities of perception and thinking promoted the chronic sensori-psychogenic, muscular-coordination and neuro-negative tensions in the children. These result in the inhibition of their development as well as the formation of a whole class of school pathology (myopia, defects of posture, neuropsychic disturbances etc.). The performed studies enables us to develop a system of natural and health protecting principles in the construction of a teaching and educational process.

A NEED FOR COMPREHENSIVE ACTION TO ENHANCE MANITOBA INDIAN CHILDREN'S ACADEMIC ACHIEVEMENT. S. Longstaffe, N. Ling, B. Postl, E. Loadman, C.A. Ferguson. Department of Community Health Sciences and Department of Pediatrics, University of Manitoba, Winnipeg, Canada.

A project conducted in four northern Manitoba Indian communities involved neurodevelopmental testing on 302 children (21% of target group). The children, referred for medical, academic, social, and behavioral reasons, had prenatal, labour and delivery, and medical history reviewed. There were 200 children under age 10. Cognitive skills were acceptable, but with widespread delay in language performance. Analysis of the poorer functioning 21% centile, showed congenital anomalies and seizure history contributing to cognitive delays. The cognitive delay, and some maternal prenatal measures, perhaps proxy measures, contributed to delays in language performance.

The global nature of the language delay, with adequate cognitive skills, raises questions of test adequacy. Historical evidence also suggests a need for language enhancement action in the communities. The implications of poor academic performance are vast in this era of self government for Canada's Indian populations.

INFANT FEEDING PRACTICES AND MALOCCLUSION: A LONGITUDINAL STUDY. D.W. Davis and P.A. Bell, Pacific Region, Medical Services Branch, Health and Welfare Canada, Vancouver, B.C.

Bottle-feeding and malocclusions have long been suggested to be linked in a causal relationship. The study reported here is the first to document the infant feeding practices of individuals and to follow up with direct examination of the subjects to determine the relative risk of developing malocclusion.

The sample population comprised those born in First Nations communities in British Columbia during 1983. The families participated in a program in which the method and duration of feeding was recorded during the first twelve months.

In 1988 a comprehensive examination of oral health was carried out for five-year-olds which included ten orthodontic items: molar relationship, cuspid relationship, crowding, drifting from premature loss of teeth, overjet, overbite, other manifestations of malocclusion and the patient's experience with orthodontic therapy if any.

A detailed analysis of the method and duration of feeding has demonstrated a significantly higher risk for malocclusion with increased duration of bottle feeding in a population of 110 five year olds. Five years is early to expect to detect malocclusion. Where malocclusion exists at this stage it can be predicted that severity will increase as the subjects mature. It is expected to follow these subjects at four year intervals to determine the full extent of infant feeding practices on malocclusion. Only children who could be identified with absolute certainty were included in the five year follow-up analysis.

Over the course of 91 days during the winter and spring of 1988, four Canadians joined nine Soviet skiers in an unprecedented attempt to cross the Arctic Ocean on foot. The 1800 km journey between Cape Arkticheski on the Northern tip of Siberia's Novaya Zemlya Islands and Cape Columbia in Canada was fraught with obvious obstacles:- severe cold, shifting ice, and injury. In addition, language and cultural barriers, personality conflicts, and the prolonged privation of such an extensive trek made for a very stressful three months. Apart from the political and personal motives involved, the expedition provided a rare opportunity for scientific study:- not only of the geographic and environmental elements through which the men travelled, but also of the physiological and psychological effects on the participants of life under these extremes. The voyage was ultimately completed on schedule by all 13 skiers. The purely scientific aspects of the expedition will be presented in other papers. This presentation will provide an overall perspective of the expedition.

THEORETICAL CONSEQUENCES OF POLAR STRESS.
R.J. Shepard, Toronto, Ontario, Canada

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The severe cold and physical exertion of a Transarctic skitrek places great demands on protective clothing and other equipment and on the heat exchange and thermoregulatory mechanisms in the skiers themselves. A comparison of Canadian and Soviet protective clothing was made under laboratory conditions on members of a 13 man team chosen for a 90 day, 1800 km Transarctic Skitrek from the USSR to Canada via the North Pole. Physiological and hygienic tests revealed some operational shortcomings. Cold chamber (-40 C) studies showed that both sets of clothing provided human heat comfort and the results were within accepted physiological norms. However, the skiers dressed in Canadian clothes were in a more comfortable heat state. These results were confirmed by heat exchange studies on 4 skiers during the expedition. Our data also showed that the Canadian outfits were more effective during high physical exertion in the cold. Our results confirmed further the efficacy of using layers of clothes with good thermal properties. There is a need for further research into the optimum design for winter clothes for different intensities of work and climatic conditions, particularly the problem of respiratory protection during high physical exertion in the cold.

THE EFFECTS OF A 90 DAY POLAR SKI EXPEDITION ON COLD ACCLIMATIZATION. S.D. Livingstone, R.W. Nolan and A.A. Keefe. Defence Research Establishment Ottawa, Ottawa, Ontario, Canada.

In early 1988 a group of four Canadians and nine Soviets took 90 days to ski across the North Pole from Northern Siberia to Northern Canada. The physiological effects of this cold exposure were determined in the four Canadian members of this group.

Local acclimatization was determined by examining cold induced vasodilation (CIVD) which was observed by measuring temperature changes in the mid finger when immersed in ice water. General cold acclimatization changes were examined by exposing each skier, wearing only shorts and reclining on a rope mesh cot, to an ambient temperature of 10 C. Skin and rectal temperatures, electromyographs and metabolic rates were measured. These tests were done approximately one month prior to departure and within five days after their arrival in Canada. The results showed that each skier had a greater CIVD response as a result of the exposure indicating a local acclimatization to cold. The general cold stress test indicated no clear differences in skin or rectal temperature changes; however, the onset of shivering was delayed and metabolic rate was lower in the post-trek tests. This would indicate that there was an insulative-hypothermic response to a general cold stress.

MEDICAL OBSERVATIONS ON MEMBERS OF THE USSR/CANADA TRANSARCTIC SKITREK. J. Sproule, M. Jette, A. Rode. School of Human Kinetics, Faculty of Health Sciences and Health Services, University of Ottawa, Ottawa, Canada.

The 9 Soviet and 4 Canadian members of the USSR/Canada Transarctic Skitrek were examined within 24 hours of their arrival in Ottawa. Generally all members were in good health. No significant medical problems were identified and there was no evidence of physical or mental fatigue. Injuries were related primarily to environmental factors. Every member of the Trek suffered some degree of cold injury to the extremities and face. Most of the injuries ranged from frost nip to superficial frostbite which had resolved by the time of examination. There were two cases of severe frostbite: one on the tip of the nose with resulting ulcer formation and loss of tissue and the other to the great toe resulting in some tissue and sensory loss. All members suffered some degree of sun and wind damage to facial skin. Seven showed mild to moderate trauma to the feet and toes: eight rash on their knees; and seven eye irritation from the strong polar sunlight. Seven reported having had short episodes abdominal cramps and diarrhea thought to be related to the high fat content of their diet. Muscular aches and pains were common during the expedition. Blood tests, urinalysis, and EKG's were normal. Lung function tests showed three individuals with mild degrees of restrictive lung disease. Three members had evidence of mild hypertension.

The results of this examination indicate that the skiers were primarily affected by environmental factors (cold, wind, sun) rather than the cardiovascular demands of the trek. The implication of these results will be discussed.

PSYCHOLOGICAL ADAPTATION IN PARTICIPANTS OF A TRANSARCTIC SKITREK. V.S. Koscheyev, M.A. Lartzev, V.K. Martens. Biophysics Institute, USSR Ministry of Health, Moscow, USSR.

Psychological adaptation was studied in 9 Soviet and 3 Canadian participants on a 90 day, 1800 km Transarctic skitrek from the USSR to Canada via the North Pole. The results were analysed to evaluate and predict their physiological state and working capacity and to improve personal protection under remote and isolated conditions.

Personality, motivation, intelligence, self-esteem and other psychological variables were studied using tests such as the MMPI, 16PF, Raven, Lucher Colour, SAN, and specially developed questionnaires in Russian and English.

Psychological profiles of 'successful' and 'unsuccessful' participants were drawn and indices developed for use in screening candidates and predicting success under extreme and isolated conditions.

En route skiers showed psychological changes which were most likely determined by discomfort, physical exertion, fatigue at the end of the Trek and, most importantly, by the difficulties of interpersonal relations between the Russian and Canadian skiers.

ANTHROPOMETRIC AND FITNESS CHARACTERISTICS OF MEMBERS OF THE USSR/CANADA POLAR BRIDGE EXPEDITION. M. Jette, A. Rode, V. Koschev, M. Booth, and J. Thoden. School of Human Kinetics, Faculty of Health Sciences, University of Ottawa, Canada and the Institute of Biophysics, Ministry of Health, Moscow, USSR.

The three-month USSR/Canada Polar Bridge Expedition from Cape Arklichevsky to Cape Columbia, a distance of some 1800 km was conducted between March 3 and June 1, 1988. The 9 Soviet and 4 Canadian members of the expedition were measured before, during, and after the expedition on selected indices of fitness and anthropometry. The mean age of the Soviets was 40.9 ± 7.2 yrs (range 29 to 51 yrs), mean height 177.1 ± 5.8 cm, mean weight 80.6 ± 8.4 kg (range 75 to 91.5 kg), body mass index (BMI) 25.7 ± 2 . The Canadians had a mean age of 33 ± 6.8 yrs (range 28 to 43 yrs), mean height of 178.1 ± 8.2 , mean weight of 74.8 ± 5.6 kg (range 70.6 to 85.7 kg) and a BMI of 23.6 ± 1.1 . During the first month of the expedition the weights of the Soviets decreased by 4 to 5 kg. It then increased by 3 to 4 kg so that by the end of the expedition their mean weight was 2.2 kg (2.7%) less than at the start. This reduction in weight was accompanied by a 21% reduction in body fat (24.5 to 19.4). In the Canadians weight dropped slightly during the first two weeks of the expedition, increased as the expedition progressed reaching 78.4 ± 7.3 in mid-May and ending with a slight increase of 1.6% over their pre-departure weight with little change in percent body fat. Upper body strength, as measured by the shoulder-arm push dynamometer, increased in both the Soviets (79.1 to 81.6 mm) and the Canadians (78.0 to 81.5 mm). Mean maximal oxygen consumption measured on a bicycle ergometer averaged 60.5 5.1 ml/kg-min prior to the expedition in the Canadians. This value decreased by 20% to a mean of 48.7 ml/kg-min following the expedition and was similar to the post V02max of the Soviets (46 ± 5.5 ml/kg-min). Physical working capacity decreased from 1500 kpm/min following the trek for the Canadians and from 1539 to 1308 kpm/min for the Soviets. The implication of these results will be discussed.

THE SYMPATHETIC-ADRENOMEDULLARY, SEROTONINERGIC, AND HISTAMINERGIC SYSTEMS DURING A TRANSARCTIC SKITREK. N. Davydova, R. Tigranian, N. Kalita, M. Malakov. Institute for Standardization and Control of Drugs, Ministry of Health, Moscow, USSR.

Blood concentrations of epinephrine (E), norepinephrine (NE), serotonin (S), and urine excretion of catecholamines (CA), their precursors and metabolites, histamine (H), S, and their metabolites were determined in 13 men on a 90 day 1800 km Transarctic Skitrek from the USSR to Canada via the North Pole. We sampled 18 and 11 days before the start; at day 12, 29, 55, and 74 of the trek; and 3 days after the finish.

Blood concentrations of E and NE exceeded initial values both during the trek and after the finish, with maximum values observed during the first three stages of the trek. Blood levels of S also increased markedly during the first two stages but decreased by day 74 of the march. Urinary excretion of CA, their precursors and metabolites increased during the trek, with maximum values noted by day 74. Urinary excretion of S, H, and their metabolites was characterized by most pronounced changes in indices of the serotonergic and histaminergic systems during the 4th stage of the trek.

The data provide evidence of sympathetic-adrenomedullary, serotonergic and histaminergic systems activation under trek conditions.

Disabilities Amongst Native Population. Shah C.P. Preventive Medicine and Biostatistics, University of Toronto Sioux Lookout Program, University of Toronto, Toronto, Canada.

Native Population in Canada are going through transition including in their morbidity patterns. There are suffering from more and more chronic diseases such as hypertension, cardiovascular diseases and diabetes. The disability rates are also increasing. Study in our area indicates that the disability rate per 100 persons in native group compared with Canadian averages for different age groups were as follows: 0-14 years old were 12.1% and 5.2%; 15-34 years old were 25.5% and 5.7%; 35-64 years old were 46.4% and 15.7% and for over 65 years old 80.0% and 45.5% respectively. Services for the disabled natives are non-existent. This paper will outline strategies for care of the disabled native people.

STRUCTURAL AND FUNCTIONAL FEATURES OF ERYTHROCYTE MEMBRANES IN MEMBERS OF A TRANSARCTIC SKITREK. L.E. Panin, V.G. Kunitsin, M.F. Nekrasova, N.G. Kolosova. USSR Academy of Medical Sciences Siberian Branch, Biochemistry Institute, Novosibirsk, USSR.

Changes in erythrocyte membranes were studied in 13 men on a 90 day, 1800 km Transarctic Skitrek from the USSR to Canada via the North Pole. At the end of the trek there were marked changes relative to pre-start states. The erythrocyte content of α -tocopherol was lower at all stages of trek. The amount of the fluorescent products of lipid peroxidation increased only in the pre-Pole stages of the trek. At the Pole and at the finish in Canada their content remained at pre-start levels probably due to increased super-oxide dismutase activity.

The analysis of the IR spectra of erythrocyte ghosts showed a significant increase in the phospholipid/protein ratio at the pole and the finish. This was caused by an increase in the phospholipid content and a slight decrease in the membrane proteins. The amount of bound water also increased thus showing an enhanced hydrophilicity of the membranes. There was an increased rigidity of the membranes at the Pole relative to Moscow and Ottawa as shown by analysis of the electrical conductivity and viscosity of erythrocyte ghosts.

The above changes did not influence the rate of glycolysis but decreased ATPase activity which is bound to the erythrocyte membrane. The decrease in the Michaelis constant of the enzyme evidences the conformational changes due to changes in its environment. Restoration of some structural features of the erythrocytes at the finish may be a sign of the appearance of large amounts of young cells.

ALTERNATIVE PROGRAMS TO LONG TERM INSTITUTIONAL CARE FOR ALASKA'S ELDERLY. Helen D. Beirne. Health & Human Resources Consultant. Anchorage, Alaska, U.S.A. 99511

The revolution of aging which is taking place in most of the developing nations of the world dictates that humane and cost effective ways of meeting the needs of the aging population be designed. Alternatives to costly and family divisive institutional placement must be explored. Societies which are already struggling under the brunt of an aging population and especially those with a harsh climatic environment and diverse cultural groups have much to learn from each other.

In 1981, The Older Alaskan's Commission was established by the Alaska State Legislature to implement programs which would ensure dignity and independence for Alaska's elderly and assist them in maintaining useful and quality lives within their homes and home community.

Even though the funding for these community and home base programs is less than 10% of the amount presently spent for institutional care by Alaska's public and private systems, there is reason to believe it is making a significant contribution to home and community based living and is proving a deterrent to institutional placement.

This presentation will describe the home and community care programs which have been initiated and examine their effectiveness in meeting the goal of the Commission.

HEARING HANDICAP INVENTORY FOR THE ELDERLY. Betty Ann Garner. Alaska Native Medical Center, U.S. Public Health Service, Anchorage, AK, 99501, U.S.A.

To assess hearing handicap in Eskimo adults, it was necessary to translate a tool and test its validity. Problems pertaining to the population selected, the tools chosen, the cultural mores and the perception of hearing loss specific to this population necessitated the termination of the study. However, this investigation delineated factors which can influence the results of testing hearing acuity tests for the audiologist working in this setting.

CHALLENGE OF HOME CARE IN REMOTE COMMUNITIES. J. Feather, J. Irvine. Community Health and Epidemiology and Northern Medical Services. University of Saskatchewan, Saskatoon, Canada, S7N 0W0.

Home care needs and service environments in southern urban, southern rural and northern rural Canada are compared, using data from national and selected provincial sources.

Home care is a health-promoting and cost-effective alternative to institutional care, and should be considered a high priority in health services planning such as that undertaken by Treaty communities in the health transfer process. When issues in development and operation of home care are discussed, variations between provinces are usually acknowledged, but less attention is paid to inequalities in the nature and extent of need, and of differences in the social and physical environments for care, in southern urban compared with southern rural and northern rural communities. Basic human needs for treatment, personal care, home safety, nutrition and social support are universal, but rural and urban patterns of unmet need for support services differ. Needs in native and non-native communities also differ, due to contrasting patterns of disease, demographics, and social and cultural conditions. Meeting home care needs in rural communities is complicated by factors such as the limited human and resource pool available. But northern and southern rural communities differ in responding to those challenges because of demographic, cultural and health service system characteristics. The findings suggest that the frail elderly, chronically ill and disabled in rural and northern communities will continue to be disadvantaged with respect to home support unless models applied to urban centres are adapted to local needs and conditions.

THE PREVALENCE OF DISABILITY IN THE BAFFIN: A MODEL FOR THE DELIVERY OF COMMUNITY BASED REHABILITATION. B.V. Destounis, T. Pollitt, J.C. MacDougall, E. Gisell, G. Watters, R. Gledhill. School of Physical and Occupational Therapy, Department of Psychology, McGill Baffin Project, McGill University, Montreal, Canada. The Baffin Regional Health Board, Iqaluit, Baffin Island, Canada.

Rehabilitation services are not as yet available in communities of the Eastern Arctic Zone. The demographic characteristics of congenital anomalies and chronic disabilities are described in the Inuit pediatric population (0-18yrs) in the Baffin Zone. Providing rehabilitation and support services within a community, reduces the necessity for disabled individuals to leave their home. The necessity for the development health education prevention and rehabilitation programs are presented along with a model for community based rehabilitation (CBR). CBR involves the cooperation and participation of social service, education, health departments and community representatives in taking joint responsibility for the continuity of services through community programs. The need to develop comprehensive services for disabled persons living in isolation is emphasized.

URBAN NATIVE HEALTH CARE UTILIZATION: THE RELEVANCE OF SOCIO-ECONOMIC STATUS. James B. Waldram. Department of Native Studies University of Saskatchewan, Saskatoon, Canada.

This paper presents the results of a study of health care utilization patterns in the western Canadian city of Saskatoon. Structured interviews with 142 Native and 84 non-Native respondents were undertaken in an impoverished section of the city. The results indicate that, contrary to beliefs held by the medical community, not only did the Native respondents extensively utilize medical services, in some areas their utilization patterns could be deemed "more appropriate" and conducive to good health than that of the non-Natives. The study concludes that cultural models which postulate that urban Natives are unable to decipher the urban medical system because of its complexity, or who avoid using medical services because they are not "culturally appropriate," are misdirected. Strong parallels in utilization patterns are demonstrated between the Natives and non-Natives, and although there are some differences the data suggest that socio-economic status may provide a greater explanation for utilizations patterns than cultural factors. It is argued that Native urban dwellers utilize available medical services as they do because they are poor, and not because they are Native.

PERCEIVED PROBLEMS OF ORAL HEALTH IN ELDERLY PEOPLE LIVING AT HOME. I. Palin-Palokas. Faculty of Dentistry, University of Kuopio, Kuopio, Finland.

Problems of oral health and dental treatment needs as perceived by the elderly (those 70 years old or older) living at home in urban community were studied as part of an interdisciplinary approach aiming to study the quality of life of the elderly. The study sample consisted of 10% of the elderly living at home, of which 80% (n=433) returned a mailed questionnaire. Of these about 70% had completed the questions concerning problems of oral health.

Pain in teeth or soreness of mouth troubled 31% of the participants while 38% had problems of social intercourse because of poor oral health (articulation problems, bad breath etc.), and 97% had problems of chewing or tasting. Only 38% of those with problems of chewing or tasting felt a need for dental treatment, whereas 54% of those with pains in the mouth and 61% of those with oral health related communication problems felt they needed dental treatment. Except for pain, the need for treatment among those with problems was more commonly felt by men than by women, and was more common in persons with some of their natural teeth left than in edentulous persons. Regardless of the type of problem, need for treatment was more often stated by those with high income, and by those with more formal education, than by the rest of the elderly.

About a third (31%) of all participants felt that something restricted their utilization of oral health care services. The expensiveness of dental treatment was stated as the main hindrance by more than a half of them (58%). Among those who felt a need for dental treatment, poor general health appeared to be the foremost obstacle, followed by low income.

A large proportion of the elderly living at home suffer from problems of oral health that complicate their everyday lives, but do not seek treatment because of lack of knowledge or financial resources.

WHAT IS SOCIAL ENVIRONMENT AND HOW DOES IT INFLUENCE HEALTH IN GREENLAND? P. Bjerregaard. Danish Institute for Clinical Epidemiology, Copenhagen, Denmark.

The social environment is formed by all human interactions, past and present, which influence people's lives and health. A person's social environment is to a large extent determined by his cultural background and social class but also by individual life history as modelled by education, family history, habits etc. Most often the influence of the social environment is indirect, through intermediates such as housing conditions, substance abuse and access to medical care.

In Greenland, the major public health problems are heavily influenced by the social environment: accidents, suicides, violence, venereal diseases, alcohol misuse, lung cancer and infant and child mortality. A number of studies have linked the social environment with morbidity and mortality. Associations have been demonstrated between low housing standards or social group and high incidence of a number of infectious diseases, congenital heart disease, admission to hospital and participation in special education for handicapped children. At community level, social background variables have furthermore been shown to be associated with mortality: income was negatively correlated with infectious diseases, and community size positively correlated with ischaemic heart disease and suicides.

The objectives of future research in this field will be to identify the specific components of the social environment which influence morbidity and mortality and to evaluate to what extent they can be modified.

MEDICO-SOCIAL ASPECTS OF HEALTH IMPROVEMENT IN CHUKOTKA NATIVE POPULATION. O. Tunnettuvge,

Chukotka Central Okrug Hospital, Anadyr, USSR.

Traditional huntings of Chukotka native population are developing with the use of the technologies of civilization. This demands the development of social structures, public health services and population understanding of disease prevention.

Deer and marine huntings need endurance and quickness of actions. Regional system of sanitary measures helps to preserve high physical activity and to take care of the health of the native population of Chukotka: the development of national kinds of sport, qualitative medical care and prevention for every native with the help of mobile medical teams, distance medical consultation from Okrug Central Hospital by telephone and TV communications, creation of data bank of medical information on all natives, annual health improving of tundra and marine hunters in local health resorts, introduction of rational diet with traditional and artificial food, rich in vitamins and important microelements. The system of psychological comfort of the native population is not only modern houses in tundra and settlements but also the strengthening of family ties and the native language.

PUBLIC HEALTH AND THE IMPACT ASSESSMENT OF THE JAMES BAY HYDRO-ELECTRIC DEVELOPMENT, NORTHERN QUEBEC. Alan Penn, Cree Regional Authority, Nemaska, Québec

The La Grande project in northwestern Québec has dominated the lives of many James Bay Crees during the last two decades; directly and indirectly, the development has had far-reaching implications in the field of public health. Further river basin developments, to the north and south, are scheduled for construction during the next fifteen years. This multiple component, regional development offers a major opportunity to examine the public health implications of northern development, both retrospectively and prospectively. The documented impacts of the La Grande Complex are reviewed as a basis for a critique of methodological issues posed by the assessment of the proposed Great Whale and Nottaway-Broadback-Rupert hydro-electric developments. The paper focusses principally on methyl mercury as a contaminant to illustrate the issues involved. Accelerated mercury bioaccumulation by fish following impoundment is well-documented but the ecologically-based understanding of this process stands in sharp contrast to the difficulties of evaluating community perceptions of and responses to such contaminants. Closing fishing sites, and limiting fishing by species or size involves, implicitly or explicitly, many assumptions about the cultural role of fishing and individual responses to the perceived hazards of mercury exposure. Mercury is one of several public health-related issues raised by such projects, but it illustrates the challenges of social impact assessment.

SOCIAL AND ECONOMIC PROGRESS OF THE NORTH AND HEALTH OF NORTHERN NATIVE POPULATION IN THE USSR K.R. Sedov, Institute of Northern Medical Problems, Siberian Department of the USSR Academy of Medical Sciences, Krasnoyarsk, USSR

The intensive mastering of mineral and energy resources in the northern areas of the USSR is accompanied by the development of a social infrastructure including public health.

The increasing influence of the progress in science and technology on vital activity and health in the native population is observed. It led to the change of a demographic situation as well as to the improvement of health indices in the peoples of the North: total and children's mortalities were reduced to a great extent, birth rate increased, infectious mortality was reduced, indices of physical development in children's and adult populations were improved.

At the same time, a rapid change of a traditional stereotype, i.e. transition to a settled lifestyle, as well as disturbance of dietary habits, etc., resulted in a considerable tension of regulatory systems and had influence on the status of health. Recently, a structure of disease incidence has been changed, increase of chronic disease is observed, especially that of diseases of cardiovascular and respiratory systems, digestive tract, etc. Indices of alimentary-dependent diseases increased, especially in children. Defects of a functional state and development of organ of vision are being revealed with a considerably higher frequency. Geochemical environment and a changed ecological situation affect the health of the native residents.

COMMUNITY CRISIS INTERVENTION IN SUICIDE EPIDEMICS. D.D. RODGERS, M.D., J.A. Hilde, Northern Medical Unit, Community Health Sciences, University of Manitoba, Winnipeg, MB, Canada R3E 0W3.

There have been a number of instances of extraordinarily high rates of suicide and attempted suicide in some native communities. Such increases are seen as indicators of community demoralization along with increased crime, violent behaviour, spouse and child abuse, physical illnesses and alcoholism.

The author describes three such communities in crisis - two in The Northwest Territories and one in Southern Canada with reference to the circumstances leading to their difficulties and some techniques of intervention by outside resources.

PERCEIVED AND OBSERVED HEALTH STATUS OF INUIT RECEIVING SOCIAL ASSISTANCE. Chris Egan. Faculty of Health Sciences, McMaster University, Hamilton, Ontario, Canada.

From June to August 1989 interviews were carried out with the 31 households receiving social assistance (out of 83) in a northern, isolated community of 501 Inuit. A comparison of the interview results with medical files shows a high frequency (>50%) of family and social problems and of chronic disease compared to 14% of the employed population (p<.001).

It has been suggested that a hunting allowance be given to allow greater access to land foods as many Inuit express an overall feeling of well-being when a more traditional life-style is assumed. It may be concluded that lack of cash in the mixed economy in the North is having a deleterious effect on the health of many indigent Inuit.

ACCULTURATION AND MENTAL HEALTH AMONG INDIGENOUS PEOPLES IN CANADA, GREENLAND AND ALASKA. J.W. Berry. Psychology Department, Queen's University, Kingston, Ontario, Canada, K7L 3N6.

It is now clear that culture contacts between indigenous peoples in circumpolar areas and dominant southern societies have brought about many undesirable changes. In the domain of mental health, six public indicators are available to document low mental health status: suicide, homicide, alcohol and drug abuse, and spousal and child abuse. Infant mortality and life expectancy, along with high incarceration rates and low educational achievement, are also relevant to this pattern. The documentation of these difficulties, comparatively across the three countries, and between the indigenous and the comparable southern populations, is a first necessary step in the understanding and the resolution of these problems. Analyses suggest that the source of the difficulties lies, not in the indigenous or in the southern populations alone, but in the nature of the relationships (both historical and contemporary) between them. Using the conceptual framework of acculturation, various options are considered as possible resolutions. Extant data indicate that the social and psychological preconditions for improvement lie in indigenous control (including political, economic and a sense of "cognitive control") that is rooted in a new partnership between the groups in contact, with new institutions being developed in the domains of governance, education, work, social and health services.

THE EPIDEMIOLOGY OF SLEEP DISORDERS AND SEASONAL DEPRESSION IN ALASKA AND SIBERIA John M. Booker, School of Health Sciences, University of Alaska Anchorage, 99508
Carla J. Hellekson, Sleep Disorder Center, Providence Medical Center, Seattle, WA 98122

Data on seasonal depression in Alaska show that 1 of 4 Alaskans may be adversely affected by the loss of daylight during the fall and winter months in Alaska. About 9% of Alaskans may be severely affected enough to require therapeutic intervention. A major component of seasonal depression, or SAD (seasonal affective disorder) is sleep disturbance, in both summer and winter seasons. A joint project between the authors and Drs. Arkady Putilov and Sergei Krivoshekov of the Institute of Physiology, Siberian Branch of the Academy of Medical Sciences, USSR, provides preliminary evidence of related sleep disorders and winter depression occurring in both Siberia and Alaska. Findings from Soviet studies of sleep disturbance and individual adaptation to northern climates will be compared with the current clinical and epidemiological evidence for SAD in the US. These studies serve as a starting point for a program of collaborative research underway between US and Soviet scientists.

JOINT INITIATIVE ON HEALTH SCIENCE PROGRAMS FOR NATIVE STUDENTS. G. Dickson, J. Irvine, B. Hemmelgarn. College of Nursing, and Northern Medical Services of College of Medicine, University of Saskatchewan, Saskatoon, Canada.

Canada's indigenous people are underrepresented in all professional health careers. A program initiated in 1985 to address this disparity, particularly in nursing, is the National Native Access Program to Nursing (NNAPN). It is co-sponsored by the University of Saskatchewan in Saskatoon and the Saskatchewan Indian Federated College in Regina, and funded by Health and Welfare Canada. NNAPN has served as a role model and stimulus for a more recent parallel venture initiated by the joint deans of all health science faculties at University of Saskatchewan (Colleges of Dentistry, Medicine, Nursing, Pharmacy, Veterinary Medicine, and the School of Physical Therapy).

In this initiative, consultations have been held for the last two years between the Native community and the university. The Native participants represent their provincial and regional political and educational institutions. This unique composition of participants, using a framework, 'from community-back to community', have identified goals and resources, as well as the hurdles, for enhancing health careers among Native people. Learning from the experiences of NNAPN and other programs in North America, this collaborative initiative has considered influences of Native control, educational feeder systems, breadth of resource use, support systems for students, awareness raising with faculty, benefit to mainstream students, work-study methodology, etc. Without external funding in place, this developmental approach makes use of existing resources and appropriate partners, and enhances ownership of the process and outcomes by both Native and non-Native collaborators.

A NORTHERN BACHELOR OF NURSING PROGRAM - ONE SOLUTION TO PROBLEMS IN HEALTH CARE PROVISION, E. Thomlinson, D. Gregory, J. Larsen. The School of Nursing. The University of Manitoba, Winnipeg, Canada.

The provision of health care in isolated, rural and northern areas of Canada relies heavily on the services of registered nurses. However, nurses are often academically and clinically unprepared to meet the diverse professional challenges facing them in these settings. When coupled with the high turnover rates, the result is often the lack of continuity in patient care, a limited focus on prevention and health promotion, and client dissatisfaction.

To counter these problems, the School of Nursing at the University of Manitoba collaborated with the Swampy Cree Tribal Council and Medical Services Branch of Health and Welfare Canada to develop and secure funding for a bachelor of nursing program. The program will be delivered in northern Manitoba and is designed to focus on native health care issues and advanced clinical training. The target student population is aboriginal people and northern residents.

This presentation will describe the complexities of negotiation when two levels of government, a university, a tribal council and a community college attempted to find common ground in a situation of differing values, mandates, objectives, resources and strategies.

NEGOTIATION, NURSING, EDUCATION

IMPLEMENTING PRIMARY HEALTH CARE THROUGH COMMUNITY CONTROL: THE EXPERIENCE OF SWAMPY CREE TRIBAL COUNCIL G.S. Connell, P. Stewart, R. Flett. Swampy Cree Tribal Council, The Pas, Manitoba, Canada.

Swampy Cree Tribal Council (SCTC) is a federation of six north-western Manitoba Indian First Nations with a collective membership of about 6,500 persons. Since 1986, SCTC has been engaged in a research and development process to plan and prepare for the establishment of an integrated system of First Nation managed regional and community based primary health care programs. Negotiations are underway with the federal and provincial governments, the Manitoba Health Services Commission, professional associations and various health and related service agencies to secure resources and establish institutional linkages for implementation in 1990.

The SCTC experience brings to light the complexity of First Nation health issues and illustrates a variety of innovative solutions, including: the first health by-law enacted by a First Nation in Canada; strategies for proactive care, family oriented health care programming, multi-sectoral health management, and coordinated public policy development; design of a regional service level to enhance community based program structures integrating six autonomous First Nation Health Authorities.

PROVIDING BACCALAUREATE NURSING EDUCATION TO REMOTE POPULATIONS VIA TELECOMMUNICATIONS: PROBLEMS AND SOLUTIONS. J. Pflaum, K. Morris, D. Young, N. Sanders, B. Predeger, S. Littell. College of Nursing and Health Sciences. University of Alaska Anchorage, Anchorage, Alaska 99508.

Alaska, the largest state, yet the most sparsely populated, has the distinction of a system for quality nursing education reaching into the far corners of the state. The mission of the University of Alaska Anchorage mandates the provision of baccalaureate nursing education for the entire state.

In 1981 an effort to create a program responsive to the unique needs of Alaskans was initiated. The School of Nursing utilized telecommunications to provide greater accessibility to nursing education. Core community health and community mental health clinical courses are offered in this non-traditional manner. Live instructional TV, audio conferencing, self-directed learning modules and computer-assisted instruction have served as modes of delivery.

Providing many of the offerings in a distance delivered mode is certainly not without problems which include transmission difficulties and lack of face to face interaction. However, evaluations reveal students, particularly the practicing registered nurses, prefer this mode to leaving home for their entire education. This model offers one solution to increasing the numbers of baccalaureate prepared nurses in a vast geographical area.

ISSUES IN THE DESIGN OF INDIAN CONTROLLED PRIMARY HEALTH CARE SYSTEMS. P.G. HANSON. Medical Services Branch, Alberta Region, Suite 730 - Canada Place, 9700 Jasper Avenue, Edmonton Alberta, Canada, T5J 4C3

The design of an effective Indian controlled primary health care system requires an understanding of the larger Canadian Health Care System, principles of primary health care and the fundamentals of organizational design. The purpose of this literature review was to establish a working understanding of relevant issues for the consideration of Indian Bands and develop a functional model to be used as a tool for discussing those issues. The result was the collection of academic books and articles, many of which were not written in a manner directly useful to an Indian Band engaged in community health planning. The conclusion was the adaptation of an existing organizational design model for use in the planning of Indian controlled Health Care Systems.

The elements of the model are the internal organizational culture, structure and systems. These elements interact with the external organizational environment which has political, economic and socio-cultural aspects.

THE EFFECTS OF PROVIDING PRIMARY CARE UNDER INDIAN BAND CONTROL TO A PREVIOUSLY POORLY SERVED COMMUNITY.

M. Moore, H. Forbes, L. Henderson.

In September, 1988, the on-reserve health services of the Montreal Lake Band were transferred to Band control, and expanded to include primary care, weekly visiting physician and monthly visiting dental team, expanded health education combined with previously existing alcohol and Community Health Representative programs. Results of this change in service have included a decline in the acuity of illness presented (especially among children) due to improved accessibility, provision of service to previously poorly served groups including elders and trapline residents, reductions in hospitalization particularly due to respiratory illness/ diabetes/ skin infections/ trauma, improved community health awareness and home management of early illness, earlier prenatal care provision, and closure of many gaps in service.

The experience of the Montreal Lake Band indicates that provision of on-reserve primary care to a non-remote community at distance (100 kms.) from acute/emergency care can result in measurable improvements in health status, at similar cost with the previous system provided that transport costs can be included.

A QUESTIONNAIRE STUDY OF SEASONAL AFFECTIVE DISORDER (SAD) IN THE USSR. A. A. Putilov, K. V. Danilenko, J. Booker. Institute of Physiology SB AMSci., Novosibirsk, USSR and School of Health Sciences, University of Alaska Anchorage, Anchorage, Alaska 99508.

The epidemiology of Seasonal Affective Disorder (SAD) has been investigated in the USA by means of a self-administered questionnaire and interview. Data on seasonal depression in Alaska have shown that 1 of 4 Alaskans may be adversely affected by the loss of daylight during the fall and winter months in Alaska. About 9% of Alaskans may be severely affected enough to require therapeutic intervention. A major component of seasonal depression, or SAD, is sleep disturbance in both summer and winter seasons. A joint project for the Alaska-Siberia Medical Research Program, these methods have been applied for the first time to a Siberian population. This pilot surveyed new-comers and natives from 3 different latitudes: West Siberia (56°N), East Siberia (62°N), and Far East (64°N). The main features of SAD in the USSR are similar to the USA: symptoms of this disease are discovered more often in northern than in southern communities, in Caucasian more often than in Eskimo and Chukchi populations, in Caucasian women more often than men, etc. Correlations between SAD and factor scores on a sleep-wake pattern questionnaire are also examined.

This project is part of the Alaska-Siberian Medical Research Program.

PSYCHIATRIC SERVICE DELIVERY IN THE EASTERN CANADIAN ARCTIC. E. Hood, S. Abbey, L.T. Young, Clarke. Institute of Psychiatry, University of Toronto, Toronto, Canada, M5T 1R8.

The delivery of health care to northern communities has specific limitations which led to the development of an innovative and highly successful consultation service out of the Clarke Institute of Psychiatry. Since 1965, the Baffin Consultation Service has provided psychiatric services to the town of Iqaluit (Frobisher Bay) and 12 settlements which are geographically isolated and widely dispersed. This service provides consultations both to patients and to local health care providers, social services, schools, and community groups. Clinical consultations and treatment, consisting of frequent on-site visits, telephone advice, and inpatient management, are complemented by facilitation of local community initiatives and participation in educational programs. The presentation will focus on the development of this consultation service including administrative issues and practical considerations related to service delivery in a cross cultural context. The role of this service in psychiatric residency training at the University of Toronto will be outlined. The advantages and limitations of the development of such a service will be highlighted.

COMMUNITY DEVELOPMENT: HOW CAN EDUCATION & TRAINING HAVE AN IMPACT? Dr Elizabeth Roberts MB.BS; LMCC, C.H.R. Training Program, Confederation College, Thunder Bay, Ontario. This paper will raise the question of the relationship between initiatives in Training and Education and strategies for Community Development in Canadian First Nation Communities. Within a broad definition of "Health", Many of the problems cannot be defined as solely due to disease prevalencies and inadequacies of delivery mechanisms. Although these are significant aspects of "Health" and the delivery of Health Care must be raised to a level equivalent to that of any sector of Canadian life, issues of equal importance include those of community control, how to implement community-based solutions and how to regain the strength of Traditional healing practise as an alternative to Westernized Health Care systems and approaches. How to return to self-determination and a balanced life for individuals, families and communities within First Nations.

The questions raised by this paper will focus on an established training program for Community Health Representatives at Confederation College in Northern Ontario, and the education provided through the Lakehead University of Thunder Bay to enable entry into their Degree Nursing Program for people of Native ancestry. The paper will describe the key issues of the development and the implementation of these programs that have contributed significantly to their success and which are Community Development strategies. These strategies are transferable and may be adapted to a multitude of situations.

NEW PERSPECTIVES ON MENTAL HEALTH PROBLEMS IN INUIT WOMEN. S. Abbey, L.T. Young, E. Hood, Clarke. Institute of Psychiatry, University of Toronto, Toronto, Canada, M5T 1R8

Inuit women utilize psychiatric services to a greater degree than men as is typical in southern mental health services. However, they bring special challenges to mental health care providers because of their unique status in a culture in transition. Issues related to family violence, sexual abuse and bereavement and loss are prominent in the women seen by the Baffin Consultation Service. Empirical data obtained as part of an ongoing research project related to psychiatric consultations will be presented to describe the magnitude of these problems and the types of interventions used. The data highlight the unique needs of Eastern Canadian Arctic Inuit women and the need for the development of new treatment models and collaboration with local community initiatives.

THE SPECIAL PREMEDICAL STUDIES PROGRAM - REVIEW OF TEN YEARS OF EXPERIENCE. M.C. Stephens, J.A. Hildes Northern Medical Unit, University of Manitoba, Winnipeg, Canada.

This program, unique in Canada, has prepared students for admission into medicine and other health professions. It is a program for students of Aboriginal ancestry. It was designed taking into account recognized barriers to post-secondary education faced by such students. It consists of a staff drawn from Continuing Education and the faculties of Science and Medicine, who provide special courses in order to prepare these students for the admission requirements of the professional schools. Once in the program, students spend their first premedical year mostly with specially assigned science instructors, reading skills specialists and counsellors. As students advance to further academic sessions, they take an increasing proportion of courses with mainstream students, until their last year when both course load and courses chosen are identical to those of the mainstream group. Those students also have an ongoing contact with the Health Sciences campus through weekly seminars and summer practical experiences. Problems initially encountered amongst students are poor skills in reading, writing and scientific logic. A high degree of stress related problems also exists. The characteristics of students which appear to favour success are related mainly to maturity and a strong interest in being role models for aboriginal youth. The financial security provided is a fundamental need if students are to succeed. Graduates are family physicians or other health professionals serving now in northern and isolated communities of Manitoba and other provinces.

RATIONALIZATION OF MEDICAL MANPOWER IN UNDERSERVED AREAS OF NORTHERN ONTARIO. D. and E. Hillman, R. Pickering, C. Renaud and J. Eyles. The Centre for International Health and the Geography Department of McMaster University and the Underserved Areas Program (U.A.P.) of the Ontario Ministry of Health. Hamilton, Ontario, Canada L8N 3Z5.

There are 240 Ontario communities that have been designated medically underserved by the Ministry of Health. Funds are available to supplement salaries of responsible physicians willing to serve for one year or more in these communities. The communities themselves participate in an active program to encourage physicians to locate in the designated areas.

In spite of these Government and community efforts, many communities, often those in greatest need, are unable to recruit and retain physicians.

The present study recognizes the disparate needs of the individual communities and uses measurable characteristics to identify the communities in greatest need.

The strategies employed by the Ministry of Health and the University in developing this evaluation instrument involve intense community participation and provide an opportunity for health science students to play a key role in the collection and application of essential health information.

The involvement of the community in the preparation and application of this instrument reinforces the community's acceptance of their responsibility for their own health services and their personal commitment to health.

THE WILLIAM CHARLES HEALTH CENTRE TRANSFER EXPERIENCE.

L. Bird, M. Moore. The William Charles Health Centre, Montreal Lake Band, Montreal Lake, Saskatchewan, S0J 1Y0 Canada. The Montreal Lake Band in northern Saskatchewan is the first Band in Canada to take control of its health service from Medical Services Branch, Health and Welfare Canada. The Band has developed a unique set of agreements with the Federal Govt. which include roles and responsibilities for each party, defines the MSB residual role, specifies a process for resolving disputes, and specifies terms and conditions under which the agreement can be terminated. The Band has operated its health service since September, 1988. Improved management has resulted in better staff work performance, strengthened prevention and health promotion activities, increased involvement of Chief and Council in health issues, growing community health awareness. Health programs have been expanded to include community activities, a Health Awareness week, extensive health education. Elders have been used to guide health education program development, and initial preparation of health legislation. Due to an expansion in on-reserve services occurring at the same time as transfer, there have been measurable declines in hospital use due to diabetes and respiratory illness, improved prenatal care and trauma services.

TRAINING/EDUCATION OF LOCAL PEOPLE FOR POSTS IN THE HEALTH SERVICE, -NEOCOLONIALISM? E.M. Boesen. The Greenlandic Health Service. Sundhedsmedhjælpereskolen (S.M.S.), Boks 1001, 3900 Nuuk.

The geographical distance from Denmark was a reality, which played a major role when the seeds to the present Health Service were laid. The distance still is a reality and plays a role. Significant changes involving local people took place between 1926-1966. Such changes and such involvement are still the intention.

Money was/is an issue and often the decisive one, but personalities- among local people and the people from the outside- for good or worse- have meant at least as much for development or lack of same.

Present plan for changes has to confine itself to expenditures that can be held within the budget- how much money will be channeled into involving, engaging and keeping local people as "the backbone of the Health Service" especially the nursing sector, is not yet clear. According to the latest statistics there are 1207 positions in the Health Service of which 76% are filled by local people, unfortunately not enough of them are employed as doctors, nurses/SUNDHEDSMEDHJÆLPERE, midwives.

Plans for the Home Rule administration to take over the entire Health Service have been postponed several times and are not likely to be carried out until the mid-nineties- but the Home Rule Government would like to take over the educational sector in the Health Service at the earliest opportunity- among other things because their planners have ideas at variance with current planning.

ADMINISTRATIVE TRANSFER OF HEALTH PROGRAMS IN THE DEVELOPMENT PROCESS OF NUU-CHAH-NULTH COMMUNITIES. S.C. Read and J.E. Watts Nuu-chah-nulth Health Board, Port Alberni, B.C., Canada

The Nuu-chah-nulth Tribal Council (N.T.C.) serves the common political and administrative needs of 14 small indigenous communities located along 150 miles of mountainous coast line. Since 1973 the N.T.C. has worked to secure control over public services to its members, including health.

In March 1988 one of the first health transfer agreements in Canada was reached. This agreement is reviewed in the context of the history, resulting health and community development needs of indigenous people in B.C., the development process followed by the N.T.C. and the national policy on transfer of control over health programs to indigenous populations. The experience for the first year and a half of operation is reviewed. This includes some resistance to increased personal and community responsibility for health. The overall response to community controlled programs has been positive.

Better communication and increased trust is bringing many problems which were previously hidden, ignored or denied into the open. The result is increases in the needs for new programs and resources in the area of mental health, particularly in relation to the breakdown of family systems and related sexual and physical abuses. The newly identified needs are only partly met by the power to shift resources into health education, training and lifestyles programs under the transfer agreement.

REGIONAL HEALTH BOARDS AND THE DEMOCRATIZATION OF HEALTH CARE IN THE NORTHWEST TERRITORIES. J.D. O'Hall Department of Community Health Sciences, University of Manitoba, Winnipeg, Canada.

In April 1989, responsibility for health services in the Northwest Territories was devolved from the federal to the territorial government. Fundamental to this transfer was the creation of Regional Health Boards to administer community-based services. Regional Health Boards are intended to represent community interests and to provide a mechanism for client concerns to influence health policy and services.

This paper will critically examine the current status of Regional Health Boards and is based on a study of the devolution of health services in the Baffin Region, NWT. The study was conducted between September 1988 and March 1989 and involved in-depth interviews with a targeted sample of health care experts in three Baffin communities, with additional interviews in other NWT regions. Informants included community workers and elders, Health Trustees, medical and nursing personnel, health care administrators, and elected officials. Interviews were supplemented by an archival review of relevant policy documents.

The study found that the structure of regional health boards varies significantly across the different regions. The Baffin model emphasized Inuit (Native) control and regional autonomy but these features have only been partially achieved in other regions. The successful democratization of health services in northern regions was found to depend on the Regional Board's ability to balance community interests, regional development and departmental objectives. Relations between administration, professionals and board members are critical to obtaining a successful balance and these relations are primarily affected by ethnicity and education.

OVERCOMING BARRIERS IN HEALTH CARE. L. Epoo-York. Kativik Regional Board of Health and Social Services, Kuujuaq (Québec), Canada.

The Kativik Regional Board of Health and Social Services has had to deal with many barriers in order to assure effective development and delivery of health care in the Kativik region. The territory under the jurisdiction of the Regional Council includes all lands in Québec, north of the 55th parallel. This territory includes 14 coastal communities along the eastern Hudson Bay, the Hudson Strait, and Ungava Bay. The territory covers an area of 563 515 km² and accounts for more than one third of the total area of the province of Québec.

The population is approximately 6200 and Inuit people count for the majority (91%). All professional health care services are currently provided by non-Inuit recruited from outside the region.

The participation of the population in the development and orientation of health care has been enhanced through the creation of the Kativik Regional Board of Health and Social Services in 1979. However, the challenge, impediments, barriers, and obstacles are not always easily identifiable or deal with. Limitations in financial resources, human resources development programs for Inuit, and culturally relevant program development all contribute to this situation. Creative, dynamic, and innovative approaches are needed to harness the energies and enthusiasm of all portions of the Northern Quebec society. Creating this environment is the challenge, the lack of it, the greatest barrier.

THE UNRECOGNIZED POTENTIAL: CHRs Offer Another Dimension to Northern Health Care. Editors/Producers, C.R. Boyce and M. Wilcke. Community Health Representative Program, Arctic College, Aurora Campus, Inuvik, N.W.T., Canada.

Objective: To recognize the full potential of CHRs as key facilitators with an innovative, culturally appropriate, wholistic approach to primary and preventive health care, offering viable solutions to problems identified in the current system of health care delivery to Northern residents.

Method: (1) Slide show with soundtrack: Duration 15 minutes, (2) Pamphlet to accompany the slide presentation.

Situational slides taken on location in Northern Communities present CHRs in many roles, performing a variety of tasks.

Slides with diagrams and graphics, theoretically illustrate the actual and potential context in which CHRs can work.

The soundtrack consists of narration to provide background to the situational slides and to state concerns on issues identified. Live recordings of CHRs at work, music and soundeffects guide the viewer through the presentation.

The themes of the presentation include people the CHR works with, the clients they serve, the environments in which they work and the various tasks they can perform. The presentation will focus on health needs/concerns which are not adequately addressed by the current health care system. Suggestions will be made on how CHRs may be instrumental in filling this void.

The accompanying pamphlet summarizes the issues presented in the slide show and is designed to stimulate further discussion on the role of the CHR.

COMMUNITY HEALTH REPRESENTATIVE IN LABRADOR COMMUNITIES. I. Allen, Labrador Inuit Health Commission, Northwest River, Labrador, Canada.

The Labrador Inuit Health Commission (LIHC) is an affiliate of the Labrador Inuit Association. The LIHC runs its own Community Health Representative (CHR) program in 6 Labrador Inuit Communities. LIHC also deals with all health issues related to the Labrador Inuit.

There are 7 CHR's working in 6 isolated communities. Their main role is health education and promotion. The CHR teaches safe health practices and explain the health programs that are available. He/she also informs medical personnel about local culture and problems. The CHR will help the people in their community with any health related problem whatsoever.

The CHR's have completed basic training and is presently participating in a 2 year "Certificate Program in Community Health Education" offered by Dalhousie University in Halifax. The CHR's are a vital member of the health care team who are from the communities and know the people. They play a major role in promoting a healthier community.

ROLE OF THE COMMUNITY HEALTH AIDE IN RURAL ALASKA. D. Caldera, The North Pacific Rim, Seward, AK 99664 and S. Daniels, W. Ashenfelter, Norton Sound Health Corporation, Nome, AK 99762. U.S.A.

Community Health Aides (CHAs), the backbone of health care for rural Alaska Natives, provide primary health care in communities with a population range of 45-900 people located up to 1200 miles from the nearest physician staffed medical facility. CHAs maintain standard clinic hours five days per week and respond to medical emergencies 24 hours a day, 365 days per year.

The stresses of the position are significant. With no alternative available, CHAs must care for close family members, friends, and adversaries alike. Nearly every patient encounter has personal significance for the CHA. Maintaining objectivity in this setting is a challenge faced daily.

As sole resident village providers, CHAs shoulder the responsibility for the health of those they care for. Most of the time, the CHA gains satisfaction from observing the care they provide and decisions they make have a positive outcome. However, when the outcome is negative, the CHA is devastated. This responsibility is not easily shared.

CHAs are dedicated individuals determined to make a contribution in their communities. The support of village councils, community members, the agency for which the CHA works, physicians, and most importantly the CHA's family are critical elements in program success.

COMMUNITY HEALTH AIDE PROGRAM: HEALTH CARE FOR RURAL ALASKA NATIVES BY RURAL ALASKA NATIVES. D.L. Caldera. The North Pacific Rim, Seward, AK, 99664 U.S.A.

The Community Health Aide Program (CHAP) is the sole means by which 50,000 Alaska Natives living in remote communities receive primary health care. Health care is provided by paraprofessionals, Community Health Aides (CHAs), sole resident health care providers in the community. Selected from and by the communities in which they serve, CHAs provide a wide variety of services including emergency, acute, and preventive care, as well as monitor the care of the chronically ill. CHAs consult daily with professional providers in regional centers on patient care issues. The focus of all health care delivered in the community, CHAs are the referral point for patients requiring a higher level of care in regional centers. In 1988, CHAs provided care in 238,000 patient encounters.

The program was first established through federal legislation passed in 1968. The purpose of the program was to provide health care in underserved regions. The current level of combined Federal and State funding to this program is \$17.5 million.

CHAs have become an indispensable component of health care for Alaska Natives. They have had a significant and positive impact on the health status of those served. Native paraprofessionals serving in their own communities ensures the provision of services which are cost effective, available, accessible, continuous and acceptable.

The Evolution of a Village-based Health Education Program, K.A. Larson. Health Education Program Manager, Maniilaq Association, Kotzebue, Alaska, U.S.A..

The Northwest Arctic Borough of Alaska encompasses 36,000 square miles and approximately 6,500 people. The Maniilaq Association Health Education Program has been charged with designing and implementing health promotion interventions to this discrete, isolated rural population challenged by communication and transportation difficulties, unemployment and poverty as well as loss of cultural identity. Health promotion strategies that are successful in urban or even more populated rural areas are not viable in this setting.

The targeted health concerns, teen pregnancy, substance abuse, suicide intervention, fetal alcohol syndrome and injury prevention are more than physical health problems. In order to effectively address these health concerns a holistic approach has been taken.

Literature indicates that the strategies with the most far-reaching and comprehensive effects involve community participation. Yet, due to transportation and communication obstacles, continued community support was lacking. Thus the inception of a village-based health education program.

This paper discusses the steps taken to initiate, coordinate and support eleven village-based health education programs. The strengths and weakness of our project and the adaptations and adjustments made to produce a valid, continuing program.

THREE PERSPECTIVES ON COMMUNITY HEALTH AIDES: SURVEYS OF HEALTH AIDES, CONSUMERS AND PROVIDERS IN WESTERN ALASKA. R. E. Quick, R. Bashshur, Y. Kuskokwim Health Corporation, Bethel, Alaska, University of Michigan School of Public Health, Ann Arbor, Michigan.

Consumers and providers of health services in Western Alaska were surveyed about their perception of health services, priorities and problems in 1988. Response rates were 97% for the total population of Community Health Aides (CHAs), 88% for the total population of other providers of health services and 77% of a sample of 1 out of every 9 households in the Yukon-Kuskokwim Delta region (477 households total).

CHAs were 86% female, 72% married, 59% under 35 years old, and 85% had care responsibilities. More than half had worked at least 3 years. Total family income was less than \$10,000 for 54% of CHAs and more than 75% had less than enough time for substance (37%). The job was considered stressful by 87%. Over one third of CHAs indicated some dissatisfaction with support from village residents and village council members.

The vast majority of consumers of health services had confidence in CHAs, a 77% felt they received good or average treatment from them. CHAs were the primary source of general health information (59%) and mental health advice (32%) for consumers.

Other providers of care felt that CHAs provided good or excellent care (74%), that they had an excellent or good professional relationship with (77%), and felt that correcting a shortage of CHAs was a high priority (77%).

CHAs have a high level of responsibility in remote villages, but are compensated and suffer from economic, familial and job related stresses. Although many CHAs do not feel supported by their villages, they are highly regarded by the vast majority of consumers and providers of health care and are the major source of health information.

CANADIAN FIRST NATION CONTROL OF HEALTH- A SUCCESSFUL CASE STUDY. Leonard Bluebird, Dorothy Krasauskas, C.H.R. Train Program, Confederation College, Thunder Bay.

For many years, communities within the Nishnawbe-Aski Nation of Northern Ontario defined their need for adequate training for Community Health Representatives to meet their community expectations for Health Services. In 1986 a process was established which facilitated the development of such a program with Grand Council Treaty # 3 as a partner and the first program was held between January 1988 and September 1989.

Program is regarded as successful and offers an innovative approach compatible with a framework for Self-Government. The unique process for the development of the curriculum and for the ongoing implementation of the program in a partnership between First Nation communities and a Comm College, Confederation College of Thunder Bay, is described in this paper. The methodology of delivery, the style of teaching materials used, the Instructors and the Guest Speakers are culturally appropriate and effective. The evaluation process and the ongoing communication strategies are designed specifically to work within Canadian First Nations as they interface with Non-Native society, personnel and Institutions.

As First Nations throughout Canada define issues of priority to the health of their communities and their members and define ways in which these priorities can be met in an effective manner, the case study described in this paper will share the experiences of people from Northern Ontario and tell how this has had an impact on the communities.



