Table II

Percent of Low-Weight Births and Percent of Mothers With 5 or More Medical Checkups Starting Before 3rd Month of Pregnancy, by Type of Hospital Control, Prenatal Care Survey, Alaska, January-June, 1973

Type of Hospital Control	% of Births ≤ 2500 gr.	% of Mothers with 5 or more checkups starting before 3rd month
Non-governmental, nonprofit, non-church	4.2	61.6
Church operated	6.5	55.7
Public Health Service Indian Service	7.9	41.0
City	4.7	55.3
Military	6.8	48.1
Other	7.1	53.6
TOTAL	6.2	53.6

Vital Statistics Summary

Bethel Service Area: 1970-1973

	1970	1971	1972	1973
Total Live Births	367	371	370	377
Total Deaths	68	79	81	95
Total Infant Deaths	9	15	10	12
RATE	24.5	40.4	27.0	31.8

Causes of Infant Death

Bethel Service Area: 1970 and 1973

	1970			1973		
	-1 yr	-28 days	28 d-11 mo	-1 yr	-28 days	28 d-11 mo
Total All Causes	9	6	3	12	4	8
Certain Gastrointestinal Diseases (004, 006-009, 535, 561, 563)	--	--	--	--	--	--
Influenza and Pneumonia (470-474, 480-486)	--	--	--	4	--	4
Congenital Anomalies (740-759)	2	1	1	--	--	--
Birth Injuries (764-768, 772)	--	--	--	--	--	--
Asphyxia of Newborn, unspecified (776.9)	1	1	--	--	--	--
Immaturity, unqualified (777)	1	1	--	1	1	--
Other Diseases of Early Infancy (remainder of 760-778)	2	2	--	3	2	1
All Other Causes	3	1	2	4	1	3