8th International Congress on Circumpolar Health

"IN THE SPIRIT OF CARING": A PROGRAMMED LEARNING EXPERIENCE WITH MARIONETTES TO FOSTER MENTAL HEALTH IN THE CLASSROOM. Sharon Trasatti, Community Health Nurse, Health & Welfare Canada, Yukon Region, Haines Junction, Yukon. Y0B 1L0.

This effective and enjoyable program suited for 6-10 year old children culminates with a marionette production created and performed by its participants. In fifty-minute sessions once a week for 6 weeks participants develop their script and characters, design a stage set, arrange the sound production, and learn how to operate the marionettes. The themes that the children are given to build their production with are designed to help the child appreciate himself as a unique individual, worthy of respect by others as well as self-respect. The child is encouraged to discover and appreciate his strengths, while realistically accepting some lack of success. . is efforts. Cultural considerations have been given to the program so that it is suitable to both Native and non-native participants.

A paper will entertain the reader with the progress of the program. Comments will be made on preparation, resources, cultural considerations, teacher response and involvement, and finally enjoyment and growth.

The presentation will be a short original show produced by students from St. Elias School. (St. Elias School, with an enrollment of 130 students, is situated in Haines Junction. This Yukon community is 100 road miles away from Whitehorse.) The marionettes reach out and bring enjoyment to the diverse cultures both in front, and behind the curtain. The presentation will demonstrate that health education in the classroom can be effective and enjoyable despite cultural barriers.

A PROPOSED MODEL OF MENTAL HEALTH CARE BASED ON RESEARCH AMONG YUKON ABORIGINES AND A DEMONSTRATION OF THE THERAPEUTIC USE OF MASK AND LEGEND TO BUILD SELF-ESTEEM. J. Faily, Shadanj Associates/Yukon College.

A four month research study was undertaken in 1989-90 among the aboriginal peoples of the Yukon examining through literature review and questionnaire both historical and contemporary attitudes and practices related to mental health.

Yukon aboriginal communities were visited and inhabitants were interviewed concerning their views in diagnosing mental illness and perceived treatment needs and preferred approach for treating mentally ill persons.

Based on research findings, a method for development of a model for mental health treatment derived from aboriginal culture was developed. The research findings, the proposed model development methodology, and one therapeutic innovation based on aboriginal culture will be presented.

The use of aboriginal masks and legends in psychodrama designed to increase participants' self-esteem will be presented through slides and/or video tape. It's rationale and outcome data will be discussed.

THE HEALTH STATUS OF COMMUNITIES EMPLOYING PARA-PROFESSIONAL INDIGENOUS COMMUNITY HEALTH WORKERS AS THE PRIMARY HEALTH CARE PROVIDER. C.L. McLean, Council for Yukon Indians, Whitehorse, Yukon, Canada.

The health status of communities employing para-professional Indigenous community health workers as the primary health care provider was examined in terms of incidence of disease and mortality rate. Other factors, such as the socio-economic status and environmental conditions, that have an effect on the health status are also looked at. Communities in Alaska, Central and South America, and Canada, that employ local community health workers were included in the study. It was determined that there is no marked difference in the health status of communities that employ a para-professional Indigenous community health worker than in communities that employ a professional health care provider. Therefore it is concluded that the support and encouragement of employing locally based community health workers should be continued and increased in terms of training opportunities and program funding. It is further concluded that this type of support and encouragement will not have an adverse effect on the community's health status and may in fact increase the community's participation in the development of their own healthy lifestyle. Additionally this encouragement may prove to be more cost effective in the long term.

COMMUNITY-BASED SUICIDE PREVENTION PROGRAMS IN RURAL ALASKA: SELF DETERMINATION AS A NEW APPROACH. C.J. BENDER, Alaska Department of Corrections, Seward, Alaska, USA.

Alaska's suicide rate is double the US national average. The rate for Alaska natives is twice the statewide Alaskan rate. Suicide attempts and completions among young native Alaskan males between the ages of 18 and 34 are a special and periodically increasing problem. After a series of public hearings conducted around the state by members of the Alaska State Legislature during the winter of 1987-88, an appropriation of \$860,000 US was made to allow for the provision of village and community based suicide prevention projects by the local residents.

This presentation will describe the methods used by fifteen Yup'ik Eskimo villages in the Yukon Kuskokwim Delta region of SW Alaska who applied for the funds. In order to be eligible and receive consideration from the state, each community group was required to demonstrate that a planning process had been initiated and developed by the local organizers and was taking place prior to the preparation of the application and throughout the operation of the project. To aid in this effort, the State made available to interested villages the services of a pool of Community Development Specialists, each familiar with rural communities and lifestyles and the culturally distinctive views of mental illness, to assist with the community development process. Successful methods and their outcomes will be examined.

REASONS FOR PSYCHIATRIC REFERRAL IN AN INUIT POPULATION. L.T. Young, S. Abbey, E. Hood, Clarke Institute of Psychiatry, University of Toronto, Toronto, Canada. M5T 1R8

The Baffin Consultation Service of the Clarke Institute of Psychiatry provides comprehensive mental health consultations to 13 northern communities in the Eastern Arctic. Over the last five years, approximately 1250 consultations were requested from various local referral sources. At the time of consultation, a standardized instrument was used to collect detailed patient profiles which included: demographic parameters, reasons for referral, concurrent psychosocial stressors, diagnoses, and management plans. The major reasons for referral are: (1) depressive symptoms; (2) bereavement and reactions to loss; (3) suicidal behaviour; (4) marital discord; (5) family violence; (6) substance abuse. The importance of these reasons for referral in the diagnosis and management of this specific Inuit population will be outlined and empirical data will be presented. The interaction between these presenting problems, economic privation and cultural change will be discussed within the context of the current Eastern Canadian Arctic milieu.

OBSTETRIC POLICY FOR KEEWATIN INUIT. J.D. O'Neil, P.L. Kaufert, M.E.K. Moffatt, E.D. Postl, R. Brown, E. Voisard, P. Brown. Department of Community Health Sciences, University of Manitoba, Winnipeg and Keewatin Regional Health Board, Rankin Inlet, N.W.T., Canada.

Keewatin Inuit concerns about childbirth in southern Canadian hospitals have been extensively investigated over the past three years. All consenting women who became pregnant between January 1988 and January 1989 were interviewed on three separate occasions during their pregnancies. Further interviews were conducted with family members while mothers were absent for childbirth. Inuit midwives and other representatives and health professionals and administrators were also interviewed during this period.

These investigations have shown that Inuit women of all ages are fundamentally opposed to leaving their communities for childbirth.

Results also indicate that Inuit women have a clear perception of risks associated with community births; a perception that is culturally constructed and historically embedded. The majority of Inuit women indicate a preference for community births assisted by both Inuit and nurse midwives with physician support.

The study also found that there is considerable variation among communities in regards to support for a regional hospital or birthing centre as a suitable alternative to either community or southern hospital births. A significant proportion of women indicated that if a community birth was not a viable option, they would prefer to go to a southern hospital rather than a regional birthing centre. Although willing to accept a certain level of risk associated with community births in return for the benefits of family and community participation in the birth experience, many women would prefer the safety of a southern hospital and amenities of the city if community benefits were not available.

THE DELIVERY OF PRENATAL CARE TO WOMEN FROM THE KEEWATIN: ESTABLISHING THE EXPECTED DATE OF CONFINEMENT: 1979-85.

P.L. Kaufert, P. Gilbert, E. Bowden, J.D. O'Neil, E.D. Postl, M.E.K. Moffatt, R. Brown. Department of Community Health Sciences, University of Manitoba, Winnipeg and Keewatin Regional Health Board, Rankin Inlet, N.W.T., Canada.

This paper will be based on data from a recently completed audit of the prenatal and obstetric records of all the women from the Keewatin who gave birth between January 1st, 1979 and December 31st, 1985. The section on prenatal care will describe how often women are seen during their pregnancy within their own communities by health care professionals (both physicians and nurses), how often they are referred out of the community to see a specialist, where they were sent, for how long and for what reason.

The accurate establishment of a woman's date of confinement is seen as essential to the safe delivery of obstetric care to women. Problems with determining a woman's expected date of confinement is one of the main reasons for sending women out for specialist examination and/or an ultrasound. This paper will examine the relationship between the expected date of confinement as recorded at a woman's first prenatal visit, any changes in this date after she has been seen by a physician and/or had an ultrasound, and her actual date of confinement.

PCB DESTRUCTION - A NEW KIND OF MILITARY ACTIVITY IN LABRADOR. M. Baikie, The Labrador Inuit Association, Northwest River, Labrador, NF, Canada, AOP IMO

Canadian Forces Base Goose Bay is the storage site of over 3000 tonnes of PCBs that originated from abandoned radar sites. The Department of National Defense (DND) plans to destroy the PCBs in a mobile incinerator, the first of its kind in Canada. DND released an Initial Environmental Evaluation (IEE) on this project in March 1989 which stated that the anticipated environmental impacts are acceptable or mitigateable. This is in spite of the fact the IEE did not include an evaluation of the hazards of marine shipment of PCB wastes from remote storage sites in stormy autumn Labrador seas. Moreover the Health Hazard Assessment portion of the Evaluation was not widely circulated in a timely fashion and work on air pollution modelling that was done by DND for the Environmental Impact Assessment on Military Flying Activities in Labrador and Quebec was not made available for the assessment of this project. Instead values from other areas of Canada were inappropriately used. This paper also outlines the role the Labrador Inuit Association played in attempting to increase public consultation and to ensure that the Health Hazard Assessment was widely reviewed by appropriate health authorities before the first burn in December 1989. This is yet another of DND's projects in an environment already under siege from increasing military activities of all kinds, especially low level flying.

INUULITSIVIK MATERNITY: A WORKING MODEL FOR PERINATAL CARE

The Povungnituk Maternity is a practice which emerged as a community initiative endeavor. The people of the Hudson Bay region were concerned about the detrimental health effects that the 16 year "evacuation policy" for all pregnant women had on maternal and child health, as well as family and community life. The local Native Women's Association articulated these concerns in a proposal to have perinatal services returned to the north. The POV Maternity, which serves seven (7) coastal villages, is the result of community and professional collaboration aimed at meeting these concerns.

We would like to briefly tell the story of events leading to the development of the Maternity, and explain how, subsequent to this, we function, how major decisions are made, and our priorities for practice. We will also discuss the education and role of local midwives (from a trainer/trainee point of view). In addition, some preliminary statistics and clinical observations from our two years of practice regarding transfer, intervention, potential impact on community health, satisfaction of women, community, and professionals, teamwork, and strengths and weaknesses will be presented. Future directions and the possibility of this practice serving as a model for other regions will also be discussed.

We hope this meeting will be an opportunity for exchange, mutual support, an exploration of true community and perinatal health needs in North.

Thanks.

L. Qinaq
Leah Qinaq
Midwife

Colleen Crosbie
Colleen Crosbie
Midwife

Determinants of exposure to methylmercury among the James Bay Cree 1987-88. Tom Kosalsky, Charles Dumont, Module du Nord québécois, 980 C Street, Montreal, Canada H3H 2K3.

Routine surveillance of the James Bay Cree for exposure to methylmercury in freshwater fish has been offered each summer since 1982. During 1987, 1988, over 70% of the target group of women older than 14 years and men of than 39 allowed a sample of their hair to be analyzed for its mercury content. 1987, among 1,042 women 15-39 years, there were none whose hair contained 60 mg/kg mercury, the level where adverse effects on health might be expected in the most sensitive adults. There were 80 (7.7%) whose hair contained ≥ 9 mg/kg mercury, at which level there may be risk to an infant exposed prenatally; reside in certain villages, and older age related to increased likelihood of hair mercury mg/kg. Among men and women 40+, 8/1026 (0.8%) had hair levels ≥ 60 mg/kg. Seventy-eight (7.6%) had ≥ 30 mg/kg, at which level we consider that diet caution needs to be exercised; residence in certain villages, older age, being male, and self-description as a trapper were related to mercury concentrations ≥ 30 mg/kg. With the demonstration of similar determinants of risk in both 1987, 1988, the 1989 hair sampling program concentrated on persons not yet sampled, trappers, certain villages and age groups.

PATHWAYS OF ORGANOCHLORINE CONTAMINANTS ACCUMULATING IN NORTHERN NATIVE DIET SPECIES. R.G. Shearer, D.P. Stone and J. Jensen. Department of Indian Affairs and Northern Development, Ottawa, Ontario.

Organochlorine compounds (e.g. PCBs, DDT, dioxins and toxaphene) are transported to the arctic by atmospheric, fluvial and oceanic pathways. Recent research in Canada has clearly demonstrated the presence of these compounds in arctic air, surface seawater, suspended sediments and snow. These organochlorine contaminants are also present in northern native diet species, particularly in animals such as marine mammals at the top of the food chain. In addition, elevated levels of PCBs have been found in blood and breast milk samples from native residents who depend on these animals as a major source of food. Possible sources of these contaminants are the Soviet Union, Europe, Asia and North America. The issue is currently being intensely studied through comprehensive research and monitoring programs coordinated by the Canadian Department of Indian Affairs and Northern Development.

This paper will review our current quantitative understanding of the chemical, physical and biological pathways of organochlorine contaminants in the north and identify areas of future research.

THE ROLE OF THE CREE VILLAGES AND THEIR COMMUNITY HEALTH REPRESENTATIVE IN THE JAMES BAY METHYLMERCURY SURVEILLANCE PROGRAM. E. NOEL, L. MISTACHEESICK, CREE BOARD OF HEALTH AND SOCIAL SERVICES OF JAMES BAY, CHISASIBI, QUÉBEC, CANADA.

Parallel to extensive hydro-electric development, the contamination of freshwater fish by methylmercury has affected the diet, culture and economy of the James Bay Cree while threatening their health. Since 1982, a methylmercury surveillance program has been implemented in each village. The Community Health Representative, a native person, carries out all activities of the program in her village. In order to determine the needs of her community and to communicate the program's objectives and results, she meets with the Band Councils, Cree Trappers Associations, etc. She diffuses information through the local radio station, newsletters, slide shows, posters, pamphlets and videos. All of these communications strategies are worked out in consultation with the band councils and other local groups.

Mercury contamination is not well understood and accepted by the Cree population because methylmercury cannot be seen, smelled or tasted; the fish looks good and even a person with a high level of methylmercury may feel well. After 7 years, there is a marked decrease of the median hair methylmercury concentration and only a small percentage of the population are exposed to a high methylmercury levels. Methylmercury contamination has a direct impact on the culture and traditions of the Cree people; their education and involvement in the design and implementation of the program is essential to succeed.

DEVELOPING AN INTEGRATED TRADITIONAL/CLINICAL HEALTH SYSTEM IN THE YUKON. M.A. Wheatley, Council for Yukon Indians, 22 Nisutlin Drive, Whitehorse, Yukon, Canada Y1A 3S5.

Yukon First Nations people have always had their own traditional medical practices and practitioners, although after contact, many of these were suppressed. At the present time, Elders are expressing the desire to have these practices and practitioners recognized as viable alternatives to clinical health systems. At the same time, there is a greater acceptance among non-native professionals and governments and a readiness to consider such a possibility.

This paper outlines the steps which need to be taken toward developing an integrated traditional/clinical health system. It describes a study currently underway to identify traditional practices and practitioners, to suggest possible ways of recognizing and integrating them into the mainstream clinical system and to examine the policy and legislative procedures necessary to accomplish successful integration.

Progress in the study to date is presented.

UNDERSTANDING NATIVE COMMUNITIES: CROSS CULTURAL GUIDELINES FOR HEALTH PROFESSIONALS. R.E. Devlin, Medical Services Branch, National Health and Welfare, Canada, Vancouver, British Columbia, Canada.

Canadian Native people are generally misunderstood, their needs and ambitions misinterpreted by the non-Native population. The study of culture, cultural differences and cross cultural communication is an important responsibility for health professionals working in a cross cultural context. Innumerable difficulties and confusions have arisen both theoretical and practical because members of one culture have found it impossible to see things in the way they are seen by members of another culture. The problem is not only one of seeing the other's point of view, but a more difficult one of comprehending the unacknowledged and unanalyzed position from which the views are taken. The Cross-Cultural Orientation distance learning program is designed to provide an analytical review of the professional's knowledge and skill base. The program consists of twelve modules each containing videos, books and professional readings on explicit topics such as Land Claim Issues, Racism and Impact of Residential Schooling. Using the distance learning mode the program delivers 84 cross cultural guidelines, provides knowledge, skills and experiential exercises in five categories: self development; orientation and entry skills; intercultural communication skills; community communication patterns; and home culture re-entry skills. Resulting in new staff having a clearer understanding of Native learning styles, communication and cultural patterns and greater self awareness. Cross cultural communication is a two way process, through utilization of this program Native people experience a greater awareness of the differences and similarities of non-Native cultures; for health professionals the guidelines are tools for change.

CONSULTATIONS WITH ANISHINABE (OJIBWAY) HEALERS IN A MANITOBA COMMUNITY. L.C. Garro, Northern Health Research Unit, Department of Community Health Sciences, University of Manitoba, Winnipeg, Canada.

The research reported in this paper comes out of a larger study on lay medical knowledge and health care decision making carried out in an Anishinabe (also known as Ojibway or Chippewa) community. A set of 62 randomly selected families were asked about past use of Anishinabe healers. As well, 13 bi-weekly visits were made to these families to collect ongoing illness case histories. Excluding two families headed by medicine men, all but 13 families (21%) reported consulting medicine men during the past five years, with 22 families (35%) reporting more than 5 visits during this time period. Six families (10%) reported never having consulted a medicine man. For illness case histories collected during bi-weekly visits, over fifty instances where individuals consulted Anishinabe healers were recorded. Data are presented on the reasons for these treatment decisions, subsequent and concurrent treatment choices, and illness outcomes.

OLD HEALING METHODS OF SKOLTSAMI (VIDEO)

L. Soininen, Provincial Government of Lapland, Rovaniemi, Finland. L. Semenoja, Sevetiljärvi, Finland. E. Pylikanen, Finnish Broadcasting Company, Helsinki, Finland. E. Rantala, Finnish Broadcasting Company, Inari, Finland.

Skoltsami have been living without medical doctors and health sisters until about 1950. Before and also after that time they have used their own healing and pain releasing methods. There was in every village some, who had the skill. Often several in the same family in following generations.

In this video the skolts call to mind and discuss about the old methods and demonstrate the "touvil", in Finnish "taulaaminen" and in English "monibustion". That is an old healing method, which is used in China and some other Asian countries. Special material, often herbs, in this case the fungus growth of birch is burned in known points of skin. The method is compared with acupuncture, because the points seem to be much the same.

There is only one person left, who can this method.

The language in the video is skoltsami. There is Finnish text. Translation into English will be on the paper.

The program is made in Autumn 1989.

CIRCUMULAR CANCER - INTERNATIONAL COOPERATION IN PREVENTION AND CONTROL PROGRAMS. J. P. Hest Hest, Department of Pathology, Gentofte Hospital, University of Copenhagen, Denmark.

The unique pattern of cancer in the indigenous Inuit populations of the circumpolar regions has been investigated by researchers in Alaska, northern Canada, and Greenland/Denmark. The small size of the population groups in the individual countries and the fast changes of lifestyle in the Arctic have discouraged international cooperation, which has been actively supported by WHO. An international monograph on circumpolar cancer with evidence from Alaska, Canada and Greenland is in preparation. Hopefully, the monograph will also include recent cancer data from the small Inuit population of the Chukotka region, U.S.S.R., thus making the monograph cover all Inuit populations of the world.

Cancer control programs are already working in parts of the Arctic. There is, however, a strong need for further and more effective activities. This is often supported by local political forces. The involvement of all citizens through education and participation in prevention campaigns and control programs is, however, important. International cancer related meetings like the recent IARC/WHO circumpolar meeting on tobacco and health offer an opportunity for exchanging information and experiences and for coordinating cancer prevention and control programs in the circumpolar countries.

CANCER IN ALASKA NATIVES: IMPLICATIONS FOR RESEARCH ON ETIOLOGY AND PROGRAMS FOR PREVENTION AND CONTROL. Lanier, Anne P., Arctic Investigations Program, Center for Infectious Diseases, Centers for Disease Control, Anchorage, Alaska, 99501, U.S.A.

Cancer incidence patterns among Alaska Natives differ from those of all other populations in the U.S. Despite the geographic distances, cancer patterns in Alaska Natives are most similar to those of Eskimos in Canada and Greenland. Viral etiologies are suspected for many of the cancer sites which occur in excess among Alaska Natives. These include cancers of the nasopharynx, salivary gland, liver and cervix and Epstein Barr, hepatitis B, and human papilloma viruses, respectively. Invasive cancer of the cervix is increasing while the incidence of nasopharyngeal and salivary gland cancer have shown little change over the last twenty years. A primary prevention program (hepatitis B vaccination) should eventually reduce the excess liver cancer in the population while a secondary prevention program (early detection of liver cancer by periodic screening for alpha-fetoprotein) has reduced the mortality from liver cancer.

Incidence rates for some cancers are lower among Alaska Natives than in the rest of the U.S.: breast, prostate, uterus and bladder. The most rapidly increasing incidence is occurring for cancer of the lung. These cancer data will be discussed in the context of implications for cancer control programs and studies of cancer etiology.

CURRENT TRENDS IN CANCER INCIDENCE IN GREENLAND. N.H. Nielsen, H.H. Storm, A. Prener. Danish Cancer Registry, Danish Cancer Society, and Department of Pathology, Rigshospitalet, Copenhagen.

Cancer incidence data in Greenland 1983-87 were evaluated based on notifications to the Danish Cancer Registry supplemented by death certificates and pathology reports. Time trends in incidence were studied by comparison to previously studied incidence rates. The Greenland population is still at high risk of the "traditional" Inuit cancers of the nasopharynx, salivary glands and esophagus, the latter exhibiting regional clustering. However, lung cancer and cervical cancer predominate after a rapid increase in incidence during the last decades. Lung cancer is the most frequently diagnosed cancer in men. In women lung cancer was second in number per year only to cervical cancer. The incidence of cervical cancer and female lung cancer are among the highest in the world. Incidence of breast cancer and cancer of the endometrium are still rather low and incidence of laryngeal cancer and prostate cancer remain very low.

LUNG, BREAST AND CERVICAL CANCER INCIDENCE AND SURVIVAL IN SASKATCHEWAN NORTHERNERS AND REGISTERED INDIANS (1967-86). J. Irvine, D.C. Gillis, L. Tan, S. Chiu, L. Liu, D. Robson. Northern Medical Services, University of Saskatchewan; Health & Welfare Medical Services Branch, Regina; Department of Community Health & Epidemiology, University of Saskatchewan, Saskatoon; Saskatchewan Cancer Foundation, Regina, Saskatchewan, Canada.

The age-standardized and age-sex-specific incidence rates per 100,000 and survival rates for lung, breast and cervical cancers were determined for a 20-year period among Saskatchewan Registered Indians and northerners (mostly Indian/Metis between 54-60° latitude) and were compared to those of the province.

Results from four 5-year periods of analysis (1967-71, 1972-76, 1977-81, 1982-86) indicated that lung cancer rates increased from 0 to 49.0 among Registered Indians and more than 2-fold (15.0 to 54.4) among northerners. Although not statistically significant, the most recent rates (1982-86) have now exceeded provincial rates, particularly among females. Survival analysis indicates both groups showed poorer survival when compared with their respective provincial comparison groups, although this finding is not statistically significant. Northerners appear to fare more poorly. Cervical cancer incidence was shown to be consistently above that of the total population ($p < .05$). While provincial rates declined by 50% (14.9 to 8.4), the Registered Indian rates have increased by at least 52% (34.4 in 1967-71 to 52.4 in 1982-86) and the northerners by 10% (22.0 to 24.2). Similar patterns of poorer survival were observed. Cancer of the female breast indicated even more dramatic increases in incidence among northerners and Registered Indians while remaining relatively stable for the province. Survival rates were comparable.

Results from this first reported study on incidence and survival among remote/Indian populations in Canada indicate that primary and secondary preventive programs are crucial if any improvements are to be seen.

CANCER PATTERNS IN THE INUIT POPULATION OF CANADA 1970-1984 LA Gaudette, R Dufour, S Freitag, AB Miller. Statistics Canada, Ottawa, Ontario, K1A 0G8, Gov't of the Northwest Territories, Université de Laval and University of Toronto. During the period 1970-84, 475 cases of invasive and in situ cancers for the Inuit population were reported to Statistics Canada by cancer registries and researchers from the Northwest Territories, Nouveau-Québec, and Newfoundland. Standardized Incidence Ratios (SIRs) were calculated by comparing the number of cancers observed in Inuit to those expected based on Canada's National Cancer Incidence Reporting System. Cancer patterns observed in Canadian Inuit differ from those found in the overall Canadian population. Lung cancer, the most common cancer, occurred in 59 women (SIR= and 87 men (SIR=2.4); age-standardized rates of lung cancer 1980-84 were almost identical in Inuit men and women. Cervical cancer, the second most common cancer in women, accounted for 31 cases (SIR=3.0). Rates for colorectal cancer, the next most common cancer for both sexes, were similar to Canadian rates in each time period. Significant high SIRs were found in both men and women for traditional Inuit cancers of the nasopharynx, salivary glands and esophagus. Cancers rarely occurring in Inuit were prostate (SIR=.10), female breast (SIR=.22) and body of uterus (SIR=.10). Rates for total invasive cancers in Inuit were only slightly elevated. Analysis of trends occurring during 1970-1984 will be discussed in comparison with those observed in Inuit in Alaska and Greenland.

CANCER INCIDENCE AND SURVIVAL OF SASKATCHEWAN NORTHERNERS AND REGISTERED INDIANS, 1967-86. D.C. Gillis, J. Irvine, L. Tan, S. Chiu, L. Liu, D. Robson. Health and Welfare Canada, Medical Services Branch, Regina; Northern Medical Services and Department of Community Health and Epidemiology, University of Saskatchewan, Saskatoon; Saskatchewan Cancer Foundation, Regina, Saskatchewan, Canada.

The age-standardized and age-sex-specific incidence rates (per 100,000) and survival of all malignancies (excluding skin) were determined for a 20-year period, 1967-86 among Registered Indians and northerners (predominantly Indian/Metis between 54-60° latitude) and were compared to that of the provincial population. Results from four 5-year periods of analysis (1967-71, 1972-76, 1977-81, 1982-86) indicated that Registered Indians experienced a 4-fold increase in incidence (54.9 to 249.3) through the 20-year period and northerners a 2-fold increase (126.3 to 258.7). In contrast, the provincial incidence rate increased by only 19% (258.8 to 308.5). However, rates in study groups are significantly ($p < .05$ and $p < .01$) below those of the province. Similar trends were observed in both sexes and among all age groups. For Registered Indians only, female rates were consistently higher than male.

Survival since diagnosis using cumulative proportion survival rates revealed that female Registered Indians and both sexes of northerners had significantly poorer survival than their respective provincial comparison groups.

This is the first reported comparison of incidence and survival in remote Indian populations in Canada. It should assist the planning and evaluation of primary, secondary and tertiary prevention programs to decrease the incidence and improve the survival rates.

FIGHTING CANCER IN GREENLAND. THE DANISH CANCER SOCIETY STRATEGIES. B. Harvald. The Danish Cancer Society, Copenhagen, Denmark.

The Danish Cancer Society, which is a private organization with 365,000 supporters, considers as its duty to intervene where the public health service lacks behind. In Greenland the number of cancer cases is rising, partly because of the rapid growth of the older age group during later decades, partly because of a true increase of the incidence of certain cancer types, first of all cancer of the lung and cancer of the uterine cervix.

The Cancer Society acts in different ways: research, information, and direct support to patients. The Cancer Society focuses through its Cancer Registry the registration of all new cancer cases and all deaths from cancer in Greenland. In the capital of Greenland, Nuuk/Godthåb, the Cancer Society has sponsored a project on cervical cancer with special referral to papilloma and herpes virus infections.

During these two years altogether 12 local sections of the Cancer Society have been founded in Greenlandic municipalities with the aim of promoting local cancer preventive activities. Pressure has been exerted on political and administrative authorities to stop smoking in public areas. TV- and radio lectures have argued for regular cervical screening. Information sessions on cancer have been organized. Support to individual patients and their relatives has been supplied in the form of direct grants, travel grants, and psychological and practical aid during admission to hospitals in Denmark.

CANCER REGISTRATION AND TRENDS IN CANCER INCIDENCE IN THE NORTHWEST TERRITORIES. Sharon C. Freitag, Carolyn P. Pim. Department of Health, Government of the Northwest Territories, Yellowknife, Northwest Territories, Canada.

The idea of a cancer registry for the Northwest Territories (N.W.T.) was first conceived in 1986. Initially, plans were to build a system based solely upon mortality data; it was later decided that an incidence based system would be a more feasible approach.

By the very nature of health services in the north, most N.W.T. cancer patients must undergo investigation and treatment in medical institutions in southern Canada. That, combined with the small population dispersed over a vast land mass, necessitated a cooperative effort from various sources to begin the process of data collection.

Lung Cancer remains the most frequently diagnosed cancer among N.W.T. residents, both male and female. Prostate, rectum and colon cancers are the next more frequently diagnosed cancers among males. Breast and cervical cancers are the most frequently diagnosed among females. In addition, initial comparisons between site-specific cancer rates in the N.W.T. and Canada have been calculated.

A registry, currently in development, will allow for more in-depth cancer analysis, as well as a basis for future intervention studies.

HEREDITARY SITE-SPECIFIC COLON CANCER IN A CANADIAN KINDRED. G.W.N. Fitzgerald, B.H. Cameron, J. Cox. Grenfell Regional Health Services, St. Anthony, Newfoundland, Canada, A0K 4S0.

A large kindred with colorectal cancer unaccompanied by polyposis coli and characterized by autosomal dominant inheritance has been identified in eastern Canada. Twelve family members from three successive generations have presented 19 documented colorectal cancers. The clinical features of the kindred are characteristic of hereditary site-specific colon cancer (HSSCC) (Lynch syndrome I): absence of multiple polyposis, autosomal dominant inheritance, onset of colorectal cancer at an early age and a high incidence of synchronous and metachronous colorectal cancers. Patients with HSSCC have been managed by means of segmental colectomy followed by annual colonoscopic surveillance. All five patients with localized (Dukes' stage A or B) cancer at initial diagnosis were alive and free of disease after 5 to 15 years of follow-up, although three had required further colonic resection of metachronous carcinomas. Five young family members without cancer have had sporadic adenomatous polyps removed and are being followed with annual colonoscopy. It is not known whether polypectomy will alter the subsequent incidence of colon cancer. Subtotal colectomy is recommended for patients with HSSCC because of the high incidence of multiple lesions. An aggressive screening protocol, including colonoscopy, is recommended to all adult first and second degree relatives of patients with HSSCC. Identification of a biomarker which is currently being sought in this kindred would help identify those at greatest risk of developing cancer and allow earlier intervention.

CANCER OF THE STOMACH IN ABORIGINAL POPULATION OF THE SOVIET FAR EAST (EPIDEMIOLOGICAL STUDY) V.I. Kustov, A.G. Roslavov, A.U. Marochko, Khabarovsk State Medical Institute, Khabarovsk, USSR

Although there is a trend to decreased incidence of cancer of the stomach morbidity, incidence rates of this disease are still high. Tumors incidence in the incidence in the aboriginal population of the territory is great but it is not the same in different ethnic groups and its rates are lower among newcomers.

The Soviet Far East (from the South-West to the North-East-latitude 42° 70' North) is inhabited by more than 20 nationalities which constitute 1% of the population (55,000 people). The data of the presented study are the results of investigations from 1968-1986.

To compare morbidity rates among different nationalities, they have been divided into three ethnic groups: nationalities of the Extreme North-East (Chukchi, Koriakians, Itelmenians, Eskimoes), "taiga nationalities" (Evenkians and Evenians) and nationalities of the Lower Amur, Ussuri, Northern Sakhalin (Nanaians, Nivkhi, Ulchi, Udegiains).

263 people had cancer of the stomach for the first time in 1977-1986; 157 males (59.7 ± 3.0%), 106 females (40.3 ± 3.0%). Morphological proof of the disease was confirmed in 68.4% of cases. 7.6% had tumors diagnosed by endoscopy and laparotomy. In the aboriginal population, this cancer took the second place after pulmonary cancer. The average incidence of cancer per 100,000 was 62.3 ± 15.4 males, 32.5 ± 10.7 females in 1977-1981 and 56.9 ± 14.7 males and 42.4 ± 12.2 females in 1982-1986.

Among cancer patients there were 13 nationalities. The incidence of cancer in men was greater among Koriakians and in women - among Itelmenians. There was a decrease of morbidity among small nationalities related to their moving to and settling in the South.

Cancer of the stomach morbidity in aboriginal population of the Far East is closely connected with natural and economic conditions in place of residence, degree of ethnic isolation, way of life and most of all nutrition.

SCREENING FOR CANCER IN REMOTELY POPULATED REGIONS - LESSONS FROM MAMMOGRAPHY AND BREAST CANCER. Mostow, E.N., Lanier, A.P., Arctic Investigations Program, Centers for Disease Control, Anchorage, Alaska 99501.

Several studies have demonstrated that breast cancer mortality can be reduced by the use of screening programs which include mammography. Breast cancer is the second most frequently diagnosed cancer and the third most frequent cause of cancer deaths in Alaska Native women. Despite the high relative rank of breast cancer, age adjusted breast cancer incidence and mortality rates are approximately one-half those of U.S. white population. In the U.S. population, screening with mammography is recommended annually in women over age 50 and biannually for those over age 40-49. Since 1) the Alaska Native population is scattered in over 200 communities over 500,000 square miles, 2) many women live in small communities which are accessible only by air travel, 3) the cost of travel alone to a community in which mammography is available would approach \$500, and 4) breast cancer rates are relatively low, the feasibility and impact of implementing the national recommendation for mammography was assessed. Three options were examined: 1) bring all women to Anchorage for screening, 2) purchase, equip and staff mammography units for field hospitals, and 3) provide screening thru a combination of Anchorage service and contract care. It was estimated that one less death would occur if a full scale mammography program was in place. Annual costs ranged from \$1.5 to \$3 million. This analysis raises the issue applicable to many disease conditions in the North, specifically the feasibility of utilizing screening strategies which have proven effective in other settings, but require technology which is not available at the northern village/community level.

THE ECOLOGICAL SPECIFICITY OF SIBERIAN NORTH AND MALIGNANT TUMOR SPREAD. N.V. Vasilyev, L.F. Pisareva, T.I. Kolyada, V.D. Podoplekin, E.A. Dektyareva, A.P. Boyarkina. Institute of Oncology, Tomsk, USSR.

Using the limited selection of North Siberia population there is the attempt to reconstruct the anthropo-ecological relations defining the increased spread of malignant tumors in some regions of the North. Dependence of the processes mentioned above upon non-specific host resistance, climatic-geographical and anthropogenic factors is investigated. The data on the presence of the definite specificity in cancer disease structure of aboriginal and European population in the North are given. The role of migration processes in distortion of real oncological situation in this region is discussed.

THE ALASKA AREA NATIVE HEALTH SERVICE (AANHS) - IT'S ORGANIZATION, PROGRAMS AND SERVICES. G. H. Ivey, K. Duyan.

AANHS, one of 11 Area Offices of the Federal Indian Health Service, provides comprehensive health services and water and sanitation facilities for approximately 83,000 Alaska Natives. The delivery of health care to Native people is carried out through an extensive network of Indian Health Service direct activities, programs managed by Alaska Native health corporations under Public Law 93-638 and private sector contract care. The AANHS works closely with the Alaska Native Health Board and with Native groups in the 12 regions of the state. There is also significant involvement of the State of Alaska in cooperative efforts.

The Alaska Area's eight service units collectively cover the entire State of Alaska. The composition and size of the staff at each service unit varies according to the population served and its needs. Each service unit field hospital or health center and the Alaska Native Medical Center located in Anchorage serve as the respective service unit headquarters and hub from which services are provided regionally. In addition, there are personnel stationed at 8 health centers, 7 health stations, and 142 village clinics.

Support services and technical expertise is provided from the Alaska Area Office and Medical Center. Because of many factors such as Alaska's large size, geography, climate, distance from the lower 48 states, and limited transportation and communication systems, the delivery of health care to the Alaska Native people is a most challenging and difficult task.

THE ROLE OF THE CIRCUMPOLAR UNIVERSITIES IN THE DELIVERY OF HEALTH CARE SERVICES IN THE NORTH: A COMPARATIVE ANALYSIS. Geoffrey R. Weller. Lakehead University. Thunder Bay, Ontario, Canada, P7B 5E1.

In the period since the end of the Second World War a large number of universities have been established within the circumpolar north. They are of many different types and sizes but they all have important roles to play in the economic, social, political and cultural development of their respective parts of the region. This paper analyses the varying nature of their roles in terms of responsibility for health care professional training and delivery. The paper begins by delineating the circumpolar north and the differing nature of the universities recently established in that region. It proceeds by indicating that there is a clear role distinction between the universities in the European portion of the circumpolar North and those in the North American portion. In the former the universities within the region have the preeminent role in health professional training and delivery while in the latter universities outside the region retain preeminence. The paper offers explanations as to why this is the case and argues that it is a major reason why health manpower supply problems are far less serious and why health status indicators are far better in the European portion of the circumpolar north than in the North American.

POLYCLINICAL MEDICAL SERVICE INDEPENDENT OF A HOSPITAL - a model for the health care of indigenous peoples

EGIL UESTI M.D. & KNUT JOHNSEN M.D., the Specialist Medical Centre, Karasjohka, Norway

The Sami are indigenous inhabitants in Norway, Sweden, Finland and Russia. Over half the Sami live in Norway.

With the establishment of the Specialist Medical Centre in Karasjohka in 1987, Sami speakers have been able to seek specialist health care, provided by Sami speaking medical personnel. The idea of such a facility evolved among enthusiastic, idealistic Sami doctors, who had come to realize the vital importance of mother-tongue in contact between doctor and patient.

The Centre is located in the Sami heartland of Norway, but extends to Sami communities in neighbouring states. The catchment area encompasses around 17,000 people.

The Centre provides important internal medical services on a polyclinical basis and is equipped with quite advanced facilities for non-invasive examinations. Thus the Centre can undertake examinations usually confined to hospitals. Two internal medical physicians are employed at the Centre; one is also a rheumatologist and the other a cardiologist. Periodically, the Centre also provides a number of other specialist services, such as orthopaedics and E.N.T., engaging specialists on a peripatetic basis.

The Centre is having considerable success in breaking down the language barrier that previously hindered Sami speaking patients from exploiting health care services to the full.

This initiative in Sami (Lapland) could prove to be a viable model for health care provision for other indigenous peoples.

A COMPARISON OF FACTORS AFFECTING NATIVE HEALTH IN CANADA AND THE UNITED STATES. Joyce M. Kramer. Centre for Northern Studies, Lakehead University Thunder Bay, Ont., Canada; and Center for American Indian and Minority Projects, College of Education and Human Service Professions, University of Minnesota, Duluth, MN., U.S.A.

Whereas the life expectancy of all Canadians is higher than that for all Americans, the life expectancy of Canada's Native population is lower than that for Native people in the United States. By comparing morbidity and mortality rates along with other social and demographic indices across contiguous provinces and states, this study identifies some of those factors which may contribute to observed differences in Native health status. In particular, by comparing matched pairs, such as Yukon with Alaska and Saskatchewan with Montana, the study analyzes such influences as differences in climate, urbanization, educational attainment, as well as health and social service delivery systems. The aggregate data are augmented by interviews with Native providers of health and social services within cultures spanned by the borders. Policy implications of the findings at the Federal as well as Provincial and State levels are discussed.

ORGANIZATION AND PERSPECTIVES IN DEVELOPING MOBILE MEDICAL CARE IN CHUKOTKA. A.N. Lebedev, A.D. Chernuk L.I. Abryutina. Magadan Region Health Department, Novosibirsk Institute of Therapy of Siberian Branch of the USSR Academy of Medical Sciences, Bilibino Central District Hospital, USSR

Social and economic living conditions of the natives in Chukchi Autonomous Okrug are bound with traditional trades of national economy: reindeer breeding, sea animal trade, fishery and hunting. This lifestyle determines settling nature of the aboriginal population and "shuttle" migration processes in the region. A considerable part of the natives is occupied in reindeer farming. It is characterized by professional nomadic life by summer and winter migration routes. The other part is engaged in sea animal trade, hunting and fish and lives in small communities on the coast of two oceans: Arctic and Pacific.

Mobile medical care teams provide the natives with skilled first aid, examination and hospitalization. For this purpose we organize 3 kinds of teams. One is of common treatment and two others are specialized. Preliminary analysis of mobile teams activities allowed to summarize and plan further perspectives in developing this kind of medical care for the native population in Chukotka.

THE IMPORTANCE OF A FUNCTIONAL COMMUNICATIONS SYSTEM IN THE PROVISION OF HEALTH CARE IN RURAL ALASKA. D. Caldera, The North Pacific Rim, Seward, AK 99664 and G. Anasogak, Norton Sound Health Corporation, Koyuk, AK 99753, U.S.A.

Functional communication systems are crucial in the operation of the Community Health Aide Program. Paraprofessionals, Community Health Aides (CHAs), providing primary care in small, remote and isolated communities rely heavily on these systems for support. The telephone and or side band radio is the link between the CHA and the larger medical system.

CHAs are said to be the eyes, ears, and hands of the physician. They evaluate and assess every patient in need of care in the village. To assist them in this process, they use a protocol manual which was developed just for this purpose. Yet often this is not enough. CHAs seek advice daily on patient care through consultation with physicians based in regional medical centers.

The communication system links the CHA to other critical components of the CHA support system. Mobilization of aircraft for emergency patient evacuation requires an intact communication system. The CHA supervisor at the regional center, more than just a sympathetic ear, is just a phone call away.

When the communication system is operational, CHAs feel supported in an extremely difficult job. When the system fails, they feel the crushing responsibility and the profound isolation which is the reality that comes with the job.

Health Expenditure Trends in Northern Canada, 1960-1985.

John M. Horne, Ian D. Fish. The Northern Health Research Unit. University of Manitoba, Winnipeg, Canada.

This paper describes health expenditure trends in Northern Canada over the period 1960-1985. Data from Health and Welfare Canada are assembled, assessed and adjusted for consistency over time. Expenditures specific to each of the major service categories (institutional, professional, drug and appliances, public health) are documented and described. Per capita expenditure in each category are expressed in relation to the Canadian average to gauge the extent to which Northern trends differ from the national experience. Expenditure patterns subsequent to the introduction of public universal hospital and medical insurance programs are of particular interest. The data will also raise interesting questions concerning changes in accessibility as a result of the introduction of new technology.

MOVEMENT TOWARD PROFESSIONAL EXCELLENCE - MEDICAL SERVICES BRANCH INDIAN HEALTH. G.I. Lynch, Director General, Indian and Northern Health Services, Medical Services Branch (MSB), National Health and Welfare, Ottawa, Ontario.

As health professionals strive towards the World Health Organization's goal of health for all by the year 2000, the challenge to provide appropriate relevant health care services is immense. MSB is responsible for the actual provision of and/or ensuring access to health services for Canada's status Indians on reserve, and residents of the Yukon.

Both the physical and social environments impact on the type of health care delivery system in place. Some native communities are moving towards administering, managing, directing, planning and controlling their own health service delivery system in conjunction with the Federal Government - a program called Transfer. Native communities can move in this direction or can request MSB to continue to provide health services. The diversity of this unique health care delivery system ranges from delivery in the isolated setting with a community health representative as the link into the health system to a urban setting linked to the southern Canadian health care system.

This paper will examine the MSB approach in striving for professional excellence in this ever changing environment.

RESEARCH AND THE IMPROVEMENT OF REMOTE HEALTH CARE - AN ANTARCTIC EXAMPLE. D W H Walton, British Antarctic Survey, Natural Environment Research Council, High Cross, Madingley Road, Cambridge CB3 0ET, UK.

British Antarctic Survey maintain five year-round stations in Antarctica and South Georgia. Health care and medical research are undertaken as an integrated whole by four doctors. Prior training, specialist advice during and research work-up after the Antarctic tour are co-ordinated through a centre in Aberdeen. Research projects are selected from four groups - 1. the unexpected incident, 2. specific assessments of field safety criteria, 3. the identification of continuing health care problems using a consultations database and 4. the exploitation of the unique features of the Antarctic environment for specialised studies. Examples are given for each of these categories and attention is drawn to two developments - increasing international collaboration in Antarctic health care research and the likely value of Antarctic research as an analogue 'Space' environment-

NORTHERN HEALTH CARE IN CRISIS: UNDERSTANDING NURSING TURNOVER IN CANADA. Brenda Canitz, Department of Behavioural Science, Division of Community Health, University of Toronto, Toronto, Ontario, Canada.

For decades nurses have provided 24 hour comprehensive health care in isolated communities of Canada. As the only health care personnel in most communities of the north, nurses must meet all health care needs ranging from veterinary assistance to health education, emergency care to mental health counselling.

This paper will focus on the structural and psychosocial factors affecting isolated post workers. Considering the intense nature of professional responsibility in these isolated settings, it is not surprising that there is frequent turnover of nurses. The constant change in staff results in poor community and staff morale, limited success of programs and increased expenditures for government due to the high costs of additional relief staff, travel, and orientation.

Utilizing a mailed survey (N=55) and on-site interviews (N=17) collected in two regions of northern Canada, this paper will outline key issues which produce nursing dissatisfaction and ultimately decrease the effectiveness of health care programs. The paper will conclude with suggestions to increase nursing satisfaction and ultimately improve the provision of health care in northern areas.

LEAVING HOME-PATIENTS IN NORTHERN LABRADOR. M. Baikie, Labrador Inuit Association, Northwest River, Labrador, NF, Canada, AOP 1M0.

For 1987 and 1988, daily records were kept to document the numbers, types of services required and movements of patients travelling out of their Northern Labrador community by air to access health services. An average of 1403 patients a year from a population of 2757 left home to attend the closest Hospital in Goose Bay where 40% were admitted for at least part of the time, and 18% went on to other centres for specialist care. Women between the ages of 15 to 34 made up 30% of the patients including 98 per year away from home awaiting delivery. All patients were away from home 9 days on average. In 1988 alone 345 (23%) of these patients saw a resident doctor (GP, General Surgeon, or Obstetrician/Gynecologist) on an outpatient basis and at least 100 of these (7%) had an x-ray, lab work or ultrasound scan. 100 (7%) saw a visiting specialist and 61 (4%) saw a dentist.

In conclusion, large numbers of patients travel considerable distances at great cost for services that urban Canadians take for granted. Further work needs to be done to plan more effective use of health dollars.

NO INFORMATION ON A FORGOTTEN PEOPLE: HOW HEALTHY ARE NATIVE PEOPLE IN CANADA WHEN THEY LIVE OFF-RESERVE. Chris McCormick & Mark Wigmore, Native Council of Canada, Ottawa, Canada.

Native Health Problems in Canada are critical in nature. Mortality and Morbidity Statistics of Native people in Canada compiled by Medical Services Branch of Health and Welfare Canada paint a picture of extreme health problems. These statistics are quoted in publications ranging from House of Commons Reports to Canadian Medical Association speeches.

While these statistics are alarming, they are nonetheless problematic in that they do not in fact refer to Native Health status in Canada but rather they refer specifically to the Health of Status Indians living on-reserve. At the present time, data collection methods, medical services statistics and most health studies etc. tend to focus only on the reserve segment of the total native population. Ignored in the statistics and the studies are the off-reserve status, non-status and Metis people in Canada.

The health status of the larger native population is often extrapolated from health statistics for status Indians on-reserve. It is suggested that the health status is similar for those native people living off-reserve and those living on-reserve. The research however gives no clear answers. The lack of information leaves many questions: what is the health status on the off-reserve status, non-status and Metis? Is there a difference between the health status of urban and remote native people? What factors affect health status among this population?

Without more concrete answers, the need for focussed efforts by government and the health care system to address health concerns of off-reserve Native people in Canada will always be uncertain and these people will be left forgotten by health planners.

NUTRITION OF THE INUIT. Harriet V. Kuhnlein, School of Dietetics and Human Nutrition, McGill University, Montreal, Canada, H9X 1C0.

It is known that the Inuit diet is gradually changing away from the exclusive use of traditional Inuit food, and that for many people, nutritional problems are evident. It is generally agreed that fewer chronic diseases existed when the Inuit followed their aboriginal diet, although longevity and causes of morbidity and mortality are not well-documented until recently. Research on the indigenous food systems of the Inuit have used several techniques, including harvest studies, nutritional status evaluations and detailed dietary interviews. A serious limitation in the research is lack of information on the nutrient constituents of the food items actually consumed by individuals. Recently, concern for presence of toxic residues in wildlife species has prompted new investigations of Inuit food resources and the importance of these in meeting nutritional needs. A dietary interview study from a community in Eastern Baffin Island has shown that wildlife foods are still an important constituent in diets of young women. Wildlife food fats were found to contribute PCB's to daily diets, but the traditional meat food items were excellent dietary sources of unsaturated fatty acids, omega-3 fatty acids and retinol. Women's nutrient intakes were nevertheless low in retinol, as well as calcium. Intakes were more than adequate in protein, iron, zinc and phosphorus.

(Supported by Health and Welfare Canada)

DIETARY INTAKE AND NUTRITIONAL STATUS OF CANADIAN INDIANS: A REVIEW. S.E. Evers, Division of Applied Human Nutrition, Department of Family Studies, University of Guelph, Guelph, Ontario, Canada.

There has been a resurgence of interest in the diet of Canadian Indians because of accumulating evidence that some current health problems may be associated with impaired nutritional status. Deficient intakes of calcium, iron, folate and vitamins C, D, and A are frequently reported. There is, however, much variation in dietary intakes and nutritional status from region to region.

In recent years, there has been a shift from traditional foods to purchased manufactured foods. Traditional foods make an important contribution to daily nutrient intake and diets high in traditional foods tend to be superior. There is some indication that purchased manufactured foods are added to the traditional diet rather than replacing traditional foods, at least initially. It is important to emphasize the value of traditional foods in developing Native nutrition programs. Another consequence of the rapid social change that is taking place in many communities is a decline in physical activity. This has implications for recommendations on energy intake, particularly in view of the high prevalence of obesity and non-insulin dependent diabetes in Native communities.

THE SVALBARD STUDY: INCREASED BODY WEIGHT AT 78 DEGREES NORTH. T. Brenn, H. Schirmer, O. Nilsen, G. Hoyer, Institute of Community Medicine, University of Tromsø, N-9000 Tromsø, Norway.

The total Norwegian population aged 18 years or more living on Svalbard was invited to a health screening during the autumn of 1988. The study was similar to the cardiovascular county studies in Norway, and in addition included a questionnaire on Svalbard-specific topics. Of the 818 invited, 611 (74.7%) attended the screening and of these 517 (84.6%) returned the Svalbard questionnaire.

The results were compared to similar studies on the Norwegian mainland from where the Svalbard population is recruited. The most striking result was the raised ($p < .05$) body mass in both sexes (about 3 kilograms when adjusted for body height) and in all age-groups, except the oldest women. The population consumed more alcohol and rich canteen food and less fish, fruit and vegetables, and physical activity at leisure was smaller. The length of the Svalbard stay was not influential.

In conclusion, diet is of importance, but a possible selection of overweights to Svalbard may occur as well. Among environmental factors that might be influential are high indoor temperature, dry climate, bad-tasting drinking water as well as unknown arctic phenomena.

CHANGING FOOD PATTERNS OF CONNE RIVER NICHOLS: BACKGROUND FOR EDUCATIONAL PROGRAMMING. Mary G. Alton Mackey, PhD. and Luce Bernard, MA. Coastal Associates and Consultants Ltd. St John's Newfoundland and Department of Nutrition University of Montreal, Montreal Quebec.

Food related behaviour is culturally rooted. Qualitative and quantitative data were obtained through the use of structured and semi-structured interviews with several key informants. The food procurement strategies used by the community have changed due to several factors affecting the food supply including the building of a road to the region and hydro electric development in the 1960's and a road to the community in 1975. The food supply comes from two main sources: country food (or wild food) and imported food (or store food) as well as some home food production. Wild food procurement activities are still practiced today and make a major contribution to a number of households in the community. The informants indicated a preference for wild food which they considered "more nutritious", "appetizing", and "better for health". Prior to the road to the community only basic staples were available with a restricted variety in stores in neighbouring communities that could be transported by row boat or sleigh. The ability of the community to classify food groups was no more sophisticated than a division of wild food and store food. The concept of "eating well" related to the frequency and presentation (cooked/uncooked) of food, not to food combinations. Associations between diet and health or diet and growth were not always recognized or if identified were often confused. Recognition and understanding of food related opinions, food beliefs, and traditional food practices provide important background information for the development of an educational program. In any community where the food supply is changing, nutrition education programs should build on the beliefs that are positive and gradually introduce new concepts to assist the residents in making wise food choices from both the traditional and the imported food supply.

DIETARY INTAKES OF ALASKA NATIVE ADULTS 1987-1988. E.D. NOBMAN, Alaska Area Native Health Service, Anchorage, Alaska, 99501 USA.

The purposes of this study were to: 1. identify and describe current food consumption practices of Alaska Native adults from different regions; 2. establish an ongoing dietary monitoring system in Alaska; and 3. utilize data to promote healthful food consumption practices.

A dietary questionnaire was developed, tested and used by trained interviewers in 11 Alaskan communities. A representative sample of adult Alaska Natives from those communities was identified. The sample included 359 persons who provided 907 questionnaires during the four seasons of 1988. Foods have been listed by frequency of consumption in the eleven communities. Intakes of twelve nutrients are also presented.

The reported diets have several positive aspects: frequent use of fish, water, and lower fat meats such as chicken. On the other hand, consumption of fruits, vegetables and fiber rich foods was infrequent and consumption of sugars, sweetened beverages and coffee was frequent.

The information has already been used to develop educational material for diabetes prevention, weight control and serum cholesterol reduction.

The system developed for this project can be used as an ongoing monitoring tool for Alaska Natives. There is potential for application of the system throughout the U.S. Indian Health Service.

NUTRIENT INTAKE AMONG SAAMI PEOPLE COMPARED WITH AN OLD TRADITIONAL SAAMI DIET. L. Häglin, Department of Dietetics, University Hospital, Umeå, Sweden.

Food and nutrient intake were evaluated in southern Swedish Saami. The aim of the study was to evaluate nutrient intake today and to compare this with the diet in the past. Repeated 24-hour recalls performed from August 1987 through January 1988 for 48 Saami (23 . 25) and 51 Swedes (30 . 21) all living in 3 small towns close to the mountains. Interviews with ten, 60-85 year old Saami and data from earlier studies allow a description of the food habits, traditions and crucial factors which have changed food habits over several centuries. In the 1600's and 1700's the Saami diet consisted almost exclusively of meat and fish. Changing living patterns and influence from the western society have lowered the protein intake and raised the carbohydrate intake of the Saami.

The season, reindeer herding and residence have determined the food habits among Saami. Those living close to a lake eat more fish and those living in the forrest all the year round (non nomadic) combine reindeer herding with farming, and hence their diet is more varied with more milk and cereal grains.

Nutrient density (gram/MJ) indicates no difference in the quality of food when comparing food intake among Saami women and settled Swedish women in the same area. The Saami men's diet had a higher protein ($p < 0.001$) and lower calcium ($p < 0.001$) content, Ca/P₁ ratio was lower ($P < 0.001$), and P₁/CHO ratio higher in Saami men's diet compared with Swedish men's diet.

BENEFIT-RISK CONSIDERATIONS OF TRADITIONAL FOOD USE BY THE HARE DENE/METIS OF FORT GOOD HOPE, N.W.T., N. Doolan, H.V. Kuhnlein, D. Duncan, School of Dietetics and Human Nutrition, McGill University, Montreal, Canada, H9X 1C0.

Traditional and marketed foods are consumed in varying proportions by the Hare Dene/Metis of Fort Good Hope (FGH), N.W.T. The benefits associated with the utilization of native foods are well documented and involve such dimensions as nutrition, economics, and socio-cultural value. Media attention has recently focussed on the risk aspects of traditional food use, particularly with regard to contamination of these foods by organochlorine compounds, including PCBs. Dietary and food composition data collected from FGH during the summer (Jul/Aug) and winter (Nov/Dec) seasons of 1988 provide the basis for a perspective on the benefit-risk characteristics of traditional food use. Personal 24-hr. recalls (24H) and family food frequency questionnaires (FFQ) were administered to high, medium and low users of traditional foods for a total community response rate in Jul/Aug of 61% (24H) and 67% (FFQ); and 65% and 73%, respectively in Nov/Dec. Nutrient levels in Hare Dene/Metis foods have been reported earlier, and are on-going. Inconnu and moose, the most frequently consumed traditional foods in Jul/Aug, had PCB values of 22.4 ± 16.9 ng/g (ppb) wet wt and 2.9 ± 1.4 ng/g, respectively, baked. Loche liver, a lipid-rich organ, had the highest levels of PCBs at 98.4 ± 38.0 ng/g. Benefits of traditional food use appear to outweigh risks.

A PRELIMINARY COMPARISON OF NUTRIENT INTAKE OF CHUKOTKA AND ALASKA NATIVES. T. A. Rodgina, P. R. Mamleeva, and E. D. Nobmann¹. Institute of Internal Medicine, Novosibirsk, USSR; Alaska Area Native Health Service, Anchorage, Alaska, USA¹.

Considering the unique diets of Alaskan and Siberian native populations and the known peculiarities of serum lipid profiles in coastal versus inland natives in Siberia (Nikitin *et al.*), an Alaska-Siberian collaborative research project on nutrition and cardiovascular risk factors is being undertaken.

Two independent studies on nutrient intake of the native populations of Chukotka and Alaska have been compared. In the Siberian study a representative sample of 165 coastal and 104 inland men aged 30-59 were interviewed in 1982-1984. The subjects were Chukchi and Eskimos from Chukotka.

The Alaska study (1987-1988) assessed the nutrient intake of 164 native men aged 21-60. The Alaskan subjects were Eskimos, Indians and Aleuts. The 24-hour diet recall method was used in both studies. Although the samples in the two studies vary somewhat in age distribution and in the timing of collection, some comparisons are of interest.

Mean caloric intake ranged from 3160 kcal in Siberian coastal natives to 2700 in Siberian inland (tundra) natives and 2750 kcal in the Alaskans. Cholesterol intake ranged from 600 mg/day in Chukotka natives to 510 mg/day in the Alaska natives. Fat consumption ranged from 150 gm/day (36% of calories) in Chukotka coastal natives to 90 gm/day (31%) in Siberian inland natives.

The Alaska natives consumed the most carbohydrates (41% of daily caloric intake) and the Chukotka coastal natives the lowest (26%). The Chukotka tundra natives intake of refined sugar was very high. The intake of refined sugar in the Alaskan population was not evaluated in the same manner.

The conclusion is that there are some significant differences in dietary intake in these populations, but that a more systematic and comparable assessment is required to evaluate cardiovascular risk factors.

The long-term study now being organized will include the detailed chemical analysis of hitherto unexamined native foods and a standardized, common method to inventory food consumption.

This project is part of the Alaska-Siberian Medical Research Program.

BREASTFEEDING IN KAHNAWAKE: REVISITED AND REDEFINED.

A.C. Macaulay, N. Hanusaik, J.E. Beauvais. Kateri Memorial Hospital Center, Kahnawake, Quebec J0L 1B0 Canada. Department of Family Medicine, McGill University, Montreal, Canada.

This study documents the initiation and duration of breastfeeding of babies born in 1985/1986, and compares data for babies born in 1978. The results will be used to promote breastfeeding in Kahnawake.

Breastfeeding in 1985/1986 was 64%, an increase from 45% in 1978. Breastfeeding was significantly associated with birthweight, previous nursing experience and support from baby's father. Most mothers chose method of feeding prior to pregnancy and those choosing breastfeeding pre-pregnancy breastfed significantly longer.

Mother's chose breastfeeding "for babies health" and bottlefeeding for "other" reasons or "others can feed baby". Twenty nine percent of breastfed babies and 46% of bottlefed babies received cereal before three months.

The results suggest that breastfeeding promotion should involve the entire community, including schoolchildren, and postpartum mothers need a supportive environment.

Key Words: North American Indian
Breastfeeding
Community

THE PREPARATION OF A PAMPHLET AND POSTER PROMOTING TRADITIONAL YUKON FIRST NATIONS DIET. C. Pugh. Council for Yukon Indians, Whitehorse, Yukon, Canada Y1A 3S5.

In random discussions with Yukon First Nations there was strong evidence that usage of traditional foods was falling rapidly particularly in urban centres. Awareness of nutrition was not that strong amongst younger people and misconceptions had developed regarding traditional foods, i.e. those who had attended residential schools had been taught that eating traditional foods was improper and diet such as milk, white bread or cereals with sugar, for example, were appropriate. Over time there has been movement away even from the healthier introduced foods to a greater reliance on high sugar, starch, and salt products such as chocolate bars, candies, and cheezies.

The purpose of the development of a pamphlet and poster promoting traditional Yukon First Nations diet was (a) to highlight the nutritional values of traditional diet, and (b) to make it more socially acceptable to utilize a traditional diet. Realizing that it would not be practical or justifiable to suggest that individuals only eat traditional foods, the pamphlet also describes the combining of traditional foods with fresh garden products, and other nutritious introduced foods such as brown flour products or brown rice. Research was based on community surveys and discussions with elders as well as a literature review.

ECONOMIC BARRIERS TO OPTIMUM NUTRITION IN NATIVE COMMUNITIES IN BRITISH COLUMBIA. P. Bell. Medical Services Branch, Health and Welfare Canada, Pacific Region.

The minimum cost of purchasing a nutritionally adequate diet in urban, rural and isolated Native communities in British Columbia was determined using the Montreal Diet Dispensary method. The cost to feed a family of four was compared with basic support allowances provided through the social assistance program. Additional food costs for pregnant women were also determined.

In rural and isolated communities those families largely dependent on locally purchased foods were unable to do so within basic support allowances. The natal supplement did not allow for nutritional requirements during pregnancy to be fully met.

While traditional foods still comprise a significant portion of the total diet in many communities, families are increasingly dependent on store-bought foods. The results of this study raise serious concerns in light of a diminishing traditional food supply and increasing presence of environmental contaminants.

NUTRITION EDUCATION FOR NATIVE TREATMENT CENTRES. J.M.Lawn and P.J.Lawn. Dialogos Educational Consultants, Campbell's Bay, Quebec, Canada, J0X 1K0.

Based on a needs assessment of native treatment centres and a pilot training project, a 10 day nutrition workshop was offered to 29 counsellors and cooks from native treatment centres from three provinces. Objectives were to: (1) improve the understanding of the effect of alcohol on health and nutrition; (2) to improve the understanding of the role of nutrition in rehabilitation; (3) to clarify their respective roles; and (4) to improve skills in menu planning for recovery and special diets, food safety procedures and cooking techniques appropriate for recovery. Assessment, counselling and treatment were considered in relation to native cultural values, meeting basic human needs and counselling theory.

Participants rated the following at 4 or 5 (on a scale of 1 to 5): meeting their expectations (100%); improving their understanding of the role of nutrition in total well being and recovery (97%); the effect of alcohol on health and nutrition (97%); the recovery diet (100%); special diets (100%) and food safety (100%); developing skills in nutritional assessment and counselling (94%). Ninety three per cent were interested in further training and all participants would recommend this training to others in the addiction field.

SELECTED VIRAL, PARASITIC AND BACTERIAL INFECTIONS IN THE ARCTIC AND SUBARCTIC. B. McMahon, Anchorage, Alaska, USA

The prevention of sexually transmitted diseases (STD) has particularly been in focus since 1986, when the CMO submitted a report on the issue. Also the realization that infection with HIV would spread contributed to a rising public attention supported by an educational campaign from the health promotion council. It is the objective of the present study to measure the effect on the incidence of STD.

Syphilis and gonorrhea are both notified to the CMO and can currently be followed. Hepatitis B is also notified and for the last 3 years even carriers of HBsAg are reported to the CMO. In 1987 658 new cases of syphilis were reported. This was a 2.5 increase of incidence, and still in 1988 369 new cases were reported. On the contrary the incidence of gonorrhea has followed a downward trend. In 1988 the drop was 58 per cent, and the occurrence of gonorrhea was the lowest registered in 25 years. No significant change in incidence of clinical cases of hepatitis B has been recorded. Even the carrier rate seems unchanged. A rate of 4.4 per cent among pregnant women was reported in 1987, whereas the rate among young males went up to 16 per cent.

A relatively long incubation period and a more insidious course of syphilis may explain the persistent high incidence of syphilis. Hepatitis B is transmitted not only sexually and a substantial decline in incidence might not be expected. However, the significant reduction of gonorrhea incidence is convincing of a substantial change in sexual behaviour.

AIDS EPIDEMIOLOGY AMONG CANADIAN ABORIGINALS - PATTERN ONE OR PATTERN TWO?
J.A. Mortman. Division of STD Control, Ministry of Health, Vancouver, Canada.

AIDS epidemiology among Canadian aboriginals is compared to that of Canadian caucasians (pattern one), Canadian blacks and the African and Caribbean (pattern two) countries. To November 23, 1989, of the 3,148 reported AIDS cases in Canada, 20 (0.6%) were recorded as aboriginals. When compared to the proportion of Canadians who are aboriginal these numbers suggest that aboriginals are underrepresented in the AIDS epidemic. However, due to variations in the policies and practices of reporting the actual number of aboriginal cases will be significantly higher than the reported number. In Canada both the ratio of female to male cases (1:3) and the proportion of perinatal AIDS cases (5.0%) among aboriginals is much higher than that among caucasians (1:19 and 0.3%). Similarities are found when the data for aboriginals are compared to those of Canadian blacks, for whom the major AIDS risk is "origin in a pattern II country." Among blacks in Canada the female to male ratio is 1:2 and the perinatal proportion is 15.4%. In pattern II countries the female to male ratio is 1:1 and the rate of perinatal AIDS is very high. Concurrently high rates of ulcerative sexually transmitted diseases (STD) contribute to the pattern II spread of AIDS. In Canada the aboriginal population tends to have high STD rates.

When AIDS among Canadian aboriginals is compared to that of other populations it appears that the aboriginal epidemiology will resemble pattern II. Since pattern II areas have more severe rates of AIDS with spread primarily via heterosexual contact these findings will be important in predicting the impact of AIDS among aboriginals and in developing effective prevention strategies that emphasize the control of other STD along with AIDS.

THE USE OF REPORTED SEXUALLY TRANSMITTED DISEASE DATA AS AN EVALUATIVE TOOL FOR HIV PREVENTION EFFORTS IN THE NORTHWEST TERRITORIES.
A.M. Jolly, C.P. Pim, D. Kinloch. Department of Health, Government of the Northwest Territories, Yellowknife, Northwest Territories, Canada.

Sexually transmitted disease (STD) is an ongoing problem in the Northwest Territories (N.W.T.). A computerized database was developed in 1986 to facilitate follow-up of STD cases and to fulfil legislated reporting requirements. While the database functioned adequately for the purposes originally intended, modifications were necessary in order for it to serve as a useful tool for monitoring trends in STD incidence and evaluating the effectiveness of AIDS and HIV prevention programs. This paper will describe some of the problems associated with STD surveillance in the N.W.T.

Primary problems with the database included lack of consistency in case definitions over time, and in the use and types of laboratory tests between regions.

Criteria were developed for standardizing case definitions and interpretation of laboratory tests. Guidelines for data entry and report processing were also developed. The information collected was assessed for epidemiologic relevance and patient management, and modifications were made on the basis of this assessment.

The revised and upgraded database will be used to calculate more accurate STD rates and identify risk groups. Temporal trends in STD rates will be analyzed to determine if HIV prevention programs have resulted in behavioural change.

REPORTED GONORRHEA TRENDS IN THE STATE OF ALASKA: 1986-1988.
G.L. Bledsoe. Sexually Transmitted Disease Program, State of Alaska, Division of Public Health, Section of Epidemiology, Anchorage, Alaska.

Reported gonorrhea in the State of Alaska was reviewed for the period 1986-1988 using a statewide database to identify potential demographic, medical facility, or geographic variables to confirm or refute a 3-year decline in cases. As recently as 1986 Alaska ranked sixth in the United States in reported cases per 100,000 population. Some Alaskan communities reported rates among the highest in the western world. Thus, the dramatic decreases in reported gonorrhea beginning in 1986 were largely unanticipated. Yearly rate decreases of 16.3%, 35.1%, and 32.8% began in 1986; this represents a total decrease of 56% (1,552 cases) during the period 1986-1988. Past reporting of gonorrhea cases was reviewed by age, race, sex, source of report, and location. Major declines were noted in all demographic categories in which significant N values existed. Even steeper declines occurred in females and non-Natives. Resistant gonorrhea remained relatively constant while early syphilis significantly increased over 1986 levels (467%, 17 cases). Transfer of key medical personnel in arctic Alaska, variability of expertise in gonorrhea specimen collection, and gonorrhea isolate viability in arctic conditions may have artificially reduced reported cases. A real decrease in gonorrhea has occurred, although the actual level is difficult to determine.

HIV INFECTION AND AIDS IN ALASKA: EPIDEMIOLOGY AND PREVENTION STRATEGIES.
W.S. Craytor. AIDS and Sexually Transmitted Disease Program, State of Alaska, Division of Public Health, Section of Epidemiology.

The prevalence of AIDS and HIV infection in Alaska are determined by surveillance systems which involve, for AIDS, health care provider reporting and, for HIV, voluntary antibody testing in community-based health facilities, substance abuse treatment facilities, and correctional centers. Prevalence data for AIDS and HIV infection are presented by age, sex, geographic area, race/ethnicity, and risk behavior for the periods from 1982-89 for AIDS and 1985-90 for HIV. State prevention strategies are presented including discussion of historical background, legislative activities, the impact of advances in medical treatment, and the influence of state and national funding directions. Of particular note are early state commitment to and funding of the AIDS Program, state policy initiatives, merger of the AIDS and Sexually Transmitted Disease Programs within the Section of Epidemiology, use of Knowledge, Attitude, Beliefs, and Behavior Surveys in target population groups, active partnership with the state Department of Education, and integration of HIV prevention activities into other preventive services. Present status is assessed vis-a-vis several other state programs and future directions are discussed.

TYPE E FOODBORNE BOTULISM THE UNGAVA COAST Baird M. Smith, Bruno Alberton, Nancy Boisvert, Montreal Children's Hospital, Montreal, Quebec, Canada

Botulism is a disease commonly encountered by general practitioners in Northern Canada. The diagnosis is often difficult because of its similarity to gastroenteritis and its sparse coverage in medical school. During 14 months beginning in 1986, 24 people involved in 4 outbreaks were diagnosed and serologically confirmed at the Ungava Bay Hospital. Three exemplary cases are described. The signs and symptoms of one cohort of 15 people are discussed emphasizing the neurologic and cardiovascular signs. We discuss our prevention strategy and emphasize its applicability to other northern regional health centres.

TRICHINOSIS IN THE CANADIAN ARCTIC: AN EPIDEMIC OR ENDEMIC PROBLEM? L. Luggitt, P. Orr, M. Moffatt. The J.A. Hilde Northern Medical Unit, Department of Community Health Sciences, University of Manitoba, Rankin Inlet, N.W.T. and Winnipeg, Manitoba, Canada.

A protracted outbreak of a trichinosis-like syndrome was recognized in the Keewatin District of Canada's Northwest Territories in 1988-89. Twenty-five serologically confirmed cases were identified. In the same time period, at least 50 clinical cases of the syndrome were found but not serologically confirmed. The majority of the cases were of mild to moderate severity and recovered spontaneously. Five of the confirmed and four of the clinical cases required hospitalization. Five patients were offered specific therapy with mebendazole; of the three who completed the treatment, all reported resolution of symptoms. Walrus meat was most often implicated as the source of the parasite. A number of obstacles to confirmation of the diagnosis were encountered both at the clinical/laboratory and the health care system levels. Reports of other "outbreaks" (and seroprevalence data) in other Northern areas lend support to the probable endemicity of this infection.

A MODEL OF HIV EPIDEMIOLOGY AND IMPLICATIONS FOR CONTROL. A.R. Ronald, R.B. Brunham, S. Moses and F. Plummer. The Departments of Internal Medicine and Medical Microbiology, University of Manitoba, Winnipeg, Man. Canada R3E 0Z3

HIV and other STD's are transmitted as a result of a complex interplay of sexual interaction rates, intrinsic infectivity of the pathogen and duration of infectiousness. A core group of individuals with high rates of new partner acquisition are essential for heterosexual transmission of HIV. This group acts as the reservoir of infection.

Studies in Nairobi have shown that heterosexual transmission of HIV is amplified from this core group by genital ulceration and by the presence of a foreskin. In a geo-epidemiologic study, ethnic groups in which men are circumcised appear much less susceptible to heterosexual HIV transmission.

Out of these observations, control programs including general and specific health education, promotion of condom use and STD control programs are evolving in Africa. Targeted programs toward core groups in society are highly cost effective. We estimate that the case of HIV infection can be prevented for \$12.00 or less of program costs.

Programs to reduce HIV transmission in other areas including the Circumpolar Region need to be developed and critically evaluated.

INVESTIGATION OF AN OUTBREAK OF CONGENITAL TOXOPLASMOSIS IN NORTHERN QUEBEC. J.C. McDonald, G. Pekeles, T. Gyrokokos, B. Alberton, J.D. MacLean, G. Richer, D. Juranek. McGill University, Montreal, Laval University, Quebec, Canada, Centers for Disease Control, Atlanta, GA.

An ongoing screening program for Toxoplasmosis in pregnant women identified a cluster of 5 women from northern Quebec who, over a period of 4 months, seroconverted during their pregnancy. An epidemiologic investigation was carried out in an attempt to identify the source of this infection. All potential risk factors were assessed by a questionnaire administered to 22 Inuit women who had delivered babies in the previous year (75% of those giving birth over the year of study). Seroconversion was associated with skinning of animals for furs ($p=0.008$) and consumption of dried seal meat ($p=0.045$). Compared to seronegative women, women who were seropositive were > 4 times more likely to eat dried seal meat ($p=0.067$), > 6 times more likely to eat seal liver ($p=0.064$) and > 8 times more likely to consume raw caribou meat more than once per week ($p=0.054$).

Prospective clinical evaluation of the 5 offspring showed one to be moderately severely affected (chorioretinitis, cerebral calcifications and cyst), one to have mild developmental delay and 3 to be normal.

These observations have contributed to the development of guidelines for the prevention of toxoplasmosis in seronegative pregnant women in this arctic region.

DEVELOPMENT OF A NATIONAL STRATEGY TO ADDRESS AIDS AMONG ABORIGINAL PEOPLE IN CANADA. R.A. Imrie. Federal Centre for AIDS, Health & Welfare Canada, Ottawa, Ontario, Canada.

The primary objective of this initiative was to determine the general situation vis-a-vis HIV infection and AIDS among the aboriginal community in Canada.

A Joint National Committee representing eleven (11) national aboriginal non-government organizations and the Federal Government entertained submissions and convened several meetings to discuss the situation as it applied to aboriginal people in Canada and to prepare a Findings Report. From the findings resulted a Strategy Document.

Two major documents were produced by the Joint National Committee. These outlined the results of research and a resultant strategy for education and prevention among aboriginal people in Canada. In addition to the strategy, nineteen (19) recommendations are offered for consideration for all stakeholders.

The results of the findings and subsequent recommendations may be of considerable value to other circumpolar countries where AIDS has had an effect on the aboriginal population.

HEALTH AND DISEASE IN AMAZONIAN TRIBES: NEW CHALLENGES. R. G. Baruzzi. Departamento de Medicina Preventiva, Escola Paulista de Medicina, São Paulo, Brazil.

Brazilian Indian tribes in the Amazon present wide variations in habits and customs and in their degree of contact with the Euro-Brazilian population. For some groups this contact stretches to the colonial period, while a diminishing number of tribes remain untouched in the Amazonian rain forest.

The Xingu Indigenous Park covers 8,000 sq. miles in the upper reaches of the Xingu River, a tributary of the Amazon, and has a population of about 3,000 Indians divided into 17 tribes. Up to the early 1970s this population had little contact with the outside world, but this situation is gradually changing which influences their behavioral and disease patterns. Such changes are reflected in some new food items that have been slowly introduced like rice, macaroni, salt and edible oils. Now the first cases of obesity, hypertension and stroke have been observed. Infectious diseases remain the main cause of mortality, although death due to malaria, tuberculosis and vaccine-preventable diseases has declined in the past 20 years.

Reduced general mortality and increased birthrate have caused population growth with 50% being under 15 years of age. The young Indian's lack of preparation and education leaves them vulnerable to the ongoing changes in their social and cultural environment. Social breakdown and alcoholism are likely to become problems in the future.

Amazonian tribes in general are always subject to two threats of a sudden and catastrophic nature: the construction of great dams, which flood large areas; and the possibility of being invaded by thousands of prospectors in search of gold, devastating the environment and poisoning the rivers with mercury. These are also potential threats to the Indians in the Xingu Indigenous Park.

ACCIDENTS - ARE THEY? INTENTIONAL AND UNINTENTIONAL INJURIES IN ALASKA. J.P. Middaugh. Section of Epidemiology, Alaska Division of Public Health. Anchorage, Alaska, USA.

Injuries continue as the leading cause of death and years of potential life lost (YPLL) in Alaska, accounting for 33% of all deaths and 54% of all YPLL. Of all Alaskans, 90% are less than 50 years old. Among Alaskans less than 50 years old, 70% of all deaths are the result of injuries.

In 1950, there were only 6 suicides documented among Alaskan Natives - in 1983 and 1984 there were 65. Alaskan Natives committed suicide twice as often as other Alaskans. Alaskan Native men, 20-24 years old, had a suicide rate of 257/100,000, 14 times higher than the suicide rate for the United States.

Between 1980 and 1984, Alaskan Native pedestrians were killed four times more frequently than other Alaskans and, in Anchorage, 16 times more frequently. Among 26 adult Alaskan Natives who died in pedestrian collisions, 22 were acutely intoxicated with an average blood alcohol level of 0.2 mg/dl.

From 1980-1986, 948 (7%) of 13,464 deaths in Alaska were due to shootings. Although Alaskan Natives comprise 14% of the population, they accounted for 35% (327) of the deaths from firearms.

Unfortunately, injury control receives scant attention compared to diseases and other hazards. Research and injury control measures are unfocused, lack continuity, and are under funded. Most injuries are not accidents and are not random or unpredictable events. Most injuries could be prevented by application of available knowledge.

SUICIDE AMONG INUIT YOUTH IN GREENLAND 1977-86.

J.Thorslund, North Atlantic Regional Studies, Uni. of Roskilde, DK-4000 Roskilde, Denmark.

The increased frequency of suicide among Inuit in the north is Reviewed. Based on an analysis of public files and responses from a questionnaire mailed nation-wide, some kind of small scale "psychological autopsy" is performed, and the material is analyzed in relation to theories of socialization and acculturation. The social background of Youths committing suicide in the period 1977-86 shows extreme high rates of suicide among young males aged 18-22, particularly unemployed and other marginalized groups in society, but hunters/fishermen showing high rates as well. The family background indicates high rates among singles, living alone, with parents of traditional occupation.

A comparison of all Greenlandic districts shows that suicides are related to slow increase of population, low rates of wage-employment and low rates of secondary education. The suicidal behavior of the juvenile population is interpreted in terms of psychological acculturation, concluding that slow acculturation might be one of the causes behind suicide.

SOCIOECONOMIC AND ENVIRONMENTAL CHARACTERISTICS OF WOMEN OF DOMESTIC VIOLENCE IN ALASKA. V. Schultz, C. Morse, S. Theno. Department of Psychology. University of Alaska, Anchorage, Alaska, U.S.A.

Primary issues regarding women of domestic violence and their ability to leave abusive relationships have been in the areas of economics, codependency and availability of social services. The characteristics unique to an Alaskan environment have not been readily explored within this population with the exception of alcohol abuse. In 1986, the prevalence of domestic violence statewide had been documented as 26% of adult Alaska women had been abused by a spouse or live-in partner at some time during their adult life. A total of 13,200 Alaskan women required medical care from a physician or hospital for abuse-related injuries during this same year.

This study focuses on the population within Anchorage and surrounding areas entering the shelter for abused women within a four-month period to include winter and spring months. The shelter indicated a continual increase in the number of women seeking services within the past calendar year of 1988. The socioeconomic and environmental issues unique to an Alaskan environment which were explored include: drug/alcohol use; seasonal changes; cold; darkness; isolation; depression; transportation; geographic location of social support network of family; perception of local social support network; economic trends/financial resources; and other pertinent biodemographical data.

FAMILY VIOLENCE IN THE NORTH: WHAT DO WE KNOW AND WHERE DO WE GO FROM HERE? Paula E. Pasquall. Medical Services, Yukon Region, National Health and Welfare, Whitehorse, Canada.

Violence within homes and communities is a major health and social problem throughout the North. Studies indicate that victims of family violence and sexual assault are over-represented at medical and mental health facilities, and constitute a large percentage of those receiving social welfare services.

This paper will review existing research on the incidence and demographic characteristics of wife assault, child sexual abuse, and sexual assaults against adult women in the North. Similarities and differences across Northern communities will be highlighted as will appropriate comparisons with Southern communities.

Challenges and obstacles to effective intervention will be outlined. Among the factors which require special attention are the development of flexible, but culturally-appropriate interventions; the high rate of alcohol abuse; service delivery in remote, isolated communities; and systemic obstacles to change (e.g., coordination of services across disciplines, centralized decision making, etc.) The relevance of programs and interventions developed in Southern, urban communities to the North will be critically evaluated.

It is argued that scarce research funds are better spent on applied social science, as opposed to theoretical or epidemiological, research.

A COMMUNITY-BASED SEXUAL ABUSE PROGRAM: THE HOLLOW WATER INDIAN BAND EXPERIENCE. H. Seymour, G. Leroy. Community Volunteers. The Hollow Water Reserve Group, Hollow Water Band, Wanipigow, Manitoba, R0E 2E0, Canada.

The Hollow Water Indian Band, in collaboration with several nearby Metis communities, has over a period of several years, developed a unique way of dealing with the problem of sexual abuse of children. The band has developed and implemented what may be the first community-based treatment program for sexually abused children in Canada. Instrumental in the success of this program has been the formation of a Resource Committee which was initiated by the community and directed by community leaders to create a holistic model of treatment that is an alternative to the penal system. The program that evolved came out of the committee's own personal growth experience at sessions held in Alkali Lake and was built on traditional healing practices and local customs recovered from the past.

The healing process considers the healing of both the victim and the victimizer. Each treatment plan consists of: a team approach to assessment, protection of the child, and confronting the victimizer, that is, leading him/her through a "healing contract" which terminates in a "cleansing ceremony". The results of this program is seen in the changing attitudes within the community, a recycling of energies and resources within the community by utilizing the recovered offender's experiences to help others, a new respect for community-based "experts" and a model that can be used for other communities.

After the initial cases of abuse were dealt with in this manner, there was an immediate disclosure of over 90 other cases.

Since that time the resource team has included community education into their sphere of activities, and most recently the community has successfully applied for and received a grant from New Careers for the training of 12 counsellors as of September, 1989.

Keewatin Suicide Prevention and Intervention Study. Caroline Anawak, Meryl Cook. Kivalliq Consulting for the Keewatin Regional Council(KRC). Box 155, Rankin Inlet, N.W.T., Canada.

Dedicated to the surviving family members of suicide victims in the Keewatin Region on the west coast of Hudson Bay in Canada's Arctic, the Study was commissioned by the seven community Mayors in 1985. Co-Authors Caroline Anawak and Meryl Cook undertook the Study over a period of four months. A review of literature included various types of suicide programs, articles discussing suicide within the context of the circumpolar world, suicide and the media and the history of suicide in the traditional Inuit community.

A review of the actual problem within the Keewatin Region including statistics, discussion with community resource people and taped interviews with families who had lost a relative to suicide. The final phase saw Workshops conducted in each community to present the Study's recommendations. In 1971 the Northwest Territories (N.W.T., Canada) suicide rate was close to the Canadian average of 10 per 100,000. This figure rose to 35 per 100,000 by 1978. This work was a direct response to that situation. The authors were directed by the Inuit to produce a Study which could be easily translated and understood, free from jargon and written in a manner by which Inuit leaders could take the recommendations forward to the Territorial and Federal authorities for action. Multi-interventionist Counselling and Treatment programs which included crisis, high-risk and follow-up counselling for the families of suicide victims formed the basis for many recommendations.

MATERNAL HEALTH AND OBSTETRICAL SERVICES: MEASURING HEALTH STATUS AND THE QUALITY OF CARE IN REMOTE AREAS. E. Robinson. Northern Quebec Module, Community Health Department, Montreal General Hospital, Montreal, Canada.

In Canada, women living in remote northern communities often have to travel long distances to have their baby in a hospital far from their families. This is clearly not an ideal situation from a political or human point of view; it may even have negative health impacts which we have not yet been able to measure. Basing their position on the results of studies and on clinical experience, doctors maintain that the policy of transferring women to larger centres for childbirth results in lower death rates in the fetus and newborn infant.

With these concerns in mind, as an invited speaker for the session on maternal health I will describe various quantitative measures of the health of pregnant women and newborn infants, and discuss their validity, their usefulness and their limits. These measures include perinatal mortality, neonatal mortality, low birthweight rate and risk scoring in pregnancy. I will concentrate on the application of these measures to small populations living in remote areas, reviewing published material, and presenting quantitative and qualitative data from our studies in the James Bay area of northern Quebec.

CHANGES IN BLOOD LEAD AND MERCURY LEVELS IN PREGNANT WOMEN FROM GREENLAND 1984-1989. J.C. Hansen, Tove G. Jensen, U. Tarp. Institute of Environmental and Occupational Medicine. University of Aarhus, DK-8000 Aarhus, Denmark.

During the period 1984-1989 blood lead and mercury concentrations were analyzed in venous blood and cord blood samples from birthing Inuit women and their children originating from 6 hunting districts and Nuuk. A total of 1312 sample pairs were analyzed.

Cord blood and maternal lead concentrations correlated significantly with a mean ratio of 0.8. A significant decrease in the blood lead level was seen with a mean decrease of approx. 7% per year.

Mercury concentrations in maternal and cord blood were highly significantly correlated. The levels were higher in the hunting districts compared to the Nuuk area, reflecting diet as the major mercury source. Both in the hunting districts and in Nuuk the mercury levels decreased significantly after 1986. In Nuuk a low concentration level was found compared with those in the hunting districts.

The possible causal factors involved in the time dependent declines for both metals will be discussed.

BLOOD PRESSURE DURING PREGNANCY IN THE CANADIAN INUIT: COMMUNITY DIFFERENCES RELATED TO DIET. D. Popeski, L. Ebbeling, P. Brown, G. Hornstra, and J.M. Gerrard. Department of Paediatrics, University of Manitoba, Winnipeg, Canada. Churchill Hospital, Churchill, Canada and The Department of Biochemistry, Limburg University, Maastricht, The Netherlands.

Blood pressure was evaluated during pregnancy in 300 women from seven Inuit communities in the Keewatin region of the Canadian Arctic. Significantly higher diastolic blood pressures were found at the end of pregnancy in four communities where caribou meat constituted a higher proportion of the diet, compared to three communities where fish and sea mammals were eaten more frequently. The relation between diet and blood pressure was independent of other factors. Correspondingly, women from meat-eating communities were 2.6 times more likely to be hypertensive during their pregnancy than women in fish- and sea mammal-eating communities. Parity and pregravid weight were also found to be significantly associated with pregnancy-induced hypertension. The relation between hypertension during pregnancy and community diet type was, however, still significant (odds ratio 2.35, $p=0.03$) in a logistic regression analysis. The dietary differences between the communities were substantiated by a diet survey and measurements of the fatty acid content of the cord serum phospholipids, which showed an increase in the fish fatty acids in women from communities where fish was more frequently consumed.

OBSTETRICAL CARE IN THE BAFFIN REGION, NWT: FACTORS ASSOCIATED WITH FAMILY SEPARATION DURING PREGNANCY. E.S. Sennett, Baffin Regional Health Board, Iqaluit, NWT. G.E. Dougherty, Department of Epidemiology and Biostatistics, McGill University, Montreal, P.Q., Canada.

Pregnancy and childbirth are important events in the life of a woman, her family, and community in the eastern arctic. Concern has been expressed over the increasing frequency of evacuation for delivery, as more women are required to spend long periods away in unfamiliar settings. Recognizing that the frequent unavailability of midwives is an important factor, this study looks at other reasons accounting for such separation during pregnancy.

In 1988 almost 220 births occurred among the population of 6000 people living in settlements remote from the base hospital in Iqaluit. Initial analysis of a 30% sample of deliveries revealed that 50% of the women left home during pregnancy to have an ultrasound. Over 90% were sent to Iqaluit for confinement, waiting an average of 22 days before giving birth.

A review of prenatal records suggested that uncertainty of gestational age was an important factor associated with prolonged separation. An uncertain menstrual history was present in over 30% of pregnancies. Although 50% of women presented for prenatal care before 12 weeks, and 90% before 20 weeks, only 40% of the former had a bimanual pelvic exam, and only 20% of the latter had an ultrasound to confirm gestational age. If the gestational age is uncertain, evacuation for delivery is likely to be recommended earlier in pregnancy. In this study 60% of women left home before 37 weeks.

It is proposed that the problem of prolonged separation could be partly addressed by interventions directed toward confirming gestational age (i.e., bimanual assessment of uterine size in the first trimester, and use of portable ultrasound). While working toward a comprehensive policy, women could actively participate in this plan.

LABOUR INDUCTION IN NORTHERN WOMEN S. Perkins, P. Lessard, STANTON YELLOWKNIFE HOSPITAL, Yellowknife, N.W.T.

When induction of labour is indicated, intravaginal prostaglandin E₂ (PGE) has been shown to be a safe, effective alternative to intravenous oxytocin.¹ Most studies of PGE have involved urban Caucasian women; our study examines the Canadian northern native woman and compares her to her northern non-native counterpart. The records of our hospital, which provides obstetric services to much of the Western Arctic, were assessed retrospectively for the year 1989.

During the first 10 months of 1989, 459 deliveries occurred, 26% to Inuit, 27% to Dene, and 47% to non-native women. Of these, 11% of Inuit, 8% of Dene and 14% of other required labour induction for conventional indications.

Intravaginal PGE preparations were the inductive agent of choice by most physicians. Twenty-four women (47%) successfully delivered following PGE use. The Inuit women were disproportionately represented - 64% had delivered within 24 hours following PGE. In contrast, 33% of the Dene, and 41% of the other, delivered without further intervention. Another 27% of the women delivered vaginally following the addition of oxytocin to the PGE. Three required section for failure to progress.

Our data supports the following conclusions: 1) Intravaginal PGE is an effective labour-inducing agent in the northern population as a whole; 2) Induction of labour is indicated no less often in Inuit women than in other northern women, but 3) PGE is more efficient in Inuit women than in other racial groups.

While the physiologic basis of the usual effectiveness of PGE in the Inuit remains unclear, our findings are in keeping with previous studies documenting low complication rates and ease of vaginal delivery in the Inuit population.²

¹ Hehner JD, AFP 223 - 226, 1988

² Lessard, P., and Kinnloch, D., CMAJ Vol. 137, 1017 - 1021, 1987

KEY WORDS: Labour induction, Prostaglandins

ROLE OF PLACENTA, INCOMING WOMEN AT THE CIRCUMPOLAR REGION, IN METABOLISM OF THE SERUM HEMOGLOBIN OF THE FETUS

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Embryonic period is characterised by short time of the life of erythrocytes, different types of hemoglobin, by the absence of the haptoglobin and undifferentiated the systems of the metabolising of serum hemoglobins in the liver (L. Chritov, 1975).

In the process of quantitative and qualitative estimation of the serum proteins in the retroplacental blood, vein and arteries of the core of newborn by the disk-electrophoresis in polyacrilamide gele we discovered the growing changes which correlate with the period of mother's living in circumpolar regions. Concentration of the protein in the alpha-2' fraction, containing serum hemoglobin A (HbA), increased in the vein of cord in the group of newborns N1 and N3 (mothers of which were living at the North until 2 and more than 6 years). At the same time the quantity of the HbA in vein of cord decreased.

The low concentration HbA is demonstrated in the serum of the blood in the second group of newborns (2-5 years living at the North), where is discovered the highest frequency the presence of the haptoglobin - 42%, is discovered in the first group - 25%, third - 29% (control group of the newborns in Novosibirsk - 5%). Similar type of the changes is revealed

Abstract: Bush Food Contamination and Public Health Policy. C. Dumont, Cree Board of Health and Social Services of James Bay, Chisasibi, Québec, Canada and Department of Community Health of the Montreal General Hospital, Québec, Canada.

Recent environmental studies have shown that some foods traditionally eaten by the native population are often contaminated of a number of chemicals (e.g. CH₃HgCl, Cd, PCB). Public health advice given to native populations has been contradictory and often confusing.

Methylmercury contamination of the territory of the James Bay Crees is used as an example to show the importance of evaluating not only the risk posed by the contaminant but also the risk posed by various proposed interventions. Otherwise the interventions could be a greater health risk than the contaminant itself.

Risk of the contaminant is evaluated by literature review, review of available environmental data, review of available human exposure data in terms of contaminant body burden and biological effects observed. Risk of the proposed policy must be evaluated not only from a biological point of view but also from a socio-economic perspective. The latter expertise is that of the native populations themselves because these populations are aware of socio-economic factors which are not evident to non-natives. It is mandatory therefore that any public health policy in the north be made with considerable involvement of the native populations in the decision-making process and as much as possible with technical persons aware of the socio-economic situation of native populations.

PERSPECTIVES OF NOOSPHERE DEVELOPING IN CIRCUMPOLAR REGIONS. V.P.Kaznachev. Institute of Clinical and Experimental Medicine of Siberian Division of the USSR AMS, Novosibirsk.

Developing of northern territories as well as developing of space reflects general state interests in different countries at the end of the XX century and at the beginning of the XXI century. This tendency is a regularity. It is a natural-historical manifestation of noospherogenesis (the development of population of new formation and culture, economy and health).

Northern territories are a kind of "experimental base" for noospheric formation of the humankind, where general human interests and general human responsibility prevail.

Such approach gives the possibility to join general human and general state interests in ecology of circumpolar and polar territories of our planet, to free them from pollution, barbarian exploiting, closed zones, proving grounds. These zones on our planet are the ecological processes and so - a guarantee for health and nature preserving of our planet.

INFLUENCE OF DIET ON BLOOD CADMIUM IN GREENLANDERS. U. Tarp and J.C. Hansen. Institute of Environmental and Occupational Medicine. University of Aarhus, DK-8000 Aarhus C, Denmark.

Samples from 306 persons living in 7 districts were analysed for whole blood cadmium (B-Cd) and hair cadmium (H-Cd).

B-Cd in smokers was significantly higher when compared to non-smokers (2.59 ± 1.39 ug/l versus 1.05 ± 0.86 ug/l). No differences in B-Cd and H-Cd was seen with regard to ethnic groups and sampling districts when adjusted for smoking habits. The amount of local produced food eaten, was significantly related to B-Cd levels, but only in non-smokers (41 local meal/week: B-Cd 0.84 ± 0.68 ug/l; $1-5$ meals/week: B-Cd 1.0 ± 0.63 ug/l; > 5 meals/week: B-Cd 1.57 ± 1.08 ug/l). In smokers no influence of diet was seen. Significant correlation between B-Cd and H-Cd was observed only in non-smokers, who had a lower H-Cd level than the smokers (0.20 ± 0.23 ug/g versus 0.39 ± 0.55 ug/l). Dietary habits were not found significantly related to H-Cd. Thus H-Cd may be regarded as a poor indicator of dietary Cd intake. Traditional Greenlandic diet contributes significantly to B-Cd concentration in non-smokers, however, in smokers this effect is concealed by the dominant of effect smoking.

STATUS OF WATER SUPPLY AND WASTE DISPOSAL SERVICES IN RURAL ALASKA. D.R. Rogness. Alaska Area Native Health Service. Anchorage, Alaska, U.S.A.

The level of water supply and waste disposal services present in many rural Alaska communities is different from that available to residents of other areas of the United States. An "adequate" level of "plumbing" is defined by the U.S. Census Bureau as "...hot and cold water piped to a kitchen sink and bathtub or shower in addition to a flush toilet." Many small Alaska communities presently have sanitation service well below this "adequate" level.

Information from several studies support the desirability of providing the level of service defined above. In spite of the conclusions that can be drawn from these studies, economic and technical problems still prevent the provision of piped water service for many rural Alaska communities. Several different service levels are possible, each with its own potential effect on health improvement. The decision on which level of service to provide for a given community must be based on several factors, all of which impact on both capital and operating costs. These factors must be carefully analyzed in relation to the overall goal of providing the highest possible level of service that the community can support.

Periodic health surveillance to monitor the changing subarctic environment: a case study demonstrating its possibilities and limitations. Tom Kosalsky, Charles Dumont, Module du Nord Québécois, 980 Guy Street, Montreal, Canada H3H 2K3.

One might think given a simple, accessible measure of exposure, that human surveillance could serve as a means to characterize the extent and spread of an environmental contaminant. Experience with methylmercury in northern Quebec illustrates the possibilities and limitations. A variety of studies and programs initiated since the early 1970s relate levels of (methyl) mercury in the hair of native Quebecers to their consumption of contaminated fish. Ongoing surveillance among the James Bay Cree shows important effects of such personal factors as age, sex, and trapping practices on their uptake of mercury. The effect of the environment is more difficult to demonstrate; there is no clear global relationship between the uptake of mercury by villagers considered as a group and the degree of contamination of fish in nearby lakes and rivers. In contrast, for trappers considered alone, a direct relationship is seen between mercury levels in hair and rise in mercury levels in nearby fish during a period of environmental change. The demonstration of seasonal patterns of exposure, while reflective of environmental effects, makes the time of sampling critical to any assessment of environmental influences. That community concern leads to rapid decline in levels of mercury in people can be inferred from studies conducted during the 1970s in two villages, one Cree, one Inuit.

The link between environmental contaminants and their uptake by people is complex. Surveillance efforts must be carefully designed and analyzed to discern these links.

CONTAMINATION OF THE AQUATIC FOOD CHAIN BY ORGANOCHLORINES IN ARCTIC QUEBEC: RISK ASSESSMENT FOR BREAST-FED INFANTS. E. Dewailly, A. Nantel, J.P. Weber, F. Meyer. The Community Health Department and the Quebec Toxicology Center. CHUL, Ste-Foy, Québec, G1V 4G2, Canada.

Organochlorinated contaminants present in the Arctic are coming from the South by long range transport by air and water currents. They accumulate in the aquatic food chain and marine mammals are the most contaminated species. Because fishes and marine mammals represent the main components of the native diet, it is possible that Inuit are exposed to an undesirably high intake of organochlorinated compounds especially infants who receive high amount of lipophilic contaminants during the breast feeding period.

In 1988, we assess the levels of polychlorinated biphenyls (PCB), dichlorodiphenyl-dichloroethylene (DDE) and polychlorodibenzo-p-dioxins (PCDD)/polychlorodibenzo-furans (PCDF), in the breast milk of 24 Inuit women from the east coast of Hudson Bay in Arctic Quebec. PCB and DDE concentrations in milk fat were respectively 3.60 and 1.87 mg/kg among Inuit women compared with 0.77 and 0.57 mg/kg among the 48 control women living in the southern part of the province. The PCDD, and PCDF concentrations expressed in 2,3,7,8 TCDD toxic equivalent were not so elevated (24.7 ng/kg) compared with southern levels.

The potential health risk of this contamination for breast-fed infants is enhanced by the long duration of breast feeding observed in the North. The health consequences for infants will be discussed in regard to well known benefits of breast feeding.

PROTECTION PROVIDED BY HEPATITIS B VACCINE IN YUPIK
ESKIMO POPULATION: PRELIMINARY 7 YEAR RESULTS. Robert
Wainwright, Brian McMahon, Lisa Bulkow, Alan J. Parkinson. Arctic
Investigations Program, Centers for Disease Control and Alaska
Native Medical Center, Anchorage, Alaska 99501 USA

The immunogenicity and efficacy of the hepatitis B vaccine is being
evaluated in southwest Alaska in a population hyperendemic for HBV
infection. Of 3,988 Yupik Eskimos residents of 17 villages screened
in 1981 for HBV markers, 1630 were susceptible and were immunized
using the recommended three year dose regimen of hepatitis B
vaccine. One year after receiving the first dose of vaccine 95% of
vaccine recipients demonstrated antibody to hepatitis B surface
antigen (anti-HBs) levels of 10 MIU/ml or greater. Immune response
to vaccine at 1 year decreased with advancing age. After 7 years of
follow-up 26% of those initially having an immune response to
vaccine of 10 MIU/ml or greater, subsequently had anti-HBs levels of
less than 10 MIU/ml. Anti-HBs levels at 7 years in responders varied
with age and directly with the level of anti-HBs attained at 1 year
after the first dose.

During the 7 years after the first dose of vaccine, five of the
responders and two persons with an anti-HBs response of less than 10
MIU developed antibody to hepatitis B core antigen (anti-HBc) and
boosted the level of anti-HBs. None developed Hepatitis B surface
antigen or had clinical hepatitis. Our data indicate that the risk of
HBV infection to most persons with an initial anti-HBs response to
HBV vaccine of 10 MIU or greater is low regardless of the initial
antibody level attained.

STRATEGIES IN DEVELOPING A HEPATITIS B PREVENTION PROGRAM FOR
REMOTE NORTHERN COMMUNITIES. Carla Chrusch, Department of
Medicine, University of Manitoba, Winnipeg, Manitoba, Canada.

Hepatitis B is endemic in African and Asian populations
as well as the Canadian Inuit. Since chronic hepatitis B
infection can lead to serious and at the present time un-
treatable sequelae such as chronic active hepatitis, cirrhosis
and hepatocellular carcinoma, the optimal management of this
infection is prevention. Basic knowledge of the hepatitis B
virus and its epidemiology would be a prerequisite for the
development of a successful prevention program.

We recently completed a survey conducted in rural Korea
wherein we examined public knowledge of hepatitis B etiology,
symptoms, transmission, risk factors and prevention. It was
found that knowledge was independently correlated with
education and the female sex, but that overall knowledge of
hepatitis B was very poor. The preferred information sources
in order of preference were physicians, public health nurses
and television. Although there are significant differences
between the Canadian and Korean health care systems, a
similar approach of evaluating target population knowledge
may be valuable in developing a hepatitis B prevention
strategy for the Canadian Inuit.

THE USE OF ORAL PREDNISONE FOLLOWED BY ACYCLOVIR IN THE
TREATMENT OF ADULTS WITH CHRONIC TYPE B HEPATITIS: A PILOT
STUDY. G.Y. Minuk, C.B. German, C. Bernstein, C.P. Tran.
Liver Diseases Unit, Department of Medicine, University of
Manitoba, Winnipeg, Canada.

In an attempt to identify a relatively safe, oral form of
therapy for patients with chronic type B hepatitis, eight
adult chronic HBsAg, HBeAg positive carriers were treated for
four weeks with a rapidly tapered dose of prednisone (initial
dose; 40mg/d) followed by a two week rest period followed by
four weeks of oral acyclovir (600mg/d). Seven of the eight
patients were male. Their mean (\pm SD) age was 36.2 ± 14.7
years. Four patients were of Southeast Asian origin and four
were Caucasian. All patients were HIV antibody negative. The
mean pre-treatment ALT level (derived from a three month
observation period) was 99 ± 54 U/L (normal 0-25). All eight
patients have completed their one year follow up visits.
Three of the eight patients lost HBeAg, two of them developed
anti-HBe. HBV-DNA levels fell to undetectable values in three
of five patients with initially positive results. All eight
patients remained HBsAg positive. Fatigue was the most
commonly reported side effect (four patients). The fatigue
did not result in absence from work. The results of this
pilot study suggest that a controlled clinical trial of
prednisone/acyclovir is warranted in the treatment of adults
with chronic type B hepatitis.

RELATIONSHIP BETWEEN TUBERCULIN (PPD) REACTIVITY AND
HEPATITIS B VIRUS (HBV) INFECTION IN THE NORTHWEST
TERRITORIES (NWT). R.P.B. Larke¹, D.D. Harley², D.A. Enarson³,
Depts. of Pediatrics¹, Medicine², University of Alberta, and Workers'
Compensation Board - Alberta², Edmonton, Alberta, Canada, T6G 2R7.

McGlynn et al reported that both Alaskan natives and Asian refugees who
were carriers of HBV (HBsAg positive) were more likely to be positive for
HBeAg if they were PPD negative than were carriers who were PPD positive.
The much smaller proportion of HBeAg-positive carriers in NWT (8.8%)
compared to Alaska (69.1%) may be related to widespread use of BCG
vaccine in the Canadian North during the last 35 - 40 years. We determined if
previous immune response to *M. tuberculosis* or BCG vaccine might
influence not only seroconversion from HBeAg to anti-HBe but also from
HBsAg to anti-HBs.

Of 370 NWT Inuit or Dene who were HBsAg-positive, only 31 had
HBeAg. Persons who were PPD negative were 6.2 times more likely to be
HBeAg-positive than those who were PPD positive, but this inverse
association applied only to those >30 years of age. We further analysed a
group of 3378 Inuit whose status was known for HBV serologic markers and
PPD reactivity. Overall, a significantly greater proportion (76%) of HBsAg
positives were PPD positive in comparison to those positive for anti-HBs
(67%) or who had no HBV markers (43%). For those ≤ 30 years, the
proportions were 83%, 79%, and 64%, respectively. Among persons >30
years, the proportions of those with HBsAg, anti-HBs or no HBV markers
did not differ statistically with respect to being PPD positive.

We conclude that patterns of HBV infection in NWT are not influenced
by tuberculin positivity resulting from either exposure to *M. tuberculosis* or
administration of BCG vaccine.

THE PREVALENCE OF ANTIBODY TO HEPATITIS C VIRUS IN AN ISOLATED
CANADIAN INUIT SETTLEMENT. G.Y. Minuk, L.E. Nicolle, T.
Gauthier, J. Brunka. University of Manitoba, Winnipeg, Canada.

The prevalence of antibody to hepatitis C virus (anti-HCV) in
southern Canada is approximately 0.5%. Blood transfusions and
parenteral drug abuse are the major known routes of spread of
HCV in this population. The prevalence of anti-HCV and its
mode of transmission in northern Canadian populations have yet
to be determined. Baker Lake is an isolated community in
Canada's Northwest Territories. The population is approxi-
mately 850, over 90% of which are Inuit. In 1982, sera from
720 of the inhabitants were screened for hepatitis A and B
exposure with 71% and 27% being positive respectively. The
same sera have now been tested for anti-HCV by a recently
developed Elisa test from Ortho Diagnostic Systems. Only two
individuals (0.003%) were positive, a 63 year old female and an
unrelated 10 year old male. Neither individual had received a
blood transfusion nor had a history of parenteral drug abuse.
The 63 year old female had been positive for anti-HAV but
negative for HBV serology. The 10 year old male was negative for
both. Thus, the prevalence of anti-HCV in this Canadian Inuit
settlement is significantly lower than that of the population
of southern Canada. These results could be interpreted as
indicating that 1) blood transfusions and parenteral drug abuse
are uncommon in this northern population, 2) fecal-oral,
maternal-infant exposure and sexual contact, common routes of
transmission for HAV and HBV respectively are uncommon routes
of spread for HCV infection or 3) HCV has not yet been intro-
duced into this northern Canadian community.

COMPARISON OF IMMUNOGENICITY OF TWO YEAST-DERIVED RECOMBINANT
HEPATITIS B VACCINES. G.W. Hammond, J. Parker, L. Minns, P. Orr,
R. Tate, L. Sekla, G. Minuk. Cadham Provincial Laboratory and
University of Manitoba, Winnipeg, Manitoba, Canada.

A comparison was conducted of the immunogenicity of two
yeast recombinant vaccines with different potency [10 ug
Recombivax-HB (Merck Sharp Dohme) vs. 20 ug Engerix-B (Smith
Kline Biologicals)]. This was conducted as a randomized,
blinded study in healthy pre-clinical medical students,
negative for hepatitis B markers.

The geometric mean titres (GMT) showed a wide individual
variability for both vaccines, and approximately a two- to
three-fold greater GMT of anti-HBs in recipients of the 20 ug
vaccine. However, the 95% confidence interval showed an
overlap of the means of the GMT for both vaccine groups, and
in the study there was no significant difference in immuno-
genicity of these two vaccines. At 6-7 months after
completion of immunization, antibody levels fell to one-third
of the levels of one month post immunization.

A case report of an allergic vasculitic reaction to one of
the recombinant vaccines is presented.

AN OVERVIEW OF TWENTY YEARS OF OBSERVATION CONCERNING ETIOLOGY, PREVALENCE AND EVOLUTION OF OTITIS MEDIA AND HEARING LOSS AMONG THE INUIT IN THE EASTERN CANADIAN ARCTIC. J.D. Baxter, M.D. McGill University, Montreal, Canada

During the past twenty years data have been collected by population surveys, primary school otitis media treatment programs, and ongoing otolaryngological consultation services in the Eastern Canadian Arctic which pertain to the prevalence and evolution of otitis media and hearing loss among the Inuit. Ongoing observations have also been recorded concerning etiological factors. Following World War II tremendous social changes occurred among the Inuit. All but a few abandoned their traditional ways of life and moved into settlements. Parallel with this otitis media, with or without hearing loss, and sensorineural hearing loss secondary to noise emerged as major health problems among these people.

With the passage of time, the impact of many aspects of the co-existence of the cultures in the North matured and the quality of community living among the Inuit has been gradually upgraded. Many social, economic and dietary problems persist, however, which have a significant impact upon the etiology of ear disease.

While the problem is still widespread, recent observations on the primary school student population in Iqaluit (Frobisher Bay) indicate that the prevalence is decreasing. This will be discussed in relationship to what is evolving in the region.

EPIDEMIOLOGY OF OTITIS MEDIA IN ABORIGINAL CHILDREN IN AUSTRALIA. F B McConnell, A Westwater, A W Foreman, P Rebgetz, F P Douglas, T G Nienhuys, J D Mathews. Menzies School of Health Research, Darwin, Northern Territory, Australia,

The prevalence of chronic suppurative otitis media (CSOM) is high in Aboriginal children living in both urban and "bush" communities. Ear perforations develop as early as 2-3 months of age, most often without a known prior episode of acute otitis media (AOM). Within the first 12 months of life, the perforation rate is greater for infants who have (i) more pre-school children living in the same house (ii) a birth date in the wet season of the year. From the age of 12-18 months, as many as 30-40% of ears are perforated and draining pus. Perforations may heal spontaneously or after treatment although no treatment has been clearly shown to be effective. Reperforation of the ear-drum is also frequent. The prevalence of CSOM falls from the age of about 5 years, and few ears are draining pus by the time of adolescence. However, many ears show evidence of scarring, and in a proportion these is a residual "dry" perforation. Some 30% of Aboriginal children suffer from a conductive hearing loss that is of educational significance.

DELIVERY OF AUDIOLOGIC SERVICE AND PREVALENCE OF HEARING LOSS IN THE WESTERN CANADIAN ARCTIC. J.A. MOORE. Department of Audiology, Stantec Yellowknife Hospital, Yellowknife, Northwest Territories, Canada X1A 2N1.

The results of a four year comprehensive clinical study of hearing loss in the settlements of the western Canadian Arctic will be presented. Data concerning surgical and audiological health histories; the type, severity, etiology, and age at onset of hearing loss; and hearing aid use have been collected on 1551 patients (Inuit, Indian, and Other) in Yellowknife and western Arctic communities. The data were entered into a computer database system developed by the author.

Analysis of these data indicated that 32% of the sample were hearing impaired. Out of the patient sample, 14% exhibited conductive losses, 2% presented with mixed losses, and 16% had sensorineural hearing losses.

Variables that influenced the effectiveness of the audiology program included frequency of patient contact, follow up procedures, roles played by the community nurse and local education professionals in the rehabilitation process, training of native ENT Health Aids, language barriers and cultural differences.

CAUSES OF CHRONIC SUPPURATIVE OTITIS MEDIA (CSOM) IN ABORIGINAL INFANTS AND CHILDREN. A Westwater, F B McConnell, F P Douglas, A W Foreman, T G Nienhuys, J D Mathews. Menzies School of Health Research, Darwin, Northern Territory, Australia.

The prevalence of CSOM in Aboriginal infants and children is extremely high (see associated abstract).

Two contrasting explanations can be offered. The first is that an episode of acute bacterial otitis media (AOM) is the usual antecedent of ear perforation, and that CSOM reaches high prevalence because most episodes of AOM are unrecognised or inadequately treated in Aboriginal children. This explanation implies that the future prevalence of CSOM would be greatly reduced by more effective diagnosis and antibiotic treatment of AOM (i.e. by more effective primary care of ear disease).

The second possibility is that Aboriginal infants have an increased incidence of ear perforation without an antecedent episode of AOM. This could be related to chlamydial infection, to eustachian tube damage and/or to middle ear effusion which has a high prevalence in very young Aboriginal infants in whom the eardrums have yet to perforate.

Further research is needed to distinguish between these two explanations. The most urgent question to be answered is whether the future prevalence of CSOM can be reduced by a more effective and prescriptive approach to primary health care of infants in Aboriginal communities.

THE SEARCH FOR THE ETIOLOGY OF OTITIS MEDIA: RESULTS OBTAINED WITH AN APPLICATION OF THE SYSTEM THEORY. R. Dufour. Community Health Department of Centre hospitalier de l'Université Laval. Québec, Canada. GIV 2K8

The search for the etiology of otitis media is such a difficult problem that decades of research have not been able to solve it. The complexity and the involved interrelatedness of the phenomena require a new paradigm compatible with this complexity and able to englobe different interrelated systems. This paradigm is the system theory. The process undertaken here consists in validating this view by exploring its relevance and coherence when applied to otitis media.

The methodology is aimed at qualifying and describing few systems. The first is a holistic and comparative description of the ecosystemic view, the one proposed by the biomedical explanatory model, that will complete the data missing from this view and re-establish its systemic operation. This system includes at least 3 sub-systems: climate, physical and cultural adaptation to cold. The second is the systems for perceiving otitis. Two such systems are considered: the popular medical system and the professional medical system. At last, a third system will elucidate the onset of otitis in the light of the communications systems which control the operation of all interrelated systems.

This approach of an organised complexity reformulates the debate and is a first step toward a transcultural definition.

CULTURALLY BASED AUDIOLOGICAL SERVICES FOR HEARING-IMPAIRED INUIT IN NORTHERN QUEBEC. M.B. Crago, C. Tremblay, A.M. Hurteau, H. Ayukawa. The School of Human Communication Disorders. McGill University, Montreal, Canada.

This presentation will describe the Project for Hearing-Impaired Inuit of Northern Quebec (HIINQ). The project has been an attempt to provide culturally based audiological services to the Inuit in Northern Quebec who suffer from hearing loss that is primarily due to widespread chronic otitis media (COM). This presentation will begin with a brief description of the medical, geographical, cultural, and linguistic context in which the HIINQ project came into being. Following that, the challenges that Inuit, medical professionals, and educators faced at the outset of the project will be outlined. Next, the ongoing process of trying to create a culturally based approach to audiology will be documented with specific examples and data taken from the project's past and present functioning as well as its future planning. Finally, the presentation will conclude with a discussion of the training of native personnel, autonomous native health care, and future research needs for the efficacious treatment of COM and hearing loss in the Inuit population of Arctic Quebec.

CHRONIC OTITIS AND HEARING PROBLEMS: AN EXPECTED COMMUNITY BASED PROGRAM AND A FIVE YEARS EXPERIENCE IN NORTHERN QUEBEC 1983-1988. G. Julien. Community Health Department of Centre hospitalier de l'Université Laval, Québec, Canada. GIV 2KS

Since 1983, the year when data were collected on the real prevalence of chronic otitis and hearing disorders in school age children of Kuujuaupik, Northern Quebec, a community health program was implemented with the support and participation of native organizations, health workers from the communities and Projet Nord from Centre hospitalier de l'Université Laval, in Quebec City.

The presentation summarizes the planification of this specific health program which focus on the implementation of a more active participation of natives in solving a complicated health problem and in establishing adapted health services in a region where people were usually attending more or less passively health services. There will be a review of data collected in all settlements of this mainly Inuit Region and a brief description of the methods used to stimulate active participation. We will also describe some research hypothesis that were funded to obtain more knowledge on the problem of chronic otitis and hearing deficit in that population either clinical, epidemiological or anthropological. Finally a discussion will evaluate some positive and some negative fall-out of the project and the situation after 5 years according to people involvement, continuity and effectiveness and in relation to prevention, treatment and comprehension of this health problem.

OTITIS MEDIA IN THE AMERICAN INDIAN-ALASKA NATIVE POPULATIONS. J.L. Stewart. Sensory Disabilities Program, Indian Health Service Headquarters West, Albuquerque, New Mexico, USA.

A series of analyses of OM prevalence based upon outpatient visits to Indian Health Service facilities have been used to (1) study the variables most closely related to disease prevalence, (2) assess the changes over time as a measure (3) of overall program effectiveness in OM control.

Findings to date show high association between OM and blood quantum, age, sex, and overall health status: male infants with higher proportion of AI-AN blood with overall poorer health records those most likely to have early, frequent, and more severe episodes of disease and long term socio-educational sequelae.

A decline in disease rates seen following establishment of OM control program, which reversed after program deemphasis. Most recent rate: 19,413/100,000 [1985] compared to lowest rate: 15,577/100,000 [1980]. OM now the leading health condition affecting males and third most prevalent condition affecting females throughout age span and the most frequently seen condition in the entire pediatric population (below age of 15 years). Disease severity, as measured by otorrhea and numbers of surgical procedures, is markedly less in recent years.

Efforts at rehabilitation, largely the provision of hearing aids, have been very limited.

Future efforts at OM control will be dependent upon Tribal priorities as programs become Tribally operated.

A STUDY ON COST EFFECTIVENESS OF AUDIOLOGY SERVICES, BAFFIN REGION, N.W.T. M.L. Goodbody, P. Stubbing, Audiology Unit, Baffin Regional Health Board, Iqaluit, N.W.T., Canada, XDA 0HO.

It has been well recognized that ear disease and hearing loss are prevalent among the Inuit of the Eastern Arctic. However, there is scant documentation on the financial aspects of providing audiology services to the Baffin Region. The establishment of an audiology unit in Iqaluit, on Baffin Island, reduced the need of sending clients to Southern Canada for audiology testing; but the cost of providing services in Iqaluit are high, especially, when the high incidence of amplification non-compliance is considered.

13 Baffin communities participated in a survey compiling information on hearing aid compliance. Since February 1, 1984, 595 hearing aids have been issued to 420 (4.2%) Inuit clients. Of these hearing aids, 134 (22.5%) are used on a daily basis, 109 (18.2%) are used occasionally, and 352 (59.3%) have been lost or never worn. At an approximate price of \$300.00 per hearing aid, the Territorial Health Insurance System has spent \$178,000.00 on the purchase of amplification devices since February, 1984.

A further breakdown of total costs can be demonstrated when the community of Cape Dorset, population 1010, is scrutinized. Total expenditure for 181 audiology appointments in Iqaluit, including airfare, accommodation, escorts for children, technician's salary and amplification, since February, 1984 equals \$119,398.00. 41% of 181 clients have been issued amplification. Only 3.8% reportedly wear their hearing aids on a daily basis.

It is suspected that poor utilization of amplification and high cost of audiology services is not unique to the Baffin Region. The obvious next step is to explore methods of improving compliance. Various ideas have been suggested, but data has not been compiled to confirm if these ideas would improve the audiology services in the Baffin Region.

AUDIOLOGICAL REHABILITATION OF GREENLANDIC PATIENTS WITH HEARING LOSS DUE TO OTITIS MEDIA. J. Courtois, Department of Audiology, Odense University Hospital, Odense, Denmark.

All otologists and audiologists with experiences from Greenland emphasize the frequency of otitis, especially in children, but also the rather mild course of the disease with a tendency towards spontaneous amelioration and a relatively rare occurrence of cholesteatoma. The physicians at the 16 Greenlandic hospitals make great efforts to treat otitis medically in co-operation with the Danish otological and audiological visiting teams. An increasing number of Greenlanders have been sent to ear operations in Denmark, but the long range results have been disappointing in about 50% of the cases, for which reason we generally abstain from operating on patients under 18.

Since 1962 the audiological rehabilitation has been secured by the Audiological Department of Odense Hospital in cooperation with the local hospitals. Greenlandic audiological assistants have been trained to manage, on their own, audiometry, hearing aid fitting and practical details of the rehabilitation in close contact with Odense. Once a year a team from Odense visits 1/4 of towns and villages in Greenland: hospitals, old peoples homes, schools and kindergardens together with the Greenlandic assistants, the visiting nurse and the consulting teacher for handicapped children. We focus not only on drums but also on individual social hearing needs as well as details of great importance, such as the placement in the class room. 60% of all otitis patients have no or just a mild hearing handicap (<30 dB loss at 1000, 2000, 3000 Hz). When necessary we start treatment with hearing aids. This work of rehabilitation "across the Atlantic" demands engagement, optimism, openness and pragmatic sense, but it enables us to help young and old Greenlanders to cope with their problems of communication.

DEVELOPMENTAL AND EDUCATIONAL EFFECTS OF CONDUCTIVE HEARING LOSS AMONG AUSTRALIAN ABORIGINAL CHILDREN AND IMPLICATIONS FOR EDUCATIONAL MANAGEMENT. T. G. Nienhuys, A. Westwater, H. Dillon, F. B. McConnell. Menzies School of Health Research, Darwin, Northern Territory, Australia.

This paper will summarise the likely developmental and educational effects of otitis media-induced, prelingual, fluctuating conductive hearing loss on Australian Aboriginal children. Although there have been no studies specifically investigating the possible effects of conductive hearing loss in this population, this paper will consider those observations of this group which have appeared in the literature and the special linguistic and culture-difference problems which Aboriginal children encounter when they attend a Westernized school setting, within the context of current understandings of the educational effects of conductive hearing loss derived from studies of other populations. Educational and audiological strategies which are being developed in Australia to assist mildly to moderately hearing impaired Aboriginal children in the classroom will be described briefly. These include classroom amplification and auditory management strategies, specialist teacher support, and the adaptation of language and auditory skills development procedures which derive from the field of education of the deaf.

AN AETIOLOGIC VIEW ON THE EPIDEMIOLOGY OF CHRONIC DISEASES IN THE ARCTIC. B. Harvald. The Danish Cancer Society, Copenhagen, Denmark.

It has been repeatedly confirmed that the disease pattern among Eskimos differs from that of Caucasians. High incidences of hepatitis B and venereal diseases are clearly due to promiscuous life-style. This probably also explains a steeply rising incidence of cervical cancer of the uterus. Also with regard to pulmonary cancer Greenland is a top-scorer, probably a consequence of a very high tobacco consumption - the annual use of cigarettes per capita is about double that in Denmark.

The low incidence of acute myocardial infarction may be due to the consumption of meat of fish and sea-mammals with a high content of n-3-unsaturated fatty acids. The low frequency of the C3F-allele of the complement system may, however, be contributory. Low incidences are found of such disorders, where autoimmunization is thought to play a pathogenetic role - juvenile diabetes mellitus, rheumatoid arthritis, thyrotoxicosis and myxoedema, psoriasis, multiple sclerosis, and probably others. The manifestation of these disorders are known to depend on special HLA-alleles, B8, DR3, DR4, some of which are known to be rare in Eskimos. On the other hand the B27 allele is prevalent with a corresponding high incidence of reactive arthritis.

Some disorders frequent in Eskimos have a genetic component, which is less clearly defined. In one group comprising spondylolysis, spondylolisthesis, osteoarthritis, hernias, and diaphragmatic relaxation, some connective tissue defect is presumed.

PREVALENCE OF CARDIOVASCULAR RISK FACTORS IN TWO SEPARATE BUT GENETICALLY COMPARABLE POPULATIONS. J. Axelsson (1), M. Karlsson (1), G. Pétursdóttir (1), A.G. Asgeirsdóttir (1), O. Olafsson (2), H. Sigvaldason (1), S.B. Sigurdsson (1): (1) Department of Physiology, University of Iceland, Reykjavik, Iceland; (2) Director General of Public Health, Reykjavik, Iceland.

The results reported here are part of a comparative study of cardiovascular risk factors in an Icelandic population (n=315) living in Fljótsdalur District of northeastern Iceland and a population of Canadians of purely Icelandic descent (n=298) living in the Interlake District of Manitoba, Canada. All participants were in the age range 20-69 years.

In the present part of the study, the prevalence of four risk factors: hypercholesterolaemia (defined as serum total cholesterol ≥ 7.0 mmol/l), hypertriglyceridaemia (serum triglyceride ≥ 1.6 mmol/l), obesity (Broca ≥ 1.1) and hypertension (resting blood pressure systolic ≥ 160 or diastolic ≥ 95) was studied. 52% of the Icelandic population was free of all four of these risk factors, while this was true of only 32% of the Canadian population.

Hypercholesterolaemia was found in 9% of both populations. The prevalence of hypertriglyceridaemia was almost 4 times greater in the Canadians (39%) than in the Icelanders (10%). Obesity was likewise much more prevalent in the Canadians, 52% compared to 35% in Iceland. Hypertension, on the other hand, was twice as prevalent in the Icelanders (22%) than in the Canadians (10%). 31% of the Canadians combined 2 or more of these risk factors, while this was true of only 22% of the Icelanders. 10% of the Canadians combined 3 or more risk factors, as against 5% of the Icelanders.

THE SVALBARD STUDY: RISK OF CORONARY HEART DISEASE AT 78 DEGREES NORTH. H. Schirmer, T. Brønn, G. Heyer, O. Nilssen. Longyearbyen Hospital, Svalbard, N-9170 Longyearbyen, Norway.

The young Norwegian population on Svalbard has a reputation of a hazardous life-style through risky leisure-time activities, and by consuming too much tax-free alcohol and tobacco. In October 1988 all adults aged 18 or more (818) were invited to a health screening emphasising among other things risk of coronary heart disease. The 611 who attended the screening had a mean age of 36.5 years.

Serum cholesterol did not differ significantly from similar studies on the mainland, except for a higher value in women under 25 years ($p < .05$). Neither blood pressure nor smoking habits differed significantly.

Eighty-nine (14.7%) were reexamined due to either hypertension (5), hyperlipidemia (13), chest pain (10), or a combined risk score (61). In this group 63 were daily smokers, while 38 knew of coronary heart disease in close family. Seventy assessed their own health to be good or excellent.

In conclusion, the Svalbard population displayed a coronary heart disease risk pattern similar to that of the Norwegian population living on the mainland. The negative life-style factors may be balanced by positive qualities in arctic life.

RISK FACTORS AND CHRONIC NONCOMMUNICABLE DISEASES IN NATIVES AND NEWCOMERS OF CHUKOTKA. T. Astakhova, A. Ryabikov, V. Astakhov, Z. Bondareva, Ph. Lyutova, Yu. Bulgakov, T. Philimonova. Institute of Internal Medicine, Novosibirsk, USSR.

353 native and 381 newcoming males born in 1921-1950, residing by 1980 in Chukotka region, were twice examined (with an interval of 5-7 years) using strictly standardized epidemiological methods and ultrasound screening. Major risk factors (RF) changes were analysed among the natives and newcomers. In both groups arterial hypertension (AH) was found to be the most stable RF, but dyslipoproteinemia - the least of all. Trends in RF occurrence were conditioned by being under the mutual interaction in the dynamics. During the second screening angina pectoris was not reaffirmed in 50% of the natives and in 30% of the newcomers with previously diagnosed angina syndrome according to Rose questionnaire. The rest of the patients had the angina syndrome caused by some noncoronarygenic mechanism, valvular diseases, myocarditis, cardiomyopathies, additional cordae, hypertrophies etc. We also ascertained secondary AH. Our findings suggest the need of profound examination of the patients with RF during the secondary screening.

ATHEROSCLEROSIS IN GREENLAND. J.P. Hart Hansen, S. Hancke, J. Møller-Petersen, Department of Pathology and Laboratory of Ultrasound, Gertoftte Hospital, University of Copenhagen, and Medical Department B, Aalborg Hospital, Denmark.

A low incidence of ischemic heart disease and an increased bleeding tendency have been demonstrated in Native Greenlanders, probably due to abundant intake of n-3 polyunsaturated fatty acids in the traditional Greenlandic diet. The extent of atherosclerosis in Eskimos is not known due to low autopsy activity.

In order to register atherosclerotic changes in the carotid and femoral arteries G. Native Greenlanders from two settlements in the Uummannaq district of Northwestern Greenland were examined ultrasonographically with a portable scanner (Aloda) using a 7.5 MHz 4 cm linear array ultrasound transducer. The living conditions of the two settlements can still be described as traditional with a diet rich in meat from marine animals. The results obtained were compared to an age and sex matched urban control material of 122 Danes living in Copenhagen.

The investigation showed that the Native Greenlanders had almost the same degree and extent of atherosclerosis in the carotid and femoral arteries as the Danes. Thus, the low incidence of ischemic heart disease in Native Greenlanders may not be attributed to lesser atherosclerosis. Further investigations, particularly autopsy studies are needed.

CORONARY ATHEROSCLEROSIS AND ISCHEMIC HEART DISEASE IN ABORIGINAL AND ALIEN MALE POPULATIONS OF YAKUTIA. V. Alekseev, Laboratory of morphofunctional research, Institute of Medical Problems of the North, Siberian Branch of the USSR Academy of Medical Sciences, Yakutsk, USSR.

The study of ischemic heart disease (IHD) epidemiology and coronary atherosclerosis (CA) morphogenesis was carried out in 2634 males at the age of 20 up to 54, of the aboriginal (692) and alien (1942) populations of Yakutsk and 3163 complete aortas and coronary arteries obtained from unselected necropsies of 739 aboriginal and 2424 alien males with different causes of death were examined.

IHD was found in aboriginals in 12.1% and in aliens in 13.0% of the total number. The definite IHD was found in aboriginals in 4.8% that was one and a half time rarer than the possible IHD (7.4%) in this group. In alien men both forms of IHD were diagnosed with the same frequency (6.7% and 6.3%).

Peculiarities of atherosclerosis in the North are caused not only by ecological peculiarities of formation and development of atherosclerosis precursors in children, but also by ethnic peculiarities of lipid metabolism. Morphometrical comparative analysis of the atherosclerosis dynamics in two male populations of Yakutsk during two stages (1965-1968, 1985-1988) of morphological study has shown significant degree of atherosclerotic lesions in aortas and coronaries in males who died in 1965-1988 at the age of 40 or older in dependence with the duration of their stay in the Far North. Most often, in aboriginals suffering IHD right coronary and left circumflex coronary arteries were involved and had the greatest total square of fibrous plaques, complicated lesions and calcification. In alien men suffering from IHD, the development of stenotic CA began a decade earlier than in aboriginals.

HYPERTENSION AND ITS CORRELATES IN A CANADIAN SUBARCTIC INDIAN POPULATION. T. Rue Young, Northern Health Research Unit, Department of Community Health Sciences, University of Manitoba, Winnipeg, MB, Canada R3E 0W3.

In a cross-sectional survey of 704 Cree and Ojibwa Indians aged 20-64 in 6 northern Manitoba and Ontario communities, blood pressure (BP) was measured along with various anthropometric, dietary, biochemical, sociodemographic and lifestyle data. Where hypertension as a dichotomous variable was used, a "normal" subject was one with no past history of known physician-treated hypertension and currently had SBP < 140 and DBP ≤ 90 . All others were classified as "hypertensives". Based on these criteria, the prevalence of hypertension in the sample was 43% among males and 27% among females, with an increased frequency with age. Compared with the Canada Health Survey, the mean SBP among these Indians exceeded that of Canadians in the younger age groups but was lower beyond age 45. For DBP Indians had higher mean levels than Canadians consistently for all age groups and in both sexes. Hypertensives differed from non-hypertensives in terms of total cholesterol, triglycerides, HDL/total ratio, various indices of obesity and fat patterning, and fasting glucose. In a multiple logistic regression model, significant predictors of hypertensive status included male sex, age, body mass index, total cholesterol, unemployed and single marital status, and positive family history of hypertension. Hypertension is currently a significant public health problem in the Indian population. This study points to several potential areas for special efforts in health promotion.

THE FATTY ACID PROFILE IN PLASMA PHOSPHOLIPIDS OF TWO SEPARATE BUT GENETICALLY COMPARABLE POPULATIONS. G. Skúladóttir (1), M. Reynisdóttir (2), S. Gudbjarnarson (1), S.B. Sigurdsson (2), J. Axelsson (2). (1) Science Institute, University of Iceland, Reykjavik, Iceland; (2) Department of Physiology, University of Iceland, Reykjavik, Iceland.

Evidence for correlation between atherosclerosis and its clinical manifestations and the fatty acid composition of phospholipids has been accumulating. In recent years, increasing attention has been paid to PUFA profiles, most especially to the w-3/w-6 fatty acid ratio. It is suggested that a low ratio may be an independent risk factor for CVD.

The results reported here are part of a comparative study of CV-risk factors in Icelanders living in Iceland and Canadians of pure Icelandic descent living in the Interlake District of Manitoba, Canada. The fatty acid composition of 14 Canadian males, aged 55.1-65.9 years (mean 59.2) was analysed. Preliminary results show that the percentage fatty acid composition of plasma phospholipids (PL) in Canadian males differs from that of 14 Icelandic healthy Icelandic males, aged 50-67 years (mean 56.0). In plasma PL the arachidonic acid (20:4 w-6, AA) is significantly higher, and the eicopentaenoic acid (20:5 w-3, EPA) is significantly lower in Canadian males than healthy Icelandic males. The ratio EPA/AA is 0.44 in Icelanders compared to 0.14 in Canadians, indicating a three times more favourable PUFA profile in our Icelandic population.

Estimation of genetic and environmental contribution in blood serum lipids and blood pressure levels variability in Chukotka natives. V.I.Voevoda, T.I.Astakhova, Yuri P.Nikitin. Institute of Internal Medicine, Novosibirsk, USSR.

In 1982-84 years 772 Chukotka natives were examined in four different settlements. Kindreds were composed on the basis of family history, couples of relatives were formed. Phenotype correlations were calculated as interclass correlations in parents-children and between-sexual sibs couples and as intra class correlations in unisexual sibs couples for total cholesterol, triglycerides, HDL-cholesterol and blood pressure levels. There were no significant sex differences between parents-children and sibs correlations, the estimation of heritability for triglycerides level was about zero. The highest level of heritability was found for HDL-cholesterol and blood pressure. The heritability for total cholesterol was lower than in most other populations. These data may reflect the genetic homogeneity of population for genes systems involved in lipoprotein metabolism.

NAME M. I. Voevoda

ALCOHOL CONSUMPTION IN WESTERN SIBERIA. RELATION OF SERUM LIPIDS, ISCHEMIC HEART DISEASE AND ARTERIAL HYPERTENSION. Svetlana A. Kurilovich, Alexei V. Avksentyuk, Michail V. Voevoda, Tatiana A. Filimonova and Natalia V. Serova. Institute of Internal Medicine, Novosibirsk, USSR.

Data are reported on prevalence and pattern of drinking alcohol. The survey was based on representative random samples of males, aged 25-64, residents of a big industrial center in western Siberia. In the surveyed population, sporadic consumption of relatively high doses of alcohol prevailed. The efficiency of biological markers of alcohol consumption was studied. The usage of two or them (GGTP and apolipoproteins B/A-I ratio) showed the efficiency of 74%, but when five more variables were added, the efficiency increased to 85% (sensitivity 86%, specificity 82%). The relation of alcohol consumption to serum blood lipids, HDL-CH in particular, will be discussed. It was shown that regular alcohol consumption was unfavorable, especially in the age group 25-44, when the prevalence of arterial hypertension increased along with the increase of alcohol consumption. The high incidence of IHD among total abstainers, when compared with people with the lowest alcohol consumption, can be explained by the high proportion of ex-regular drinkers in the former group. This population probably gave up drinking after developing cardiovascular or other diseases. The relation between HDL-CH level and IHD was different in younger and older groups. The curves which showed the relation of these variables to alcohol consumption were of similar shape in the young group, but had the opposite shape in older age groups.

PREVALENCE OF HYPERTENSION IN TWO SEPARATE BUT GENETICALLY COMPARABLE ADULT POPULATIONS. S.B. Sigurdsson (1), G. Pétursdóttir (1), B. J. Naimark (2), N.L. Stephens (2), A.B. Way (3), M. Karlsson (1), J. Axelsson (1). (1) Department of Physiology, University of Iceland, Reykjavik, Iceland, (2) Department of Physiology, University of Manitoba, Winnipeg, MB, Canada, (3) Texas Tech University, Health Science Center, Lubbock, Texas, U.S.A.

The results reported here are part of a comparative study of cardiovascular risk factors in two genetically comparable populations: an Icelandic population living in the Fljótsdalur District of northeastern Iceland and a population of Canadians of purely Icelandic descent living in the Interlake District of Manitoba, Canada.

In the present part of the study, blood pressure was measured in adults (314 Icelanders, 243 Canadians) aged 20-60. Blood pressures were recorded for each subject under three different conditions: (a) after 10 min rest, lying on a bench, (b) sitting at rest on an ergometer bicycle, and (c) after pedalling the bicycle for 3 min with a load sufficient to increase the pulse rate by 40-60% over the pulse rate at rest. Hypertension was defined as blood pressure $\geq 160/95$ for conditions (a) and (b), and $\geq 190/100$ for condition (c). Our results were as follows: 20% of the Icelanders were hypertensive under condition (a), 40% under condition (b) and 40% under condition (c). By contrast 7% of the Canadians were hypertensive under condition (a), 20% under condition (b), and 29% under condition (c). About 45% of the Icelanders were hypertensive under at least one of the three conditions (a), (b), or (c), but only 29% of the Canadians. In addition, the age-distribution of hypertension differed markedly in the two groups: about 35% of the Icelanders below age 40 were hypertensive but only 14% of the Canadians.

As the populations are genetically similar, we suggest that environmental factors are responsible for the measured differences in blood pressure.

HEALTHY LIFESTYLES AMONG THE CREE OF EASTERN JAMES BAY.

C. Lavallée, E. Robinson. Northern Quebec Module, Department of Community Health, Montreal General Hospital, Qué, Canada.

As part of a general effort to support healthy lifestyles in the Cree communities of eastern James Bay, a survey of 283 adults from five different communities was undertaken. Interviews were carried out in person by Cree interviewers using a structured questionnaire. The results showed very high levels of overweight and obesity (Body Mass Index (BMI) > 25) in men (80%) as well as in women (85%) and for all age groups. 61% of people surveyed declared they weighed too much; this proportion increased significantly ($p < .05$) with their BMI. The age-adjusted rate of smoking is 39% compared to 34% for Canada as a whole. The Crees are light smokers; 50% of them smoke less than 10 cigarettes per day; obese people smoke less often and a smaller number of cigarettes. One third of the Cree population of James Bay spend 4 months or more in the bush per year and they are significantly more active in the bush; of this group, 53% state they are never involved in leisure-time physical activity when they are in the community. More than 96% of persons surveyed perceive their health as good or excellent in all categories of respondents. The results of multivariate analysis will also be presented showing the interrelationship between obesity, health behaviours and self evaluation of health.

The findings confirm the high prevalence of obesity and the tendency towards a sedentary lifestyle in this population of trappers and hunters when they come back to the community.

PHYSIOLOGICAL RESPONSES TO COLD STRESS. Roy J. Shephard. School of Physical & Health Education, University of Toronto, Toronto, ONT M5S, 1A1.

After a brief survey of recent issues in cold physiology and a review of the classical equations of heat exchange, this presentation focusses upon our current understanding of available tactics of thermal equilibration under arctic conditions. The experienced northerner can minimise cold exposure by skillful exploitation of the natural environment. Traditional clothing provides the major source of insulation, providing it is not saturated with sweat or water. It is difficult to make good any deficit of thermal balance by either voluntary exercise or shivering, since the resultant increase of limb blood flow and air displacement cause large increases in the rate of heat loss. The extent of non-shivering thermogenesis remains a controversial issue, but the main technique of cold adaptation adopted by humans seems an insulative reaction. Nevertheless, recent research on Korean diving women supports the idea that some metabolic adaptations to cold can develop with repeated exposure to such conditions. Factors contributing to a failure of heat balance and death from accidental hypothermia are finally explored in the context of the Mt. Hood disaster.

COLD PHYSIOLOGY. L. Hirvonen. Department of Physiology, University of Oulu, Oulu Finland.

A suitable temperature is one of the prerequisites of life offered by the biosphere which is not uniform on our planet. The quantity and direction of net heat transfer between a living individual and the environment depend on their temperature difference, rate of metabolism, insulation, behaviour, humidity, relative movement of the surrounding medium, and time. Short time exposures on limited regions or the whole body are used as stimuli in thermotherapy. Repeated short time applications of cold and chronic exposure to it are followed by changes in the reactions of the body. The thermoneutral temperature for a naked human is 28-30 °C in immobile air and 34-35 °C in water and that of some arctic animals considerably below zero. Homeothermia of man is, however, relative and extensive areas of the skin are hypothermic in cool environment. General hypothermia, as a result of excessive cold exposure or failure of thermoregulation, is followed by desynchronization of physiological processes and reactions. Increasing temperature difference between the normal and actual temperatures of a tissue or an organ increases the dispersion because of the differences of various temperature coefficients. Sufficient autonomic service by the circulatory, respiratory and urinary systems and blood are necessary in all conditions. The absolute and relative durations of the various subphases of the cardiac cycle change and the contraction force of the myocardium increases with decreasing temperature. The heart is vulnerable to fibrillation and respiration to cessation. Adaptation to cold helps to avoid the dangers of low temperatures. Humans avoid them mostly by relevant behaviour and technical protection.

EFFORT ANGINA PATIENT'S REACTIONS ON COLD EXPOSURE AT AN EXERCISE TEST. C. Backman, H. Linderholm. Department of Clinical Physiology, University of Umeå, S-90185 Umeå, Sweden.

Cold exposure deteriorates exercise tolerance and increases ECG changes during exercise in some patients with angina pectoris while in others it has no or opposite effects. The aim of this study was to analyse reactions to cold exposure at an exercise test in an attempt to characterize so called "responders" to cold among patients with effort angina.

Forty-nine such patients, unselected with regard to their reports of reactions to cold, who showed ST depressions during and after exercise worked on a bicycle ergometer close to their maximum capacity, Wmax, at room temperature, about 23°C, and in a cold room at -15°C. ECG was recorded and a rating scale was used to estimate the perceived exertion during exercise (RPE). The presence of angina pectoris during and its duration after exercise was described with an AP-score.

At -15°C Wmax was lower than at +23°C in 31 patients (subset 1). Out of these 20 had larger ST depressions (subset 2), 23 had higher RPE, and 15 had both higher RPE and larger ST depressions (subset 3) than at +23°C at equal submaximal work loads. In the whole group the mean Wmax at -15°C was 10 % lower than at +23°C; in subset 1 20 %; in subset 2 25 %, and in subset 3 25 % lower. In the whole group the difference in Wmax between the test at 23°C and -15°C, WmaxRT-C, was associated with the corresponding difference in RPE (Spearman rank correlation coefficient, $r_s = 0.58$, $p < 0.001$) as well as with ST depression ($r_s = 0.39$, $p < 0.01$), but not with the AP-score. A multiple regression analysis showed that WmaxRT-C covaried with both the ST depression and RPE variables and most with the RPE variable.

Thus an exercise ECG test shows several reactions to cold in patients with angina pectoris. By considering them "responders" may be more reliably defined. This enhances future studies of the mechanisms involved in this condition.

PATHOPHYSIOLOGY OF THERMOREGULATION IN PATIENTS WITH POIKILOthermia. M. Mackenzie, A. Hermans, H. Hollersheim, Th. Thien, G. Pieters, A. Smals, R. Binkhorst, P. Kloppenborg. Department of Medicine, Division of Endocrinology and General Internal Medicine and Department of Physiology. University Hospital Nijmegen, P.O. Box 9101, 6500 HB Nijmegen, The Netherlands.

To investigate the mechanism underlying poikilothermia in man, we have studied four female patients (age 28-37yr) with poikilothermia, most probably of hypothalamic origin, as well as 4 female volunteers of similar age in a climatic chamber of, successively, low (16.5°C) and high (40°C) ambient temperature. The following parameters have been recorded: air temperature, rectal temperature (T_{re}), skin temperature finger (T_{sk}), skin blood flow (laser Doppler flux), shivering and sweating response. Separately, we have determined the basal metabolic rate (BMR) under steady state conditions in the patients at the usual hypothermia and at normothermia after body temperature had been maintained at 37°C for several days.

Results: In the volunteers cold exposure induced a small fall of T_{re} (0.2°C after 90 minutes), a marked decline of both cutaneous blood flow and T_{sk} as well as a distinct shivering response, whereas heat stress caused a rise of 0.7°C (after 310 min.), vasodilatation and a marked sweat response. All patients had a T_{re} 35°C at the start of the experiment; cold exposure induced a decrease of T_{re} down to 32.3, 33.0, 33.5 and 34.9°C respectively. Three patients did not show vasoconstriction or shivering. In the patients heat stress induced an afterdrop of T_{re} ; thereafter a rise in T_{re} was seen till 38.5°C, at which level the experiment was terminated. Only one patient showed vasodilatation; none of the patients showed any sweating.

BMR in the patients was reduced at hypothermia (77-82%, T_{re} 32.7-34.8°C), whereas at normothermia BMR was relatively increased in all patients (85-96%, T_{re} 36.5-37.6°C).

Conclusion: In these patients poikilothermia is accompanied by inadequate cutaneous circulation, disturbed sweating response and reduced heat production.

CHANGES IN VITAL CAPACITY OF CELLULAR MONOLAYER OF HUMAN KIDNEY INFLUENCED BY HELIOGEOGRAPHICAL FACTORS IN CONDITIONS OF DIFFERENT LATITUDES. V.P. Kaznacheev, L.P. Mikhailova, M.P. Ivanova, N.I. Marina, N.V. Ignatovich, I.B. Vladimirov. Institute of Clinical and Experimental Medicine of the Siberian Division of the USSR AMS, Novosibirsk.

Everything living on the Earth is constantly exposed to the influence of different environmental factors: light, temperature, humidity, gravitation, helio-geophysical factors, etc.

The given work shows the dynamic peculiarities of the growth of cellular monolayer and manifestations of the effect of distant intercellular interactions (DII) in different geographical latitudes in the USSR during synchronous experiment Novosibirsk-Norilsk in polar night. Vital capacity of cellular culture Rh was examined with the account of the quantity of cells per unit of preparation square (SP), mitotic activity (MA), etc.

A distinct seasonal and diurnal dependency of DII and vital capacity of monolayer has been revealed in the analysis of experimental material. There was found the correlation of biological processes at cellular level with the parameters of helio-geomagnetic situation: time and place of the experiment by K-index (local), sign of interplanetary magnetic field, solar flares index. Helio-geomagnetic situation in the examined latitude plays some special role in vital activity of cellular monolayer and DII manifestation.

The data obtained give the possibility to consider the method of cellular cultures and DII as a perspective test for bioindication of different external influences specially in cases when the nature of the factors is complex and diverse or not clear enough.

ADAPTATION AND CIRCADIAN RHYTHMICITY OF LYMPHOID SYSTEM Borodin, Y.I. & Letyagin, A.Y.

The light-dark regimen, locomotor activity regimen and feed regimen are known to be very important for forming and supporting of circadian organization of lymphoid system. These external synchronizers acquire particular importance in cases with scheme of their stages in circadian period to be destroyed. Similar changes are often discovered in human organisms in circumpolar regions. Experimental models demonstrate destruction of routine scheme to cause the changes similar to those ones caused by hormonal injection desynchronization.

The desynchronization in lymphoid system evokes peculiar changes in recirculation and migration of lymphoid cells among lymphoid organs. That is basis of lymphoid system adaptation in initial stages of stress. Acceleration of lymphocytes' recirculation provides high speed contacts of lymphoid cells in resistance reactions of immune system preserving optimal correlation of immunocompetent cells at any moment of time and in any compartment of lymphoid tissue. This state is not normal as the process of proliferation and differentiation of lymphoid cells is violated. Longtime stress cause quantity decrease of lymphocytes in lymphoid organs and structures. That is likely to be one of the sources of immunodeficient forming are discovered in migrants' organisms in circumpolar regions.

HUMAN THERMOREGULATION AFTER ADAPTATION TO COLD. M.A. Yakimenko. Institute of Physiology, Academy of Medical Sciences, Siberian Branch, Novosibirsk, 630090, USSR

The thermoregulatory system in builders of Siberia was studied in thermal comfort and under the test cooling. Under these conditions the following parameters were registered: tympanic temperature, skin temperature in 10 points (T_{sk}), oxygen consumption (\dot{V}_{O_2}), neck muscles electrical activity (EMG), minute volume of breath (\dot{V}_E), respiratory rate (F), temperature (T_{re}) and humidity (W_e) of expiratory air, the number of skin cold-sensitive points on an arm (N) and also oxygen consumption during the dozed exercise as a step-test ($\dot{V}_{O_{2E}}$). The investigations showed, that the cold adaptive state in builders who constantly work outdoor is characterized by the decreased values of T_{sk} , \dot{V}_E , F, T_{re} , W_e , \dot{V}_{O_2} at rest (N) and the increased values of oxygen utilisation and $\dot{V}_{O_{2E}}$. Thus, the physiological advantages of a cold adapted man consist of decreasing of sensitivity to cold and the energetic expenditure for temperature homeostasis and of the utilisation additional heat production of the working muscles in thermoregulatory system. The last is due to adaptive changing the muscle contraction energetics.

THE ALASKAN IDITAROD: A STUDY OF BIOMEDICAL STRESS
C. Pierce, V. Stillner, M. Popkin, A. Callies.
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MA, University of Kentucky, Lexington, KY, and
University of Minnesota, Minneapolis, MN, USA.

Over the course of 7 years mushers in the 1100 mile Iditarod dog-sled race were studied. This race was considered a model for prolonged competitive stress. Analyses of biological, sociological and psychological data were made. The distillate of the study permitted an explanation of 65% variance in understanding the chances of completing the race in the upper half of finishers. Critical factors were: 1) a relatively low hemoglobin value at the start of the race; 2) a very strong endorsement for racing by a significant other and; 3) a low score for "lies" in a psychological test. The concept and usefulness of needing biological, sociological and psychological data in understanding and predicting stress is elaborated.

THE INFLUENCE OF COLD ADAPTATION ON THE CHEMICAL CONTROL OF VENTILATION. Krivoschekov, S. G., R. C. Roach, P. H. Hackett. Institute of Physiology, Siberian Department of Academy of Medical Sciences, USSR, Novosibirsk, Siberia, College of Health Sciences, University of Alaska, USA.

Living and working in a cold environment imposes stress on nearly all physiological systems of the body. The control of breathing, a complex integrated mechanism, is important in determining the body's responses to lung disease, trauma and environmental stresses such as cold, heat and high altitude. Indeed, the ventilatory response is the first response of the body to the threats of hypoxia and hypercapnia. The influence of cold upon the chemical control of breathing is essentially unexplored. A preliminary study in Novosibirsk, Siberia found that men exposed every day to cold had significantly lower carbon dioxide ventilatory responses (HCVR) than men exposed to a heated indoor environment every day. In the cold exposed subjects the HCVR slope value was 11.4 ± 0.9 versus 15.75 ± 2.3 in the control subjects, $p < 0.05$. To confirm these preliminary data we studied the hypoxic and hypercapnic ventilatory responses before and after ten days of cold exposure in ten healthy volunteers. Cold exposure consisted of two hours sitting naked in a chamber at 13 degrees C each day for ten days. Cold acclimation was evaluated by measuring core body temperature and pressor response to cold water (3 degrees C) face immersion for three minutes. We expect that hypercapnic ventilatory sensitivity will decrease after cold acclimation. The results will be presented and the health implications of altered control of ventilation in cold environments discussed.

Supported by the University of Alaska and the Institute of Physiology, Siberian Department of Academy of Medical Sciences, USSR, Novosibirsk, Siberia.

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SPECIFICITIES OF ADAPTATION REARRANGEMENTS IN ABO-RHIGAL AND NEW-COMING POPULATION OF ALASKA AND CHUKOTKA IN THE PROCESS OF INTENSIVE PHYSIOLOGICAL LOADS. A.A. Aidaraliyev, A.L. Maximov. Institute of Biological Problems of the North, Magadan, FEB, USSR

There were examined 10 Natives both from Alaska and Chukotka and new-comers with the term of living in the Far North during more than three years and 9 men participants of the "Bering Bridge" international expedition. It was ascertained that in Natives of Alaska and Chukotka, despite high adaptiveness, the physiological reserves are lower than those of new-comers. According to the analysis of cardiac rhythm models, obtained from the examined individuals, and in conformity with Na and K electrolyte indices in saliva, being collected 6 times daily, there were found out changes in circadian organization of organism physiological response. Thus, in aboriginals in response to stressing effect there occurred the destruction of 24 hours' periodics in electrolyte excretion and the appearance of ultradian 12 hours' rhythms. It was ascertained that biosocial adaptation payment in aboriginals was high. Probably, all this determines low functional reserves in aboriginals and a high level of morbidity and less duration of life.

PROGNOSIS OF THERMOTOLERANCE IN MAN BY BLOOD REACTION AS A RESPONSE TO DOSE COLD EXPOSURE. L. Kim, E. Kim, V. Kulikov. Institute of Clinical and Experimental Medicine of the Siberian Division of the USSR AMS, Novosibirsk.

The investigation of the main parameters at the oxygen transport system during the process of human adaptation to northern regions will give information about roll of fetal hemoglobin as an index of human cold tolerance.

Group one was not adapted to cold, and group two was adapted to cold ("warm" and "cold" groups). When people from "warm" group were exposed to low temperatures (12-13°C) the increase of the erythrocytes concentration (up to 109.8%), hemoglobine (105.3%), haematocrit (105.3%) and fetal hemoglobin (160%) against the initial level registered.

In the "cold" group the decrease of the erythrocytes concentration (94%), fetal hemoglobin (98%). On the whole it may be concluded that the response reactions of the fetal hemoglobin on cold stress is the informational index of human cold tolerance.

OXYGEN-TRANSPORT FUNCTION OF BLOOD IN PATIENTS WITH CHRONIC LUNG DISEASES IN DIFFERENT CLIMATO-GEOGRAPHICAL REGIONS. V. Kulikov, L. Kim, E. Kim, E. Ruzakova. Institute of Clinical and Experimental Medicine of the Siberian Division of the USSR AMS, Novosibirsk.

A number of haematological indices in patients with chronic lung diseases living in Central Asia (Samarkand) and in the Far North (Norilsk) has been analysed. In the "southern" group there were found the signs of anaemia and low content of methaemoglobin and normal blood oxygenation in capillars.

For the patients from the "northern" group an abnormal content of all the forms of haemoglobin, methaemoglobin, oxihemoglobin, fetal haemoglobin and the rise of haematocrit and reduction of blood oxygenation in capillars was typical characteristic.

It has been shown that low level of methaemoglobin in the "southerners" was caused by high activity of G-6-PDG, whereas methaemoglobin in the "northerners" depends on reduction of the activity of NADPH-dependent methaemoglobin reductase.

Different strategy of biochemical adaptation of people in northern regions is due to different necessity water and lipid-soluble vitamins contributing to regulation of metabolic processes on the whole and peroxidation system in particular.

THE OCCURRENCE OF DIABETES MELLITUS AND IT'S COMPLICATIONS AMONG ALASKA NATIVES. Schraer, C.D., Murphy, N.J. Alaska Area Native Health Service, Anchorage, Alaska, USA. 99510

In the past, diabetes mellitus (DM) was documented to be a rare condition among Alaska Natives, especially Eskimos. Clinically, DM was felt to be increasing and in 1986 a computerized search of medical records was performed to assess this impression.

This study used a computerized medical records system, Patient Care Information System (PCIS), and subsequent chart audits to establish a registry of Alaska Natives meeting World Health Organization (WHO) criteria for DM. Age-adjusted prevalence rates per 1000 in 1985 were 15.7 for all Natives, 8.8 for Eskimos, 22.0 for Indians, and 27.2 for Aleuts. By 1987, the overall prevalence had increased by ten percent to 17.3 per 1000. The rate for Eskimos rose to 10.6, for Indians to 23.8, while Aleuts were essentially unchanged at 26.8.

Preliminary information on complications indicates that incidence rates of endstage renal disease, amputation, myocardial infarction, and stroke are high or higher than in other diabetic populations in the USA. Those regions of Alaska with the longest history of "western" contact have the highest rates of DM.

DM and it's complications are significantly increasing in the Alaska Natives. This population presents an unusual opportunity for primary, as well as, secondary DM prevention strategies.

DIABETIC COMPLICATIONS IN NORTH AMERICAN INDIANS.

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More recent studies of diabetic complications in North American Indians show alarming rates of atherosclerotic disease. Forty eight percent of the population with non insulin dependent diabetes in Kahnawake, Quebec, Canada have ischemic heart disease.

In this century, North American Indians have first shown increasingly high rates of diabetes, then diabetes with early rates of complications and now the first signs of diabetes with high rates of coronary artery disease. In contrast to the varying rates of coronary artery disease, diabetic retinopathy appears to occur in similar rates in all races of the world, including North American Indians.

Why are the rates of macrovascular disease changing? What is the role of lifestyle, smoking, hypertension, obesity and lipids? This paper reviews the current knowledge of macrovascular and microvascular complications in North American Indians with non insulin dependent diabetes.

Key Words: North American Indian
Noninsulin dependant diabetes
Atherosclerosis

DIABETES MELLITUS, IMPAIRED GLUCOSE TOLERANCE AND SOME RISK FACTORS OF DIABETES MELLITUS IN NATIVE AND NEWCOMING POPULATION OF CHUKOTKA. E.G. Stepanova, E.V. Shubnikov. Institute of Internal Medicine, Novosibirsk, USSR.

The data on lower prevalence of diabetes mellitus (DM) and impaired glucose tolerance (IGT) in natives than in newcomers of the North are available.

In Chukotka during the year 1988 according to the data of Regional public health services DM morbidity made up 1 case per 1000 natives among the persons over 15 years of age.

During the survey of the representative samples of men, aged 30-59, residents of coastal settlements of Chukotka (222 natives, 271 newcomers) DM was not noted, IGT prevalence made up 4.9% in natives and 16.3 in newcomers.

The relationship between IGT and systolic arterial hypertension, hypercholesterolemia, hypertriglyceridemia and consumption of refined carbohydrates was noted. Natives consume less sugar, they have lower levels of blood lipids, lower prevalence of arterial hypertension in comparison with newcomers, that is associated with lower prevalence of IGT in natives.

The representative survey of 800 Chukotka natives, males and females, aged 25-64, should detect the true prevalence of DM and IGT. (Soviet-Canadian project).

THE EFFECTIVENESS OF A TEAM APPROACH TO DIABETES PROGRAM MANAGEMENT IN INTERIOR ALASKA. B.J. Baker. Chief Andrew Isaac Health Center, Tanana Chiefs Conference, Inc. Fairbanks, Alaska, USA 99701

In the interior region of Alaska, the geographic size of Texas, the need to monitor the prevalence and care of Native Alaskan diabetic patients was recognized in light of the dramatic increases in rates seen in Southwest USA American Indians.

In 1987 only 31.3% of all diabetic patients followed by an ambulatory clinic had appropriate follow up care and adequate chart information. A Diabetes Task Force was designated to develop and implement a comprehensive diabetic program. A key concept in the pragmatic approach to the problem was an interdisciplinary management team consisting of 2 registered nurses, physician, patient educator, dietician, village coordinator and pharmacist.

Over a 31 month period, the rate of follow up care and adequate information increased to 71.6%. A significant increase was seen in recorded glucose control, EKG, fundoscopic eye exams, triglyceride and cholesterol, foot exams, diet and exercise instruction, diabetic education, creatinine/BUN and urinalysis. Also implemented were prevention initiatives, research in cross-cultural communications and a pending prevalence research project.

GEOGRAPHICAL DISTRIBUTION OF DIABETES AMONG THE NATIVE POPULATION OF CANADA: A NATIONAL SURVEY. T.Kue Young¹, Endke J.E. Szathmar², Susan Evers³, and Brian Wheatley⁴. ¹ University of Manitoba, Winnipeg, MB, ² University of Western Ontario, London, ON, ³ University of Guelph, Guelph, ON, ⁴ Medical Services Branch, Health and Welfare Canada.

The prevalence of diagnosed diabetes was determined for 76% of the registered Indian and 100% of the NWT Inuit population of Canada from case registers maintained by the Medical Services Branch. A total of 5,324 cases were ascertained. The age-sex adjusted rate varied among the Indians from a low of 0.8% in the NWT to a high of 8.7% in the Atlantic region. Among the Inuit, the prevalence was 0.4%. The prevalence was higher among females than in males in the Indian (but not in the Inuit) population. An ecologic analysis was performed with the crude prevalence of individual communities regressed upon independent variables that included longitude, latitude, geographic isolation, culture area, and language family. Stepwise regressions were also carried out within the Algonkian, Athapaskan and Eskimoan language families. For the national sample, composite language phylum-culture area predictors were used. Six predictors: latitude, Northeast-Algonkian, Northeast-Iroquoian, Subarctic-Algonkian, Plains-Siouan, and Plains-Agonkian, ranked here in decreasing order of importance, explained 48.4% of the variation in diabetes prevalence in the national sample. All the named groups had rates significantly greater than found in the reference group of Arctic-Eskimoans. We conclude that the distribution of diabetes among Canadian Natives is determined by both genetic and environmental factors.

A REVISED WEIGHT LOSS PROGRAM IN MANITOBA NATIVE COMMUNITIES. Monaca Sinclair. Medical Service Branch, Health and Welfare Canada, Winnipeg, Manitoba, Canada, R3C 0H4.

Recent studies have shown a high prevalence of overweight in Indian communities. Additionally a high prevalence of hypertension, cardiovascular disease and diabetes has been documented in some Indian communities in Canada. The Indian Survey of Nutrition Canada, 1975, found a higher percentage of Indian people at risk than found in the national survey. Diabetes appears to be affecting a greater number of Indian people across the country today, and appears to have increased over the past two decades.

A needs assessment in 1981 indicated 64% of 28 Mo. Indian communities felt the need for a weight control program. In 1982 "Slim-10" was designed for Indian peoples and distributed to all Mo. Indian communities. Presently "Slim 10" is being revised to incorporate the healthy weight philosophy outlined in "Promoting Healthy Weights: A Discussion Paper." Some of the healthy weight components being introduced into the revised "Slim-10" are: exercise, self-esteem, having a sponsor and life-style behaviour changes. The manual will be tested in three communities. It will also be distributed to various health care professionals for comments. The results of the pilot testing and comments will be used on the revised draft manual to form the completed manual.

INCREASED VASCULAR COMPLICATIONS IN DIABETIC NATIVE CANADIANS. Stuart A. Ross, Gordon H. Fick, University of Calgary, Calgary, Canada.

The prevalence of diabetes is high among natives (N) living on Canadian Indian Reserves, but little is known about the prevalence of diabetes complications. As part of a large population-based epidemiologic study of diabetic retinopathy (DR) and related factors, diabetic subjects on all 5 Alberta Indian Reserves were assessed. 102 insulin users (IU) and 103 non-insulin users (NIU) received graded stereofundal photography. All subjects were assessed for microalbuminuria (μA) (15-200 $\mu g/min$) and macroalbuminuria (MA) ($>200 \mu g/min$). Overall rates of DR between N and non-N were not different. However, IU N had significantly more severe DR than IU non-N ($p=0.0096$). NIU N had similar severity of DR as NIU non-N. A significantly higher number of IU N had hypertension compared to IU non-N. All N subjects had a higher prevalence of μA and MA ($p=0.0134$). Serum C-peptide estimations on all N and non-N IU demonstrated only 23% of N IU could be considered as truly insulin dependent compared to 62% of non-N IU ($p=0.0030$). The prevalence (P) of DR was compared among true type I's (A), type II IU (B), and type II NIU (C). In N and non-N, group B was significantly different from C ($p=0.0021$). These data suggest that insulin use may be a contributing factor in DR; that N diabetics are prone to more serious DR, μA , MA , particularly the type II IU. The high proportion of N type II IU is of considerable concern with many N diabetics possibly on insulin unnecessarily. These treatment concerns, associated with the high prevalence of vascular complications, suggest that new treatment and screening strategies are required on Native Reserves.

A HEREDITARY MITOCHONDRIAL MYOPATHY WITH LOW SUCCINATE DEHYDROGENASE ACTIVITY IN NORTHERN SWEDEN. H. Linderholm, Department of Clinical Physiology, University of Umeå, S-90185 Umeå, Sweden.

A previously described hereditary metabolic myopathy with paroxysmal myoglobinuria due to abnormal glycolysis found in Northern Sweden is reviewed and new results reported. In the chronic stage of the disease the patients had a normal maximum voluntary isometric muscle strength but a low exercise tolerance and a hyperkinetic circulation during prolonged exercise with large muscle groups. In the acute phase of the disease they developed severe acidosis, muscle paralysis and myoglobinuria. Since 1960 two out of 16 known patients have died during an acute attack and one is permanently disabled. Results from recent examinations on muscle biopsy from one of these patients showed a low succinate dehydrogenase (SDH) activity in biochemical substrate analysis and in muscle tissue specimens stained for SDH. Further electron microscopy showed mitochondrial abnormalities. As SDH is involved in the Krebs' cycle as well as in the complex II of the respiratory chain its low activity may explain the abnormal glycolysis as well as a limited oxygen uptake by the muscles. However, an abnormality in some other enzyme complexes of the respiratory chain can not be excluded. The findings allow the disease to be classified as a mitochondrial muscle disease. Analysis of the SDH activity in muscle biopsies also makes the diagnosis of the disease more specific. The diagnosis is easily missed by physicians and increased knowledge about the disease and how to diagnose it is important. Accidents such as deaths and remaining paralysis after an acute attack during military service might have been avoided if the disease had been recognized and proper advice had been given to the patients.

CLINICAL FEATURES AND HLA ALLOANTIGENS IN TLINGIT INDIANS WITH RHEUMATOID ARTHRITIS. J. Lee Nelson, Georgiana Boyer, David Templin, Anne Lanier, Rob Barrington, Annette Harpster, Eric Mickelson, Thomas Krahn, John Hansen, Arctic Investigations Program, Centers for Disease Control, Anchorage, Alaska, USA.

We previously reported an unusually high prevalence of rheumatoid arthritis (RA) in Tlingit Indians of Alaska's Southeastern coast. We have examined the clinical features and HLA alloantigen of 29 Tlingit patients, all of whom met the 1987 ACR criteria for RA. All patients were rheumatoid factor positive; 24 over 29 had significant FANA titers (over 40), and almost half had rheumatoid nodules. A positive family history of RA was reported by all but four patients; in 12 of the 29, the RA occurred in a first degree relative. The HLA-DR type associated with arthritis in these patients was neither DR-4 nor DR-1. The predominate DR alloantigens in both patients and a healthy Tlingit control group appeared to be DRw6. HLA B-27 was found in 9 over 29 patients and in 4 over 18 controls. The HLA characteristics of the Tlingit population have not been studied previously. Further investigation is planned.

CIRCADIAN VARIATION OF FIBRINOLYTIC ACTIVITY AMONG ESKIMOS IN GREENLAND. Johansen, L.G., Gram, J., Kluff, C. and Jespersen J. Nanortalik District, Greenland, Section of Thrombosis Research, South Jutland University Center, Esbjerg, Denmark and the Gaubius Institute, TNO, Leiden, The Netherlands.

This study concerns the fibrinolytic system in blood samples collected every 4 h during 24 h from Eskimos (n=10), reported to have low prevalence of myocardial infarction. We found no differences in plasminogen activator inhibitor (PAI)-1, determined in blood stabilized with citrate or in blood stabilized with citrate containing antiplatelet agents. Recent studies on circadian variation of blood fibrinolytic activity have suggested a relation between a depressed morning fibrinolytic activity and the frequent onset of myocardial infarction at that time in Caucasians. We observed a significant change in the activity of tissue-type plasminogen activator (t-PA; $p < 0.01$) and in the activity of plasminogen activator inhibitor (PAI; $p < 0.001$) during 24 h. The t-PA activity increased during the morning, remained elevated during the early afternoon and decreased during the evening and night, while t-PA antigen, PAI activity and PAI-1 antigen showed a reverse pattern. It is noted that eskimos show a shift in the sinusoidal pattern of t-PA activity and PAI activity compared to reported results in Caucasians. Furthermore, our observations demonstrate that it is of utmost importance to standardize the collection of blood samples in order to obtain reliable information on the fibrinolytic system in Eskimos.

MORPHOFUNCTIONAL STATE OF TRACHEOBRONCHIAL TREE OF ABORIGINAL AND NEWLY-ARRIVED POPULATION OF CHUKOTKA. Lutsenko, M.T., USSR, Nizhnevskaya, Institute of Physiology and Pathology of Respiration, Siberian Branch of the ANS.

Analysis of disease incidence and course peculiarities of lung non-specific processes indicate that respiratory system state is greatly influenced by geographic environment and thermoclimatic conditions of airways. Among these factors estimation of the following values is of great importance: environmental temperature, air humidity, air movement velocity, adaptation duration of tracheobronchial tree to inspired air condition and bronchial mucosa tissue metabolism.

Meteorological conditions of Chukotka are extremely complex and contrasting for different months. Incidence of acute non-specific inflammatory diseases of the airways has a good correlation with unfavorable climatic conditions in this region.

Pulmonary hemodynamics of people being residents of the North-East of the USSR for 10 - 15 years changes abruptly with blood flow redistribution towards middle and upper lobes in comparison with lower ones. Hypertension with regional spasm of pulmonary arterial vessels occurs. Aboriginal population exhibits a high level of blood pressure in pulmonary artery and minute pulsating blood flow. Hemodynamics adaptation impairment enhances the risk of occurrence of lung inflammatory processes. Parabronchial areolar tissue is markedly oedematous with high content of mast cells. Antioxidant activity accompanied by membrane integrity destruction of bronchial mucosal epithelial cells is reduced.

There is a change in mucosa membrane epithelium structure: signs of metaplasia occur, epithelial cells exfoliate and basal membrane is denuded. Ciliary apparatus loses its kinetics over the most part of bronchi. There is evidence of destructive changes of cilia and microvilli. Proteolytic enzymes easily pass into underlying connective tissue of mucosa through basal membrane.

Compensation signs of transport, secretion and protection functions of mucosa are found in 60-62% of examined subjects, suggesting marked structure-genetic plasticity of body adaptability of aborigines to ecological conditions in comparison with newcomers, whose adaptability to the corresponding conditions is significantly decreased.

INFLUENCE OF GENETICO-DEMOGRAPHIC FACTORS IF ETIOLOGY AND PATHOGENESIS OF CHRONIC DISEASES IN NORTH SIBERIAN ABORIGINES. V.P. Puzyrev, S.V. Letez, L.P. Nazarenko, V.I. Pankhilov, Population Genetics Laboratory, Institute of Medical Genetics, Tomsk, USSR

The present genetic structure of circumpolar populations results from evolution of their gene pools under specific environmental and social circumstances. This is a good reason for studying peculiarities of hereditary diseases' (HD) prevalence and understanding of etiology and pathogenesis of common (non-Mendelian) diseases. Complex medico-genetic examination of health status in the North Khanty population has shown that a portion of autosomal recessive HD is much lower compare to the adjacent Russians. Differences in spectrum of autosomal dominant HD were observed. Clinical and genetic study of cardiovascular disease permitted us to put forward and support a hypothesis about nosological independence of ischemic myocardialopathy in the Khanty people. A multidimensional statistical analysis has shown that thinning down but not excessive body weight appears to be a risk factor (RF) for ischemic changes in ECG in the Khanty males. On the contrary, none of the well known RF (disturbance of lipid metabolism, hypertension, subject's age) can be considered as such for myocardial ischemia in the Khanty females. Relationships of arterial hypertension and hyperlipoproteinemia with polymorphic loci ABO, MN, Es-D, PTC) have been established. Genetic variability of these loci does not contribute more than 12% to the total variability of the above mentioned conditions. An effect of "major gene" was found for diastolic arterial blood pressure and serum total cholesterol. Also, female fertility and endogamy level influence the mean values of arterial blood pressure and iron-binding capacity of transferrin. The suggestion that population health is likely to depend upon genetic structure of the population in question is grounded.

THE CULTURAL AND POLITICAL CONTEXT OF INFORMED CONSENT FOR NATIVE CANADIANS. J.M. Kaufert, J.D. O'Neil, W.W. Koolage, Department of Community Health Sciences and Department of Anthropology, University of Manitoba, Winnipeg, Canada.

The signing of a consent agreement is a pivotal event in the negotiation of trust in the doctor/patient relationship. This paper analyzes consent agreements as biomedical rituals embedded in the broader sociopolitical and cultural context of clinical interaction and health advocacy for Indian and Inuit patients. We examine the consent process through the use of case examples of Native patients' experience in negotiating consent with health professionals and medical interpreters in urban hospitals and Northern Nursing Stations.

The study is based on five years of observation of Native patient encounters involving medical interpreters in hospitals and community health clinics in Manitoba and the Keewatin Region of the Northwest Territories. Encounters were videotaped and participants interviewed to determine their respective understandings of information communicated. The study found that achieving informed consent in cross-cultural situations is highly dependent on the extent to which the medical interpreter is able to function as a patient advocate. Social, cultural and political factors which limit the medical interpreter's advocacy function are elaborated.

RESEARCH IN A NATIVE COMMUNITY: KEY ELEMENTS FOR SUCCESS. L.T. Montour, A.C. Macaulay. Kateri Memorial Hospital Centre, Kahnawake, Quebec, Canada, J0L1B0 & The Department of Family Medicine, McGill University, Montreal, Quebec, Canada, H3T1E2.

The precise health status of most Aboriginal nations across Canada is not known. Research into the many pressing health problems of Native communities is necessary as the logical first step towards devising solutions. In this process, it is essential that researchers pay attention to the community. If researchers establish a relationship with community leaders based upon mutual trust founded on consultation, increased collaboration with research by individuals within the community will follow.

Aboriginal communities understandably are wary of outsiders who propose to do studies. Researchers who propose to work in areas which the community perceives as helpful both to individuals and the group at large will overcome this barrier. The final step for maximum benefit from research in Native communities requires returning results to the community, ensuring that complete results are available, explained and understood.

In our hands, this last step of returning research results to the community has significantly increased community awareness, and as a tool for health education deserves to be further studied.

THE HEALTH STUDIES PROGRAM: AN EXAMPLE OF A STRATEGIC PLAN FOR HEALTH RESEARCH. DJW Hunter Grenfell Regional Health Service, St. Anthony, Canada.

The strategic plan for the Health Studies Program of the Grenfell Regional Health Service is described in order to illustrate a model for the conduct of research within public health. This model is comprised of three elements: 1) the collection of data, 2) the analysis of data and 3) the application of findings to communities. The strategic plan consists of a mission statement, a strategic direction, outcome goals and process goals. The specific goals and objectives are reviewed in the context of the mission statement which is the conduct research which will improve the health of the people of Labrador.

A BRIEF HISTORY OF THE DEVELOPMENT OF NATIVE OWNED HEALTH PROVIDER AGENCIES IN ALASKA WITHIN THE CONTEXT OF PAST, CURRENT AND ANTICIPATED HEALTH AND SYSTEMS ISSUES. D.P. DEGROSS The Alaska Native Health Board, Inc., Anchorage, Alaska, USA.

National attention to American Indian and Alaska Native Health Issues within the United States began with the Parran Report in 1954. Dr. Parran, a physician sent by the U.S. Public Health Service to look at the problem of tuberculosis among Alaska Natives, produced a report that stimulated the U.S. Congress to approve larger appropriations for the Indian Health Service (IHS) nationwide.

The 1960s and early 1970s, characterized by consumer advisory boards of the Johnson administration, bore final fruit with the passage of the Public Law 93-638 Indian Self-Determination and Education Assistance Act in 1974. P.L. 93-638 allowed Indian and Alaska Native Tribes to assume management control of programs conducted in their behalf by Federal agencies. In the ensuing "take over" of programs, the Alaska Area experienced more activity than any other IHS Area in the country.

This "tribalized" version of IHS in Alaska is not immune from the same market forces that are eroding the entire U.S. Health Care System. Double digit inflation in the private health care industry, driven by high technology and medical personnel costs and high drug costs, is eroding the ability of the tribally-operated system to survive into the 21st century.

The 1990s will bring an increase in the amount of IHS resources brought under tribal control in Alaska and the United States, but serious issues on the horizon threaten the existence of all health care in the United States.

RESEARCH ON INDIAN RESERVES - AN INDIAN PERSPECTIVE. C.S. Prince. (1) Department of Community Health Sciences, the Northern Health Research Unit, University of Manitoba, Winnipeg (2) The Pas (3) Nelson House (4) Norway House (5) Manitoba, Canada (6) Indiana University, School of Medicine, Indianapolis, Indiana, United States of America.

The Northern Health Research Unit is an academic unit of the Department of Community Health Sciences in the Faculty of Medicine, University of Manitoba. It consists of full-time faculty members within that department who have an active research interest in northern health care issues. The goal of the Northern Health Research Unit is to conduct community-based research into problems relevant to the health of native and northern peoples in Canada.

A Collaborative Epidemiology Study between the universities of Manitoba and Indiana are conducting a study on dementia funded by a research grant from The National Institute on Aging, United States of America. The purpose of the study is to test the hypothesis that Indians have lower prevalence rates of Alzheimer's disease than non-Indians.

This paper will discuss the preparation and consultation involved with Indian people at both the community and the university levels. A personal view from this experience is shared by the author on the value of having Indians in areas of research pertaining to Indians to minimize cultural dysfunction.

THE HEALTH OF THE ESKIMOS: AN UPDATED SELECTIVE BIBLIOGRAPHY. B. Sokolov, J. Braund-Allen, R. Fortuine. The Arctic Environmental Information and Data Center/University of Alaska Anchorage, Anchorage, Alaska, U.S.A., 99501.

The bibliography focuses on health-related literature pertaining to the Eskimos and Aleuts of AK, Canada, and the USSR, and serves as an update to R. Fortuine's THE HEALTH OF THE ESKIMOS: A BIBLIOGRAPHY, 1857-1967. Entries are made through 1988.

The completion is a joint effort by the University of Alaska Anchorage's (UAA) Arctic Environmental Information and Data Center and Institute of Circumpolar Health Studies, and the Alaska Health Sciences Library. It is being directed by R. Fortuine of UAA's Biomedical Program. Upon completion of the project, it is intended that all items listed in the update, as well as many listed in the original bibliography, will be available from the Alaska Health Sciences Library. The bibliography is scheduled for publication in early 1991.

NORTHERN NEWFOUNDLAND AND LABRADOR HEALTH PROMOTION SURVEY. D.S. Edge, D. Hunter, S. Webb. Memorial University of Newfoundland, St. John's, NF, and Grenfell Regional Health Services, St. Anthony, NF, Canada.

Canadian health knowledge, beliefs, attitudes, intentions, and behaviors were canvassed in the 1985 telephone survey entitled Canada's Health Promotion Survey. In this survey, 849 Newfoundland households responded, resulting in a survey response of 81%. The population characteristics of Labrador are unique compared with the remainder of the province as two aboriginal groups, Innu and Inuit, inhabit the northern interior and coast of Labrador. The mosaic of Innu, Inuit, Settler, French, and Anglo-Canadian backgrounds in Labrador are served primarily by the Grenfell Regional Health Services. Given the cultural differences within the catchment area served, the researchers maintained that a modified version of the Canada's Health Promotion Survey needed to be formulated before quality program development could take place. During the questionnaire development phase, input was sought from aboriginal organizations with the clear acknowledgement that results would be shared for community development in health promotion activities.

The randomized telephone survey with a projected sample size of 1042 will be commencing in early 1990. The baseline results on health attitudes, beliefs, and practices will allow the researchers to make culturally relevant recommendations for community development and public health nursing programming.

HEALTH SERVICE IN GREENLAND. J. Misfeldt. The Chief Medical Officer in Greenland.

The organization of Health Service in Greenland is in many ways ideal. It is unified with an almost complete integration between primary health care and hospital care, it is highly decentralized and it is free of charge and even prescribed drugs are free. 80% of the population live in small urban communities, where a small hospital admits hospital care as well as outpatient visits. This structure is bound up with geography, climate and the vulnerable communications.

However, the structure itself has a built-in vulnerability. It demands doctors with a broad professional background including surgery, anesthesia and obstetrics and general practice and social medicine as well. The increasing and early specialization of the medical profession makes this an almost impossible demand. The population basis in local communities is inadequate for employment of specialists, and centralization of all specialized service is not possible as from a security point of view a minimum of local hospital care must be. The Greenland Health Service attempts to solve this dilemma by strengthening the only specialized hospital in Greenland by employing a broader spectrum of specialists and by stressing that not only should patients be received for treatment at this hospital, but teams of doctors and nurses should even visit the different hospitals to perform surgery and to offer specialist's visits. Hopefully this will also enable the staff at local hospitals to attach more importance on preventive medicine.

COMMUNITY HEALTH AND HEALTH PROMOTION PRIORITIES FOR BAFFIN ISLAND. Paul Cappon. McGill/Baffin Programme. McGill University, Montreal, Canada.

In the context of a comprehensive community health assessment of Baffin Inuit, the current system of community health measures and health promotion initiatives was examined and priorities for the 1990's determined. The evaluation of current community health methods and future priorities was carried out by examination of mortality and morbidity data, meetings with key informants, and observations validated by visits to several communities on Baffin.

Violent deaths should be considered the most urgent community health priority. These preventable deaths account for most mortality among the population, for almost all deaths among youth, and for the most years of life lost per death. Other priorities are smoking control and prevention, improved housing, and promotion of traditional diets.

The evaluation of current community health practice concludes that the CHR network is poor, that service integration has not been done, and that community mental health services are inadequate.

From previous experience and the evaluation, an important conclusion is that health promotion in settlements should be provided, not by health professionals, but by Inuit Community leaders, either through existing health committees or through small groups established for that purpose. The Inuit health promoters should receive ongoing and basic health information from a service-integrated health promotion team based in Iqaluit, and drawing also on resources of the Division of Health Promotion in Yellowknife.

A second important conclusion is that empowerment through community development is an essential feature of successful health promotion. Locally-initiated health promotion should concentrate on Inuit areas of comparative advantage in order to build a positive sense of accomplishment and ability to control their lives. The Inuit traditional diet, superior through its lower fat content and resulting in lower rates of cardiovascular disease, should be strengthened through health promotion programmes and shown as an example of what control the Inuit people can achieve over their own health.

WAYS OF TALKING ABOUT ILLNESS IN A MANITOBA ANISHINABE (OJIBWAY) COMMUNITY. L.C. Garro. Northern Health Research Unit, Department of Community Health Sciences. University of Manitoba, Winnipeg, Canada.

Although there is an extensive ethnographic literature on how the Anishinabeg (also known as Ojibway or Chippewa) interpret and respond to illness, much of it is based on field research carried out prior to 1940 and motivated by a desire to reconstruct the pre-contact situation. Relatively little work has been done on how lay people in contemporary communities think about illness and make decisions about treatment. Based on fieldwork in a Manitoba Anishinabe community, this paper describes three ways people talk about and categorize illness experience. To refer to an illness as either an "ordinary" sickness, a "white man's sickness" or an "Anishinabe sickness" is to say something about the cause of the illness and its appropriate treatment. These ways of talking about and responding to illness reflect both past and present, both continuity and change. Case examples are presented to show the importance of these distinctions to ongoing illness treatment decisions.

A FEASIBILITY STUDY FOR A NORTHERN HEALTH NETWORK. M.M. MacPherson. MacPherson Research and Consulting and the Yukon Science Institute, Whitehorse, Yukon.

The establishment of a community health network for communities and organizations in northern Canada and Alaska presents opportunities to share health research findings, exchange information, resource people, offer positive role models through community health case studies in the circumpolar world. However distances between communities in Yukon and Alaska and the absence of such a network currently act as barriers to achieving maximum support and learning among northern communities and organizations.

After extensive consultation with communities, aboriginal organizations and government agencies in Alaska and the Yukon this paper outlines options for the establishment of a northern health network, including the roles such a network could play throughout the north. The use of northern broadcasting networks including community radio and TV, film, video, print media, aboriginal languages and customs are discussed, along with new linkages and training opportunities, links with community health institutions and international development agencies specializing in primary and community health systems.

A SURVEY OF ATTITUDES OF HEALTH CARE PERSONNEL IN NORTHERN MANITOBA AND THE KEEWATIN DISTRICT TOWARDS EMERGENCY AEROMEDICAL EVACUATION SERVICES. J.P. DOOLEY & R. MUNDY

In many isolated communities of northern Manitoba and the Keewatin, definitive emergency care can only be obtained by aeromedical evacuation.

A survey of those responsible for primary care in these isolated areas was undertaken in 1988. A total of 43 replies were received. From these responses, consistent themes regarding essentials of local and regional aeromedical evacuation services and training of primary care personnel as well as the implications of same were noted. These included a reasonable level of satisfaction with facilities and aircraft available as well as telephone consultation.

However major deficits were perceived in orientation to aeromedicine support of efforts to upgrade knowledge in aeromedicine, and clear policies and procedures dealing with medical evacuations. Further concerns were expressed regarding levels of responsibility of personnel involved in evacuations.

These results are documented and recommendations to address the perceived shortcomings are presented and discussed.

TRADITIONAL MEDICINE AND MENTAL HEALTH CARE. L.M. Jilek-Aail & W.G. Jilek. Department of Psychiatry, University of British Columbia, Vancouver, Canada.

An overview of folk therapy practices operating outside official mental health care systems and based on oral traditions rather than on a codified body of medical knowledge, is presented in the context of the authors' own experiences with traditional healers in different cultures. The presentation is focussed on northern peoples and on their healing methods as still practised today.

Different categories of traditional healers and treatment procedures are described and illustrated with the authors' photographic material. The overview encompasses physical treatments (physiotherapy, thermotherapy, etc.) herbal therapy, divining and magical procedures, shamanic healing, and traditional forms of group therapy involving altered states of consciousness. Questions to be addressed are: Traditional medicine - has it a meaningful role in mental health care today? Collaboration between modern therapists and traditional practitioners - is it possible and how can it be implemented?

PRACTICES AND PERCEPTIONS OF HEALTH OF THE JAMES BAY CREE OF WHAPMAGOOSTUI, NOUVEAU QUEBEC: RESEARCH REPORT. N. Adelson. Department of Anthropology, McGill University, Montreal, Canada, H3A 2T7.

Perceptions of health are dependent upon the complex interrelationship of cultural, historical and environmental factors. Examples of everyday "health" practices of the adult Cree of Whapmagoostui, Quebec are illustrated in this anthropological study of the link between culture and health.

The Cree word that best translates to health in English is: *miubmat'shiu*. It means "being alive well" and connotes a comprehensive notion of the ability to conduct work and social activities. *Miubmat'shiu* implies the well-being of the community as well as the individual. Health is seen as an ideal that one must strive to attain and maintain and is intimately bound to all aspects of men's and women's traditional hunting activities. "Being alive well" is understood in practical terms. Ill health is perceived primarily as not being able to adequately conduct these and other activities.

This research was funded by NHRDP grant #6605-3176-55.

HEALTH ATTITUDES AND BEHAVIORS OF NATIVE ALASKANS IN WESTERN ALASKA. R. Bashshur and R. Quick. University of Michigan School of Public Health. Ann Arbor, Michigan. Yukon Kuskokwim Health Corporation. Bethel, Alaska.

Health attitudes and behaviors were determined for residents of Western Alaska in a survey administered during the winter of 1988-89. One third of the villages in this region were randomly selected for inclusion in the study and 1 in 3 households in these villages were randomly selected to be interviewed. Bilingual interviewers successfully completed questionnaires for 477 households (77%).

The vast majority of the sample population believed that a balanced diet, weight control, regular physical exercise, stress avoidance, regular medical attention and cessation of smoking and excessive drinking were important to health. Nevertheless 41% of respondents did not deny smoking, and 50% of these did not believe smoking cessation was important for health. Similarly, 34% of the population did not deny heavy drinking, and 38% of them did not think it was important to stop.

When those who did not deny smoking were asked if they had tried to stop, 36% said they did not try. Of those who did not deny drinking heavily, 26% did not try to stop.

Western Alaska has high rates of alcohol-related health problems and growing rates of tobacco-related diseases. The attitudes and behaviors with respect to alcohol and tobacco-use exhibited in this study suggest a great need for health education and promotion activities directed at these habits.

OCCUPATIONAL HEALTH IN ALASKA: PROBLEMS AND POTENTIAL. C.M. HILD. The Alaska Health Project, Anchorage, Alaska, U.S.A. 99501

This will be a review of the current status of occupational health in Alaska. The Alaska Right-To-Know law and subsequent Physical Agents law will be discussed in their application. The Asbestos Workers regulations and the recent Painter's Hazardous Materials Certification process will be discussed as potential model legislation.

The success of these programs will be balanced with a counter-point discussion of the number of deaths and injuries that occur on the job and make Alaska the leader in these statistics in the United States. It is becoming clear that there is under reporting of occupational injury and that many deaths related to the fishing industry are not recorded as such. With logging, fishing, air, travel, and falls leading the lists of industries and modes of injury our programs need to focus on how best to address these areas and reduce the trends.

THE CONCEPTS OF HEALTH OF YOUNG INUIT ADOLESCENTS. E.M. Shea. School of Nursing, Dalhousie University, Halifax, Nova Scotia, Canada.

An appreciation of the cultural context of health is essential to develop health programs that are acceptable to and suitable for health care consumers, particularly when health professionals work with consumers of a culture different than their own. The purpose of the study was to explore and describe the concepts of health of young Inuit adolescents from the Canadian Eastern Arctic.

Twenty-four Inuit adolescents between 11- and 14-years old were interviewed regarding characteristics of health, strategies for enhancing health, and their perceived means of learning about health. The findings indicated that the concepts of health of the young Inuit adolescents in this study primarily focused on eating land meat, hunting, working hard, exercising, avoiding tobacco, having strong bodies which looked good and performed well, being helpful, and being happy or in harmony with oneself and family members. Many of the adolescents' concepts reflected the integral relationship between Inuit, animals and the environment as described in the literature on Inuit culture. Implications for practice include suggestions for assessment of individual or group health perceptions, developing health programs for individual or groups of Inuit adolescents, collaborating with family and community, addressing cognitive style, and the promoting of healthy public policy.

THE ROLE OF THE INTERPRETER IN THE PROVISION OF SPECIALIZED MEDICAL CARE

M. Angiyou, G. Esperon-Rysan, C. Gofton, J.A. Deyell Northern Quebec Module - Community Health Department, Montreal General Hospital, Montreal, Canada

The aim is to demonstrate that an interpreter's role is complex, and involves more than direct translation.

The Northern Quebec Module is a liaison service in Montreal which assists the native people of Northern Quebec in obtaining specialized medical care in Montreal. We provide interpreting, nursing, transportation and boarding home services.

The interpreters work very closely with their clients, and the role now includes patient advocacy, being a cultural link, and acting as the patient's extended family.

The presentation concludes with a discussion of the rewards, stresses, and frustrations of this demanding work.

ALLERGIC SYMPTOMS, SKIN TEST REACTIVITY AND SPECIFIC IGE ANTIBODIES IN FINNISH REINDEER HERDERS. K. Reijula, J. Hassi, E. Larmi, M. Hannukainen, L. Malmelund. Oulu Regional Institute of Occupational Health and Department of Dermatology, Oulu University, Oulu, Finland.

Reindeer herding is one of the main occupations in the areas of northernmost Scandinavia. It is the major source of living to more than 4 200 inhabitants of Northern Finland. To determine the prevalence of allergic symptoms among reindeer herders, histories, clinical examinations and skin prick tests (SPT) with 9 inhalant allergens were performed in 211 randomly selected men from 21 to 69 (mean 45) years. Specific IgE antibodies to reindeer epithelium and total serum IgE were evaluated in 90 of them.

Past or present atopic dermatitis was present in 36 (17 %), allergic rhinitis in 29 (14 %) and positive SPT reaction to at least one allergen in 19 (9 %). The prevalence of positive SPT was 0.9 % to cat, 5.7 % to cow, 1.4 % to dog, 0.9 % to house dust mite, 1.9 % to birch, 1.3 % to meadow grass and 0.5 % to mugwort. No positive reactions were found with horse epithelium. Positive SPT to reindeer epithelium was present in only one (0.5 %). The mean total serum IgE of the group was 106.6 IU/ml. Specific IgE (>0.8 IU/ml) to reindeer epithelium was detected in the skin reactive and in 7 (7.8 %) other herders.

The prevalence of allergic symptoms among reindeer herders is equivalent to the general Finnish population. However, the prevalence of positive SPT to inhalant allergens was lower than in the general Finnish population. Skin reactivity in reindeer herders to a major occupational allergen is uncommon.

A COMPARISON OF THE PATTERNS OF ILLNESS AND INJURY OCCURRING IN OFFSHORE STRUCTURES IN THE NORTHERN NORTH SEA AND THE STATIONS OF THE BRITISH ANTARCTIC SURVEY. J.N. Norman. The British Antarctic Survey Medical Unit, RGIT Survival Centre, Aberdeen, Scotland, UK.

A prospective, computerised database has been set up for the offshore oil and gas industries working in the Northern North Sea. It includes those cases of illness and injury which were sufficiently severe to warrant evacuation. There are between 1,000 and 2,000 cases each year for analysis. A database has also been set up for the British Antarctic Survey's five Antarctic stations.

The degree of isolation and the background of both populations is different and they live and work in entirely different circumstances. Yet, there are many similarities in the pattern of illness and injury, eg the high incidence of gastro-intestinal problems which affect both groups and low incidence of cardio-vascular complaints.

The common factors of the groups are their isolation and the extreme climatic conditions to which they are exposed. It is suggested that there is much to be learned from such studies which can improve the health care provided to population groups living and working in remote places with hostile environments. These factors will be discussed with particular reference to training and communications and the implementation of improved health care remote population groups.

AN ANTI-SMOKING INTERVENTION TRIAL AMONG FINNISH REINDEER HERDERS. S. N  yh  , L. Hirvonen, T. Kolivuori, M. Laakso, J. Hassi. Department of Public Health Science & Department of Physiology, University of Oulu, Finland. The Regional Institute of Occupational Health, Oulu, Finland.

In connection with a Finnish reindeer herders' health care project, an intervention trial was arranged aiming at a reduction in smoking. The methods were 1) a group-level campaign carried out within the framework of the reindeer herding districts (RHD), 2) individual anti-smoking advice given by local general practitioners (GP), and 3) a control intervention program focusing on accident prevention. Data on smoking were obtained by means of a postal questionnaire. The sample comprised 738 male smokers, who were allocated to RHD, GP and control groups in 1986, the group sizes being 257, 238 and 243, respectively. 5.8 %, 5.0 % and 4.1 % of the males in the respective groups ceased smoking during the intervention period of 1986-1988. After allowing for differences in mean age and prevalence for cardiovascular diseases, a 1.8-fold increase (95 % C.I. 0.7-5.1) in the probability of quitting was observed in the GP group and a 2.3-fold increase (95 % C.I. 0.9-6.1) in the RHD group. A subgroup analysis suggested that people who answered certain health-related questions in the questionnaire may have reacted to the intervention in a more favourable way than those who declined to do so, this being interpreted as one aspect of internal selection within the sample.

THE IMPORTANCE OF HEALTH CARE COOPERATION BETWEEN NATIONS.

Assistant Deputy Minister, Medical Services Branch, Department of National Health and Welfare, Ottawa, Ontario.

Medical Services Branch of the Department of National Health and Welfare provides primary health care to Canada's on-reserve status Indian population. Over the years Branch professional and technical staff have contributed to the work of a number of international fora including: the World Health Organization (Alma Ata Declaration on Primary Health Care), the Pan American Health Organization (Regional Strategies for Health for All by the year 2,000) and to the proceedings of the Circumpolar Health Congress, which Canada last hosted in Yellowknife, N.W.T., in July, 1974. More recently, Medical Services Branch has entered into bilateral agreements with the Department of Health and Social Services of the State of Alaska, U.S.A. and with the Siberian Branch of the U.S.S.R. Academy of Medical Sciences for cooperation in the areas of research, the exchange of information, programs and projects of mutual interest, meetings and exchange visits of health personnel. The paper discusses the value attached by the Branch to international cooperation in health and looks at some of the short and long term benefits. The paper concludes that future cooperation should focus on priority health issues in such areas as chronic disease (including tuberculosis, diabetes and AIDS), telemedicine, health standards and preventive health.

TRAUMATIC OCCUPATIONAL FATALITIES: HOW ALASKA DIFFERS FROM THE U. S. NATIONAL STATISTICS. IMPLICATIONS FOR CIRCUMPOLAR HEALTH. P. G. Schnitzer. College of Nursing and Health Sciences, University of Alaska, Anchorage.

Data on work-related injury fatalities in Alaska for 1980-1985 were compiled from workers' compensation claims and death certificates. These data yielded 422 unique cases for the 6 year period with an average annual fatality rate of 36.3 per 100,000 workers. This rate compares to the Bureau of Labor Statistics (BLS) estimate of 7.6 per 100,000 for the U. S. during the same period. The four industries with the highest fatality rates were the same for Alaska as for the nation (agriculture/forestry/fishing, construction, mining, and transportation/communication/public utilities). However, the leading causes of death in Alaska, aircraft crash (32% of the fatalities identified) and drowning (19%), differed considerably than for the nation (BLS statistics) which reports motor vehicles and industrial vehicles or equipment as the leading causes of occupational fatality.

Additional findings of this Alaska study are presented and contrasted with data from U. S. national statistics. Possible reasons for differences are explored. The benefit of local surveillance in planning prevention strategies is addressed and implications for research and surveillance of occupational fatalities in circumpolar regions is discussed.

COLD INJURIES AMONG ALASKAN WORKERS. B. Carmon, J. Pflaum. College of Nursing and Health Sciences, University of Alaska Anchorage. Anchorage, Alaska 99508

Injuries in Alaska, as in other Arctic areas, are a health problem of major significance. Alaska has an extremely high rate of work-related injury. Workers are young, inexperienced and work occurs in cold, wet environments.

Methods: Alaska Workers' Compensation Claims for the years 1985, 1986, and 1987 were analyzed to identify all cases where "nature of illness or injury" was attributed to "effects of exposure to low temperatures".

Findings: Case analysis revealed high rates of cold related injuries among workers associated with the oil and gas industry and auxiliary services on the North Slope (above the Arctic Circle). Rates of injury were highest among workers on the job for less than three months. High risk occupations include survey and map technicians, carpenters, packing and filling machine operators, miscellaneous hand workers and laborers.

Recommendations: The following recommendations are made: (1) target new and young workers for intensive safety education, (2) design prevention strategies specific for high risk occupations in northern latitudes and (3) continue surveillance of the workplace for hazardous factors that contribute to cold related injuries.

EXPERIENCES WITH DENTAL THERAPISTS FROM THE ARCTIC TO AFRICA. Keith W. Davey. National School of Dental Therapy, Prince Albert, Saskatchewan, Canada.

The Canadian dental therapist concept began in 1972 with the development of the National School of Dental Therapy and a concept to train dental therapists to provide a community-based dental programme of patient care, education, and prevention specifically in under-served areas in the Canadian North. A standardized approach focused on simplicity and portability, and continuity spread from the teaching environment into the organization and monitoring of the field programme.

This Canadian plan has come to the attention of other countries faced with similar problems of providing primary dental care in under-served areas. Since 1984 overseas students have been training in Canada.

This presentation will comment on some of the evaluations being made from researching records and surveys. Assessments concern the effectiveness of this concept, the quality of service delivered, the trends in work habits and work load, and the educational history of successful students. Some comparison can also be made between Canadian and overseas students.

Conclusions show that these dental auxiliaries, coming from a myriad of backgrounds and educational situations, can be economically trained to provide quality dental care in isolated communities. The need for treatment is reducing, time spent on preventive procedures is increasing, and more patients are able to have their treatment requirements completed. Also, the amount of lost time is limited because dental therapists are able to transport, maintain and usually repair their equipment on location.

THE CANADA - ALASKA HEALTH AGREEMENT - A PRACTICAL APPROACH TO DEVELOPING CROSS BORDER LINKS. B. Wheatley, Y. Chase. Medical Services Br., Dept. of National Health & Welfare, Whitehorse, Yukon, Canada and Dept. of Health & Social Services, Juneau, Alaska, U.S.A.

Many health problems and challenges are common to both Northern Canada and Alaska, especially those which occur in small isolated or remote communities. However, given the very different health care delivery systems on the two sides of the border, different innovative solutions have been developed. Recognising this situation, and wishing to share each other's solutions and approaches to challenges, the Canada-Alaska Health Memorandum of Understanding (MoU) was developed and signed in 1988. Having noted the mutual benefit in cooperating on health issues of concern to Northern residents, the MoU emphasizes the need for a practical approach and states as its prime purpose the sharing of knowledge and experience, the exchange of information and documentation on activities in areas of common interest, the arranging of joint working meetings and visits of health care staff and cooperation on scientific research work in programs of mutual interest. Two liaison officers were identified to encourage and facilitate activities under the MoU. Two successful program meetings have been held, a number of other initiatives have been developed and priority areas for work have been identified.

This paper outlines the challenges faced in developing the agreement and in maintaining progress once the first wave of enthusiasm has passed. It notes the specific topics which, to date, have been found to be of mutual concern and outlines the priority health issues now being addressed under the agreement. Throughout, the practical, realistic approach is stressed. The future is discussed as is the possible applicability of this approach to other borders.

CIRCUMPOLAR MEDICAL RESEARCH: THE SIBERIAN - CANADIAN CONTEXT. J.D. O'Reil, G. Starkey. Department of Community Health Sciences, University of Manitoba, Winnipeg, Canada and Siberian Branch of the U.S.S.R. Academy of Medical Sciences, Novosibirsk.

This paper describes the recent efforts of Canadian and Siberian scientists to establish collaborative research projects on circumpolar health issues. Canadian and Siberian health institutions have very different structures and medical research has different relationships with both health care delivery and health professional education. Understanding the differences and similarities between the two systems is critical for collaborative efforts to be successful.

This paper will describe the context of health research in northern Canada and Siberia. These descriptions are based on a recent exchange of scientists between the two countries which involved both authors. This exchange highlighted the following central differences between northern health research structures in Siberia and Canada.

- Separation versus integration of research into health professional training.
- Centralized block funding for northern research versus open competition for public health research funds.
- Dedicated polar basic medical research versus basic medical research with indirect polar application.
- Variation in scientific significance of applied northern health research.
- Variation in relationships between northern health researchers and health care delivery institutions.
- Differences of scale in both research facilities, numbers of scientists and geographic distribution.

Each of these differences will be described graphically and the implications for collaborative research projects will be discussed.

AN ANALYSIS OF PRESCRIPTIONS ISSUED TO STATUS INDIANS FOR SELECTED DRUGS WITH ABUSE POTENTIAL. H. Hodes, P. Dion. Department of National Health and Welfare, Medical Services Branch, Alberta Region.

Medical Services Branch is the paying agency for prescription drugs issued to registered Indian and Inuit patients. An analysis of three months pharmacy invoices (September, October, November 1988) was carried out at the request of the Indian leadership who perceived a problem in their communities.

The analysis revealed evidence of client and provider abuse. This confirmed several anecdotal reports of similar abuse patterns in other Regions.

The study represents the initiative taken by the native leadership to address this aspect of substance abuse. Options for intervention strategies are identified. These include community based approaches, the involvement of professional regulatory bodies and legal issues as they affect provider and client.

A NEW MEDICAL AGREEMENT FOR THE SOVIET FAR EAST: ALASKA, MAGADAN, CHUKOTKA. T.A. Mala, A. Lebedev, A. Aidaraliev, M. Munson. The Institute for Circumpolar Health Studies of the University of Alaska Anchorage, USA. Magadan Regional Health Department. Institute of Biological Problems of the North, Magadan. Alaska Commissioner of Health and Social Services.

The Magadan/Chukotka Region of the U.S.S.R. is a territory geographically identical to that of Alaska, with multiple historic and genetic ties between its peoples. For almost 50 years these "twins" have been divided by global political constraints. In this new era of glasnost and perestroika, many barriers have been removed, and all that remains now is only unrealized and untested opportunities. The first agreement the Region has made with the West since the end of the Cold War was that in health research, and from there many other agreements in many other areas have come forward.

The two Regions have exchanged health delegations and have proposed 15 new areas of primary clinical research on identical problems that affect our populations. This presentation summarizes those areas and will serve to not only illustrate new opportunities but also invite involvement of other northern entities to participate in this historic agreement.

ALASKA-SIBERIA BIOMEDICAL RESEARCH PROGRAM AS AN EXPERIMENT IN INTERNATIONAL COOPERATION. S.O.E. Ebbesson¹ and Yuri Nikitin². ¹University of Alaska Fairbanks, Fairbanks, Alaska 99775, USA, ²Siberian Branch of the Academy of Medical Science, USSR, Novosibirsk, USSR.

Two years after the initial nine cooperative research projects were conceived and agreed upon, all research teams find themselves submerged in data collection, analysis, manuscript writing and planning. The unqualified success in cooperation results from the superb chemistry between team members, which in turn originated with the careful selection of participants and projects. In each instance, topics were chosen that have unquestioned high priority among poorly understood high latitude health problems (i.e., addictive behavior and disorders, cold adaptation and depression). Some projects are the result of exceptional opportunities to learn basic mechanisms of disease. One such study concerns examining diets and cardiovascular disease in native populations on different diets. Studies in Siberia indicate that coastal Eskimos with higher consumption of polyunsaturated fats than inland (tundra) inhabitants have highly significant differences in serum lipid profiles, including higher levels of HDL (Nikitin *et al.*). Detailed analysis of such variables now can have a significant impact on dietary habits and cardiovascular disease in the future. The coming together of different cultures and ideas has often produced unexpected new insights for the participants.

The *modus operandi* in the Program is for participants to meet face to face twice a year in either country to carry out experiments, collect and evaluate data and write. Coordinative meetings are also held during this time. In between visits, research is carried out on both sides of the Bering Strait, funded by individual research grants. As some research projects have evolved into task forces, researchers from Sweden and West Germany are joining. This report will review the logic, mechanics and overall organization of the collaboration. Each project will have its own report at this Congress.

This project is part of the Alaska-Siberian Medical Research Program.

DENTAL CARIES INDICES AND TREATMENT LEVELS IN A YOUNG CANADIAN INUIT POPULATION. P.F. Gagnon*, L. Clérout, J.M. Brodeur, N. Tremblay. School of Dentistry, Laval University, Quebec and Kativik Board of Health and Social Services, Kuujuaq, CANADA.

Historically, several authors have found high caries prevalence in native populations of Arctic regions. More recently, some have reported improvements over the past decades. The purpose of this study was to estimate standard dental indices (dft, DMFS and DMFT) of Inuit children attending school in Northern Quebec.

In 1985 and 1986, 411 children were examined either by a dentist or a dental hygienist using a standard examination light, a mirror and explorer. The examination, completed either at school or at the nursing station, was entirely voluntary. The results confirmed earlier reports of high caries prevalence. The dft index peaked at 6 years of age at a level of 11.2. The DMFT reached 13.0 at 13 years. DMFS figures for 10, 11, 12, 13 and 14 years youngsters were 10.8, 11.6, 16.9, 17.9 and 18.4. Treatment levels (FS/DMFS) were found to be very low; 30%, 21% and 19% for children aged 11, 12 and 13.

These levels of caries prevalence are higher than those reported for neighboring native populations. They correspond to figures found in the rest of the province 20 years ago. Coupled with unacceptably low treatment levels, these figures illustrate the important backlog facing the dental profession and the need for preventive action at the community level.

A DESCRIPTIVE STUDY OF EARLY CARIES AND ORAL HEALTH HABITS OF INUIT PRE-SCHOOLERS: PRELIMINARY RESULTS. G. Houde*, P.F. Gagnon, M. St-Germain. Hudson Bay Hospital Center, Povungnituk, School of Dentistry, Laval University, Quebec and Kativik Board of Health and Social Services, Kuujuaq, CANADA.

Despite reports describing the high incidence of baby bottle tooth decay in North American native populations, very little is known about the factors influencing dental health at such an early age. Furthermore, true prevalence figures are usually difficult to obtain because few studies have attempted to survey the whole population. The purpose of this project is to determine the true prevalence of nursing caries in the Kativik region and describe oral health determinants in relation to the dental status of these children.

An interview and a dental examination, using a mirror and explorer, is performed for each child by a visiting hygienist and a community dental worker. At this time, 244 children aged 2 to 5 years have been surveyed. The results indicate that baby bottle tooth decay occur in 70.5% of this young population. At this stage, we have been unable to find an association with reported use of a bottle or its content. A weak association appears to exist with reported toothbrushing frequency ($p=0.14$) and gender ($p=0.16$), girls being more likely to exhibit baby bottle tooth decay.

The prevalence found in this survey is higher than figures reported for this condition anywhere in the world.

AN INVESTIGATION OF AN OUTBREAK OF BOTULISM IN THE COMMUNITY OF PAULATUK, N.W.T. B. Collins, Mackenzie Regional Health Service, Yellowknife, N.W.T. and P. Richardson, Inuvik Regional Health Board, Inuvik, N.W.T., Canada.

On the morning of February 27, 1989, two residents of Paulatuk died following consumption of ogsuk (fermented seal or whale oil) contaminated with type E toxin of *Clostridium botulinum*.

An environmental health officer and a physician from the Inuvik Regional Health Board responded on the evening of February 27, 1989. An epidemiological investigation was conducted. On March 2, 1989 the Medical Director and a nursing assistant arrived in Paulatuk where autopsies were performed.

Both environmental samples and clinical specimens revealed the presence of type E botulinum toxin. Interviews with family and community members, and the acting nurse in charge at the Paulatuk Health Centre and a Canadian Armed Forces medic who attended to the victims revealed symptoms associated with botulism.

The investigation raised several questions which remain unanswered. Does exposure to botulinum toxin(s) over long periods create immunity or resistance to the toxin? Is the toxin evenly distributed throughout the ogsuk or is it concentrated in certain portions? Can food such as ogsuk be made safely? Further research is necessary to answer these questions.

IRON DEFICIENCY ANEMIA IN ALASKA NATIVES. Alan J. Parkinson, Lisa Bulkow, Anne P. Lanier, and Ray Yip. Arctic Investigations Program, Centers for Disease Control, Anchorage, Alaska, and Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control, Atlanta, Georgia, USA.

Iron deficiency has long been recognized as a common nutritional problem among Alaska Native infants and school-aged children. In a study of two villages (one coastal, one riverine) in the Yukon-Kuskokwim Delta hemoglobin and serum ferritin levels were measured in 80 individuals (40 males and 40 females) randomly selected from four age groups. Using a serum ferritin level of < 12 ng/ml, as the criterion for iron deficiency, and the CDC age-specific hemoglobin cutpoints, as the definition of anemia, 86% of all males between 12 and 17 years of age in these two villages had hemoglobins < 13.0 g/dl and could be classified as being both iron deficient and anemic. Of females in the same age group, 40% had hemoglobin levels of < 12.0 g/dl and were anemic and 50% were iron deficient. In addition 35% of adult males > 18 years of age had hemoglobin levels of < 13.5 g/dl and 34% had serum ferritin levels of < 12.0 ng/ml. Of adult females, 32% were anemic with hemoglobin levels < 12.0 g/dl, and 72% were iron deficient. The mean serum ferritin for males in this group was 20ng/ml (median 23ng/ml), five times lower than a mean serum ferritin of 113ng/ml (median 92ng/ml) determined among males in the same age group surveyed during the second National Health Nutrition and Examination Survey (NHANES II). This study suggest that in some regions of Alaska iron deficiency may be a more general problem affecting not only Native infants and children but adults as well.

Abstract: The Cree Board of Health and Social Services of James Bay: the First Ten Years. S. Bearskin, C. Dumont, Cree Board of Health and Social Services of James Bay, Chisasibi, Québec, Canada.

The Cree Board of Health and Social Services of James Bay (the Board) is an administrative entity created in 1978 after the signing of the James Bay and Northern Quebec Agreement (JBNQA). It is a Cree entity responsible for all the health and social services given to the Crees in the James Bay Cree territory. The Board is controlled by Crees coming from each of the communities.

The organization of the health services in James Bay has changed a number of times in the past 40 years.

The responsibilities of the Board are unique in Quebec in that the Board is responsible for the direct management of services. The Board also ensures that the Crees can get in urban centers the health services which are unavailable locally.

The strength of the Board lies in its control by the Crees and the guarantees of funding provided by the JBNQA. Problems have come up in the implementation of the agreement, such as transfer of responsibilities without appropriate funding, in the delay by the governments to realize the full impact of social, cultural and geographic differences between urban areas and northern communities, the insufficient number of Cree professionals in the health field. The Board has also to face new health problems that came with the recent social changes in the Cree society.

THE USE OF THE ILIZAROV EXTERNAL FIXATOR IN LIMB LENGTHENING, NONUNIONS, AND ACUTE FRACTURES IN THE ALASKAN NATIVE POPULATION. R. G. Wilber, J. M. Holloway, W. A. Paton. Alaska Native Medical Center, Anchorage, AK 99510.

Recently, the work of a Soviet physician, Gavriel Ilizarov, has gained the attention of western medical societies. The external fixator, which bears his name, has been used in deformity correction, limb lengthening, and the management of a variety of complex orthopaedic problems.

We first began to use the apparatus at the Alaska Native Medical Center in Anchorage, Alaska, in July of 1988. Our primary indications included patients with bony nonunions and septic nonunions. We have subsequently expanded its application to the management of acute fractures, both open and closed, and to limb lengthening.

We have found the apparatus an adjunct to the management of certain orthopaedic problems and would like to present our early experience with its use in the Alaskan Native population.

RAPID DETECTION OF CLOSTRIDIUM BOTULINUM TOXINS A, B, AND E IN FOOD AND CLINICAL SAMPLES BY ENZYME IMMUNOASSAY. Alan J. Parkinson, Scott Kleinkauf, Robert Wainwright, and Charles Hatheway. Arctic Investigations Program, and Division of Bacterial Diseases, Centers for Disease Control, Anchorage Alaska 99501 USA

Historically rates for confirmed or suspected food borne botulism in Alaska are 8.6 cases/100,000 persons, and in recent years accounts for more than 60% of all U.S. cases of botulism reported to CDC. All outbreaks that occur in Alaska are among Natives and are associated with eating traditional Native foods. The standard test for toxin detection and identification is the mouse bioassay, which is time consuming and expensive. We developed an Enzyme Immunoassay (EIA) for the rapid detection of botulinum toxins A, B, and E in food and clinical samples. The EIA was found to be monospecific for the homologous toxin type and could detect 0.312 ng type B and E toxin complex/ml (6.2 mouse LD₅₀/ml), and 2.5ng type A neurotoxin/ml (50 mouse LD₅₀/ml). Of 19 stool samples tested from patients with suspected botulism, 2 were positive for type A, and 1 was positive for type E toxin by both the EIA and bioassay. Of 10 food samples tested, 1 was positive for type E toxin by both assays and 1 other was weakly positive by mouse assay. Of 3 gastric contents, 1 was positive for type B toxin by EIA only and all 3 serum specimens, were negative by both assays. These preliminary results suggest that the EIA may be as sensitive as the mouse assay for the detection of and identification botulinum toxin in a variety of food and clinical specimens, and may provide rapid laboratory confirmation of outbreaks in remote regions.

"OUTSIDE" HELPERS AND CULTURE SHOCK: A STUDY OF YUKON SOCIAL WORKERS RECRUITED FROM SOUTHERN CANADA. M.K. Zapp, Faculty of Social Work (Edmonton Division), The University of Calgary, Edmonton, Alberta, Canada, T6G 1K8.

This study explores the adjustment experiences of social workers recruited from southern Canada for positions in remote northern communities. A cross-sectional survey design was employed whereby a questionnaire was administered to 85 social workers practising in the Yukon Territory in 1986. Building from the controversial U-Curve pattern of adjustment offered in the literature, an original scale was developed to test for the presence of culture shock and recovery in this population. Other background data and established scales were used to test specific hypotheses involving variables presumed related to the adjustment process in a new culture.

The conventional mailed survey approach was modified for northern conditions. Assuming that perceived legitimacy of the study in northern communities would depend more upon personal contact than academic qualifications, the researcher visited each settlement to explain the study and learn about local operations. A response rate of 91% was achieved without follow-up letters.

The results offer strong support for the U-Curve pattern. Social workers hired from southern Canada did report an overall significant increase in stress while settling in ($p < .001$) followed by a significant decrease in stress ($p < .001$) by the end of the first year in the northern community. Most of the southern hire workers (65%) reported the overall U-Curve adjustment pattern compared with only 24% of local hire workers ($\chi^2 = 10.63$, $df = 1$, $p < .001$). Structural variables related to the job itself were found associated with culture shock but not recovery; individual variables of personal history and attitudes were found associated with recovery but not culture shock. The adjustment stress experienced by new social workers in the North appears to be associated with the role they are hired to perform and not with individual characteristics of the workers themselves.

CONTAMINANTS IN THE NORTH: THE BASIS FOR CANADIAN FEDERAL HEALTH POLICY. C.E. Tupper, G.M. Richardson, Medical Services Branch, Health and Welfare Canada.

The presence of organochlorine and heavy metal contaminants in the north is becoming increasingly apparent. The main pathway of exposure to these contaminants is the consumption of contaminated fish and wildlife. Concern has been expressed that intake of organochlorines and heavy metals may put northern residents at risk. There is no evidence to demonstrate an increased cancer incidence due to contaminant intake, but concern for exposure of the fetus and infants may be warranted.

There are significant health benefits from consumption of country foods. A balanced country food diet is nutritionally superior to the typical diet of Inuit and natives relying on commercial foods. Consumption of country foods such as fish has been linked to lower rates of cardiovascular disease. The consumption of commercial foods is associated with increased rates of obesity and diabetes in native and Inuit communities.

Despite the presence of contaminants, social, cultural and health considerations support the use of country foods. Mass substitution with commercial foods would likely reduce the nutritional balance and value of native and Inuit diets, increase the rates of obesity and diabetes, and increase the risk of cardiovascular disease. There would also be negative economic, social and cultural impacts for native and Inuit communities which are linked socially and culturally to the land from which they derive their food.

NUTRIENT INTAKE OF ADULTS AGED 15-65 YEARS IN TWO NORTHERN ONTARIO COMMUNITIES. L.P. Aubrey, J. Law, B. Sainnawap, B. Beardy, Medical Services Branch, Department of Health and Welfare, Ottawa, Canada, K1A 0L3.

This survey provides an indication of the nutritional status of the people of Big Trout Lake and the North Caribou Lake by demonstrating how eating patterns impact on the overall intake of essential nutrients.

A cross-sectional study design using a random sample from each community was utilized. An anthropometric and a twenty-four hour recall questionnaire was administered by trained local interviewers and analyzed using the 1986 Canadian Nutrient File. The survey was carried out in February/March 1989.

The results in both communities show a mean Body Mass Index (BMI) of 29 (SD 5.0). 37% and 46% in Big Trout Lake and North Caribou Lake respectively have a BMI over 30. The main fat consumption ranges from 36 to 42% of calories. Two thirds of the population has less than 66% of the Recommended Nutrient Intake (RNI) for calcium, Vitamin A and folacin. Over half the population has less than 66% of the RNI for Vitamin C. The Vitamin D intake is approximately half the recommended level. Dietary fibre intake was 10% of the recommended levels for good health. The consumption of wild foods among the 15 to 44 age group is lower than the 45 to 65 age group, suggesting that younger adults rely more heavily on store-bought foods. A marked difference in the fat and protein distribution of these two age groups was noticed. The results suggest a high prevalence of obesity in both communities. If nutrient consumption is not markedly improved during the other seasons this may have important health implications for the whole population and especially for the child bearing age group.

More studies are needed to document the impact on health of the changes in eating patterns shifting from traditional food to store bought.

CADMIUM AND OTHER CONTAMINANTS EXPOSURE IN KUUJUAQ, NORTHERN QUEBEC (NUNAVIK). J.L. Benedetti, F. Turcotte, F. Lefebvre, F. Thérien, J.P. Weber, Centre hospitalier de l'Université Laval, 2705 Boulevard Laurier, Sainte-Foy (Qc), Canada, G1V 4G2

Cadmium contamination of cervids and caribou in central and northern areas of Quebec prompted this assessment of a sample of Inuit for whom, caribou is a staple food. Eighty-six residents of Kuujuaq, Nunavik, Quebec, aged 9-83, were assessed for exposure and provided blood, urine and hair specimens. They account for 10% of the native population. No association was found between blood cadmium and consumption of game's offal. Blood cadmium was associated with smoking habits: non-smokers: 0.74 Hg/L, ex-smokers: 1.60, smokers: 6.80. Urinary cadmium is elevated in adolescents (2.7 Hg/g creat.) and in adults (3.5).

By comparison to recently published reports, these results point to substantial impregnation with cadmium. Other contaminants (mercury, PCBs, other organochlorines) often found in native staple foods, were also assessed. Implications for human health are discussed.

A PARTICIPATORY APPROACH TO THE PLANNING OF CULTURALLY APPROPRIATE EXTENDED CARE FACILITIES. Daniel Cichacki, Department of Health and Human Resources, Government of Yukon, Whitehorse, Yukon, Canada.

Strong dissatisfaction has been expressed amongst health administrators, care providers, and facility planners that the design of extended care institutions in the circumpolar world have not, for the most part, successfully embraced the cultural tastes, values, and perceptions of its indigenous peoples.

While it is acknowledged that these criticisms are complex, simple adherence to conventional facility planning methods significantly reduces the probability of achieving a culturally relevant product. If this objective is to be reached, meaningful involvement of indigenous people in the planning process must take place.

This paper assesses the value of the Repertory Grid Technique (RGT) as an instrument available to planners engaged in participatory planning involving indigenous communities. As part of this assessment, RGT is applied in the context of an actual extended care project currently being planned for Whitehorse.

It is concluded that RGT has the capacity to produce information regarding the subtle...and not-so-subtle...perceptions of the extended care environment to which indigenous respondents attach significance. An opportunity is afforded facility planners to better understand and appreciate how indigenous values and patterns of anticipation match with what is encountered. Further, it provides insight into how hierarchies of ideas, prejudices and beliefs are composed with respect to such facilities.

EDUCATIONAL PREPARATION FOR OUTPOST NURSING. D.L. Tasiyo and R.E. May, Faculty of Health Professions, Dalhousie University, Halifax, Nova Scotia, Canada B3H 3G5

Nurses serve as the backbone of health care services in Canada's Northwest. To date there have been few programs aimed at preparing nurses for the challenges associated with trying to promote health and provide illness care to people of a different culture without the benefits of an on-site health care team. This paper discusses how the Outpost and Community Health Nursing program at Dalhousie University offered in collaboration with the Faculty of Medicine has prepared nurses to have a significant impact on the health care delivery in remote northern Canadian communities over the past twenty years.

The program which is funded by the Medical Services Branch of Health and Welfare Canada and the Government of the North West Territories must respond to the identified need for nurses who are capable of planning and implementing a realistic preventive community health program while at the same time responding to medical emergencies and providing first level care to the ill. Consideration is given to the changing health care needs in the north.

The health care worker of today must be sensitive toward local peoples and their attitudes in order to promote community involvement and become partners in change. The program has incorporated an emphasis on the development of sensitivity and an understanding of the impact that increasing involvement of native people in shaping health care in the north will have on nursing practice in the future.

A COMPARISON OF FREQUENCY AND DURATION OF DENTAL VISITS AND TREATMENTS FOR TWO NORTHERN LABRADOR COMMUNITIES. M. Zammit, Grenfell Regional Health Services, Dental Department, Goose Bay, Labrador.

Given the problems associated with delivering dental care in Arctic areas, and a 'travelling dentist' who visits isolated communities for a limited number of days per year, is the working schedule, 'long duration-- less frequency', more productive than, 'short duration-- more frequent dental visits'?

Using statistics of treatment patterns for 1986-89 and the two communities of Nain (population 1000), and Hopedale (population 500), the study establishes that: (1) In Hopedale, for 1986-87, the average dental visit lasted 8.5 days, compared with 1988-89, which lasted 6.4 days; in Nain, for 1986-87, it was 18.5 days, compared with 1988-89, when it was 7.22 days. Both places received more frequent visits in 1988-89. (2) In Hopedale, the average number of treatments done per day and per patient, has increased in 1988-89, by 45.31%, and 38.46%, respectively, over 1986-87. For Nain, these figures are also increased by, 25.65%, and 42.11%, respectively, over 1986-87. (3) The average number of patients per day seen in these communities, is 13.6. Treatment patterns show trends consistent with the norm, that is, a decrease in extractions, and an increase in fillings. (4) Eleven less working days in 88-89, achieved this.

A COMPARISON OF HEALTH STATUS INDICATORS FOR THE ABORIGINAL POPULATIONS OF CANADA AND AUSTRALIA. P.H. Orr, J.S. Tuffy Departments of Medicine and Community Health Sciences, University of Manitoba, Winnipeg, Manitoba, Canada.

The present study compares the health status of Canadian Status Indians (CSI) and Australian Aborigines (AA) as reflected by such indicators as live birth rate, neonatal and infant mortality rates and standardized total and cause specific mortality rates.

The age distribution of both CSI and AA demonstrate a greater proportion of young compared to their national populations. The average (1982-1985) live birth rates per 1000 population were similar for both CSI (27.7) and AA (34.4) and were approximately twice the national averages for Canada (14.9) and Australia (15.6). The 1982-1986 stillbirth, neonatal, postnatal and infant mortality rate ratios for native (CSI and AA) versus national populations were comparable (2.6, 1.3, 2.7, 2.1 for CSI and 2.9, 2.5, 4.0, 3.0 for AA respectively). The age adjusted mortality rates (1982-1985) were 1.4 and 3 times the national average for CSI and AA respectively. The cause specific mortality rates per 1000 pop. were highest for circulatory diseases (2.9), injury/poisoning (1.8) and respiratory diseases (1.8) in the AA pop.; in the CSI population the rates were highest for injury/poisoning (1.7), circulatory diseases (1.4) and neoplasms (0.5). These similarities and differences in health status are further explored in relation to genetic factors, social and economic conditions, and health care delivery.

AN INVESTIGATION OF THE OCCUPATIONAL HEALTH STATUS OF NURSES WORKING IN AN ISOLATED SETTING.

ABSTRACT: An ethnographic method was used to examine the occupational health status of nurses working in an isolated community on the coast of Labrador. The researcher spent two months observing two nurses as they worked in the community, and collected data relating to the nurses' perceptions of their own work-related health. Data were collected using open-ended, unstructured interviews and participant-observation. Each nurse was found to experience different levels of work-related stress and job satisfaction. Both nurses, however identified physical environment, role structure and role responsibilities as external variables affecting work-related health. The effect of these variables appeared to be mediated by the internal variables of job satisfaction, stress response, physical health status and coping styles. The author recommended a re-evaluation of the nurses' role structure to reduce role conflict and role overload, and also recommended that specific educational preparation and professional support programs be established for these nurses.

MEDICAL ASPECTS OF THE FIRST INTENDED WINTERING IN SPITSBERGEN 1633-34 BY DUTCH SAILORS IN SMERENBURG. N.O. Alm, Longyearbyen Hospital, Svalbard, Norway.

In August 1933 7 dutch sailors were left in Smerenburg in Spitsbergen and another 7 at Jan Mayen (Mauritius Island) with provisions and equipment to spend the winter there. Their main task was to protect the dutch equipment, which was regularly stored onshore for the next whaling season, when the fleet left Spitsbergen waters to return home in August.

The seven men in Smerenburg survived while the men at Jan Mayen all died. The detailed "Day-Book" written by the leader of the sailors in Smerenburg, J.S. van der Brugge, thoroughly describes how they in the late autumn collected sorrel and scurvy-grass, - dried and stored these ascorbic-acid rich plants, - and used them for treatment against the feared scurvy-disease. This is most probably the main reason to the astonishing fact that they, in contrast to their unlucky comrades at Jan Mayen, survived the harsh winter at approx. 80 degrees north. The 7 other sailors, wintering in Smerenburg next year, -1934-35, also died, -most probably from scurvy.

Van der Brugges "Day-Book" gives a vivid description of other health problems during the winter, -like frost-bites, a possible case of "blubber-finger-infection", an interesting case of "Arctic depression". With reference to the special notes in the "Day-Book", the incidents of diseases, their possible cause and actual treatment are discussed.

COMPREHENSIVE SCHOOL HEALTH EDUCATION: CHANGING TOMORROW'S COMMUNITY HEALTH NEEDS TODAY. H. Balanoff, R. Tremblay, J. Bowman Departments of Health and Education Government of the Northwest Territories Yellowknife, NT X1A 2L9, Canada.

Escalating health care costs in the Northwest Territories motivated the Government of the Northwest Territories to adopt health promotion as a strategy to enhance lifestyle behaviours and reduce the incidence of preventable disease among its growing, young population. As a result, mandatory comprehensive health education has been introduced for all of the N.W.T. school age population (5-16 years).

The project has four identifiable stages: 1. A needs assessment to ensure the appropriateness of the School Health Program involving parents, students, teachers and community members from all 65 communities in the N.W.T. 2. Development of the N.W.T. School Health Program, with careful consideration given to factors which lead to behaviour change; skills, health beliefs, locus of control, time allocation and teaching strategies. 3. Implementation planning to address teacher training needs, teacher commitment, parental and community partnership in the program. 4. Monitoring and evaluation - the current stage - to determine the extent of implementation, and the impact of health education on students' health knowledge, attitudes and behaviours.

Where comprehensive health education has been successfully implemented, changes in lifestyle behaviours will ultimately reduce the dependency on the health care system. The extensive N.W.T. School Health Project is unique in Canada.

HOSPITAL MORBIDITY IN LABRADOR, 1986. DJW Hunter Grenfell Regional Health Service, St. Anthony, Canada.

Analysis of hospital admissions/separations for all residents of Labrador was conducted to describe the distribution of these separations by age, sex and primary diagnosis. Sex-specific rates were calculated for each age group and diagnosis using data were obtained from the Hospital Medical Records Institute. Primary diagnoses were classified according to the International Classification of Disease, 9th revision. Population data were obtained from the 1986 Census of Canada. The hospital morbidity rate for males was 180 per 1000, while for women the rate was 262 per 1000. In general the rates are high during infancy, dip and gradually increase to peak in the older age groups. For males the leading reason for hospital admission was 'other symptoms involving abdomen and pelvis' while females were admitted to hospital most often for 'delivery in a completely normal case'.

PRIMARY CARE MORBIDITY IN LABRADOR, 1986. D.J.W. Hunter Grenfell Regional Health Service, St. Anthony, Canada.

Analysis of nursing station visits in 14 isolated nursing stations in coastal Labrador was conducted to describe the distribution of these visits by age, sex and diagnosis. Sex-specific rates were calculated for each age group and diagnosis obtained from nursing station records. Primary diagnoses were classified according to the International Classification of Health Problems in Primary Care, 2nd Revision. Population data was obtained from the 1986 Census of Canada. Males visited the nursing station 4.7 times per year on average, while females visited the nursing station 8.1 times per year. In general the rates are high during infancy, decline during adolescence and increase to peak in the older age groups. For males the leading reason for visiting a nursing station was soft tissue injury, while females visited the nursing station most often for oral contraceptives.

DEVELOPING STRATEGIES FOR A STATE DIABETES CONTROL PROGRAM. J.R. ROCHE, J.W. TALBOT. Diabetes Control Program, State of Alaska, Division of Public Health, Section of Epidemiology, Anchorage, Alaska

Alaska has been funded since 1986 to develop and implement a statewide Diabetes Control Program (AK-DCP). The overall goal of the AK-DCP is to reduce morbidity, mortality and costs associated with the preventable complications of diabetes. Complications targeted by the AK-DCP include diabetic retinopathy, amputations, hypertension, and complications associated with a diabetic pregnancy. Effective methods do exist for prevention and treatment of these complications. Unfortunately they still occur with frequency due in part to the many barriers associated with the delivery of state-of-the-art care. These barriers are compounded in Alaska where access to health care is often impeded by transportation, weather and costs. To address some of these barriers, two model intervention programs have been developed, a senior center diabetes education program and a low income outpatient program. Protocols and a tracking system have been developed at both sites to ensure persons with diabetes receive comprehensive preventive care which includes a yearly eye examination, routine foot care and evaluation, hypertension screening and management, and pre-conceptual diabetes counseling. Quarterly chart review of patient's charts show a marked improvement in delivery of services.

NUCLEAR THYROID HORMONE RECEPTORS: CHANGES IN RECEPTOR KINETICS IN MONONUCLEAR LEUKOCYTES AFTER MULTIPLE COLD AIR EXPOSURE. M.M. D'Alessandro, H.L. Reed, M.J. Malik, L. Homer. Naval Medical Research Institute, Bethesda, Maryland 20814-5055 U.S.A.

Long term residence in Antarctica is associated with decreased serum triiodothyronine (T_3) values and increased serum T_3 clearance (Am J Physiol Reed et al. 1988). The mechanisms for these changes, and the physiological and psychological significance of them, are unknown. It is possible that the nuclear T_3 receptor mediates these changes in T_3 kinetics. Accordingly, we studied the effects of intermittent cold air exposure and daily T_3 supplementation on T_3 nuclear receptor binding characteristics in human mononuclear leukocytes (MNL) which contain low capacity, high affinity binding sites for T_3 .

Male volunteers were divided into two groups and exposed to cold air (4°C) twice/day, 30 minutes/exposure, for a total of 80 exposures. Group A received placebo [n=8] and Group B received T_3 (30 mcg/day) [n=8] in a double blind fashion. MNL were isolated from peripheral blood before the cold exposure/drug regimen began and after every 20 exposures.

Changes in the dissociation constant (Kd) of Group A suggest a possible yet uncertain increase in the affinity of T_3 (change in $\log Kd = -0.239 \pm 0.124$, $p=0.06$) and no change in the maximum binding capacity (MBC) (change in $\log MBC = -0.061 \pm 0.118$, $p=0.683$) with cold exposure. With daily T_3 supplementation (Group B), the Kd increased (change in $\log Kd = 0.30 \pm 0.139$, $p<0.04$) and the MBC increased substantially (change in $\log MBC = 0.49 \pm 0.10$, $p<0.001$) in response to cold air exposure.

A CASE OF TICK BORNE TULAREMIA ABOVE THE TREE LINE. M. Silverman, B. Law, J. Carson. Northern Medical Unit and Department of Medical Microbiology, University of Manitoba, Winnipeg, Canada.

Tularemia has been reported in the arctic. Although Francisella tularensis has been isolated from rabbit ticks collected near Fairbanks, Alaska, we are unaware of any cases of tick-borne human disease previously reported above the tree line. We report here the case of a 14 year old previously well Inuit boy from Arviat (Eskimo Point), N.W.T., Canada. In May of 1989 he was bit on his mid-sternum by an unknown type of insect which he removed manually and discarded. Over the next 3-4 days he developed a central sternal pustule with 4 smaller satellite pustules. Seven days later he developed tender bilateral axillary adenopathy. The sternal lesions lasted 1 month, and then spontaneously discharged pus and resolved leaving an area of depigmentation. The axillary adenopathy continued for 6 months accompanied by night sweats and chills, and a 5 pound weight loss. His axilla was biopsied demonstrating gram-negative rods and granulomatous inflammation with multiple necrotic abscesses. A single serum sample for tularemia antibodies was positive at a titre of 1 in 640.

This case is reported to make clinicians aware of the possibility of tularemia in the differential diagnosis of insect-borne ulceroglandular disease in the arctic.

NORTHERN STORES NUTRITION PROGRAM. L. Bendinger. Northern Stores Inc., Winnipeg, Manitoba, Canada, R3C 2R1.

The Northern Stores Nutrition Program is a nutrition information program for consumers in 115 communities in 5 provinces and the N.W.T. This poster session will depict Northern Stores Food Guide, Nutrition Newsletters, contests, shelf labels and signs, and food fliers.

The Nutrition Program was initiated by Northern Stores in 1978 when northern residents requested assistance in making nutritious food choices. In cooperation with Health and Welfare Canada and Corporate Affairs Canada, Northern Stores developed and implemented a colour coding system designed to highlight foods from Canada's Food Guide. The colour coding of nutritious foods is the central feature of the Nutrition Program. Northern Stores promotes nutritious foods in the food fliers by highlighting with a sun symbol. Foods selected by the nutritionist are highlighted in the store with a special "Save On This Nutritious Food Value" coloured shelf sign. A bimonthly trilingual Nutrition Newsletter coordinates the program in the various communities and provides information for lay groups and professionals. Community activities to support the program include Contests, Nutrition Month promotions, and Public Service Announcements. Recent organizational changes have been a positive factor in setting program direction. Periodic evaluation also provided positive direction for the program.

VITAMIN D IN THE NORTH - RELATIONSHIP TO CELLULAR IMMUNITY. J.C. Godej, H. Pabst, P. Hodges, R. Hodges, K. Johnson, T. Fellows. Department of Pediatrics, University of Alberta, Edmonton, Canada.

Vitamin D, its seasonal variation, and its relation to cellular immunity was studied in 189 maternal-infant pairs from 10 communities in the Inuvik zone of the Canadian Northwest Territories. At delivery, mean maternal levels were 50.3 ± 20.9 , compared to cord levels of 35.2 ± 15.6 ($p<0.001$). 6.8% of the mothers and 12% of the infants had levels in the rachitic range, below 25 nmol/l. A marked seasonal variation of maternal and cord 25(OH)D levels was found with the lowest mean levels, 32.5 and 29.5 nmol/l respectively occurring in April.

Lymphocytes were incubated with several mitogens, Phytohemagglutinin (PHA), Concanavalin A (CON A), Pokeweed (PW), Streptokinase (SK), Candida (CAN) and Purified Protein Derivative (PPD). Stimulation indices (SI) were calculated and related to levels of 25(OH)D. The SI for PHA, CON A, PPD and SK were not affected by the level of 25(OH)D. However, the mean SI for PK, which stimulates helper cells, was only 18.6 with 25(OH)D levels below 25 nmol/l, compared to 32.5 when levels were greater than 25 nmol/l, ($p<0.05$). The effect was similar with CAN but to a lesser degree.

Thus seasonal variation in Vitamin D levels combined with proportionately lower levels in the infant appear to place the infant at risk for deficiency especially in the early spring. This deficiency appears to have an inhibiting effect on certain aspects of immune function.

IMPACT OF A PHYSICIAN ON ASPECTS OF HEALTH IN TWO REMOTE COMMUNITIES IN THE YUKON. J.D. Bamford. The Faro Family Practice Unit, Faro, Yukon, Canada, Y0B 1K0.

The towns of Faro, Yukon, population 1500, and Ross River, Yukon, population 400, were without a resident physician during the period of Oct. 1/87 to Oct. 1/88. A physician was resident from Oct. 1/88 to Oct. 1/89. Faro had a nursing station staffed by four nurse-practitioners, and Ross River had a nursing station staffed by two nurse-practitioners during both periods. Evacuation time by road to the nearest hospital in Whitehorse, in good driving conditions, was four hours from Faro and five hours from Ross River. Evacuation time by air was from two to four hours depending on availability of personnel. Evacuation by air was not always possible due to weather conditions. Further night time evacuations were permitted from Faro under VFR conditions. The towns are 50 minutes apart by road in good conditions. As a policy air charters were loaded from Faro after examination in Faro by the physician, and all referrals from both towns were assessed by the Faro physician. In this paper a one year period is examined from Oct. 1/87 to Oct. 1/88 and compared to the physician period of Oct. 1/88 to Oct. 1/89.

The findings are discussed, as are the possible application of these findings to health care planning.

HEALTH ISSUES RELATED TO INCREASING MILITARIZATION OF THE ARCTIC.

E.S. Sennett, Member. M. Dworak, Founding Member. Canadian Physicians for the Prevention of Nuclear War. Montréal, P.Q., Canada. CPPNW (Canadian Physicians for the Prevention of Nuclear War), a voluntary organization of health professionals, is concerned with the following health issues in the north:

1. Medical consequences of nuclear fallout.
2. Social and economic impact of military installations on northern communities.
3. Medical and psychological consequences of low-level military flight testing.
4. Medical/biological/ecological effects of a nuclear accident occurring in arctic seas or skies.
5. Storage/transportation of high level radioactive wastes.

These health issues are circumpolar, if not global, in nature, and require an international response. To confront the militarization of the north, there is a need for a cooperative effort directed toward increasing common security through economic, social and cultural development. Examples of such cooperation are already found in the north in various scientific and environmental initiatives, the Inuit Circumpolar Conference, and in the International Union for Circumpolar Health. CPPNW is interested in developing an 'arctic region' within the parent organization, IPPNW (International Physicians for the Prevention of Nuclear War, awarded the Nobel Peace Prize, 1985). This would permit members from Denmark, Finland, Greenland, Iceland, Norway, Sweden, USA, USSR, and Canada to share their circumpolar perspective, and to work together on health issues associated with militarization of the arctic.

NUTRIENT INTAKE AND FOOD PRACTICES OF CLIENTS AT THREE NATIVE ALCOHOL AND DRUG REHABILITATION CENTRES. J.M. Lawn and P.T. Lawn. National Native Alcohol and Drug Abuse Program, Medical Services Branch, Ottawa, Canada, K1A 0L3.

To determine nutrient intake and food practices of clients from three native alcohol and drug rehabilitation centres in Labrador, Ontario and Saskatchewan, a 24 hour diet recall, dietary history and food frequency questionnaire were administered to 21 clients by trained counsellors and cooks.

Mean intake for each centre ranged from 2287 to 2970 kcal. 86 to 109 grams of protein, 96 to 145 grams of fat and 248 to 314 grams of carbohydrate. Forty per cent of clients with 50% or less than the Recommended Nutrient Intake (RNI) for calcium, folacin, vitamin A and vitamin C was 22%, 24%, 19% and 14%, respectively. Regional differences existed in the use of wild game and high fat meats, sugar, vegetables, whole grain cereals and coffee, meal patterns and history of drug use. Reported possible nutrition-related problems included: gas after eating certain foods (43%), difficulty sleeping (52%), nausea (26%), pain in the stomach area (26%), and impaired night vision (22%).

The study demonstrates that nutrient intake for some clients may not be adequate for recovery and that centres may require assistance with nutrition assessment/counselling/menu planning in order to ensure appropriate food choices.

MEDICINE AND THE MILITARY IN THE CANADIAN EASTERN ARCTIC. H.M. Sampath, Department of Psychiatry, Memorial University of Newfoundland, St. John's, Newfoundland, Canada.

The militarization of the Canadian Eastern Arctic began with the advent of the second World War. Up to this time, a Canadian military presence in the Arctic was practically non-existent. The annual "Eastern Arctic Patrol" was established in 1922; it included RCMP policemen and later, medical and dental personnel were also included. Two hospitals had been established: St. Luke's Hospital (1930) in Pangnirtung, by the Anglican missionaries, and St. Theresa's Hospital (1931) in Chesterfield Inlet, by the Catholic missionaries.

In 1940, the "Air Defense Command" was set up by the U.S. Government, and Valhjalmar Stefansson was appointed as a special advisor on the Arctic to the U.S. War Department. In 1941, Capt. Elliot Roosevelt in a PB4 aircraft landed at Lake Harbour, Baffin Island. On that trip, a site at Koojesse Inlet, in Upper Frobisher Bay was chosen for a U.S. Air Force base. A 25 bed hospital was established there, and this hospital was later taken over by the Canadian Government. A similar development took place at Goose Bay, Labrador, and that base hospital is now being operated by the provincial government.

In 1954, President Eisenhower approved the establishment of the DEW Line. Its construction attracted a large number of Inuit, and medical services were provided by the Northern Health Services of the Canadian Government.

In summary: the American militarization of the Canadian Arctic provided the framework for a viable health service.

THE ACQUIRED IMMUNE DEFICIENCY SYNDROME AND THE NATIVE COMMUNITY. D.T. Lambert. Health Development Administration student. Athabasca University - Yellowhead Tribal Council, Spruce Grove, Alberta.

A sample study was conducted to determine the level of awareness Native people in central Alberta have about A.I.D.S. During July 1989 a self-administered questionnaire was completed by 47 people. Respondents were approached at a religious pilgrimage, community store, educational institution, and offices frequented by Native people. Once the questionnaire was completed an information sheet was provided and discussion encouraged.

A majority of the respondents were between the ages of 18-25 years. Knowledge about A.I.D.S. and its transmission was good. Sexually transmitted diseases were viewed as a problem while A.I.D.S. was not. Sexual activity begins at a young age. Respondents indicated they were not monogamous for their entire life and had more than 5 sexual partners. There was a stated aversion to condom use.

An analysis of the data will be presented. It will outline a representative sample study to be conducted across the province of Alberta. A list of recommendations will also be provided.

NUTRITIONAL NEEDS ASSESSMENT OF THREE NATIVE ALCOHOL AND DRUG TREATMENT CENTRES. J.M. Lawn and P.T. Lawn. National Native Alcohol and Drug Abuse Program, Medical Services Branch, Ottawa, Canada, K1A 0L3.

A needs assessment was conducted at native treatment centres in Whitehorse, Yukon, Manitoulin Island, Ontario, and Fort Qu'Appelle, Saskatchewan to assess current nutrition practices and their impact on rehabilitation. Staff and resource health professionals were interviewed by open-ended questionnaire. Nutrition practices were compared with the Donwood Clinic and the Royal Ottawa Rehabilitation Centre. Program length ranged from 28 to 35 days, number of residents from 7 to 25. Fifty five to 90% of clients were male. Only one centre required a medical examination prior to admission. Little nutritional assessment was conducted. None of the centres provided nutrition counselling or special diets (except diabetic). None of the staff had training in nutrition or food handling. There were no guidelines for menu planning, standardized recipe files, established procedures for inventory control or food safety and limited use of traditional foods. Client nutrition education varied from 0 to 3 hours per cycle. Menu analysis suggested clients in two centres might be consuming less than adequate amounts of calcium, vitamins A and C, folacin and fibre, and excessive amounts of fat and sodium.

Results indicated a need for a nutrition policy and training program which would assist staff to ensure optimum nutritional care.

A CIRCUMPOLAR AREA HEALTH EDUCATION CENTER. D.A. Johnson, F.O. Nye, The University of Alaska Fairbanks, Fairbanks, AK, 99775 and W.W. Myers, The University of Washington School of Medicine, Seattle, Washington, 98109, USA.

Area Health Education Centers (AHECs) exist throughout most of the United States. Their common goal is to decentralize health professions education in order to expose students to opportunities outside of large medical centers and encourage practice in underserved areas. Five AHECs in Washington, Alaska, Montana and Idaho relate to the University of Washington School of Medicine. Four of these (one in each state) are dedicated to strengthening rural health care systems. The fifth AHEC, located in Seattle, focuses on urban as well as rural areas.

The Rural Alaska Health Education Center (RAHEC) is challenged with developing health education programs for rural Alaska, a land mass of 20% of the rest of the U.S., with a rural population density of 0.3 persons per square mile. RAHEC is governed by a Board representing a geographical and professional cross-section of the state. Projects have a native Alaskan emphasis and currently fall into six areas: 1) recruitment of rural Alaskans into health professions, 2) development of high school enrichment programs, 3) programs to bridge students from high school to college, 4) development of rural Alaska training sites for health professions students, 5) continuing education for rural health providers and 6) community health systems development. Most projects are accomplished by awarding competitive grants to educational entities.

THE COMMUNITY HEALTH AIDE PROGRAM IN SOUTHWEST ALASKA. Mary Anaruk The Yukon Kuskokwim Health Corporation, Bethel Alaska U.S.A. 99559.

The Community Health Aide Program (CHAP) is the foundation of all primary health care in the Yukon Kuskokwim Delta serving 19,000 people in the 48 villages scattered over 75,000 miles of the Delta. The Yukon Kuskokwim Health Corporation (YKHC) employs 128 Community Health Aides to provide acute, emergency, and preventive health care in the villages. During Fiscal Year 1989 patient encounter totaled 83,187. The CHA training is directed by Health Aide Training, provided by Kuskokwim College and through coordination of the Health Aide Services. The Community Health Aides learn a wide range of patient care knowledge and skills which lead to certification as Community Health Practitioners. The field supervision, reinforcement of skills and support are monitored and provided by Supervisor Instructors. The YKHC Medical Director provides medical supervision for the CHAP. In addition the patients that need further medical attention are referred to the Public Health Hospital in Bethel. This unique program has dramatically effected the delivery of acute and preventive health care received by Native Alaskans.

THE ALASKA INDOOR AIRLINE: THE ESTABLISHMENT AND FUNCTION OF AN INDOOR AIR QUALITY HOTLINE. M.D. Catlin. Alaska Health Project, Anchorage, Alaska, USA, 99501.

Indoor air quality in homes and public buildings is an increasing concern to Alaskan residents. To meet the increasing number of requests for information and assistance from the public, the Indoor Airline program was established at the Alaska Health Project, a private non-profit organization, in August 1989. Funded primarily by the Alaska Department of Labor, the program provides a centralized source of information, technical assistance and referrals to the public. Since its inception, the Indoor Airline has averaged more than 30 calls per month from throughout the state.

This paper will describe the staffing and operation of the Indoor Airline, current and future funding sources, and provide a preliminary report of the first six months activity.

SEASONAL AFFECTIVE DISORDER IN ALASKA: PREVALENCE AND CHARACTERISTICS. C.J. Hellekson and J.M. Booker. Center for Alcohol and Addiction Studies. University of Alaska Anchorage, Anchorage, Alaska.

Seasonal Affective Disorder (SAD) is an "atypical depression" with hypersomnia, weight gain and carbohydrate craving which begins in the fall, exacerbates in the winter and remits in the spring. A one hour structured interview study of a random sample of 305 residents of Fairbanks, Alaska was carried out in the winter of 1988. Sample included 50% women, 6% Alaska Native, and 9% Black. Respondents showed some variation in seasonal pattern reported with most reporting a "winter only" pattern of depressed mood (n=188, 61%), and one third (n=102) reported "no complaints" of seasonal mood changes at all. Global Seasonality Scores (GSS) derived from the Seasonal Pattern Assessment Questionnaire (SPAQ) provided an estimate of 8.9% for those meeting the diagnostic criteria for Seasonal Affective Disorder and 19% qualified as Subsyndromal SAD (Sub-SAD), or milder "winter blahs." Scores on the Center for Epidemiological Studies-Depression Scale (CES-D) consistently differentiated the SAD, Sub-SAD and No-SAD group and correlate moderately well with the Hamilton Rating Scale, from .44 to .69. SAD was more common in women than men (3:2) and was equally prevalent among white, black, and Alaska Native respondents. Seasonal change in sleep length showed significant variation among groups: SAD 2.39 hr, Sub-SAD 2.75 hr, and No-SAD 1.22 hr (p<.0000). Sick days in the past year also showed significant differences: SAD 11.59 da., Sub-SAD 12.79 da., and No-SAD 6.02 (p<.02). This study suggests that more than one in four residents in the high latitude community of Fairbanks, Alaska suffer from winter related complaints which may respond to light therapy during the winter season.

AIDS: THE GLOBAL CHALLENGE FOR NURSING. A.H. Wieler, International Health Secretariat, Canadian Public Health Association, Ottawa, Canada.

The World Health Organization's (WHO) global program strategy for the prevention and control of human immunodeficiency virus (HIV) infection and AIDS, and the principles and objectives on which this strategy is based is discussed. An International Council of Nurses (ICN)/WHO Joint Declaration on AIDS, issued in April, 1987, set out the rights and responsibilities of nurses throughout the world in caring for people infected with HIV. Recently published "HIV Infection-Guidelines for Nursing Management", were developed jointly by WHO and ICN. The need for AIDS basic nursing education modules is widely recognized and attempts to meet this challenge globally are occurring. Information on HIV infection and implications for nursing management must be planned and integrated into formal and continuing education programs.

Nurses, more than any other health care professionals, are on the "front line" of AIDS patient care. Because nurses provide a majority of AIDS-related services, nursing managers must take an active role in planning to ensure that all aspects of AIDS are addressed at an organizational level. A comprehensive plan requires interventions in three distinct areas - provision of patient care, human resources management, and community development.

The standard and quality of life of AIDS patients everywhere are dependent upon intelligent nursing practice, encompassing understanding, protection of human rights, dignity of the individual and avoidance of discriminatory practices. The current challenge of HIV Infection/AIDS demands the energy and commitment of nurses, and the strength of nursing traditions to ensure the provision of knowledgeable, empathetic care to individuals, families and communities affected by AIDS.

EVALUATION OF PERIODONTAL THERAPY USING THE COMMUNITY PERIODONTAL INDEX OF TREATMENT NEEDS (CPTIN). H. Markkanen, V. Kontturi-Nurhi, E. Widström, Faculty of Dentistry, University of Kuopio, Kuopio, Finland

The aim of this study was to evaluate changes in periodontal health during therapy using both the CPTIN index and traditional indices. The subjects of the study were 195 randomly selected patients treated by dental students at a University Clinic. Visible Plaque Index (VPI), Gingival Bleeding Index (GBI), presence of supra- and subgingival calculus, and probing depths were registered. The CPTIN index was also recorded. The patients were examined before and after the periodontal treatment, and two times during the maintenance phase, usually six and twelve months after the active therapy. All clinical examinations were performed by trained periodontists. The gingival health was found to improve during the therapy measured by both GBI and CPTIN indices. The quantity of improvement, however, was shown to be difficult to measure by CPTIN index, because according to this classification the treatment need situation was the same for patients having GBI values of 70% or 15%. After treatment deep pockets were still found in 62% of the patients initially with deep pockets. Because no bleeding occurred in these the patients were considered clinically healthy.

The CPTIN index was a useful tool in recording patients into treatment need classes when planning dental care but was not sensitive enough in course of clinical treatment. During maintenance care use of CPTIN caused overestimation of the severity of the disease. The authors think, that CPTIN is suitable for untreated populations but less useful for populations having access to regular dental care.

BLOOD-LIPID PROFILES IN GENETICALLY COMPARABLE, BUT GEOGRAPHICALLY SEPARATED, ADULT POPULATIONS. J. Axelsson (1), M. Karlsson (1), O. Olafsson (2), G. Pétursdóttir (1), N. Sigfusson (3), S. B. Sigurdsson (1), A. B. Way (4); (1) Department of Physiology, University of Iceland, Reykjavik, Iceland; (2) Director General of Public Health, Reykjavik, Iceland; (3) Heart Preventive Clinic, Reykjavik, Iceland; (4) Texas Tech University, Health Science Center, Lubbock, Texas, U.S.A.

The results reported here are part of a comparative study of cardiovascular risk factors in two genetically comparable populations: an Icelandic population living in the Fljótisdalur District of northeastern Iceland and a population of Canadians of Icelandic descent living in the Interlake District of Manitoba, Canada.

In the present part of the study, blood-lipid levels were measured in adults aged 20-69. Samples were taken, by the same field team, from 319 Icelanders and 314 Canadians of purely Icelandic descent, and were analyzed in the same lab.

The mean serum total cholesterol level in the Icelanders was 5.657 mmol/l, 7.4 % higher than in the Canadians, in whom it was 5.269 mmol/l ($p < 0.001$). Mean levels of LDL cholesterol were 3.905 mmol/l in the Icelanders and 3.717 mmol/l in the Canadians, a barely significant difference of just over 5% ($p < 0.05$). Mean levels of HDL cholesterol were 1.373 mmol/l in the Icelanders and 0.987 mmol/l in the Canadians, that is, some 39% higher in the Icelanders ($p < 0.001$). For this reason, the Icelandic "atherogenic index" (the ratio of HDL to total cholesterol) was more than 26% higher (presumably more favorable) than the Canadian index (0.248 as against 0.196). Mean triglyceride levels differed markedly between the two populations; 1.036 mmol/l in the Icelanders and 1.526 mmol/l, or some 47% higher, in the Canadians ($p < 0.001$). On the generally accepted assumption that levels of VLDL cholesterol are 20% of those for triglycerides, the two populations likewise differed markedly (on the order of 47%) in VLDL. All figures given are age-adjusted. These results flatly contradict the idea that the blood lipid profiles of a population may be inferred from mean levels of serum total cholesterol.

As the populations are genetically similar, the striking differences in HDL (and thus in the atherogenic indices), triglycerides and VLDL are evidently environmentally induced.

THE CHANGING ROLE OF NURSES: THE PERSPECTIVE OF MEDICAL SERVICES BRANCH. Nursing Division, Indian and Northern Health Services, Medical Services Branch (MSB), National Health and Welfare.

Changes are occurring in the health services delivery system in MSB. These changes are in response to a variety of factors, i.e. the World Health Organization's goal of health for all by the year 2000, the Federal Government's leadership direction in health promotion and the movement of native people towards self-control.

Program implementation changes are influencing the provision of health care service in remote areas. At present this service takes the form of direct program delivery and ensures access to other provincially delivered health programs. The responsibility for service delivery has become the major focus of the Nursing Directorate of Indian and Northern Health Services. The prime focus of the Division's role is changing from that of providing to facilitating, with health promotion as the main component.

The paper will examine changes in context of the present, residual, retained and future roles of MSB in Indian Health. It also examines the overall impact of these changes on nursing in Canada.

ABSTRACT FOR THE CIRCUMPOLAR HEALTH CONFERENCE POSTER SESSION

May 20-25, 1990, Whitehorse, Yukon. Physician Recruitment in Northern Canada: 1970-1990. M.E. Moffatt, S.M. Macdonald, E.D. McFadden, J.A. Hildes Northern Medical Unit, Winnipeg, Canada, R3E 0W3.

Since 1970, the J. A. Hildes Northern Medical Unit (N.M.U.), University of Manitoba, Winnipeg, Canada has recruited general practitioners and consultants to provide service to northern communities in the province of Manitoba and the Keewatin District, Northwest Territories. In 1989 21 fulltime positions were filled. In a review of recruiting and retention practices for general practitioners over the past two decades a number of characteristics are consistent. Visiting consultant programs, adequate opportunities for continuing medical education, salary and group practice arrangements, and a sense of "contribution" are the most powerful factors which contribute to a positive work experience. The N.M.U. has recruited an increasing proportion of women (now 33%). An increasing number have certification in Family Practice. The recruitment of experienced physicians and the retention of long-term employees has increased, but only over the past 5 years. Establishing good working relationships with other service providers (Health and Welfare Canada) and good communication with the local community are critical to reducing frustration for physicians. Recruitment of Canadian graduates (65%) has been successful relative to the overall distribution amongst rural physicians. However, other marketplace forces, such as walk-in clinics, impede both recruiting and retention for northern Canada. The development of a Special Premedical Studies Program at the University of Manitoba has contributed to the recruitment of two doctors of Indian ancestry working in Indian communities in northern Manitoba. (2 of 21 physicians)

THE SVALBARD STUDY: ALCOHOL DRINKING IN AN ARCTIC POPULATION. O. Nilssen, G. Høyer, T. Brenn, H. Schirmer, Institute of Community Medicine, University of Tromsø, N-9000 Tromsø, Norway.

Of a total population of 818 persons aged 18 years or more, living at 78 degrees north, 611 (74.7%) met to a health screening in autumn 1988. The study was similar to the Norwegian cardiovascular county studies. In addition a questionnaire on Svalbard-specific topics was returned by 517 (84.6%) persons.

About 50% reported unchanged alcohol intake after moving to Svalbard and 40% reported an increase but expected reduction after returning to the mainland. Except for wine in men, self-reported consumption of all beverages was higher than on the mainland, and men reported twice as much drinking as women. Reported sale indicated a weekly intake of about 18 alcohol units (1 unit equals 15 grams pure alcohol) per capita compared with 5 units in the mainland. "Riskseekers" reported significantly higher intake, whereas type of employment showed no significant differences. Gamma-glutamyltransferase was higher in both sexes and all age-groups than on the mainland.

In conclusion, the Svalbard population has adapted a more "continental" way of drinking, probably primarily due to low prices. Sleeping problems due to seasonal variation in arctic light, may, among other phenomena, influence drinking habits.

TOWARDS A MORE EFFECTIVE NURSE RECRUITMENT STRATEGY FOR ISOLATED POSTINGS. Nursing Division, Indian and Northern Health Services, Medical Services Branch, National Health and Welfare.

Historically, there has been a high rate of turnover and vacant nursing positions in Indian and Northern Health Nursing. The constraints to recruitment of nurses to remote practice settings are numerous and complex. Geographical, professional and social isolation impacts upon the ability of the organization to attract and retain adequate nursing staff.

The approach towards resolving the problem involves the development of effective recruitment tools. These are utilized as part of the marketing plan entailing a myriad of activities.

A computerized nurse recruitment inventory information system also forms an integral part of the recruitment strategy by providing timely referral and follow-up of applicants to distant parts of the country and supplying statistical data for planning of recruitment activities.

Ultimately, the commitment and support of all levels of management in the organization are required to maintain optimum staffing levels.

DEVELOPMENT OF A DEMENTIA SCREENING INTERVIEW IN CREE AND ENGLISH. K.S. Hall, M.C. Hendrie, M. Brittain, C. Prince, J. Kaufert, J. Norton, A. Blue, D. Rodgers, W. Pillay, R. Whitmore, E. Noel, I. Swanson, I. Swanson. The Northern Health Research Unit, University of Manitoba, Winnipeg, Canada; Indiana University School of Medicine, Indianapolis, Indiana.

The multidisciplinary research team of the Collaborative Epidemiology Study of the Northern Health Research Unit and Indiana University School of Medicine developed and tested a dementia screening interview for two populations from different cultural and linguistic backgrounds - native Cree-speaking Americans living on a reserve in Manitoba, and English-speaking residents of Winnipeg. The interview has two parts, a cognitive assessment with the subject and functional assessment to be done with a close relative. The testing was performed on known populations of demented and non-demented subjects. Better sensitivity, specificity and comparability between the populations were obtained from scores from the informant interview than from scores from the cognitive examinations. Good sensitivity and specificity in the combined populations was obtained by utilizing both scores from the cognitive and informant interviews in a regression analysis. The implications from this study for the screening of dementia in culturally and linguistically distinct populations will be discussed.

BARRIERS TO HEALTH CAREERS IN BRITISH COLUMBIA - PROBLEMS AND SOLUTIONS. C. Campbell Keeper. Indian and Inuit Health Careers Program, Pacific Region, Medical Services Branch, Health and Welfare Canada, Vancouver, B.C. V6C 3E6.

This study evolved during consultative work as Regional Advisor of the Indian and Inuit Health Careers Program, Pacific Region, Medical Services Branch, Health and Welfare Canada, and derived from fifteen years experience as a Native professional in Canadian Native Studies in the provinces of Quebec, Ontario, British Columbia, and for different Federal Government departments in Canada. The study discusses problems such as the present low enrollment of Canadian Native students in scientific/health professional studies at college and university, both in Canada in general, and in British Columbia in particular.

The learning styles of Native students and the majority's learning styles conflict. Native students are taught by "observation, imitation, self-sufficiency and cooperation" within the group. Non-Native students in the school system are taught rewards, punishments, materialism and competition for the individual.

The second part of the study offers through recommendations a model of Education which is successful for Native students wishing to become scientific/health care professionals. The model is holistic - and covers cultural, personal and academic support systems. All governments and Native organizations involved in health care must support such an initiative towards equity programs for Native students in British Columbia if enrollment is to be increased substantially by the 21st century.

IMMUNOGENICITY OF THREE HAEMOPHILUS INFLUENZAE TYPE B (HIB) CONJUGATE VACCINES IN ALASKA NATIVE INFANTS. L.R. Bulkow, R.B. Wainwright, G.W. Letson, J.L. Ward. Arctic Investigations Program, Centers for Disease Control, Anchorage, AK, USA.

Haemophilus influenzae type B (Hib) disease is a major problem in northern populations, especially in children less than two years of age for whom effective vaccination is not available. New conjugate vaccines are currently being developed including three candidate vaccines with Hib polysaccharide (PRP) or oligosaccharide conjugated to protein antigens. In order to assess immunogenic response, the three vaccines, PRP-D with diphtheria toxoid, PRP-DMP with meningococcal outer membrane protein, and PRP-CRM with Hib oligosaccharide conjugated to a diphtheria toxoid variant, were administered to Alaska Native infants.

Each of the three vaccines was given to approximately 50 infants at 2 and 4 (PRP-DMP) or 2, 4, and 6 (PRP-D, PRP-CRM) months of age as specified by the manufacturer. Blood was obtained at the time of each vaccination and on several follow-up visits, and Hib capsular antibody was measured.

Preliminary results indicate a wide range in immunogenicity with 80% of the PRP-DMP infants, 63% of the PRP-CRM infants, and 6% of the PRP-D infants achieving a level of 1000 ng/ml after 2 doses, and 94% of the PRP-CRM infants and 35% of the PRP-D infants at that level approximately 1 month after of 3 doses. Initial results also indicate a rapid fall in antibody levels. Data on 49 PRP-CRM infants on whom multiple follow-up antibody levels are available show a decline in GMT from 12,220 ng/ml to 3,380 ng/ml in an average of 3 months. Data are also being examined for the possible effect of sex, pre-existing antibody, and quantum Alaska Native on the response.

The results of this study will be used to help determine the strategy for prevention of Hib disease in this population of high risk infants.

| | PRP-CRM | | PRP-DMP | | PRP-D | |
|-----------------|---------|-------|---------|-------|-------|-------|
| | >150 | >1000 | >150 | >1000 | >150 | >1000 |
| Pre-vaccination | 55% | 5% | 49% | 14% | 6% | 0% |
| Post 1st Dose | 24% | 0% | 89% | 51% | 6% | 0% |
| Post 2nd Dose | 79% | 43% | 100% | 80% | 34% | 6% |
| Post 3rd Dose | 100% | 94% | | | 59% | 35% |

A COMPARISON OF GENPROBE NEISSERIA GONORRHOEAE WITH CULTURE AND GENPROBE DNA CHLAMYDIA TRACHOMATIS WITH MICRO-TRAK. R. Tanaka, M. Tolman, R. Carlson, O. Obeidi. Southcentral Regional Laboratory, Div. of Public Health, Ak. Dept. of Health & Social Services, Anchorage, AK, USA.

A total of 2348 urogenital cultures were screened for *N. gonorrhoeae* from the Municipality of Anchorage STD and Family Planning clinics. A total of 774 specimens were examined by the MicroTrak FA method at the Oregon State Public Health Laboratory as part of the CDC Region X Project, and the GenProbe DNA at the Southcentral Regional Laboratory. Criteria for selection of patients and positive values were defined by the Region X Chlamydia Project.

The first UG specimen swab was used for streaking Modified Thayer Martin Medium on all patients and Gram stain on male patients only. The swab was inserted in collection transport tubes. A second specimen swab was inserted into the collection tube for *N. gonorrhoeae* and *C. trachomatis* DNA assays. A third swab was used for the MicroTrak smear.

The DNA *N. gonorrhoeae* probe compared to culture gave the following results: sensitivity 95.1%, specificity 99.8%, predictive negative value 99.9%, predictive positive value 92.1%, and 99.7% agreement. The agreement of GenProbe *C. trachomatis* assay and MicroTrak was 96.9%.

The GenProbe DNA assays produced excellent results and will be a valuable method for specimens collected in the field and mailed to a central laboratory. Specimens can be examined up to 7 days after collection of the specimen.

CROSSROADS IN HEALTH CARE : THE DELIVERY OF TWO NURSING IN-SERVICE TRAINING PROGRAMS. Nursing Division, Indian and Northern Health Services, Medical Services Branch (MSB), National Health and Welfare.

MSB has 800 nursing positions providing a variety of services to native populations. Because the formal nursing training programs do not prepare nurses to meet the specific health needs of MSB clients, two in-service training programs were designed to remedy this situation.

The MSB Nursing Division developed a Community Health Nursing Program and a Clinical Skills Program for nurses who practise in a variety of settings in urban, rural, semi-isolated, and isolated communities.

These programs are unique in that the emphasis is geared towards interventions that are culturally acceptable and towards addressing specific needs under conditions operant at the worksite.

These two programs are linked by the concepts and principles of primary health care which encourages community participation and self reliance.

This presentation will demonstrate how specific training programs enable nurses to succeed in their role as primary health care providers.

THE YUKON: EXPLORATION AND EPIDEMICS. S.E. Macdonald. Whitehorse General Hospital, Whitehorse, Yukon.

The Yukon was the last "frontier" of North American Exploration. This presentation focuses on the impact of this exploration and settlement on the health of Yukon's aboriginal people. Areas highlighted are early Hudson Bay activity, the Gold Rush and Alaska Highway Construction. Historical accounts of traditional native medicine will also be discussed.

COGNITIVE AND PHYSIOLOGICAL FEEDBACK FACTORS IN COLD PAIN TOLERANCE. D.M. Kappes, J. Michaud, S. Theno. University of Alaska, Anchorage, Alaska, U.S.A.

This experimental research study was concerned with providing relevant or irrelevant physiological and cognitive information on cold pain tolerance during a cold water hand immersion test. Previous research has shown thermal biofeedback for hand warming can account for small but consistent amounts of peripheral temperature self-regulation. This 2x3 design manipulated cognitive information by detailing the specific temperature decline expectancy during cold water hand immersion (Relevant) versus the annual average temperature in Alaska (Irrelevant). These 44 randomly assigned female subjects also received specific and continuous temperature biofeedback readings of immersed hand or sweat activity of opposite hands (GSR) or no physiological feedback as a control condition. Results demonstrate relevant expectancy information to be superior regardless of the relevant physiological feedback. Hand temperature feedback and GSR feedback were equally effective and superior to an absence of physiological information. Feedback of physiological performance appeared to serve only as a distractor. Relevant information detailing expected experience was most predictive of actual time in water and cold pain tolerance with or without physiological information. Moderating variables suggest cold pain tolerance is strongly influenced by motivation and self-efficacy expectations. Psychological effects were better predictors than physiological measures on the self-report of pain experience.

THE STUDY OF ADDICTIVE BEHAVIOR IN ALASKA AND SIBERIA: A REVIEW OF A COOPERATIVE RELATIONSHIP AND IMPLICATIONS FOR RESEARCH IN CIRCUMPOLAR NATIONS. Bernard Segal, Ceasar Korolenko. Center for Alcohol and Addiction Studies, University of Alaska Anchorage, Anchorage, AK 99508 and Department of psychiatry, Novosibirsk Medical Institute, Novosibirsk, USSR.

This report conveys the nature of joint studies on addictive behavior that are being carried out by specialists in addictive disorders at the Department of Psychiatry, Novosibirsk Medical Institute, and the Center for Alcohol and Addiction Studies, University of Alaska Anchorage. It presents a unique opportunity to review the philosophical approaches and general attitudes toward the problem of alcoholism from two diverse research centers. A description of the approach taken by the Novosibirsk group toward the epidemiology of addictive disorders, attitudes toward treatment and prevention of the clinical symptoms of alcoholism and its course is contrasted with the approaches followed in Alaska. A brief discussion of the implications that these approaches have for research in Circumpolar Nations is presented. The chief conclusion, however, is that any attempt to understand drinking behavior has to be multidimensional, focusing on determining the nature of the complex relationship among geo-climatic, ethnic, economic, social and psychological factors, and drinking behavior.

This project is part of the Alaska-Siberian Medical Research Program.

MENTAL HEALTH OF POLAR SOJOURNERS

Peter Suedfeld
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The harshness, deprivations, dangers and novelty of the Arctic and Antarctic environments have led to a general assumption that people exploring and working in these regions are at high risk for psychological as well as physical breakdown. Autobiographical writings, selectively reproducing the concurrent accounts of the individuals involved, have in general buttressed these views. However, analyses of the concurrent accounts of themselves, as well as more recent archival and field research, present a different picture. In fact, expeditioners and work parties overwhelmingly adapt acceptably to polar environments. Most interestingly, a high proportion of participants feel that their mental health has improved as a result of the experience. There are clear parallels with other challenging environments, specifically with those involving isolation in both field and laboratory settings.

Seasonal changes in exposure to methylmercury among the James Bay Cree. Tom Kosatsky. Charles Dumont, Module du Nord Québécois, 980 Guy Street, Montreal Canada H3H 2K3, Francine Noël, Cree Board of Health and Social Services, Alan Penn, Cree Regional Authority, Ben Armstrong, McGill University.

The Cree Indians of James Bay have long depended on freshwater fish as an important subsistence food. The species and quantities of fish available change with the seasons; so too, do the fishing practices of the Cree. Exposure to methylmercury via fish consumption is monitored through a once-yearly collection and analysis of hair, a practice which has not allowed for the assessment of seasonal patterns of exposure. To assess this seasonal influence, we studied the year-round exposure of 95 residents of Waswanipi, an inland village and 124 residents of Whapmagoostui, a village on the coast. The study participants had taken part in the annual methylmercury survey during August 1988 and agreed to have their hair resampled in January and April 1989 at which time a questionnaire would be applied. Of all 219 participants, 151 (69%) completed the study.

In inland Waswanipi, among those completing the study, serial analyses showed a peak of exposure in late fall with a marked late winter drop-off. In contrast, in coastal Whapmagoostui, there was little seasonal variation of either the median or the 90th percentile level of methylmercury. We are currently analysing questionnaire responses to evaluate seasonal methylmercury exposure among individuals and entire villages. This analysis will consider changes in methylmercury as a function of time resident in the bush, preferred species of fish, and estimated fish consumption. Based on our results so far, we believe that in coastal villages, it may be necessary to add a late winter hair survey to the current program which bases advice on fish consumption only on an August sample.

A HANDBOOK FOR INTERPRETERS IN HEALTH Rick Tremblay Acting /Head, Health Promotion and Education, Department of Health, Government of the Northwest Territories, Box 1320, Yellowknife, NWT, X1A 2L9.

A short background will be given to explain the genesis of the handbook project and where it fits into the three step approach to certifying medical interpreters in any of the eight aboriginal languages of the NWT. An explanation will be given about how the book can be used as a living-working document for interpreters to record the words to diagrams and pages in their own dialect. The text is simply written with the scientific or medical words in boldtype to allow for quick reference for vocabulary creation or adaptation. Simple diagrams have blank spaces for the interpreters to write in words in the patients' own language. Copies are then given to patients. Common nursing station problems are cross referenced with the basic discussion of the body systems. The handbook has been made available to all interpreters and nurses in the field and related medical services in the north. The handbook is also being used as a text for the certification of medical interpreters at Arctic College in the NWT. The next phase could be the development of a standard dictionary of medical terms and phrases.

COMMUNITY HEALTH AIDE TRAINING: COMMUNITY HEALTH AIDE PERSPECTIVE. D.L. Caldera, E. McMullen. The North Pacific Rim, Anchorage, AK, 99503, U.S.A.

Community Health Aide (CHA) basic training consists of ten weeks of instruction divided into three sessions lasting four, three, and three weeks each. Between each session, the CHA functions as a health care provider in the home village setting. The basic sessions are followed by a two week preceptorship and certification examination. The entire process takes two to four years.

Natives of small, remote communities selected to become CHAs face tremendous challenges in mastering the skills of the position. The basic training sessions focus on learning the technical skills of the trade. Applying these skills in the village setting requires a great deal of courage. Often alone, the CHA must practice and master patient care skills on friends, relatives, village leaders, and neighbors under uncontrolled circumstances.

However, to become competent, confident health care providers, CHAs must master more than technical skills. They must learn to function within the dominant culture and medical culture. They must adapt to new roles within their communities and learn to balance family life with a very demanding job. Attaining these skills places the greatest demands on the CHA coping and learning skills.

A strong, capable, and determined group of Natives have accepted the challenges of learning to be competent village care providers. They make a difference in rural Alaska!

USING NATIVE LANGUAGE IN GENERAL PRACTICE. A. Snellman. Health Centre of Inari-Utsjoki, 99980 Utsjoki, Finland.

I have worked as a GP for 10 years in a community of 1500 people in Finnish Lapland at the 70th latitude. The majority of the population are Sami and speak Sami as their native tongue, nearly all being more or less bilingual having learned Finnish as a second language.

The language of health care has traditionally been Finnish. Many of the health workers think they have no problems in communicating with their patients in Finnish. I partly shared this opinion 10 years ago, only experiencing problems in situations where the client didn't speak Finnish at all.

After 3-4 years I started to use Sami in my work. I noticed that when speaking his or her own language when telling about symptoms and feelings the patient gave a much more vivid and concrete picture of the trouble than when describing it in a language learned later. Speaking Sami not only helps me to communicate with clients who don't know Finnish at all (especially children and the elderly) but also makes the patient-doctor relationship closer with many who don't have language problems.

My experience shows that even with a language knowledge far from perfect you can get a closer contact, a feeling of safety and trust, which cannot be obtained with the help of an interpreter.

PRIMARY HEALTH CARE: A HEALTH SERVICES AGENCY CHALLENGE

R.J. Musto, H. Hodes, Alberta Region, Medical Services Branch, Health & Welfare Canada, Calgary, Alberta, Canada

This paper presents a description and formative evaluation of efforts made by Alberta Region of Medical Services Branch, the federal agency mandated for health care of Registered Indians, to reorient itself to primary health care. A review of the historical development of services and recent government policy provides the background against which the agency efforts are described and evaluated including establishment of an Indian Health Care Commission, affirmative action programs, internal reorganization and staffing to emphasize programs, and staff inservicing. Specific cooperative initiatives addressed include community health team work planning, training community based trainers for diabetes control and investigation of possible health impacts of the construction of a dam.

"A SEASON TO GROW"-A Preventive Alcohol Abuse Project for Head Start Children in Rural Alaska. Hanson, Mary Lou. Rural CAP Head Start, Anchorage, Alaska, U.S.A., 99520.

In recent years, many communities in rural AK have experienced an epidemic of violence and suicide related to alcohol abuse. In this 17-month project, Head Start children and families were the entry point for alcohol abuse prevention in three villages. Two villages, located in Western AK, shared similar ethnicity, while the village in Southeastern AK was dissimilar. Methodology for the project included needs assessments, identification of stressed children, training for staff and parents on healthy life-styles and support for troubled families. Curricula for children included a puppet program for building self esteem, allowing expression of feelings, and developing alcohol/drug awareness as well as traditional talking circles and other activities to emphasize cultural pride. As a result of the project, staff began to look at their own state of wellness, identified needs for skills and introduced more culturally relevant materials and activities to the children. Parents were involved and requested parenting workshops. Although it is impossible to assess the long term effects, parents and staff showed increased awareness of the ingredients of a healthy family and community, were empowered to identify needs and seek support for change. Observations indicated increased pride among families and staff as to who they are, where they came from and a vision for future change.

DIABETES PREVALENCE AMONG THE EASTERN JAMES BAY CREE OF NORTHERN CANADA. P. Brassard, C. Lavallée, C. Dumont, E. Robinson. Northern Quebec Module, Community Health Department, Montreal General Hospital, Montreal, Canada.

Using chronic disease registers and diabetic clinic lists, and questioning interpreters in the clinics in the eight communities, a list of physician-diagnosed diabetics was drawn up. Medical records were then consulted to ascertain the date of diagnosis and diagnostic criteria, age, sex, glycosylated hemoglobin, blood pressure, weight and height, and presence or absence of complications. Other variables related to lifestyle and clinical care were also studied. The WHO definition of diabetes (fasting plasma glucose ≥ 7.8 mmol/L or random plasma glucose ≥ 11.1 mmol/L on more than one occasion) was applied to diagnosed cases and those not meeting the criteria were eliminated.

A total of 235 persons with diabetes were found in this population of 8841, giving a total prevalence of 27/1000. Seven cases of Type I diabetes were identified; the remainder were type II. The female to male ratio was 2:4. Prevalence of type II was 52/1000 in the 20 years and over age group. Prevalence varied from 1.9% in the northernmost Cree community to 9.0% in the southernmost village. Mean age at diagnosis for Type II diabetes was 48.3 years and mean duration of the disease as of July 1989 was 5 years.

Further details on the other variables will be presented at the time of the conference, and comparisons will be made with other studies.

THE HAZARDOUS PAINTING CERTIFICATION PROGRAM IN ALASKA. M.D. Catlin. Alaska Health Project, Anchorage, Alaska, USA, 99501.

In 1989, a new law became effective in Alaska requiring painters to successfully complete a 16 hour course covering health and safety hazards of their trade. Workers applying paints are exposed to numerous hazards on the job. Exposure to solvents, pigments and active ingredients can cause a variety of acute and chronic health problems, including neurotoxic effects and cancer. Flammable solvents, cold weather and work in remote locations are additional hazards.

The purpose of the new hazardous painting certification program is to insure that these workers are aware of job hazards and methods to eliminate or control them. This presentation will describe the requirements of the law and present an example of an approved 16 hour training program. More than 500 painters have completed the required training and the results of a preliminary evaluation of the training will be presented.

RISK FACTORS FOR CERVICAL CANCER IN GREENLAND AND DENMARK. S.K. Kjaer, C. Teisen, R.B. Christensen et al. Danish Cancer Registry, Nykøbing Falster Hospital, Dept. of Gynecology, District Health Clinic, Nuuk, Greenland.

The incidence of cervical cancer in Greenland is 5.7 times higher than in Denmark among women aged 20-39. Possible determinants were investigated in a population-based cross-sectional study. A total of 586 and 661 women were studied in Greenland and Denmark, respectively. All underwent a personal interview, a gynecological examination, PAP-smear, a cervical scrape for HPV-analysis and finally a blood sample for analysis of HSV-specific antibodies was taken. In Greenland 13% reported first intercourse before the age of 14 in contrast to 3.5% in Denmark and nearly 85% of the Greenlanders had sexual debut before the end of 16th year, whereas this applied to only 45% of the Danish women. 53% of the Greenlandic women reported more than 20 partners and 22% more than 40. The corresponding figures in Denmark were 4% and 0.3% respectively. In Greenland the most common contraceptive method was intra-uterine device (73.6%), whereas oral contraceptive use was most frequent in Denmark (87.9%). As many as 87% in Greenland were current smokers, against 53% in Denmark. The indications of a higher sexual activity in Greenland compared to Denmark are in line with the observed higher rates of sexually transmitted diseases, including HSV-2 infection, and with the hypothesis that differences in cervical cancer incidence are determined by aspects of sexual background. High-risk criteria: early age at first intercourse, multiple partners, unprotected cervix and smoking.

TWENTY-FIVE YEAR FOLLOW-UP STUDY OF DIABETES MELLITUS IN YUP'IK ESKIMO. Murphy, N.J., Schraer, C.D., Boyko, E., Lanier, A.P., Bulkow, L. Alaska Area Native Health Service, Bethel, Alaska, USA. 99559

Diabetes mellitus (DM) was documented by Mouratoff in 1962 to be rare among Yup'ik Eskimo. Clinically, DM was felt to be increasing in frequency. In 1987 a screening study was performed to assess this impression.

The subjects were Yup'ik Eskimo residents of 15 villages near Bethel, Alaska. Of the 2,126 persons over 20 years of age 1,124 (53%) were screened by obtaining a random glucose level, determined by both capillary and plasma samples. The capillary samples were analyzed visually by a reagent strip and by a reflectance photometer. The plasma sample was analyzed by a hexokinase method. Subjects with a glucose value of 120 mg/dl on any of the 3 methods were given a 2 hour 75 gram glucose tolerance test (GTT). Of 255 persons in this group, 202 (79%) received the GTT which was interpreted by World Health Organization (WHO) criteria.

Twenty-five (2.2%) had DM in the current group versus eight (1.13%) of the 705 subjects screened in 1962. Twenty-two (2.0%) of the current group had impaired glucose tolerance (IGT). Thirteen (52%) of the subjects with DM and 19 (86%) with IGT had no prior glucose intolerance. Using Mouratoff's criteria for obesity there were 4.0% men and 10.1% women in 1962 and 14.7% men and 19.7% women in 1987 (p less than .001).

Diabetes mellitus and obesity have significantly increased among Yup'ik Eskimo in the last 25 years.

PREVALENCE OF DIABETES MELLITUS IN PREGNANCY AMONG YUP'IK ESKIMO AND ALASKA COASTAL INDIANS 1987-1988. Murphy, N.J., Schraer, CD, Lanier, AP, Bulkow, L, Knott, L. Alaska Area Native Health Service, Sitka, Alaska.

Diabetes mellitus (DM), once rare among Eskimos, has been reported to be increasing in prevalence. Schaefer's work in the 1950's with Canadian Eskimos confirmed DM to be rare but 26 percent of the diabetics he found were pregnant. This study will assess the prevalence of diabetes in pregnancy in two groups of Alaska Natives.

Birth log information was obtained on 873 consecutive deliveries in the predominately Yup'ik Eskimo of the Yukon Kuskokwim Delta Service Unit (YKDSU) and the Alaska Coastal Indian of the South East Alaska Regional Health Corporation at Mt. Edgecumbe Hospital (SEARHC-MEH). Patients were screened with a 50 gram oral glucose screen test (GST). A GST greater than or equal to 140 mg/dl required a three hour 100 gram oral glucose tolerance test (OGTT) evaluated by O'Sullivan criteria.

Thirty five (5.8%) of the pregnancies at YKDSU and five (2.5%) at SEARHC-MEH met O'Sullivan criteria for gestational diabetes mellitus (GDM). An additional two pregnancies at each facility met World Health Organization (WHO) criteria for DM for a total of 37 (6.1%) at YKDSU and seven (3.5%) at SEARHC-MEH pregnancies affected by DM.

The prevalence of diabetes in pregnancy at YKDSU is twice the rate reported for US, all races. Given the low prevalence of DM in the adults in YKDSU, these findings suggest the Yup'ik Eskimo may have a rapidly emerging increased prevalence of DM.

Peculiariti tendency disease Aechinococcus granulossus in Chukotka.

Vasilii Boicov D., Alecsander Teluchkin V. Central district hospital of Chukotka, surgical department. Anadyr.

Disease Aechinococcus granulossus in Chukotka has aborigin population. Yearly discover about 6-8 case disease Aechinococcus granulossus in course series yeas.

Before 1989 yea 100% diseas Aechinococcus granulossus in lung operative treatment. In 1989 yea have observation cure don't tratment of localisation process in lung.

We have six case patients with localisation process in lung for observation. This observant allow suppose what disease Aechinococcus granulossus has differ from European variety disease.

THE 1988 POLAR BRIDGE EXPEDITION: COUNTER-BALANCING EFFECTS OF CHANGES IN AEROBIC FITNESS AND SKIING ECONOMY ON THE RELATIVE STRESS OF TREKKING. M.A. Booth, J.S. Thoden, F.D. Reardon, M. Jette, and A. Rode. School of Human Kinetics, Faculty of Health Sciences, University of Ottawa, Ottawa, Ontario.

Three of the 4 Canadian members of the 3-month, 1800 km expedition were tested on a motorized ski-treadmill (TM), just before and after the Trek, to determine the oxygen cost of sub-maximal ski-trekking, both with and without a 37.5 kg backpack, over a range of speeds and heart rates. Heart rates were also recorded at 15 min intervals during portions of the Trek itself using battery operated Sports Testers. Maximal aerobic power (VO2 max) was determined with a bicycle ergometer protocol.

Over the range of TM speeds tested (2.5 - 5.0 kph at 1° slope), heart rates (HR) and oxygen consumption per min (VO2) increased progressively, whereas VO2 per km was relatively constant. The effect of the backpack load, which increased total weight carried by an average of 50%, was to increase VO2 per km by about 30% in two subjects and 49% in the third.

Post-trek VO2 max decreased by 15-20% in all 3 subjects from an average pre-Trek "trained" level of 62.2 ml/kg·min while the oxygen economy of loaded skiing improved by 6, 8 and 14% in the 3 subjects. These two long-term adaptations appeared to have counter-balancing effects on the relative physical "stress" of skiing, such that HR following the trek was essentially unchanged from pre-Trek at any given TM speed in 2 subjects and even decreased by an average 8% in the subject with the 14% improvement in economy.

The HR recorded during the trek suggest that the majority of the distance was covered at a speed equivalent to about 3.5 kph on the TM. This speed equates to a mean oxygen cost of 370 ml/kg·km (21.6 ml/kg·min) for the post-trek loaded condition and a relative stress level of 39-46% of VO2 max. Oxygen cost at 3.5 kph was 29% greater in the least efficient compared to the most efficient trekker.

THE EVOLUTION OF THE COMMUNITY HEALTH REPRESENTATIVE PROGRAM IN CANADA AND THE VISION FOR THE FUTURE. Oliver Okemow, C.L. McLean. National Indian and Inuit Community Health Representative Organization, Ottawa, Ontario, Canada.

The evolution of the Community Health Representative Program in Canada is examined, tracing the history of the program from the first training sessions in 1965, through the many program evaluations, to the first National Community Health Representative Conference in 1986 and the subsequent formation of the National Indian and Inuit Community Health Representative Organization (NIICHO). The direction being provided through NIICHO is leading to positive developments in terms of establishing training and program standards and the recognition of the contribution of Community Health Representatives to the well being of First Nation's people. Models for training, the enhanced role of the Community Health Representative and the relation of the Community Health Representative to the Self-government and Health Transfer process will be presented.

A COMPARISON OF CANCER IN GREENLAND AND DENMARK. A STUDY BASED ON ROUTINELY COLLECTED INCIDENCE DATA 1973-1985, USING THE DANISH POPULATION AS BASELINE. H.R. Storm, N.H. Nielsen, A. Prener. Danish Cancer Registry, Danish Cancer Society, P.O. Box 839, DK-2100, Copenhagen, Denmark.

Marked differences in cancer incidence of specific sites has been reported between the Greenlandic population (Inuit) and the Danish. The purpose of this study is to make a comprehensive overview of such differences by studying all cancers based on data of same quality, collected and coded similarly, from a time period where health services in Greenland and Denmark are similar.

The cancer pattern in Greenland was studied by comparison to the pattern in Denmark calculating the expected number of cancers by applying age and calendar time specific incidence rates from Denmark to the population at risk in Greenland 1973-85. The relative risk (RR) was calculated by dividing the observed number with the expected under the assumption of a proportionate hazards model. Confidence limits were calculated assuming a Poisson distribution.

The cancer risk was increased more than 20 fold in both sexes for nasopharyngeal cancer, 5-10 fold for salivary glands, oesophagus and unspecified sites, and between 1.2 and 2.5 times for lung cancer and metastasis. Increased risk was observed for cancer of the mouth among males (RR 3.0), and for nasal cavities (RR 5.7), peritoneal cavity (RR 5.3) and cervix (RR 3.2) among females. Decreased risk was observed for both melanoma and non-melanoma skin cancer (10 fold) for both sexes, breast cancer and corpus uteri cancer for females (2-3 times), and for cancer of larynx, rectum, prostate, testis, brain tumours and lymphomas and leukaemias for males. These differences points towards areas for research in the causes of cancer.

PITUITARY-ADRENOCORTICAL ACTIVITY DURING A TRANSARCTIC SKITREK. N. Kalita, R. Tigranian, T. Shumilina, B. Porokova, A. Roganov, A. Melkonian, M. Malakov, T. Chernikovskaya. Institute for Standardization and Control of Drugs, USSR Ministry of Health, Moscow, USSR.

Blood levels of ACTH, cortisol (F), progesterone and urinary excretion of F were studied in 13 men on a 90 day, 1800 km Transarctic Skitrek from the USSR to Canada via the North Pole. Samples were taken 18 and 11 days before the start of the trek; at day 12, 29, 55, and 74 of the march; and 3 days after the finish.

ACTH decreased during the trek, the lowest values occurring in the 2nd half of the march. In contrast, blood cortisol was higher in the first half, returning to initial values on subsequent test days. Cortisol excretion increased to day 55 and then returned to pre-trek levels. Blood progesterone rose at day 12 and particularly at day 74, but approximated initial levels at other test dates.

Our data indicate increased glucocorticoid activity of the adrenals in the first half of the trek. This can be seen in the increased blood levels of F and its urinary excretion against the background of unchanged adrenocorticotrophic activity. During the second half of the trek the hormone levels showed an opposite effect. The increased blood levels of the working hormone (cortisol), concomitant with the unchanged central hormone ACTH, may be regarded as a change in the homeostasis of the adaptive system to the extreme working and environmental conditions.

THE EFFECT OF SEVERE COLD AND EXERCISE ON THE ACTIVITY OF THE RENIN-ANGIOTENSIN-ALDOSTERONE SYSTEM. A. Roganov, N. Kalita, R. Tigranian, B. Dorokova, T. Chernikovskaya, M. Malakov, T. Shumilina, A. Melkonian. Institute for Standardization and Control of Drugs, USSR Ministry of Health, Moscow, USSR.

Blood and urine studies were conducted on 13 men on a 90 day, 1800 km Transarctic Skitrek from the USSR to Canada via the North Pole. Renin activity in plasma and blood levels of aldosterone, angiotensin II, vasopressin (ADH), Na, K, osmolality and the activity of angiotensin converting enzyme (ACE) were measured. The urine content of aldosterone, Na, K, and osmolality were also studied. Samples were taken 18 and 11 days before the start of the trek; on day 12, 29, 55 and 74; and 3 days after the finish.

Plasma renin activity rose early in the trek with the highest values found on day 74; whereas, the blood level of aldosterone rose markedly by day 12 and then reverted to pre-trek values at other study dates. Blood content of angiotensin II increased steadily to a high level; whereas, ACE activity decreased throughout the trek. ADH blood levels rose dramatically and early in the trek. Na blood levels fell only in the 1st stage while K levels increased markedly at all stages and at the finish. Urine excretion of Na fell early in the trek, K only during the 4th stage, and aldosterone rose in the 3rd stage. Blood osmolality was lower only in the 1st stage of the trek, while urine osmolality remained unchanged.

The data provide evidence of wide shifts in the functional activity of the renin-angiotensin-aldosterone system and ADH secretion.

THE EFFECTS OF EXTREME CONDITIONS ON THE PITUITARY-GONADAL SYSTEM DURING A TRANSARCTIC SKITREK. A. Melkonian, N. Kalita, R. Tigranian, M. Malakov, B. Dorokova, T. Chernikovskaya, A. Roganov, T. Shumilina. Institute for Standardization and Control of Drugs, Ministry of Health, Moscow, USSR.

The blood content of prolactin (PRL), luteinizing hormone (LH), follicle stimulating hormone (FSH), testosterone, estradiol (E2), and estriol (E3) was studied in a 13 man team participating in a 90 day, 1800 km Transarctic Skitrek from the USSR to Canada via the North Pole. The studies were conducted 18 and 11 days before the start of the trek; on day 12, 29, 55, 74 of the trek; and 3 days after the finish.

Relative to pre-start values there was a significant decrease of PRL concentration both during and after the trek. Except for day 29, LH concentration decreased considerably throughout the trek whereas the blood concentration of testosterone was decreased by day 29, 55, and 74. Blood levels of E2 remained unchanged. E3 remained unchanged during the first half of the trek, but dropped markedly during the second half.

We conclude that a prolonged skitrek under extreme Arctic conditions led to a decrease in the testicular activity of gonads and the luteotropic function of the adenohypophysis as well as to changes in the E2 metabolic process. The decreased PRL content of the skiers' blood differs from the PRL content of people living under Arctic conditions usually associated with stress factors. The reaction of the adenohypophysis with respect to PRL secretion appears to be specific to these conditions.

THE EFFECTS OF PROLONGED EXPOSURE TO ARCTIC CONDITIONS ON THE SOMATOTROPIN-SOMATOSTASIN-SOMATOMEDIN AND PARATHORMONE-CALCITONIN SYSTEMS. B. Dorokova, T. Chernikovskaya, A. Roganov, N. Kalita, A. Melkonian, M. Malakov, R. Tigranian, T. Shumilina. Institute for Standardization and Control of Drugs, Ministry of Health, Moscow, USSR.

Blood levels of somatotrophic hormone (GH), somatostatin (S), somatomedin (Sm), parathyroid hormone (PTH) and calcitonin (CT) were studied in 13 men on a 90 day, 1800 km Transarctic Skitrek from the USSR to Canada via the North Pole. Sampling was done 18 and 11 days before the trek; at day 12, 29, 55, 74; and 3 days after the finish.

The GH level increased dramatically in the 1st 3 stages of the trek with highest values on day 12 and 55; by day 74 it had reverted to pre-start values, and again showing a considerable rise after the finish. S levels were higher on day 29 and after the finish whereas Sm decreased by day 12 and 29 and after the finish. PTH levels increased considerably at all stages of the trek and fell drastically to well below pre-start values after the finish. CT content remained unchanged throughout the trek, decreasing after the finish.

We believe that prolonged exposure to Arctic conditions resulted in a marked activation in the adenohypophysis somatotrophic function of the skiers. The mechanism responsible for regulation of GH secretion, normally hypothalamus controlled with the help of S and Sm, appeared to be realized in some other way under the Skitrek conditions. It may be that blood levels of GH, PTH and CT are dependent on changes in Ca metabolism caused by the extreme trek conditions.

THE BLOOD CONTENT OF NEUROPEPTIDES IN SKIERS DURING A TRANSARCTIC SKITREK. R. Tigranian, N. Kalita, M. Malakov, T. Shumilina, T. Chernikovskaya, A. Roganov, A. Melkonian, B. Dorokova. Institute for Standardization and Control of Drugs, USSR Ministry of Health, Moscow, USSR.

Blood concentrations of B-endorphin, substance P, and neurotensin were studied in 13 male skiers on a 90 day, 1800 km Transarctic Skitrek from the USSR to Canada via the North Pole. Samples were taken 18 and 11 days before the start of the trek, at day 12, 29, 55, and 74 of the trek and on the 3rd day after its completion.

Blood levels of B-endorphin decreased markedly by the 29th day and remained low after the trek. In contrast, the concentration of substance P rose considerably during the second half of the trek (day 55 and 74) and after the finish. The blood concentration of neurotensin increased by day 55 and 74.

Our data indicate that different neuropeptides appear to participate in the regulatory functions of the antinociceptive and nociceptive systems of the brain at different stages of the trek. During the first half the ratio of ACTH and B-endorphin in the blood played a dominant role in the activation of the nociceptive system; whereas, in the second half of the trek the activation of the antinociceptive system predominated, stimulated by substance P.

THE HYPOTHYROID-THYROID GLAND SYSTEM DURING EXPOSURE TO EXTREME ARCTIC CONDITIONS. N. Kalita, R. Tigranian, B. Dorokova, T. Shumilina, M. Malakov, T. Chernikovskaya, A. Roganov. Institute for Standardization and Control of Drugs, Ministry of Health, Moscow, USSR.

Blood levels of thyrotrophic hormone (THS), total triiodothyronine (T3), free T3 (fT3), reverse T3 (rT3), total thyroxine (T4), and free T4 (fT4) were studied in 13 men on a 90 day, 1800 km Transarctic Skitrek from the USSR to Canada via the North Pole. Sampling was done 18 and 11 days before the start of the trek; on day 12, 29, 55 and 74 of the march; and 3 days after the finish.

Levels of THS increased only by day 29, those of total T3 and rT3 remained practically unchanged, while fT3 was lower than pre-start values at all times. Total T4 levels rose considerably in the first half of the trek, returning to initial values during the second half. There was a decrease in fT4 levels at day 12, 29, and 55.

Our results indicate that exposure to the extreme Trek conditions had an inhibiting effect on thyroid function. However, the most essential feature of such exposure is the ability of the human organism to influence more effectively the deiodinizing process of thyroid hormones.

BLOOD LEVELS OF PANCREATIC HORMONES UNDER EXTREME ARCTIC CONDITIONS. T. Chernikovskaya, N. Kalita, R. Tigranian, I. Stainaya, A. Melkonian, B. Dorokova, A. Roganov, M. Malakov, T. Shumilina. Institute for Standardization and Control of Drugs, USSR Ministry of Health, Moscow, USSR.

Levels of insulin, C-peptide, glucagon and glucose were studied in 13 men on a 90 day 1800 km Transarctic Skitrek from the USSR to Canada via the North Pole. Samples were taken 18 and 11 days before the start; at day 12, 29, 55 and 74 of the trek; and 3 days after the finish.

At day 29 and 74 there was an increase in insulin, C-peptide, and glucagon; whereas at day 55 and after the finish insulin and C-peptide levels were below pre-start values. There was a decrease in blood glucose both during and after the trek.

The results illustrate phase changes in the activity of pancreatic alpha and beta cells. During the first half of the trek there was not only greater secretion in the pancreas but also a higher rate of degradation in the liver. During the third stage and after the finish there was both a drop in pancreatic secretory activity and an increased rate of insulin degradation process in the liver. In the fourth stage there was a rise in pancreatic secretory activity together with a reduced rate of insulin degradation in the liver.

THE EFFECTS OF SEVERE COLD AND EXERCISE ON BLOOD LEVELS OF CYCLIC NUCLEOTIDES AND PROSTAGLANDINS. T. Shumilina, R. Tikhonov, N. Kalita, T. Chernikovskaya, B. Dorokova, A. Koganov, A. Melkonian, M. Malakov. Institute for Standardization and Control of Drugs, USSR Ministry of Health, Moscow, USSR.

The blood levels of cAMP, cGMP, prostaglandins (PGE), prostacyclin and thromboxane and the urinary excretion of cAMP and cGMP were studied in 13 men on a 90 day, 1800 km Transarctic Skitrek from the USSR to Canada via the North Pole. Samples were taken 18 and 11 days before the start of the Trek; at day 12, 29, 55, and 74; and 3 days after the finish.

Blood levels of cAMP rose dramatically by day 12, 29, and 55 of the Trek but cGMP levels decreased markedly throughout the march. Urinary excretion of cAMP decreased only at day 12 but urinary excretion of cGMP decreased at all stages and after the finish. Blood content of PGE increased considerably by day 29 but dropped markedly by day 55. There was a marked increase in blood prostacyclin by day 29, 55, and 74 and after the finish.

The results indicate that during the trek the activity of β -adrenergic structures predominate while in the post-trek period the cholinergic effect predominated.

CHANGES IN BLOOD ACID HYDROLASES ACTIVITY DURING A TRANSARCTIC SKITREK. L.E. Panin, N.N. Mayanskaya, A.A. Borodin. USSR Academy of Medical Sciences Siberian Branch, Biochemistry Institute, Novosibirsk, USSR.

The process of somatic cell destruction/restoration was studied in 13 men participating in a 90 day, 1800 km Transarctic Skitrek from the USSR to Canada via the North Pole. We know that lysosomal acid hydrolases enter the blood during stress due to somatic cell destruction and increased phagocyte secretion, particularly mononuclear phagocytes. Specific macrophages are active in stressed tissue, thus there is simultaneous destruction and restoration of cells.

Skiers subjected to an acute stress in Moscow (an intense physical load after sleeping in a cold chamber @ -20 C) prior to the expedition showed no changes of serum acid phosphatase, cathepsin-D, β -galactosidase or DNAase activity. Prior to departure one week later at Dixon (Lat 73 N) the activity of all acid hydrolases except cathepsin-D had increased sharply. During the trek this changes: we saw a high β -galactosidase (up to the Pole) and high acid DNAase activity throughout the trek and at the finish in Ottawa. In contrast the phosphatase and cathepsin-D activity were significantly lower during the trek and at the finish. We take the latter as evidence of the equilibrium in the destructive/restorative trends. The role of hormone mobilization in lysosome enzyme activity changes are also discussed.

PSYCHOLOGICAL AND PHYSICAL ADAPTATION IN MEMBERS OF THE USSR/CANADA TRANSARCTIC SKITREK. T.S. Bshir-Zader, M.G. Malakov, V.K. Martens, V.I. Chadov (USSR), A. Rode (Canada). Biophysics Institute, Ministry of Health, Moscow, USSR.

Psychological suitability, cardiovascular and central nervous system function, autonomous regulation, and working capacity were assessed in 13 men before and after a 90-day, 1800 km transarctic skitrek from the USSR to Canada via the North Pole. Data was collected before the trek in Moscow and Dixon (lat 73) in the USSR and in Ottawa, Canada after the trek. Analysis of pre-start modelling data based on cold chamber studies at -20 C are also presented.

In general, the skiers' initial functional state (FS) was characterized by a high functional level, slight tension and autonomous regulatory balance, high level of working capacity, and slight electro-encephalographic changes. Individual characteristics of initial FS were established and team members were divided into groups based on their ability to adapt.

On the whole, at the finish and after the trek the functional level was decreased, the regulatory tension was increased, working capacity decreased, and there were some functional electro-encephalographic changes.

Adaptation and "successful" activity in the field were influenced by initial cardiovascular and central nervous system functional state, by non-specific stability to the extreme environment, and by working capacity. We defined the relationship between these variables and successful activity under extreme conditions. The relationship between psychophysiological variables and "success" in the field was also used to develop methods for screening candidates for expeditions and other similarly stressful tasks.

ENERGY METABOLISM CHANGES IN PARTICIPANTS OF A TRANSARCTIC SKITREK. L.E. Panin, L.S. Ostapina, T.A. Tret'yakova, A.R. Kolpakov. USSR Academy of Medical Sciences Siberian Branch, Biochemistry Institute, Novosibirsk, USSR.

Changes in energy metabolism were studied in 13 men participating in a 90 day, 1800 km Transarctic Skitrek from the USSR to Canada via the North Pole. During the trek there was an increase in the role of lipids in energy supply. FFA concentrations did not change but there was a decrease in triglyceride (TG) levels at the Pole. The total fraction of LDL and VLDL was markedly lower at all stages of the trek relative to initial values. Previous analyses of this effect showed its dependence on the increase in triglyceridolipase and lipoproteinlipase activity in the blood. Change in LP-spectrum showed the same dependence. Content of VLDL was very low. Content of LDL was two times lower. Content of HDL3 and especially HDL2 increased. This gave a 50% increase in HDL cholesterol. Atherogenic index (VLDL+LDL/HDL) was 3 times lower.

Before the trek (Moscow) and after (Ottawa) the skiers spent the night in a cold chamber @ -20 C followed by 3 hours of exercise. There was an increase in serum FFA levels, more clearly expressed before than after the trek. There were no changes TG, LDL, or total fraction of VLDL. LP-spectrum studies showed increases in VLDL levels in Moscow but not in Ottawa. However, in Ottawa the total fraction of LDL and VLDL was lower and HDL2 was higher. The data indicate a change towards and increased use of lipids after the trek. In erythrocytes the rate of glycolysis was increasing slightly but that on fructose diphosphate was markedly reduced. This indicates that the inhibition of glycolysis takes place after phosphofructokinase.

CHANGES IN ENDOCRINE ACTIVITY IN PARTICIPANTS OF A TRANSARCTIC SKITREK. L.E. Panin, P.E. Vloshinsky, I.E. Kolosova, A.R. Kolpakov. USSR Academy of Medical Sciences Siberian Branch, Biochemistry Institute, Novosibirsk, USSR.

Changes in hormonal activity were studied in 13 men participating in a 90 day, 1800 km Transarctic Skitrek from the USSR to Canada via the North Pole. Both before (Moscow) and after (Ottawa) the trek, the skiers spent the night in a cold chamber and were then subjected to 3 hours of intense physical exercise. Blood sera were analysed for adrenocorticotrophic hormone (ACTH), cortisol, insulin, C-peptide, glucagon, triiodothyronine (T3), tetraiodothyronine (T4), aldehyde and somatotrophic hormone (STH).

In Moscow there were increased levels of cortisol and ACTH while that of insulin and C-peptide were lower, changes characteristic of stress. After the night in the cold chamber, there was a tendency to a decrease in ACTH and cortisol and an increase in insulin. After the addition of intense exercise there was an increase in insulin, C-peptide, glucagon, TTH, T4, aldehyde and STH.

In Ottawa there was a significant increase in cortisol, C-peptide, T3, but the reaction to cold and physical load were completely different. There were no changes in the ACTH, glucagon, TTH, T3, T4, aldehyde or STH. Thus at the end of the trek the skiers showed the characteristic features of "diabetes of stress" as described by Panin elsewhere.

A COMMUNITY RESPONSE TO AN OUTBREAK OF PERTUSSIS IN YUKON.

R.G. D'Aeth, A. Grauwiler, M.A. Sinclair, R. Pearson, D. Perman, G. Szabo L. Tremblay. Yukon Region and Branch (Ottawa) H.Q. Staff, Medical Services Branch, Health and Welfare Canada.

The Yukon Territory experienced an outbreak of pertussis caused by B. pertussis lasting some four months. During this period 207 people were reported as having had this disease.

The disease was largely confined to the capital city, Whitehorse. (population approximately 20,000) and Carmacks, (population approximately 500), a community 200 km from Whitehorse. A few sporadic cases occurred in five other Yukon communities.

The Yukon has a high reported level of immunization. Immunization data was collected from Carmacks on those who had the disease and compared with those who did not get the disease. In addition, the immunization status of children in Whitehorse was studied.

The results of the response of this outbreak by physicians, nurses, the public and the media contributed to the rapid curtailment of the disease.

A GROUP APPROACH TO CHOLESTEROL REDUCTION BY DIET. M. Cushing, Alaska Department of Health and Social Services, Division of Public Health, Section of Nursing, Petersburg Health Center, Petersburg, AK, 99833.

The prevalence of high blood cholesterol ≥ 240 mg/dl in adults in the United States is 25%. Diets in Northern communities may result in prevalence even higher than this. The National Cholesterol Education Program recommends dietary treatment to reduce this risk for coronary heart disease. This group approach uses the Eater's Choice Cholesterol Treatment Program by Ron Goor, Health Prospects, which focuses on reducing dietary saturated fat and teaches participants skills to translate the AHA dietary guidelines into actual food choices within a quantitative framework. Patients determine an individualized daily sat-fat budget based on 10% (or lower) of their total daily ideal calorie intake. Given extensive tables of sat-fat contents of foods, they then choose any combination of food to stay within their budget.

The Food Processor II computerized Nutrition and Diet Analysis System by ESHA Research is used to analyze basic nutrients, calories from saturated, monounsaturated and polyunsaturated fats, poly/sat, and CSI for each participant.

Many participants lose weight as well as lowering their cholesterol.

PREVALENCE AND DETERMINANTS OF TUBERCULIN SENSITIVITY IN A PREDOMINANTLY VACCINATED INDIAN CHILD POPULATION. T. Kue Young¹, Sulaiman Mirdad², Ian Casson³.

¹ Department of Community Health Sciences, University of Manitoba, Winnipeg, MB. ² University of Toronto, Toronto, ON. ³ Sioux Lookout Zone Hospital, Sioux Lookout, ON.

A cross-sectional survey of 701 Indian children aged 1-15 in 5 northwestern Ontario communities was undertaken. Eighty-two percent of the children had a documented history of past BCG vaccination while 50% had a visible scar. The prevalence of a positive reaction (induration of 5 mm or more) varied from 6% to 26% in the study communities. Multiple logistic regression analyses indicated that community of residence, age, past use of isoniazid, and time since last Mantoux test were positive significant predictors of a positive reaction. The presence of BCG scar and the number of past vaccinations were not significantly associated whereas the elapsed time since the last BCG was significantly but negatively associated with tuberculin sensitivity. Other factors which were investigated included the degree of overcrowding, nutritional status and past history of household and community contact with an active case of tuberculosis, but their independent effect could not be demonstrated. Despite the presence of mass BCG vaccination in this population, tuberculin testing is still a useful tool in assessing the risk of infection and evaluating the effectiveness of control strategies.

COLD EFFECTS ON OUTDOOR WORKERS. H. Viikari-Juntura, M. Anttonen, J. Hassi, Oulu Regional Institute of Occupational Health, P.O. Box 451, SF-90101 Oulu, Finland.

The aim of the study was in outdoor work in winter to investigate the effects of cold exposure, which could cause health risk, reduce performance of workers or diminish work safety. The evaluation was made with body temperatures, heart rate, blood pressure and thermal feelings.

Cold exposure and responses in the body were measured in heavy, moderate and light outdoor work during 34 workdays. The subjects were young, healthy men and they wore winter clothing generally used in those ambient temperatures (1.3-2.7 °C). The ambient temperature was +3...-24 °C and work rate 180-470 W.

Heat debt was temporary over recommended 40 Wh/m² among nearly all subjects and in two cases in heavy work the mean of heat debt during workday was over the limit, too. Rectal temperature increased in heavy work 0.5-1.0 °C and in light work less than 0.5 °C. Mean skin temperature was occasionally under 28 °C and mean value during workday was most often 29-31 °C.

The limit of the frostbite risk in this study was +8 °C, because skin is then not able to warn for freezing. On cheek skin temperatures under that limit was often measured, but on finger skin only for short periods. Local temperatures on finger skin (T_{fi}) indicated that dexterity was often reduced (T_{fi} under +15 °C) in outdoor work. Blood pressures during short work pause increased most (16/17 Hgmm) in light work, where thermal condition was repeatedly changing (outdoors - indoors).

The results showed that in outdoor work in winter workers exposed significantly to cold even if they were using good winter clothing. The performance of hand was reduced, which can diminish work safety and exposure can cause health risk i. g. to the workers, who have heart or circulation disease.

TAKING A HEALTHY LIFESTYLE MESSAGE TO NORTHERN NATIVE PEOPLE THROUGH A DOOR TO DOOR CAMPAIGN. M. Crown, S. Yazdannehr, Community Health Directorate, Department of Health, Government of the Northwest Territories, Yellowknife, NWT, Canada.

Because of the high prevalence of tobacco use and the high incidence of sexually transmitted diseases in the north, the Ministry of Health initiated a special health promotion campaign to provide each household in the Northwest Territories with information about the health hazards of tobacco use and the prevention of AIDS. The main strategy used in the campaign was to train local people to deliver the message door to door in each community. The door to door campaign consisted of four stages: development of the campaign package materials, training of local community people (canvassers) to deliver the materials door to door, delivery and evaluation of the campaign.

A series of five pamphlets was developed for use in the door to door packages and translated into French, English and four dialects of Inuktitut. These pamphlets were developed in consultation with aboriginal people to ensure that the terminology was easily understood, translatable and culturally appropriate.

The Regional Health Boards selected aboriginal people from their communities as canvassers for the campaign. Canvassers participated in a training session that gave them a) an overview of the health information in the door to door packages; b) skill development to carry out the door-to-door strategy of delivery and c) other strategies for public awareness of the campaign such as use of local radio, newspapers, posters and community presentations.

The delivery of the campaign took place in each region over a three month period. Approximately 18,000 packages were delivered. The campaign was considered a success with the majority of aboriginal homes in the Northwest Territories receiving packages. The feasibility of the door to door approach will be considered in future health promotion activities.

COMPUTER GUIDED IMMUNIZATION TRACKING. Lark Hackney, Elfrida Nord, Public Health Nursing Program, Division of Public Health, Department of Health and Social Services, State of Alaska.

Providing detailed immunization status and vaccine accountability has been a long-standing problem in Alaska. An immunization module has been designed by Indian Health Service and adopted for use by Alaska Area Native Health Service/Alaska State Nursing Program. It is being implemented on a decentralized computer system in rural Alaska.

The module has been designed to be used on a variety of computers, such as mini, personal or multi-user computers.

The features of the program include the ability to enter recent or previous immunizations. Lot numbers aid in accounting for vaccine usage and in identifying vaccines which may be responsible for adverse reactions. There are a variety of ways providers may obtain list of clients due for immunizations. A letter to the parents of children due for immunizations can be generated. Reports on immunization status and vaccine accountability can be printed for designated time periods.

REWARMING OF FEET BY DIFFERENT TYPES OF PHYSICAL EXERCISE. M. Rintamäki, J. Hassi, J. Oksa & T. Mäkinen, Oulu Regional Institute of Occupational Health, P.O. Box 451, SF-90101 Oulu, Finland.

Due to diminished circulation, large surface area-weight relationship and usually minor insulation than in the torso, the temperatures of the peripheral parts of the body decrease first when the human body is exposed to cold. In this work, the capacity of physical work to rewarm the feet was studied at -15°C with 6 young men using adequate winter clothing. Before exercise, the test subjects were cooled by allowing them to sit motionless for 60 min at -15°C. The studied activities were: bicycle ergometer work (BE), arm crank ergometer work (AE) and step exercise (S). Total metabolism was adjusted to be ca. 340 W in all experiments.

S was the most effective method to rewarm the whole body (P<0.001) as well as the feet (P<0.001). This was obviously due to the poorer mechanical efficiency (15.9 % in this work) of S in comparison to BE and AE (20.7 and 18.8 %, respectively). Moreover, increased circulation of feet as well as increased metabolic rate in foot muscles is probably also involved, because higher feet temperatures in relation to body temperature were measured during S in comparison BE and AE. Both BE and AE were equally effective to stop the decrease of body temperature or to turn it to a slow increase. However, leg and feet temperatures were increased more by BE than by AE.

BE and AE increased the average dry heat loss by ca. 10 % and S by ca. 20 %. Obviously due to the work, S increased dry heat loss from feet (instep) by 30 % and BE by 12 % while AE decreased it by 6 %.

The results suggest that to be able to predict foot temperature and to estimate the required thermal insulation for feet, the knowledge about the type of exercise is as important as the knowledge about total metabolism.

DEVELOPMENT OF AN ONSITE OXYGEN PRODUCTION DISTRIBUTION SYSTEM IN AN ISOLATED NORTHERN REGION. Wendy MacDonald, Christopher O'Neill, Churchill Health Centre, Churchill, Manitoba, Canada.

The high cost of transportation used to make medical oxygen one of the most costly items in the operating budget of both the Churchill Health Centre and the eight Nursing Stations in the Keewatin Region of the Northwest Territories.

In 1989, the Churchill Health Centre addressed this problem by installing a Rimer Alco Ltd. Model OC6 oxygen concentrator and a Rimer Alco Ltd. pressure intensifier. The 31 bed Health Centre now produces all oxygen required for its in-patients and O.R.; then bottles excess production for distribution to the eight Keewatin Nursing Stations.

Churchill has eliminated their transportation costs entirely and the Keewatin is projected to have a 50% cost reduction. Capital payback is projected as 4 years.

Labelled as "Oxygen 93% Percent" the oxygen produced generally rates at 95% on the control and monitoring system that continuously monitors the final product gas of the concentrator. Specifications of the system, safety factors, maintenance program, and financial details will be presented.

INFLUENCE OF COLD ADAPTATION AND PHASE SHIFT OF CIRCADIAN RHYTHM ON RESPIRATORY CENTER SENSITIVITY IN MAN. S.G. Pravyachikov, Yu.A. Ilaturov, P.M. Shmerling, A.M. Pichukov. Siberian Department of Medical Academy. Institute of Physiology, 630090 Novosibirsk, USSR.

The influence of cold and Zeitgebers shift on hypercapnic respiratory center (RC) sensitivity was studied in shift workers and transit workers, respectively. Ergospirometric system EOS SPRINT equipped with computer IBM PC/XT was used in the experiment. Two research sessions were held. In the first one - shift workers adapted (1group - 12 subjects) and nonadapted (2group - 10 subjects) to cold - hypercapnic sensitivity was evaluated by the Rebreathing method. RC sensitivity in 1gr. was lower versus 2gr., $S=11.4 \pm 0.90$ and 13.75 ± 0.23 l/(min * %FetCO₂), respectively, $p<0.05$; (FET CO₂ - End tidal volume). The metabolic level was higher in 1gr. ($E=0.78 \pm 0.04$) vs 2gr. ($E=0.64 \pm 0.05$, $p<0.05$). In the second session the parameters prior to and after air crossing of 4 time zones were compared (3group and 4 group, respectively, 9 subjects in each). However no reliable differences in RC sensitivity were found after transmeridian flight: $S(3gr.)=11.2 \pm 1.78$, $S(4gr.)=14.3 \pm 1.57$. Minute ventilation was the same, however E coefficient in 4 gr. was higher than in 3gr. (0.77 ± 0.047 , 0.64 ± 0.03 respectively, $p<0.05$). The increased level of metabolic processes and reduced muscle efficiency were stated.

THE OREM'S CONCEPTUAL FRAMEWORK AS A SELF-DETERMINANT OF THE NURSING PROFESSION. Louise Dures, Professor in Health Sciences (Nursing), Université du Québec à Hull, Hull, Québec Canada

Choosing a conceptual framework to guide the practice of nursing involves understanding its uniqueness and explaining its contribution to the field of nursing. As the author shows, Orem's conceptual framework stands above the many competing frameworks available in nursing, with respect to both dimensions of uniqueness and explanatory power. Correctly applied to community health nursing practice in the North, Orem's framework can bring forth changes in the population's health and self-care habits, thus leading the Aborigines to reach a greater degree of self-determination concerning their own lives. Orem's conceptual framework helps describe and explain what is nursing of healthy or sick individuals according to their environment, their growth and development stages and/or their health deviations. Using a conceptual framework in nursing practice doesn't change directly the beneficiary's mind; rather it allows the practitioner to see him from a different viewpoint and to intervene accordingly. The author presents her personal experience in the implementation of Orem's framework in an acute care hospital which opened five years ago. She infers the possibility of extending Orem's framework to a setting in which nurses could self-determine their practice wherever they work with any type of clients in need of nursing care.

Orem's conceptual framework is presented as a tool that practicing nurses should integrate in their daily practice, should it be in Quebec or in the Circumpolar regions. Based on the author's experience, Orem's framework provides a sound basis to help the profession advance in research, education, and practice.

CHILD HEALTH OF ABORIGINAL POPULATION IN THE Khabarovsk Territory.

U.E. Savosin, U.S.S.R., Khabarovsk Medical Institute

A complex study of the health of native children of the north, living in 15 regions of the Khabarovsk Territory, has been worked out at the Khabarovsk Medical Institute. 66 populated areas belong to national villages, the majority of which are situated in the river valleys on the Okhotsk seashore, in the Sikhote-Alin and the Djugdjur Mountains. The inhabitants of the villages are engaged in fishing, hunting, making things of fur, bone, wool and deer-breeding in the north regions.

16 expeditions were made by research workers of 11 departments of the institute. Nansians (43%), Ulchi (13%), Orochi, Nivkhi (10%), Udegiens, Evenians, Evenki (21%), the Yakuts, Negidlians make 22,000 persons of the Khabarovsk Territory total population. Over 6000 are children.

A higher birthrate (28.4%) in comparison with the Khabarovsk Territory (17.8%) and the Russian Federation (16.0%) is a characteristic feature for 1988 among the aborigines.

The total death-rate among the native people of the North (9.3%) is lower than that in the USSR (10.7%), but the child mortality is 2.5 times higher than in the Khabarovsk Territory and the USSR. Diseases of the respiratory organs, perinatal causes, infectious diseases, congenital abnormalities, trauma and poisoning prevail among the causes of child mortality.

Specific features of natural and climatic conditions of the Far East are reflected in the child pathology. A high incidence of upper and lower respiratory infections was noted, as well as a high level of bihelminthiasis.

Helminths morbidity of the population was 8.8% (16.4% Northern Natives and 2.8% migrants). There were ethnically linked lower indices of physical development of the native children in comparison with migrant children. Caries is wide spread. There was a low percentage of eye diseases among native children.

Poster Presentation: 8th International Congress on Circumpolar Health Using a Community-Based Process to Develop a Nutrition Education Tool for Diabetes Prevention and Control.

L.P. Aubrey, A. Kawayosh, P. Winquist

Non-insulin dependent diabetes mellitus occurs more frequently in the First Nations people compared to the rest of the Canadian population. Health workers in Southern Ontario's aboriginal communities formed a Diabetes Nutrition Committee, to address the needs of Native diabetics in Southern Ontario.

Through a community-based consultation process, a nutrition education tool was developed for diabetics. This tool, a Native Food Guide, incorporates current nutrition concepts as well as traditional, cultural, linguistic and socio-economic factors.

To ensure accurate information was used during the development process, a food consumption survey was undertaken on five reserves in Southern Ontario. Implementation of the survey was followed by a diabetes nutrition education session, to increase awareness, interest and understanding of nutrition and diabetes.

The Native Food Guide will be evaluated in the later part of 1990. Results of the food consumption survey and how the Native Food Guide was developed will be featured.

IMMUNITY PECULIARITIES TO POTENTIAL ONCOGENOUS EPSTEIN-BARR VIRUS (EBV) IN NORTH SIBERIA POPULATION. V.D. Podoplekin, L.N. Urasova, L.N. Rusaev, L.P. Pisareva. Institute of Oncology, Tomsk, USSR.

G antibody level to capsid EBV antigene in aborigines and migrants (Europeans) of North Siberia is investigated. The positive results are obtained in 56% (Chukchi)-90% (Nenets) individuals. The primary infection of children of all nationalities is found to be at the age of 2-5. The aging dynamics of antibody titer is the same for all ethnic groups: the highest level is registered in individuals above 35-40 years. At the same time some differences in antibody titer are found in individuals of various nationalities. The highest level of antibody titer is characteristic of North-Western Siberia aborigines. The more eastern is the region, the lower is this index. Antibody titers are lower in Europeans as compared to aborigines; whereas no dependence between their number and residence region is found. We consider that the main factors in immune-response level to EBV are ethno-genetic peculiarities of population.

PREVALENCE AND RISK FACTORS OF IRON-DEFICIENCY STATE DEVELOPMENT IN WOMAN OF SIBERIAN REGIONS.
E.Ya.Zhuravskaya. Institute of Internal Medicine, Novosibirsk, USSR.

The study of representative samples of female populations in Novosibirsk, Chukotka and Altai was conducted. In Chukotka we examined inland and coastal natives, in Altai - natives. Totally examined in Novosibirsk - 1769, Chukotka - 237, Altai - 205 women, aged 20-59. Questionnaire, assessment of quantity and quality of erythrocytes, definition of ferrum fund of the organism indices with the use of batophenanthroline and radioimmune methods took place. Nutrition and lipid spectrum was studied.

The highest rate of iron-deficiency states (IDS) was in group of women, aged 25-45. In this group in Novosibirsk anaemias were found in 12.3%, hypoferric anaemias - in 8.7%, IDS - 36.6%. In Chukotka: anaemias - 10.4%, hypoferric anaemias - 7.7%, IDS - 35.5%. In Altai anaemias are more frequent - in 22% of women. In Chukotka natives mean hemoglobin was $128.7 \pm 9.8 \text{ g/l}$, erythrocytes - $4.16 \pm 0.39 \cdot 10^{12}/\text{l}$. Blood ferrum - $17.01 \pm 6.30 \mu\text{M/l}$, general ferrum-binding ability of blood serum - $72.34 \pm 10.08 \mu\text{M/l}$, latent ferrum-binding ability - $58.75 \pm 12.04 \mu\text{M/l}$, transferrine saturation with ferrum - 20.3%. In Novosibirsk respectively - $17.46 \pm 5.27 \mu\text{M/l}$, $69.16 \pm 15.00 \mu\text{M/l}$, $51.30 \pm 16.20 \mu\text{M/l}$, $26.91 \pm 11.01 \mu\text{M/l}$.

CULTURAL AND PSYCHOLOGICAL PERSPECTIVES ON MOXIBUSTION AMONG THE SKOLT SAMI UNDER CONDITIONS OF CULTURAL CHANGE: L. Seitamo. Department of Social Sciences. University of Lapland, Rovaniemi and Department of Pediatrics. University of Oulu, Oulu, Finland

During the expedition of the International Biological Programme/Human Adaptability (1967-70) observations were made among the Skolt Sami in North Finland regarding the relatively widespread use of an old healing method, moxibustion, "taullmos", burning of the fungus growth from a birch gnarl close to a diseased organ or at points where pain was felt.

As part of a basic psychological study among virtually all adult Skolt Sami in Finland (1967-74; N=500) on the Skolt culture (see former Proc. Cong. Circumpolar Health) the cultural concept and practice of taullmos was studied in interviews: how did the Skolts explain the use, healing process, efficacy and failure of taullmos; whether or not it was a part of their belief system and practices regarding diseases and their healing, and whether attitudes were changing towards it as a function of culture change (re-examined also in 1980, 1986-89).

Taullmos was connected with a broader traditional belief system but attitudes were changing already in 1967-74 and were sometimes totally negative even when their practice was used and felt to be effective. The practice has now almost died out.

NATIONAL PROCESS OF DEVELOPING NUTRITION EDUCATION IN NATIVE SCHOOLS, J. Steckle, Medical Services Branch, Health & Welfare Canada, Ottawa, Ontario

A national process to initiate and improve nutrition education in native schools was launched in 1986 to address the growing concern for health problems related to nutrition in native communities.

Teaching nutrition early through the school curriculum would increase school children's knowledge of good nutrition and lifestyle practices. The nutritionists of Medical Services Branch took the major responsibility to implement the project. Native involvement although limited was incorporated through the ad hoc advisory committee. The project was implemented in three phases, and evaluated in 1989. Phase I provided culturally relevant nutrition education materials to selected schools. Phase II expanded distribution and Phase III explored opportunities for holding inservice training workshops and using the feedback to improve the lesson plan materials.

The evaluation report completed in the fall of 1989 provides an opportunity for various native and non-native groups to consider with government the direction of ongoing support for nutrition education in native schools in Canada.

COMMUNITY CONSULTATION FOR NATIVE NURSING CURRICULUM DEVELOPMENT. Mae Katt, Marg Boone, Lakehead University, School of Nursing, Thunder Bay, Ontario, Canada, P7B 5E1

In May 1985, Lakehead University hosted a consultation workshop with 40 Native community representatives to examine the barriers of Native people accessing nursing education. This paper compares two models of consultation: prescriptive and catalyst approaches for the components of control, energy, resources, and, ownership. Stevens (1980) outlines a consultation strategy that was followed in the workshop. Step one is called: "cathexis" where there is open group discussion; step two is "search for cures"; step three is "acceptance of internal work"; final step is "the search for real problems and real solutions". The outcome of the workshop was 43 recommendations, one for university nursing education, and one for a "bridging" or preparation program. The formation of a Working Group consisted of 6 Native nurses and university personnel who developed the curriculum of the Native Nurses Entry Program. Success rates for 3 intakes of 36 students is 29 completing NNEP or 80.6%; 27 of 29 enter degree nursing education or, 93%; 19 of 27 remain in nursing education or 69% retention rate.

EVOLUTION OF COMMUNITY HEALTH IN YUKON: A NURSING PERSPECTIVE

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This poster presentation proposes to illustrate the nursing role in health care delivery in Yukon. It is meant to be archival and narrative in approach, and follows in the footsteps of Yukon's historical events.

A necessary first acknowledgement is made to the vital role of traditional healers and their medicine. A health care system that ignores such a resource denies itself a source of strength.

Informal health care delivery in an outlying community includes the lay dispenser. Often front-line intervention comes from the ranks of community leaders, missionaries, teachers, traders and R.C.M.P. personnel.

In establishing the nursing perspective, the vignettes and stories come from such sources as:

- * Klondike Gold Rush: members of the Victorian Order of Nurses who accompanied the Yukon Field Force to the Klondike Gold Rush in 1898,
- * construction of the Alaska Highway circa 1942 and the U.S. military presence during World War II,
- * Department of National Health and Welfare, Medical Services, 1945 - example: Amy V. Wilson, Alaska Highway Nurse,
- * outpost nurses as primary care workers for Medical Services Branch providing treatment and public health service in hospitals, nursing stations and health centres throughout Yukon,
- * Look to the future: the expanded role of nursing in administration, education, and private enterprise.

To add depth and character to this display, the presenter proposes to wear the nursing uniform of the Goldrush era.

SOME IHD RISK FACTORS AND ALCOHOL CONSUMPTION: CLINICO-BIOCHEMICAL AND POPULATION ANALYSIS.
T.V. Chernobrovkina, T.I. Astakhova, V.G. Zaporozhchenko
 2 Moscow Medical Institute, Institute of Internal Medicine, Novosibirsk, USSR.

During the epidemiologic study of Chukotka native population together with strict criteria of IHD diagnostics, arterial hypertension and dyslipoproteidias the degree of alcohol consumption was determined. The method of clinical observation and questionnaire with verification by enzyme diagnostics test was used. Serum activity of gamma-glutamyltransferase (GGT), AST and ALT against the absence of clinically manifested liver pathology in the examined. On the whole in natives higher concentrations of GGT (in males) and AST (in females) in comparison with normal levels were observed. Among drunkards with IHD blood pressure, cholesterol and triglycerides levels were higher and HDL-cholesterol level was lower than in non-drunkards with IHD.

The possible reasons of observed enzyme constellations of blood and mechanisms of combined influence of alcohol abuse and some risk factors on IHD development in Chukotka natives are being discussed.

IHD IN MALE POPULATION OF CHUKOTKA AND NOVOSIBIRSK
S.Malyutina, T.Astakhova, A.Ryabikov, N.Serova, Yu.Ni-
Kitin. Institute of Internal Medicine SB AMS USSR,
Novosibirsk, USSR.

The representative samples of natives and newcomers of Chukotka coastal villages (109 persons) and of Novosibirsk (614 persons) have been studied with the help of standardized methods. All sample - men at the age of 30-59 years.

Prevalence of IHD among eskimo population and among Novosibirsk population is much the same (10.7% and 11.8%). In these groups the positive answer to the Rose Questionnaire have been revealed with the same frequency (5.9% and 5.8%). "Definite" scar myocardial changes occurred in Novosibirsk population more seldom than in Chukotka ones. Other ECG changes of "ischemic type" were the most rare among the eskimos.

For verification of IHD diagnosis the stress (exercise) test and transthoracic atrial pacing test were used. Among patients with angina pectoris syndrome the test results turned out positive much more frequently in Chukotka native population than in the Novosibirsk one. For patients with electrocardiographic signs of IHD this was on the contrary.

INSTITUTE OF INTERNAL MEDICINE, SB, AMS, USSR: EXPERIENCE OF INTERNATIONAL COOPERATION. N.V.Alekseeva. Institute of Internal Medicine, Novosibirsk, USSR.

Every circumpolar country has a considerable experience in the solution of urgent problems of medical science and health care. All circumpolar countries have common medical and medico-social problems and their solution demands both national and international efforts. In present time the exchange of experience is mutually beneficial.

During recent years noncommunicable diseases occupy the first place in morbidity and mortality of populations in many countries. At the Institute of Internal Medicine noncommunicable diseases in Siberia are studied. Great attention is paid to the international cooperation. The Institute has scientific relations with WHO, socialist and capitalist countries. Agreements on cooperation have been concluded with the USA, Canada, CSR, PPR. Great importance is given to the cooperation with circumpolar countries. This cooperation is conducted by means of various forms: researches on common programmes, seminars, joint publications, joint expeditions to research regions, information exchange. More close contacts with other circumpolar countries: Finland, Denmark, Sweden, Norway are also planned. The development of international cooperation is the important factor for scientific progress and for strengthening peace between peoples.

THE EFFECTS OF PHOTOTHERAPY ON DIURNAL RHYTHMS OF PHYSIOLOGICAL PARAMETERS AND MELATONIN EXCRETION IN SUBJECTS WITH SEASONAL AFFECTIVE DISORDER.

V.A.Cherepanova, K.V.Danilenko, A.A.Putilov. Institute of Physiology, Academy of Medical Sciences, Siberian Branch, Novosibirsk, 630090, USSR.

Diurnal variations of urine melatonin excretion, body temperature, heart rate, sodium in slaver in 9 inpatients with seasonal affective disorder (SAD) in winter, after phototherapy (PT), and in summer were compared. In winter the depressed subjects were exposed to a week of morning (0800-1000hr)/evening (1900-2100hr) bright light (2500lux) and then a week of evening/morning PT. The 24-item HDRS score reduced, high serum cortisol level normalized and oxygen uptake of standart 5-min physical load decreased from week to week of PT. Melatonin excretion level had no significant diurnal variations before PT. The level decreased and the variations became apparent after morning PT. Low diurnal rhythm amplitudes of body temperature, heart rate, sodium in slaver increased after either PT. The evening melatonin excretion reduced and midnight body temperature raised after evening PT. At the same time subjective evening alertness elevated and night sleep became worse, while morning PT caused the morning alertness level increase without any sleep difficulties. On the whole, PT, especially morning one, brought the temporal structure of physiological functions near to summer pattern.

IHD IN CHUKOTKA RESIDENTS: CONCENTRATIONS OF THYROTROPIN, THYROXIN, TRIIODOTHYRONINE IN BLOOD SERUM. V.P.Babin, E.G.Stepanova, S.K.Malyutina, Institute of Internal Medicine, Novosibirsk, USSR.

The epidemiologic study of Chukotka natives and newcomers, residents of coastal settlements (448 men aged 30-59) was conducted. The concentrations of thyrotrophin, thyroxin (T4) and triiodothyronine (T3) in blood serum were determined. IHD was diagnosed according to standard epidemiologic criteria (ECG coding due to Minnesota code, Rose questionnaire).

In newcomers without IHD higher concentration of thyrotrophin, higher concentration of T3, lower concentration of T4 were noted in comparison with natives without IHD.

In newcomers with angina of effort higher concentration of thyrotrophin and lower T4 concentration were noted in comparison with newcomers without IHD. In newcomers with painless IHD thyrotrophin, T3, T4 concentrations were the same as in individuals with out IHD. T3 and T4 were supposed to affect the formation of IHD pain syndrome.

In natives the concentrations of thyrotrophin, T3, T4 (with angina of effort and with painless IHD) don't differ from those in natives without IHD.

CEREBRAL HEMISPHERIC ASYMMETRY OF FUNCTION IN SEASONAL AFFECTIVE DISORDER AND LIGHT TREATMENT.

Volf N.V., Senkova N.I., Danilenko K.V. Institute of Physiology, Academy of Medical Sciences, Siberian Branch, Novosibirsk, 630090, USSR.

Patients with seasonal affective disorder and healthy volunteers participated in winter and summer experiments. Depression has been measured by 24-item Hamilton Depression Rating Scale (HDRS). The dual-task method and dichotic listening procedure were used in research of the hemispheric asymmetries. In the winter patients were randomly assigned to a week of morning bright light (2500 lux) or a week of evening bright light and were crossed over during the next week. We found no differences in depression ratings and cerebral asymmetry measurements across seasons in controls. Patients showed no differences from controls in the summer. In the winter a mean baseline HDRS was increased ($P < 0.05$) in patients (19.8 ± 5.5) compared to controls (5.8 ± 3.1). Mean percent reduction of left-hand tapping during concurrent tasks was greater ($P < 0.01$) in patients (9.2 ± 2.3%) than in controls (0.2 ± 1%). In dichotic task patients had significant difficulties in right ear words selection. The winter light treatment normalized HDRS and reduction of left-hand tapping. Thus winter depression was associated with shift of laterality from left to right. The winter abnormalities appear to be normalized by bright light.

Prevalence of Cervical Infections with Human Papillomavirus in Alaska Native Women. Schloss M, Davidson M, Parkinson A, Knight J, Murphy C, Schnitzer P, Allison G, Toomey K, Kiviat M. Arctic Investigations Program and Alaska Native Medical Center, Anchorage, Ak., Centers for Disease Control, Atlanta, Ga., University of Washington, Seattle, Wa., USA

Alaska Native women have invasive cervical cancer incidence, mortality, and cervical dysplasia rates that are 2.3, 3.2, and 3.5 times higher respectively, than U.S. Caucasians. Despite widespread cervical cytologic screening, invasive cancer increased more than three fold between 1969 and 1983 while rates declined for U.S. Caucasians and Blacks. Since May, 1988, Alaska Native women, both self-selected and referred, have been screened for human papillomavirus (HPV) by dot blot DNA hybridization. Results on 685 women include 288 referred for colposcopy, 253 presenting at family planning clinics, 114 new prenatal patients, and 30 women with other sexually transmitted diseases (STDs). Of the total patients examined 25% have been positive for any HPV genotype including 44% from colposcopy clinic, 20% with STDs, 12% from family planning clinics, and 10% of new prenatal patients. The distribution of patients with identified HPV genotypes included 6/11, 8%; 16/18, 61%; 31/33/35, 54%; and multiple genotype groupings, 22%. Additional results of screening randomly selected Alaska Native women from a remote area of Northwest Alaska will more accurately reflect the burden of HPV infection in sexually active women. The utility of HPV screening in this and other populations will be indicated by correlation of HPV status with age at enrollment, concurrent cervical cytology, prior screening history and results, and prevalence in the general population at risk, as well as natural history and case-control studies of HPV and cervical cancer now in progress.

COMMUNITY HEALTH STATUS AMONG THE BAFFIN INUIT. Paul Cappon, Robert Choinière. McGill Baffin Programme. McGill University, Montreal, Canada.

An assessment of Community Health status among Baffin Islanders was carried during 1989, with particular reference to those health problems which are susceptible to community health and health promotion intervention strategies. Both mortality and morbidity rates of Baffin Inuit were examined for the years 1983-87 and compared with southern Canadian rates. Both overall rates and rates for specific diseases were examined.

Results indicated a substantial improvement in Baffin Inuit life expectancy at birth over the past 20 years. However, for mortality from most major disease entities, Baffin Inuit continue to show substantially higher rates than southern Canada. The Inuit/Canada adjusted monthly ratio for infectious diseases is 6.6. For respiratory diseases, the adjusted mortality ratio is 6.5; 3.3 for injury and poisoning and 1.7 for neoplasms. Only for diseases of the circulatory system do the Inuit of Baffin - adjusted mortality ratio 0.6 - have an advantage over southern Canadian. Morbidity rates show similar patterns and comparisons. This analysis is consistent with the observation that much Baffin Inuit illness and death continues to be preventable. This is particularly striking for deaths from injury and from respiratory disorders, including lung cancer. Strong locally-controlled community health and health promotion programmes will be required to improve community health status in Baffin.

ROLE OF ENVIRONMENTAL CONDITIONS IN THE FORMATION OF CARBOHYDRATE AND LIPID METABOLISM IN HUMAN NEONATES IN THE FAR NORTH. V.T. Manchuk. Institute of Northern Medical Problems, Siberian Department of the USSR Academy of Medical Sciences, Krasnoyarsk, USSR.

Peculiarities of functional formation and a status of carbohydrate and lipid metabolisms in 662 normal mature neonates born in the Far North have been studied. The presence of a number of peculiarities was revealed in them in contrast with those born in the conditions of middle latitudes. These peculiarities are as follows: a lower blood glucose level, activation of lipolysis as well as the increased levels of free fatty acids and of cholesterol esters in blood and a more active course of the processes of glucose absorption and utilization in children of northerners during a neonatal period.

All these characteristics of the energy metabolism enable a neonatal organism to adapt itself to the extrauterine life in the severe ecological conditions. They are accompanied with the early functional inducing and the intensive activity of the regulatory systems. This appears to be fraught with failure of the regulatory systems activity and of a prolonged course of a neonatal period.

HLA ANTIGENS AS A BASIS OF THE ANALYSIS OF ETHNOGENESIS AND PREDISPOSITION TO DISEASES IN NATIVE POPULATIONS OF THE FAR NORTH. V.V. Pefolva, N.M. Mylov, A.V. Orlov-Morozov. Institute of Northern Medical Problems, Siberian Department of the USSR Academy of Medical Sciences, Krasnoyarsk, USSR, Institute of Rheumatology, USSR Academy of Medical Sciences, Moscow, USSR.

On the basis of HLA genetic markers a genetic structure of Mongoloid populations of Yakuts, Evenks, Evens, Koryaks and Yukagirs has been studied. 1,354 persons were tested.

In Koryaks, a high frequency of HLA-B27 antigen (Phenotype frequency of 39.63%) was revealed. In population ankylosing spondylarthritis was not found, though a high incidence of sacroileitis of 10.24% was observed. No association between sacroileitis and B27 was revealed. The data obtained in the population do not confirm a hypothesis of the direct involvement of HLA-B27 gene into pathogenesis of the disease.

From the analysis of the HLA antigen distribution, a new hypothesis has been put forward on the ethnohistory of Central-Asian Mongoloids - Yakuts. It connects the substratum of the Yakut ethnoses not with Mongoloid Turkic-speaking tribes as it was considered formerly, but with Indo-European tribes of the ancient Aryans who had been mongolized and turkized.

Influences of different ethno-genetic (Europoid and Mongoloid) bases of the Yakut population on a predisposition of the population to diseases have been analyzed.

ESTIMATION OF HUMAN ADAPTIVE POTENTIALITIES IN ARCTIC ACCORDING TO LYMPHOCYTE METABOLIC PARAMETERS AND REGULATION TYPES. Rulyguin, G.V., Mashanov, A.A. Institute of Northern Medical Problems, Siberian Department of the USSR Academy of Medical Sciences, Krasnoyarsk, USSR.

The results of the examination of 736 normal men who came to the arctic and middle area of Siberia from the other regions of the country demonstrated the regular structural and functional changes of blood lymphocytes in the initial period of adaptation of 1.5 years to the contrasting ecological conditions.

The presence of correlations between the activity of such enzymes of NAD- and NADPH- dependent dehydrogenases determined by luminescence and the lipid spectrum of lymphocytes as well as the relationship of these values with the catecholamine and serotonin levels in the cells and with the serum cortisol and invulin ones including the concentrations of various immunoglobulins enabled to obtain information about a mechanism of the adaptive transformations in the cells in the process of human adaptation to the new conditions of vital activity.

The most informative indices were marked out and computerized for the prediction of the probability of the most prevalent kind of pathology - acute respiratory disease in the persons examined for the reported period.

PECULIARITIES OF LYMPHOCYTE METABOLISM REGULATION IN RESIDENTS OF ARCTIC AS A BASIS OF SECONDARY IMMUNE DEFICIENCY DEVELOPMENT. L.B. Zakharova, A.A. Savchenko. Institute of Northern Medical Problems, Siberian Department of the USSR Academy of Medical Sciences, Krasnoyarsk, USSR.

In normal native and new come residents of Arctic and in a middle zone of Siberia, the activity of NADPH-dependent dehydrogenases in blood lymphocytes, their substrate funds, ATP level as well as the levels of catecholamines and serotonin in cells were determined by means of bioluminescence. The responses of the cells to the incubation with PPA, adrenaline and E prostaglandin were evaluated.

The results obtained in the residents of Arctic showed that the ATP production in lymphocytes and the activity of G-6-PD were decreased while the indices of LDH were moderately increased. A proper level of energy production was provided by means of a distribution of substrate flows under the tension of regulatory systems.

In a group of persons who are susceptible to respiratory diseases with a protracted course the stronger inhibition of G-6-PD accompanied with a decrease of a metabolite flow in a pentosephosphate cycle has been revealed. At the same time, the ability of the cells to response to the incubation with the biologically active substances as well as the catecholamine level in the cells has changed.

The disturbance of the cell susceptibility to the regulatory influence appears to be caused by a decrease of biosynthesis of membrane lipids and by change of a receptor apparatus of lymphocytes.

PECULIARITIES OF HEALTH STATUS FORMATION IN INFANTS AND PRESCHOOL CHILDREN IN A NEW COME POPULATION IN THE ARCTIC. O.M. Novikov, A.V. Lapko. Institute of Northern Medical Problems, Siberian Department of the USSR Academy of Medical Sciences, Computer Center, Siberian Department of the USSR Academy of Sciences, Krasnoyarsk, USSR.

On the base of a prospective observation of a cohort of children who were born in the Arctic and according to parameters of physical growth and disease incidence it was revealed that combinative variants of anthropological indices, ie types which were formed in the early period of childhood, determine as a rule, a status of health and development of children in a preschool period when the fluctuation and delay in the rising of physical growth indices are noted.

Parallel with the generally known risk factors (maternal age, maternal health status, a course of pregnancy and labour, etc.) the disease incidence in children of the Arctic is related to the duration of their mothers' residence in the Arctic. Significance of this factor (gradations of more than 6 years of residence) is maintained in boys in infancy and at age 1-3 years whereas in girls - at any age excluding the fifth year of life. The peaks of the disease incidence in boys fall in the types with a low level of physical growth, in girls - in the types with anthropological signs of high value.

Principles worked out by us of the computer prediction of changes in health status of children with regard for the types of physical growth and those of the disease incidence and the duration of recreative outages from the arctic regions demonstrate the probable trends of these changes in any period of the six years of life.

MANAGEMENT OF SURGICAL REHABILITATION OF PATIENTS WITH CONDUCTIVE HYPOACUSIS IN THE REMOTE REGIONS OF THE NORTH. O.A. Grushevskaya Institute of Northern Medical Problems, Siberian Department of the USSR Academy of Medical Sciences, Krasnoyarsk, U.S.S.R.

A high prevalence of chronic inflammation of middle ear has been revealed in mongoloid populations of the Far North.

We worked out a number of modern principles of the surgical rehabilitation of hearing in native populations of the Far North with regard for peculiarities of ecological and social conditions in the region.

A number of our methods enable to perform operations in patients of preschool age and over in any hospital conditions without anesthesiologist.

The worked out portable apparatus makes it possible to draw the highly skilled specialized aid nearer to remote regions.

The presented system of the management of the surgical rehabilitation of hearing in the native populations of the North provides a positive effect of 92%.

PROBLEMS OF PRESENTATION AND HEALTH IMPROVEMENTS AMONG THE CHILDREN OF NORTHERN PEOPLES IN THE USSR E.I. Prakhin, Institute of Northern Medical Problems, Siberian Department of the USSR Academy of Medical Sciences, Krasnoyarsk, USSR

The complex researches in medical, biological, social, sanitary and ecological aspects of health among the children of northern peoples were consolidated. The northern peoples in the USSR live in different climate and geographical zones on the territory of more than 2 mln sq. As a rule, children live with their families in small settlements (trading stations) or leading a nomad's life in brigades. Their parents are engaged in fishing, hunting and fur trade.

Children of school age live in boarding schools on full state maintenance. The most significant problems of northern pediatrics are rational and balanced nourishment according to vital requirements and centuries-old traditions genetically caused by peculiarities of organism.

An important factor is the prophylaxis of digestive organs disease, myopia, otitis, rhinitis, caries, etc.

Such questions are to be solved as perfection of forms and methods of primary aid, introduction of a wide system of early disease exposure and prophylaxis of epidemiological situations.

As a result of our research work, we developed recommendations on rational nourishment for different age groups of children, pregnant and lactating women, early hardening.

We are working out proposals on perfection of medical education for medical personnel and improvement of medical culture among the population.

GRAVITATIONAL PERTURBATION AND HUMAN HEALTH IN POLAR REGIONS. V.I. Hasulin, Institute of Clinical and Experimental Medicine Siberian Branch, Academy of Medical Sciences, Novosibirsk, USSR

Our investigation helped to reveal the previously unknown influence of gravitational perturbation on human state and health condition. Analysis confirmed that gravitational anomalies influence on the organism in the combined influence of weather and geophysical factors.

The increasing of acceleration of gravity in polar regions, together with gravitational perturbations and powerful geomagnetic ones are the principal and extreme cause of fast enervation of adaptive organism reserves in high latitudes.

Exacerbations of illnesses depend on periods of gravitational perturbations. Weather and geomagnetic perturbations have less influence on a person's state, but their combination with gravitational anomaly redoubles the effect.

The gravitational perturbation has an effect on the membrane-cellular level as well as on organs and systems.

The exposed regularities underlies the long-term medical and geophysical prognosis of unfavorable periods (days) for chronically ill people. The use of such prognosis allows not only to organize medical measures in prophylaxis of meteorotropic illnesses of cardiac-vascular and other patients, but to prevent traffic accidents and ensure better safety in railway and air transport.

The availability of a prognosis helps to reduce the doses of drugs in treatment of chronic pathology.

PECULIARITIES OF SOMATIC AND PSYCHICAL CHILDREN'S DEVELOPMENT UNDER NORTHERN CONDITIONS. E.L. Shepko Institute of Northern Medical Problems, Siberian Department of the USSR Academy of Medical Sciences, Krasnoyarsk, U.S.S.R.

We examined 457 children aged 6 and 7 of the new come population living under northern conditions and 215 children living under temperate climate conditions for the purpose of studying the regularities of somatic and psychical development.

It was brought to light that during the critical period of adaptation functional peculiarities of the CNS lead to the deterioration of mental efficiency, concentration of attention and some more indices of psychical activities. The enumerated changes are of a temporary character. Their duration depends on the child's age - the younger is the child the quicker the changes disappear.

Northern conditions exert either positive or negative influence on the child's somatic and psychical development. Negative influence upon the child's organism is exerted by some ecological factors: specific northern photoperiodicity, hard character of weather, high tensivity and inconstancy of magnetic field, etc.

It is proved that unfavourable factors can be leveled with the help of pedagogical influence and rational improvement of the upbringing conditions.

PECULIARITIES OF EPIDEMIOLOGY, CLINICAL COURSE AND PREVENTION OF HYPERTENSION DISEASE IN THE CONDITIONS OF THE NORTH L.S. Polikarpov, N.V. Pirogovsky, S.R. Kuznetsov, I.I. Khamagadiev, G.M. Shust Institute of Medical Problems of the North, Siberian Department, USSR Academy of Medical Sciences, Krasnoyarsk, USSR

14,333 persons in new come and native populations in the North were examined. A correlation was revealed between the relevance of arterial hypertension (AH) in the new-come population and their previous place of residence before their arrival in the North. A correlation was also found between age and the duration of the residence in the region. AH in males aged 30-54 was revealed in 18.6% of the new-come population and in 17.4% of the native one.

Polyclinical diagnostics of the patients with AH showed hypertensive disease in 92.3% and detected 7.7% patients who needed a comprehensive examination. A five year prospective observation of the populations demonstrated that a transformation of blood pressure (BP) and borderline arterial hypertension into AH was related to age and a risk factor combination. In the new come population, this depended on the duration of the residence in the North. There was a statistical correlation between the indices of a functional system that regulates BP, the indices of carbohydrate metabolism and the risk factors combination.

Hypertensive disease in arctic conditions has its qualitative peculiarities for the new-come population who had been living in the region for at least ten years. In these persons severe neuroticism as well as in youth a crisis course of the disease were revealed, meteorotropic responses being observed more often.

Secondary prophylaxis of AH was performed for 4 years in males aged 30-53 which produced a decrease in the quantity of new cases of myocardial infarction, cerebral insult and the total mortality in the population.

SOME SINGULARITIES OF BLOOD CIRCULATION IN THE BRAIN HEMISPHERES OF HUMANS IN ADAPTION TO HIGH LATITUDES K.A. Bakulin, Institute of Clinical and Experimental Medicine, Siberian Branch, USSR Academy of Medical Sciences, Novosibirsk

Some observations in dynamics of a group of polar residents were carried out. The results obtained indicated that unfavourable factors on humans produce a redistribution of blood in favour of the right hemisphere. Only 17% of persons examined during their first months at the station were left-hemispheric-oriented. Functional dysadaptation or pathological disturbances were observed to occur in the left-hemispheric group, as opposed to the right-hemispheric-oriented. Later we observed a decrease in the number of people with the left-oriented blood circulation and an increase of the number of patients with blood circulation prevailing in the right hemisphere. The course of the wintering season elucidated the seasonal variations in blood circulation levels in both hemispheres.

Investigations on determining the physical fitness levels were conducted simultaneously according to the Rozenblat modified technique. The right-hemispheric-oriented patients were inclined to perform strenuous physical work more than left-hemispheric ones and were shown to respond to it more adequately.

After returning to habitual conditions the polar residents were observed to show a reserve pattern of dynamics of blood circulation levels in the brain hemisphere.

SEASONAL VARIATIONS OF REPRODUCTIVE ABILITY IN NORTHERN HUMAN POPULATIONS. Yu.P. Shorin, V.N. Melnikov. Institute of Clinical and Experimental Medicine, AMS of the USSR. Novosibirsk, USSR.

The study of seasonal variations of birth-rate, stillbirths and spontaneous abortions in Yakutia has shown that the most favourable conditions for bearing a healthy baby are in cases if a conception occurs in spring or autumn i.e. in seasons with equal duration of day and night. On the contrary a probability of pathological complications (stillbirths, fetal death) increases if the pregnancy begins in summer and winter. These findings are in agreement with the theory of periaquatorial origin of hominids where an unchanged 12L:12D diurnal photoperiodicity during the year takes place. It appears reasonable to assume that abnormal photoperiodicity which effects on the reproductive function mainly through the epiphysis (melatonin) and associated gonadal steroids was the principal factor for adaptation of human populations while their subsequent migrating to polar directions. A decrease of reproductive ability in certain seasons in the North can be considered as a "pay" of human species for adaptation to life in the regions located in the periphery of area with the abnormal photoperiodicity.

NON-INVASIVE ULTRASOUND IN ESTIMATION OF CARDIORESPIRATORY SYSTEM AT 4.400M ON MT. MCKINLEY B.A. Moroz, A.A. Logutenko, V.I. Davidenko, Institute of Clinical and Experimental Medicine USSR AMS, Siberian Branch, Novosibirsk, USSR

The early diagnosis of subclinical pulmonary edema is difficult. One possible way our method of complex investigation of heart, lungs and pleural cavities, using non-invasive ultrasound.

In joint collaboration within Denali Medical Research Project (University of Alaska) ultrasound examinations in 10 climbers were performed at the altitude 4.400m. The results were compared with the data obtained in similar groups of healthy people at sea-level.

The echocardiographic indexes according to Teicholz and a heart index have been calculated. A comprehensive estimation of cardiovascular and respiratory systems and also blood gas composition was performed at the same time as echocardiographic investigations. 60% of examined persons had a hyperkinetic type of hemodynamic. A direct correlation was found between the heart index and the depth of ultrasound scanning in lung tissue. The majority of examined persons had increased by 55-60% the distance between visceral and parietal pleura indicating the filling of pleural cavities by additional amounts of liquid and evidently, reflecting a regional high altitude norm.

Taking into account these results in declining regional high altitude norms during high altitude adaption, we can draw conclusions about the need for further research in this direction in order to reveal the prognostic importance of ultrasound scanning when developing high altitude pulmonary edema and for its subclinical diagnosis.

PROGNOSTIC SIGNIFICANCE OF STATIC ENDURANCE (HAND GRIP TEST) IN NORTHERN ARTERIAL HYPERTENSION. V.I. Davidenko Institute of Clinical and Experimental Medicine USSR AMS, Siberian Branch, Novosibirsk, USSR

Practical cardiology gives prognostic significance to physical tests to reveal persons threatened by cardiovascular diseases. Testing in isotonic and dynamic regimes (step-test, VEM, treadmill, etc.) is most wide spread, but testing in isometric and static regimes is not investigated adequately.

To reveal persons threatened by possible development of "northern" type of AH, a group of northern newcomers was observed over 5 years. A retrospective analysis of the observations was performed to define this prognostic significance of testing in a static regime. Primary examination of persons with normal BP level showed about 50% BP reactions of normotonic type, 38% of hypertonic type and 12% of hypotonic type. (In Western Siberia, only 23% are hypertonic type and 7% hypotonic.)

76% of primarily examined persons who stayed in northern region appeared to be threatened by AH development due to their professional activity. 18 had AH according to 5 year prospective observation. The examination compared BP reaction type of healthy newcomers who revealed AH development "afterwards". 10 of 31 persons of hypertonic BP reaction type had AH afterwards, as well as 7 of 36 persons of normotonic BP reaction type and 1 of 9 persons of hypotonic BP reaction type. Therefore, in this case of BP hyperaction response to static hand-grip test, the risk of an AH development afterwards is 2 times more for northern newcomers comparing with normoreactive type persons, and 3 times more comparing with hyporeactive type persons.

Thus, hand-grip testing in static regime can be successfully applied to reveal persons threatened by possible development of "northern" AH.

THE SOCIAL IMPACT IN THE MODERN HEALTH PROBLEMS OF THE NORTHERN PEOPLES IN THE USSR. Boyko, Deputy Director of the Institute

The interaction of the two cultures and the corresponding ways and styles of life of the peoples of the North and the newcomers appear to be the phenomena which define and shape positive and also negative tendencies in keeping the peoples of the North healthy and fit.

The indigenous peoples adopt and absorb not only positive values, but negative ones as well, which were not typical of them.

The changes in the relations of the traditional and new kinds of industry provoke not only shifts in the field of culture, but in the structure of meals and food and also in the area of the medico-biological processes.

In the conditions of the intensive crosscultural interactions, the tendency of the decline of the number of marriages and the growth of the one-parent families, determine the increase of the psychological strain among the people of the marital age and consequently, the growth of the psycho-deviances. The worsening of the psychological atmosphere in the family, the change of the structure of the "productive" traditional basis are the social premises for the appearance of the new diseases and illnesses with the youngsters.

One of the most important social sources of the negative influence on the health of the peoples of the North is the modern system of socialism of the youth. This system does not take into account the typical biochemical processes of digestion, the unique psychological perception of the world, the limited character of moving around, isolation from the family. These factors of socialization in the national boarding schools influence the character of the illnesses.

MEDICO-SOCIAL CHARACTERISTICS OF HEALTH OF COMMUNITIES FORMATION IN THE NORTH OF SIBERIA. V.P. Dotsitsin. Institute of Complex Problems of Hygiene and Occupational Diseases. Siberian Branch, USSR Academy of Medical Science, Novokuznetsk, USSR. 654035.

The Health Status of native Population versus alien Population of the North of Siberia differs considerably. Ill health is a peculiarity of alien population. The main reasons of infant mortality are respiratory diseases. At the same time a half cases of death are caused by endogenous reasons. It's determined the adult alien population may be characterized by ill health. One of the reason of this fact is the changes of cardio-vascular system daily rhythms, coinciding with the polar nights' and polar days' periods. These changes are characterized by phase and frequency desynchronization due to the influence of season variations of natural photoperiod. In the North of Siberia physical exercises effect on daily rhythms of cardiac activities are less expressed.

It's also determined the dependence of Health Status of the Northern Siberia native Population on traditional life.

Nutrition changes result in ill health. Generic organization with exogamous bans prevents from the increase of inbreeding among the population and thus reduces the hereditary pathology. It's registered the increase of hereditary morbidity rate with the destruction of such generic organization. Barriers preventing from cross-breeding let the native population leading the traditional life maintain viability and high reproduction level.

Measures on health promotion of native and alien population in conditions of the intensive development of the North of Siberia areas are worked out.

PHOTOTHERAPY FOR SAD IN SIBERIA K.V. Danilenko, V.A. Cherepanova, A.A. Rutilov, N.I. Senkova, N.V. Wolf, Laboratory of Biorythmology, Institute of Physiology, Timokova 2, Novosibirsk, 630060, USSR

In winter 1988-89 nine patients with SAD were subjected to two one week courses of phototherapy (PT) with bright artificial light (2500 lux) course of morning and course of evening PT (2 hours daily). Physiological, psychophysiological and biochemical parameters were studied before and after every course of PT.

Average scores of 24-item HAM-D and 31 item SIEN-SAD (Williams J.B.M. et al, 1988a) progressively reduced from week to week of PT.

Study of the circadian rhythms revealed the significant arising of body temperature in 24 hours in result of light treatment in the evening. Amplitudes of diurnal variations of body temperature, pulse-rate and sodium increased after any PT courses.

Melatonin excretion levels were equal in day and night hours. PT normalized melatonin excretion rhythm without changing its daily excretion. Morning and evening PT suppressed the melatonin excretion level in the morning and evening hours correspondingly.

High level of blood cortisol decreased to normal after any PT courses. The levels of T-3 and T-4 remained low.

Resting metabolic rate and oxygen consumption during standard physical load reduced (not significant).

Study of the brain asymmetry with a dual task procedure showed the SAD patients exhibited greater left hand control tapping disruptions during manual-verbal task than control subjects. PT reduced interference in finger tapping with left hand. In dichotic listening procedure with retrieval of words from right or left ear, it was found that SAD patients had difficulties in right ear words selection.

REGULARITIES OF FUNCTIONAL STATUS OF LIVER IN MAN IN THE EXTREME NORTHERN CONDITIONS. Yu. P. Gichev, Institute of Clinical and Experimental Medicine, Siberian Division, Academy of Medical Sciences of the USSR, Novosibirsk, USSR.

Given the leading role of liver in the main phases of intermediate metabolism the evaluation of human adaptation to the extreme northern conditions is not complete without data on the changes in functional status of liver.

Living in the extreme northern conditions causes basic liver functions to participate in adaptive changes of the organism.

The changes in the indices of the liver status start from the first days after coming to the northern regions and is accompanied by the development of subclinical syndrome of the decrease of the excretory function of the liver. The syndrome is manifested in simultaneous increase of the total bilirubin, cholesterol (CHOL) on the background of the increase of aminotransferase activity in the process of short term adaptation and the increase of bilirubin, fraction of connected bilirubin, CHOL, and the ratio cholesterol/phospholipids on the background of the increasing of antioxidative activity of the membrane lipids - during the long term adaptation. The complex of the simultaneously registered changes of the basic liver functions in the course of human adaptation to the extreme northern conditions could be combined into hyperfunction syndrome, which is mainly characterized by rising of the indices, characterizing by rising of the indices, characterizing synthetic processes in liver (CHOL, L- and B-globulins, B-lipoproteins) on the background of more frequently found hepatomegaly as compared with the inhabitants of middle latitude regions.

THE DEVELOPMENT OF A YUKON COMMUNITY HEALTH INFORMATION SYSTEM. E. Heinen, R. Pearson, M.A. Sinclair. Medical Services Branch, Yukon Region, Canada.

The need for ongoing client contact and service information has continually been sought and identified as necessary for program justification and planning, as well as statistical gathering and trend identification. Yukon Region, of Medical Services Branch, is no exception to this need.

In the summer of 1988, a first draft at a computerized data collection tool was piloted. When very useful information was extracted from this initial crude gathering of data, a second and more refined draft was designed and initiated on January 1, 1989. With cooperation and patience of the Yukon Region nurses, CHR's and clerks of the sixteen health units, useful and revealing data are being gathered. As a result of ongoing refinements, disease and service trends are now being tracked. Yukon Region continues to pursue this evolutionary development of a data collection system which is increasing its capacity to track and report trends in illness and disease, (using ICD-9 codes), aboriginal health, tourism, community health field nursing, administration, nursing responsibilities, social factors relating to health care, etc. The system which allows for the combination of a variety of variables is continually under review and scrutiny for further evolutionary change.

HEALTH PLANNING IN MANITOBA FOR STATUS INDIANS THROUGH USE OF A REGIONAL HEALTH PROGRAMS COMMITTEE. Ted Rosenberg, Charlotte Johnson, Larry Richards, Bill Rutherford Health and Welfare Canada, Medical Services Branch, Manitoba Region, Winnipeg, Canada

Decisions must be made regarding updating standards for existing health programs, planning and prioritizing new ones, and mechanisms for evaluation of all programs. Medical Services Branch, Manitoba Region, has attempted to accomplish this in a rational, informed and multi-disciplinary fashion with Indian participation, through the development of a regional health programs committee. The following paper will describe the function and structure of this committee, and its importance for health planning.

ROLE OF HEREDITARY FACTORS IN PHENOTYPIC VARIABILITY OF HORMONE LEVELS IN THE POPULATION GENETICALLY ADAPTED TO CIRCUMPOLAR ENVIRONMENT. V.B. Saljukov, S.V. Lemza, A.M. Kucher, V.P. Puzyrev. Population Genetics Laboratory, Institute of Medical Genetics, Tomsk, U.S.S.R.

Functioning of various physiological systems including endocrine exhibits a number of special features in aborigines of circumpolar regions. Plasma estradiol, cortisol, TSH, T3, and T4 levels were studied in the North Khanty population occupying a large area in the basin of the Lower Ob river and genetically adapted to extremal arctic conditions. A population sample consisted of 720 subjects of both sexes aged > 10 years. In order to clarify the role of hereditary factors in variability of hormone levels the following approaches were used: (i) analysis of the total variability, (ii) estimation of heritability coefficients, and (iii) analysis of relationships between hormone levels and polymorphic loci - ABO, MN, Es-D, Hb, Gc, Tf. Negative linear correlations between the age and plasma levels were more pronounced for T3 than T4 and were higher in males than in females for both hormones. The remainder ones have shown non-linear age dependence. The mean plasma cortisol and T3 levels were significantly higher in males than in females. The highest coefficient of heritability ($h^2 = 0.44$) was obtained for estradiol level. Variability of plasma T3 level is totally explained by environmental factors. In males plasma cortisol, estradiol as well as T4 levels were found to associate significantly with Es-D and Tf, Gc, MN respectively. In females significant associations were established between plasma cortisol and Gc, estradiol and ABO, T3 and ABO, MN, Hb. The data above presented are discussed from the point of view of the fitness of the population in question to extremal circumpolar environment.

DIABETES MELLITUS IN THE INDIAN PEOPLE OF BRITISH COLUMBIA. Martin, J.O., Bell, P., Medical Services Branch, Department of National Health and Welfare, Pacific Region, Vancouver, British Columbia, Canada.

Diabetes mellitus is becoming an increasing problem in the reserve population in British Columbia. In 1987, as part of a national attempt to obtain current data on the prevalence of this disease in the Native population, a survey was carried out in British Columbia. 125 communities reported, representing two-thirds of the on-reserve population. For Type II diabetes mellitus, the overall rate was 1.24%. For the over 35 age group, the rate was 4.50%. 14 communities were considered to be at high risk, both for the prevalence of diabetes in the population and for the overall number of diabetics. The highest rates were noted in coastal and southern communities. One small coastal community had a rate of 28% in the over 35 age group. However, this represented only 7 diabetics in a community of 140. Of 345 cases reported, therapy in 83 (25.5%) consisted of diet alone, in 114 (35.0%) diet plus oral hypoglycemics, and in 129 (39.6%) diet and insulin. This paper provides details on the survey and the program initiatives including research, being undertaken to improve programs for Native diabetics in British Columbia.

THE HEALTH STATUS OF MANITOBA INDIANS AS MEASURED BY VITAL STATISTICS - A 10 YEAR REVIEW. Ted Rosenberg Health and Welfare Canada, Medical Services Branch, Manitoba Region, Winnipeg, Canada

The age structure, birth and mortality patterns have been changing for Status Indians over time. The following paper will describe these indicators of health status by reviewing the vital statistics for Manitoba Indians from 1979-1988. Comparisons will be made between remotely situated and less isolated groups, people living on and off reserve, and to the non Indian population.

COMMUNITY HEALTH STATUS ASSESSMENT AS A TOOL FOR EVALUATING THE HEALTH OF SMALLER COMMUNITIES IN MANITOBA. Ted Rosenberg, Richard Musto, Joel Kettner, Charlotte Johnson Health and Welfare Canada, Medical Services Branch, Manitoba Region, Winnipeg, Canada

Health Status information has been limited to aggregated data for large Indian populations. This has led to questions regarding the relevance of this information for individual communities and local leadership. This paper describes a tool for systematic community health status assessment and its application in Manitoba.

AIDS EDUCATION FOR MANITOBA INDIANS. Mary Brown, Larry Starr, Pauline Wood Steiman, Ted Rosenberg Health and Welfare Canada, Medical Services Branch, Manitoba Region, Winnipeg, Canada

Cases of H.I.V. infection have slowly been emerging in the native Indian population. Although exact quantitative data has been lacking, efforts are under way to deal with this problem and its concomitant threat to health. The following paper describes regional strategies to promote community awareness through liaison with Indian leadership. In addition, it describes the use of health education as a tool to prevent the spread of this disease throughout the population.

CHEMICAL AND STRUCTURAL STUDIES ON BRAIN CIRCUITS AND NERVE FIBER GROWTH. S. O. E. Ebbesson¹, M. Shtark², M. Starostina², M. Rickmann³ and D. L. Meyer³. ¹University of Alaska Fairbanks, Alaska, USA; ²Siberian Branch Academy of Medical Sciences, USSR; ³Department of Anatomy, University of Göttingen, FEDERAL REPUBLIC OF GERMANY.

The most frequent cause of death in Siberian and Alaskan native populations is behavior related, such as suicide, accidents and excessive alcohol consumption. One aspect of the Alaska-Siberian Research Program is therefore to enhance basic brain research capability in Alaska and Siberia for research on the chemical and molecular basis of behavior and for studies related to recovery from brain and spinal cord injury. The preliminary work concerns the assessment of the role of the brain specific protein S100 in neural plasticity and nerve fiber growth. One model used is the "midlife neuroembryonic period" in salmon which allows the study of factors that control nerve fiber growth. The use of this model, discovered in Alaska last year, may lead to an understanding of what conditions are necessary for recovery from injury to brain and spinal cord. This and other chemical studies on the brain may elucidate what factors play roles in maintaining the integrity of neural function and how such factors become incapacitated. Here we will report on changes in S100 levels over time and on the possible role of thyroid hormone in nerve fiber growth.

In another series of experiments the role of S100 protein in the molecular mechanisms of plasticity was studied in the model of long term potentiation in rat hippocampal slices. The data suggest that the S100 protein participates in the development of this phenomenon. Since S100 protein is not species specific, one can suggest the use of S100 as a "marker" for neuronal plasticity in the nervous system of a large number of taxonomic groups.

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THE PREVALENCE OF CHRONIC PAIN IN A NORTHERN RURAL POPULATION.

Söderhielm, L., Bauer, M. The Community Health Centre, Funäsdalen, and The Department of Orthopaedics, Östersund Hospital, Östersund, Sweden.

The entire population of Funäsdalen, 2 067 persons, were interviewed by a structured questionnaire regarding the presence of pain enduring more than two weeks during the past five years. Funäsdalen is a mountain village in a remote area in Northern Sweden, (62° North). About 10% of the population are Laps who live on reindeer-breeding. The dominating trade is tourism. The climate is inland with winter temperatures frequently below -30° C and snow from October to May. 1 556 answers were received. The very young and the very old, as well as persons belonging to the ethnical minority were over-represented by those not answering. 59% of those answering had not had a period of prolonged pain for the past five years. However, no less than 30% stated that they had had pain for more than six months during this period of time.

Low back pain and shoulder pain are the most common symptoms, 19,9% each, followed by pain from the knees and hips, whereas visceral pain was less common than expected.

5% of those with pain are on continuous medication and 20% of the population had taken pain-killers for a continuing period of at least two weeks during the past five years. Disturbed sleep and fear of cancer is frequent among those with pain. In this group almost 1/3 had considered a hidden malignancy.

The results demonstrate the wide-spread occurrence of pain as a present-ing symptom of illness. They are of interest when planning medical care, although many of these symptoms may have other than medical reasons. In an on-going study, all patients with symptoms will be examined to establish the cause of ill-being.

USE OF ETHNIC FOODS AS TOOLS FOR EFFECTIVE TEACHING. Mary M. Gregory, Nutrition Department, Yukon Kuskokwim Health Corporation, Bethel, 99559 -USA. The prevalence of anemia is high in the Yup'ik population of the Yukon-Kuskokwim Delta in south-western part of Alaska. The Nutrition Department staff is developing materials and teaching school age children using the Ethnic Native Foods in three categories: A, Three part video series called "Let's Eat", "Harvest of the Season's" "yesterday's foods". Good footage from 1930's way of life. "Making Choices" food changes among the Yup'ik people. "The Price you Pay". The circumstances as the result of eating non healthy foods. It also spells out foods high in IRON. All three have footages from moving films of the missionaries' & local peoples home film libraries. B, A half an hour slide show presentation photographed and narrated by the Author both in Yup'ik and English. Posters are made using local ethnic peoples during their subsistence gathering activities in all of the 4 seasons. Handouts used include a song "Iron Gives me Energy" targeted at lower grades, but is making hits with all age groups. "Treasures of the Tundra", a list of Iron, Calcium, Vitamins A & C & B - Vitamins containing foods from locally harvested plants, animals, fish and plant roots. "Nutrition Alaska Style", a quiz using the findings of the re-searches done on Native Foods Nutrition and People of the delta. Visual Aids include: Flash cards using animals under IRON, Calcium and Vitamin A & C, contents. A plant specimen book featuring Edible, Medicinal and poisonous plants and an "Endurance Exercise".

YUKON ACTIVITIES ASSOCIATED WITH ALCOHOL RELATED BIRTH DEFECTS

Judy Pakozdy RN BScN
Whitehorse, Yukon

This poster presentation will present the impact of alcohol related birth defects on Yukon Children and their families and describe several community activities related to the prevention of Fetal Alcohol Syndrome/Fetal Alcohol Effects and to inter-vention for affected children and their families.

Low Relative Risk of Epiglottitis in Manitoba Indians

Moffatt MK, Law B and Tenenbaum M. Departments of Pediatrics and Child Health and Community Health Sciences, University of Manitoba.

Clinical impressions have always suggested that epiglottitis is an uncommon condition among Canadian Indian and Inuit children. We obtained data on hospitalizations from the Manitoba Health Services Commission (MHC) to test the hypothesis that epiglottitis is rare in Indian children. MHC is the sole paying agent for hospital and physician services in the province of Manitoba. Their data bank has a code attached to the client number which allows identification of status Indians.

In the six year period 1979 to 1985 there was only one status Indian admitted to any hospital in Manitoba with a diagnosis of epiglottitis (ICD-9 code 464.3) compared with 71 non-Indian children. The mid-period population denominators were 19,794 Indian and 230,852 other children aged 0 to 14 years. This yields average annual incidence rates of 0.84 and 5.13 cases per 100,000 respectively. The relative risk for an Indian child to develop epiglottitis was 0.16 (p<.05).

By contrast, for the age ranges 0 to 4 years, there were 21 cases of bacterial meningitis in Indians and 84 in other children. The annual incidence rates were 51.4 and 18.9 cases per 100,000 and the relative risk for Indians was 2.72 and a different age distribution was apparent with 16 (76%) of the 21 Indian cases occurring before the age of one year as opposed to only 40 (48%) of 84 cases in non-Indians. Epiglottitis appears to be a rare disease among Indian children, while bacterial meningitis is more common and occurs at an earlier age. These facts must be taken into consideration when decisions are made about *Haemophilus influenzae* and other vaccines.

SOCIAL AND ECOLOGICAL HEALTH FACTORS OF THE NATIVE POPULATION OF CHUKOTKA. Yu.P. Nikitin, A.D. Chenukha, A.N. Lebedev. Institute of Internal Medicine, Novosibirsk, USSR.

Peculiarities of life and state of health of Chukotka natives are determined by social and ecological factors of this region.

Realization of social measures resulted in positive changes in medico-demographical situation among Chukotka natives; in last 15 years the birth rate increased and natural increase of population became more intensive; children mortality and total one lowered. But social and economical changes (urbanization, new type of production, new life style) resulted in a number of negative factors: poor state of environment, increase of morbidity on a number of nosological forms, increase in out-of-family child-birth and sexual deformities in native villages and caribou-breeding brigades. Anthropogenic pollution of environment caused the growth of oncological and infectious morbidity, specific lesions of organs and systems of natives. The disturbance of microelements (natural biogeochemical anomalies), wide prevalence of diseases of bacterial, viral or helminthic nature are characteristic for the ecological factors of biosphere of Chukotka. This all determines the peculiarities of the regional pathology among the natives of the region.

ALLERGENIC AIRBORNE POLLEN AND SPORES IN WHITEHORSE, YUKON J. H. Anderson. Institute of Arctic Biology, University of Alaska, Fairbanks, Alaska 99775-0180, U.S.A. 907 474-6068

Airborne allergenic and other pollen and spores were sampled with a Burkard volumetric sampler at Whitehorse General Hospital in 1984 and 1987-89 as part of the University of Alaska's ongoing aerobiology research program addressing medical and ecological problems. This has led to a fairly thorough inventory of aeroallergens for Whitehorse. These include willow, poplar, aspen, alder, birch, juniper, spruce, pine, grass, and wormwood pollen, appearing approximately in that order in a season from late April into August. Pine pollen is of special concern because of high aerial concentrations in June and an apparent sensitivity to it in several Whitehorse residents. Fungus spore concentrations become serious at several hundred per cubic meter of air by late May and generally increase through the summer to around 10,000 in late August. A prototype standard pollen calendar incorporating the four seasons of data is being prepared as a first-generation predictive model of daily outdoor exposure risks. Major annual variations in pollen production and timing are becoming evident and are being analyzed with respect to intrinsic and environmental controls and significance in the allergy community. This research is aimed toward an ability to predict pollen season severity several months in advance and to forecast daily pollen concentrations in conjunction with the weather forecast.

GUIDELINES FOR REGISTERED NURSES PRACTISING PRIMARY HEALTH CARE IN NORTHERN SASKATCHEWAN.

Kathleen Chisholm. Northern Health Services, LaRonge, Sask. Canada

In northern Saskatchewan as in many other regions of Canada, registered nurses are providers of primary health care. Through Northern Health Services Branch of Saskatchewan Health, nurses provide care to several remote, isolated communities with a population of less than 1500 comprised mainly of Metis, status and non-status Indians living off reserves. In addition to their role in preventative health services, the nurses provide assessment, diagnosis and treatment including dispensing of medication to clients in an effort to meet the health needs of individuals and communities. Prior to 1988, this extended role of nurses in northern Saskatchewan was practiced without the formal recognition of the professional licensing bodies. Discussions were held with the three professional bodies, the Saskatchewan Registered Nurses Association (SRNA), The College of Physicians and Surgeons and the Saskatchewan Pharmaceutical Association as well as the two employing agencies, Medical Services Branch, Health and Welfare Canada, Saskatchewan Region and Northern Health Services Branch, Saskatchewan Health. A document, Roles and Functions for Registered Nurses Providing Primary Health Care in Northern Saskatchewan was developed by the SRNA and ratified by the other licensing bodies to provide guidelines for the scope of practice of these nurses. This document discusses prerequisites for these expanded roles and functions and identifies safe and reasonable boundaries of practice for nurses in designated communities in northern Saskatchewan.

NATIVE COMMUNITY CARE: COUNSELLING AND DEVELOPMENT PROGRAM (NCC&D) Anigawncigis Institute (Peterborough), Association of Iroquois & Allied Indians (London), Cambrian College (Sudbury), Mohawk College (Brantford), Union of Ontario Indians (Toronto), Ontario.

The NCC&D Program, unique to Ontario, was developed in direct response to stated Native community needs in the areas of community care, substance abuse and mental health. Two general principles guided the formation of curriculum: 1) Training had to be community appropriate with community application and recognition of community based resources. 2) Training had to enhance the broad goal of self-determination of the First Nations in the field of community care. These principles lead to the development of distance education manuals particularly suited for Native community care workers. The curriculum was developed with help from the above named institutions as well as Contact North and is taught in a modified distance education and regular delivery format at Cambrian and Mohawk Colleges. Areas of study include: personal growth and development, communications, community health care, Native Studies, behavioural science, substance abuse, and community development.

The successful enactment of the theoretical and practical educational objectives established through community based consultation have provided a framework from which to construct further programs which meet the real sociopolitical needs of First Nations' people.

THE SVALBARD STUDY: QUALITY OF LIFE AT 78 DEGREES NORTH. G. Hoyer, O. Nilssen, T. Brenn, H. Schirmer. Institute of Community Medicine, University of Tromsø, N-9000 Tromsø, Norway.

All Norwegians aged 18 years or more living on Svalbard were invited to a broad health survey in 1988. Of the 818 invited, 611 took part in the screening. Of these, 487 persons returned a self-administered questionnaire with special emphasis on quality of life and mental health. Subjective apprehension of quality of life was measured by the Cantril ladder, while Golbergs General Health Questionnaire was applied to assess mental health. Other questions concerning quality of life, life-style and mental health were also included.

On average, the responders reported quality of life equal to 7.2, which is as high as for 20 years old men in Oslo, the capital of Norway. Those with the lower scores reported higher alcohol consumption and more often suffered from sleep disturbances. Only 12.2% of the participants were identified to suffer from mental distress, compared to about 20% in other population studies in Norway.

Despite the extreme climate, quality of life is experienced to be good at Svalbard and there is a low prevalence of mental distress. This finding can probably be explained by a positive selection of individuals going to Svalbard.

GENETIC MECHANISMS OF ADAPTATION IN INDIGENOUS POPULATIONS OF NORTH-EAST ASIA. L.L. Solovenchuk. Institute of Biological Problems of the North, USSR Academy of Sciences, Far-Eastern Branch, Magadan, USSR.

Eight codominantly inherited polymorphic systems - Hp, Gc, AcP, PGM, GPI, GLO-1, PGD, EsD - were studied in Asian Eskimo, Coastal and Reindeer Chukchi, Karyak and Even populations. The statistically significant ($P < 0.02$) increasing gradient of mean heterozygosity (H_0) in the following axis: Karyak - Even - Reindeer Chukchi - Coastal Chukchi - Eskimo was established. This gradient is in the line with the hardening of environmental conditions and demographic deterioration.

F-statistics shows the excess of factual heterozygosity (H_0) when compared with the calculated one (H_{IS} and H_{IT}). Excessive factual heterozygosity is the most demonstrative when the inbreeding coefficient is taken into account and remains stable when subpopulation F-statistics is analyzed irrespectively of ethnic membership.

It was established that optimized levels of immunoglobulins G, I and M change to worse with the transition of individual heterozygosity from medium to high and then to low. Such correlations explain the tendency of selective processes to conserve the high level of genetic variation in populations with small effective volume and fluctuating number. Genetic differentiation of populations does not conform with their mean heterozygosity differentiation which could be explained by interaction of stabilizing and directed genetic processes and reflects adaptive changes in genetic structure of populations subjected to extreme environmental conditions.

VILLAGE LEVEL SURVEILLANCE OF OTITIS MEDIA IN SOUTHWEST ALASKA, A TRANSITION FROM CRISIS MANAGEMENT TO DETECTION AND PREVENTION. Thomas P. Hishon. The Yukon-Kuskokwim Health Corp., Bethel, Alaska, U.S.A. 99559.

Intervention by the Otitis Media/Special Ear Program (OMP) at the village level has effected a dramatic decrease in the number and severity of corrective ear surgeries. In 1979, the first fiscal year of the program, there were 150 Tympanoplasties, 36 Myringotomies and Tubes and 10 Mastoidectomies performed from a regional population of 14,407. In the fiscal year 1988, there were 39 Tympanoplasties, 90 Myringotomies and Tubes and 4 Mastoidectomies from a regional population of 19,942. The OMP staff of two technicians provide services in 48 villages. By traveling to villages, hundreds of people are provided with specialized care each year that would otherwise be unavailable or unaffordable. In most cases, conditions that previously required major corrective surgery to restore hearing are now discovered and treated early enough to prevent hearing loss, developmental delays and associated learning disabilities.

ELECTROCOCHLEOGRAPHY: A NEW DIMENSION IN OTOLGY & AUDIOLOGY D.D. Beal, M.D., J.K. Van Ausdal, M.S., CCC-A, N.L. MacIver, M.A., CCC-A. Alaska Dizziness & Balance Center and Advanced Hearing Technology, Anchorage, Alaska.

For years otolaryngologists have tried to discriminate among the anatomical structures causing dizziness, hearing loss, tinnitus, and aural fullness without surgical intervention. A powerful diagnostic tool, Transtympanic Electrocochleography, is being used in the clinic which allows the otolaryngologist and audiologist to separate endolymphatic hydrops from other possible etiologies. Electrocochleography, EcoG, is an electrophysiologic technique that measures the neural response of the cochlea to auditory stimulation. It determines if a potentially reversible inner ear condition exists. EcoG is also used intra-operatively to aid in placement of the endolymphatic shunt to alleviate the hydrops. Within this setting, EcoG has demonstrated a significant benefit in patients with hydrops who have elected this surgery. Improvement in one or all of their presenting symptoms have been found.

THE PATHOGENESIS OF OTITIS MEDIA IN CANADIAN NATIVE POPULATIONS.

Otitis media was not a disease entity in Northern Canadian native populations until the advent of change induced by the colonization of the area in which they live and subsequent changes that occurred in their life style which laid the foundations of an environment which encouraged the development of this and other similar conditions. Attempts at treating the problem medically have been necessary but the answer to eliminating it rests in social and educational alteration of the native way of life.

Subject index: INDUCED OTITIS MEDIA.

BACTERIAL BIOLOGY OF CHRONIC OTITIS MEDIA AMONG ALASKA NATIVE CHILDREN. Alan J. Parkinson, Susan E. Clift, and Michael Davidson. Arctic Investigations Program, Centers for Disease Control, Anchorage, Alaska, 99501 USA.

Otitis media and its complications have long been recognized as a major cause of morbidity among Alaskan Native children. In the Yukon-Kuskokwim Delta (YKD) region of Alaska, otitis media ranks as the second most common cause of out-patient visits. Middle ear aspirates (MEA's) were collected aseptically from 139 Native children with chronic otitis media from the YKD undergoing routine tympanostomy with tube insertion. MEA's were cultured aerobically for bacterial pathogens. The following pathogens were recovered from 244 aspirates. H. influenzae not typeable (or not type b) 40 (16.4%), H. influenzae type b 6 (2.5%), S. pneumoniae 16 (6.6%), S. epidermidis 8 (3.2%), E. catarrhalis 9 (3.7%), S. aureus, S. viridans, and Group A streptococcus 3 (1.2%). Because of frequent treatment of these patients with antibiotics, a monoclonal antibody enzyme immunoassay (EIA) was developed for detecting pneumococcal C polysaccharide (PnC) in MEA's. A total of 197 aspirates were tested by EIA. PnC was detected in 12 of 16 samples (75%), of which grew S. pneumoniae. Of 129 specimens that were sterile, 8 (6.2%) were EIA positive. Two of five specimens which grew H. influenzae type b, and 2 of 10 specimens that grew S. epidermidis were also EIA positive. By combining both the culture and EIA results, evidence for pneumococcal infection could be found in 24 of 68 (17.6%) aspirates that yielded pathogens suggesting that S. pneumoniae may be responsible for an even larger fraction of recurrent otitis media than can be determined by culture alone.

OTITIS MEDIA AND THE PATTERN OF CHILD MORBIDITY IN KUUVJUAARAPIK. Rose Dufour and François Thérien. Centre Hospitalier de l'Université Laval, 2705 boul. Laurier, Ste Foy (Qc) Canada. G1V 4G2.

Between 1984 and 1987, Kuuvjuaraapik (East Coast of Hudson Bay, Northern Québec) has been the focus of intensive research on otitis and hearing problems in native children (both pre-schoolers and school children). This presentation deals with a systematic review of medical records of all children born between January 1st, 1980 and January 31st, 1986, carried out for a 66 month period (Jan. 1st, 1980-June 30th, 1986). A number of 101 children were under study, with a total of 1018 consultations at the nursing station (the first line medical facility). Otitis media, of course, ranks first among recorded diagnoses (26.9% of consultations) and the overwhelming majority of consultations concerns ears and contiguous regions (mouth and respiratory tract). Analysis was performed with respect to several variables such as adoption, breast or bottle-feeding and seasons. In conclusion, promising avenues for further research will be discussed.

ECHOCARDIOGRAPHIC ASSESSMENT OF CARDIAC ABNORMALITIES AND THEIR RELATIONSHIP TO EXERCISE BLOOD PRESSURE IN TWO ICELANDIC POPULATIONS. B. J. Naimark (1), A. Morris (2), J. Axelsson (3), N. L. Stephens (1): (1)Department of Physiology, University of Manitoba, Winnipeg, Canada, (2)Department of Cardiology, St. Boniface Hospital, Winnipeg, Canada, (3) Department of Physiology, University of Iceland, Reykjavik, Iceland.

The results reported here are part of a comparative study of cardiovascular risk factors in two separate, but genetically-comparable, populations. Further results of this study are reported elsewhere in this volume.

In the present part of the study, the relationship between exercise systolic blood pressure (ESBP), measured during bicycle ergometry, and left-atrial and left-ventricular echocardiographic abnormalities was studied in two groups of males, aged 25 - 70 years and either normotensive (NT) (< 140/90 mmHg) or borderline hypertensive (BHT) (< 160/95 mmHg) at rest. GROUP I subjects (n=77) were Canadians of purely Icelandic descent residing in the Interlake district of Manitoba. GROUP II subjects (n=68) were Icelanders residing in the Ármessysla region of southern Iceland.

Prevalence of abnormal left-atrial dimension index ($LADI \geq 2 \text{ g / m}^2$) was 0.21 for GROUP I and 0.17 for GROUP II, while the prevalence of abnormal left-ventricular mass index ($LVMI \geq 125 \text{ g / m}^2$) was 0.11 and 0.06 for each group respectively. Analysis of the data showed that both LADI and LVMI increased with increasing ESBP, in both groups. No significant statistical relationship was discovered between increasing ESBP and diastolic blood pressure, age, resting heart rate, or body mass index. Resting SBP increased significantly with increasing ESBP. In 24 of the 145 subjects, left-atrial enlargement occurred in the absence of left-ventricular hypertrophy, while the converse condition was found in only 3 subjects. Left ventricular hypertrophy was of the eccentric type in all but one case.

These findings are consistent with the hypothesis that in some NT and BHT individuals with an exaggerated ESBP, atrial enlargement induced by high cardiac output, precedes changes in the left ventricle - a pattern which may reflect the hyperdynamic circulation thought to be a feature of early hypertension.

EPIDEMIOLOGY OF VIRAL HEPATITIS.
B. Larke, Edmonton, Alberta, Canada

TREATMENT OF VIRAL HEPATITIS.
G. Dusheiko, London, United Kingdom.

SEXUALLY TRANSMITTED DISEASES AND A.I.D.S.: A COMMUNITY APPROACH. P. Bertha, C. Couture, M. Mannke. Video: 38 minutes. Inuititut with English subtitles.

The effort to inform the Inuit public about sexually transmitted diseases (S.T.D.'s) and A.I.D.S. is far less advanced than in Southern Canada. Although a considerable amount of information is communicated individually by health workers, and the subject is raised regularly on television. There is no audio-visual material yet available adapted to the Inuit culture and produced in the Inuit language.

Filmed in the North and in Inuititut, this video endeavours to educate Inuit adolescents and adults about the nature of S.T.D.'s and A.I.D.S. and, at the same time to sensitize them to a problem that threatens their health and, as we know, may endanger their lives.

This attempt to remedy the absence of appropriate material was undertaken with the participation of the Inuit of three villages on Ungava Bay, Arctic Quebec: Tasiujaq, Kangirsuallujuaq and Kuujuaq. Funding was provided by Community Health Subsidy Program (Kativik Regional Board of Health and Social Services).

We trust the video, completed in January 1990, will prove a useful tool in the reduction of STD's, particularly chlamydia and gonorrhea, among the Inuit, and at the same time, help arm the population against the arrival of a most unwelcomed guest, the H.I.V. virus.

EPIDEMIOLOGY OF VIRAL HEPATITIS IN CIRCUMPOLAR POPULATIONS.
P. Skinboj, Copenhagen, Denmark.

TREATMENT OF VIRAL HEPATITIS IN CIRCUMPOLAR POPULATIONS.
S. Schalm, Rotterdam, The Netherlands

PREVENTION OF VIRAL HEPATITIS.
M. Sjogren, Washington, D.C., U.S.A.

PREVENTION OF VIRAL HEPATITIS IN
CIRCUMPOLAR POPULATIONS.
B. McMAHON, ANCHORAGE, ALASKA, U.S.A.

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