LEADING CAUSES OF DEATH BY AGE GROUPS

BETHEL SERVICE AREA: 1973

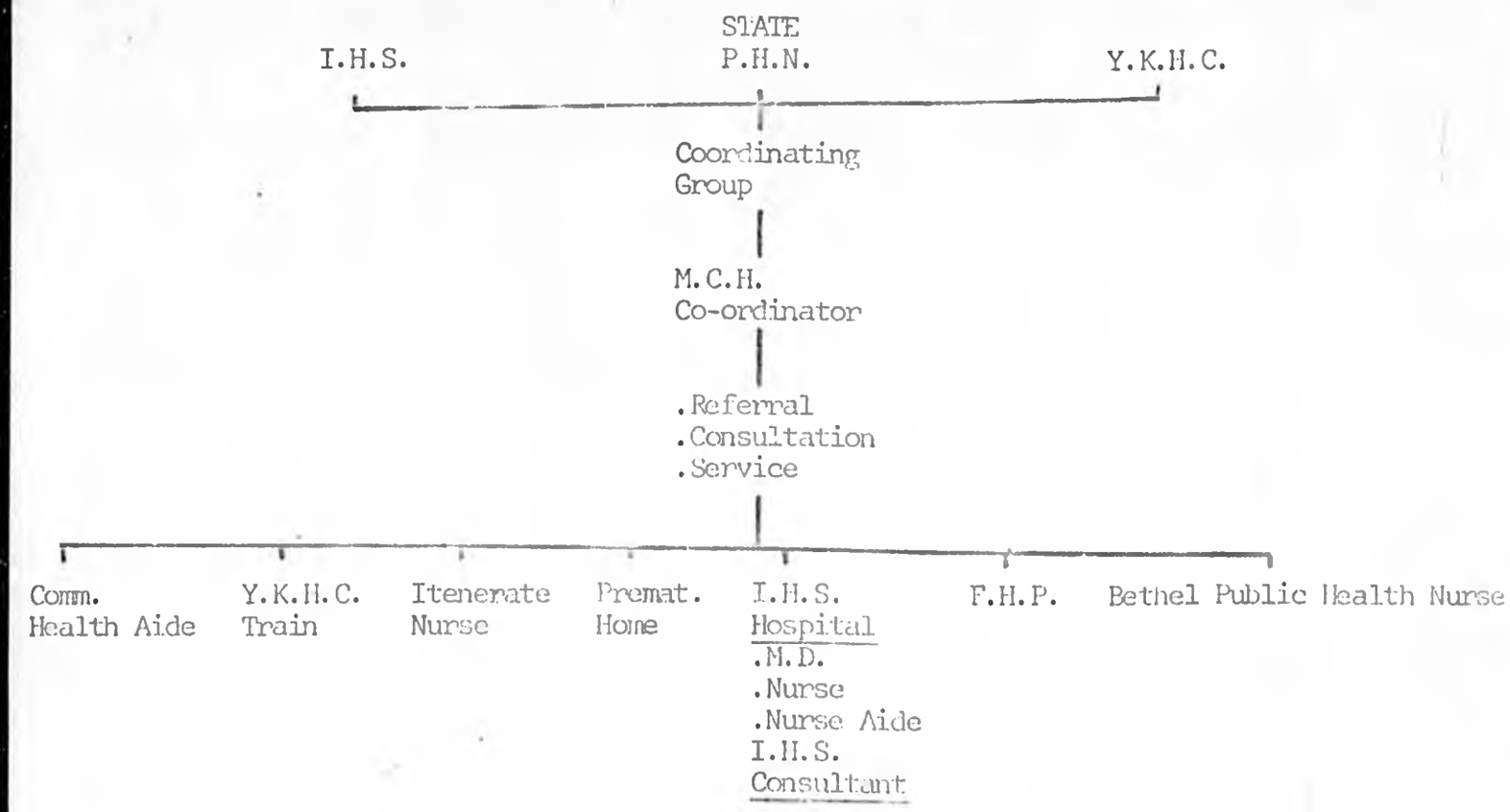
Residence Data

Cause of Death	TOTAL	Less Than 1 Year	1-14	15-44	45-64	65-84	More Than 84 Years
All Causes	95	12	4	35	20	15	9
Accidents (all types) (800-949; 980-989)	23	2	1	15	5	--	-
Malignant Neoplasms (140-209)	14	--	1	1	5	3	4
Alchoholism (303)	11	--	-	8	2	1	-
Influenza and Pneumonia (460-509)	8	4	1	1	--	1	1
Heart Disease (393-429)	7	--	-	1	3	2	1
Vascular Lesions (430-438)	5	--	-	--	2	2	1
Suicides (950-959)	5	--	-	5	--	--	-
Diseases of Early Infancy (760-779)	4	4	-	--	--	--	-
Tuberculosis (010-019)	3	--	-	--	--	3	-
Other Infectious Diseases (000-009; 020-136)	2	--	-	--	1	1	-
All Other Causes	13	2	1	4	2	2	2

MCH PROGRAM TASKS AND RESPONSIBILITIES

TASK	DESCRIPTION
1.	Review of hospital chart and prenatal form will be the responsibility of the district physician with back-up and coordination by the MCH program and the OB physician.
2.	Identification of risk and development of the plan of care will be the responsibility of the district physician. Again the district physician will be backed up by the MCH Coordinator and OB physician.
3.	All plans of care will be given to the MCH program to disperse to the CHM & PHN.
4.	MCH program will maintain the tickler file and will keep each physician abreast of the prenatal, postpartum, and early childhood patient. MCH program will update prenatal record based on monthly reports. MCH program will meet with each district physician reviewing MCH patients prior to the physicians travel.
5.	Coordinate and run the prenatal program for Bethel and village patients at the Prematernal Home. Insure that each prenatal has a complete exam and educational sessions. Work closely with the Bethel PHN and Prematernal Home Director.
6.	Manage the care of prenatal and postpartum normal patients on the OB ward during the day.
7.	Be on call for delivery of babies once a month.
8.	Maintain tickler file on discharged babies and mothers. Complete physical on all maternity patients prior to discharge and coordinate follow-up care in the village or hospital by the physician, community health aide and PHN.
9.	Working with the pediatrician investigate the feasibility of developing a high risk file for infants to age 4. Coordinate all efforts with the PHN. Focus may initially be on children with chronic conditions.
10.	In service training for physicians, OB nurses, physician assistants, and health trainers.
11.	Consult with the CHA training program to coordinate the health aide training both in Bethel by YKHC training staff and by PHN in the field. Some clinical training of CHA may be done by the nurse midwife during her normal course of direct service.
12.	Develop and maintain an awareness of the village and their problems in relation to the MCH program.
13.	Work with OB physician, MCH consultant and others to evaluate the progress of the MCH program.

APPENDIX ii
M.C.H. SYSTEM
-Organization-



VILLAGE M.C.H. SYSTEM

CTIVITY/STEPS	RESPONSIBLE PERSON (s)	FREQUENCY TIME	PROBLEMS
. Identification of pregnancy.	.Mother .Community Health Aide* .During Field Trips: PHN* Physician M.C.H. F.H.P.	First Trimester (Goal)	.Many mothers do not think it is important to go to the Health Aide as soon as they find out. .Health Aide may be a relative who you do not want to let know about a pregnancy. .Mothers do not know importance of early identification.
. First prenatal exam.	.Health Aide .Itinerant P.H.N. Physician* .Bethel Hospital	At time of identification of pregnancy is ideal.	.A complete exam cannot be done at the village level by a Health Aide and by many P.H.N. .Some patients would require more lab. work-up.
3. Send prenatal form for new pregnancies to Bethel.	.Community Health Aide* .During Field Trips: PHN* Physician* FHP	Firts Trimester	.Level of training. .Need supervisory support of Health Aide by P.H.N. and Physician.
. Review of prenatal form and hospital record and complete prenatal form.	. District M.D.* .M.C.H. Back-Up	Weekly	.Adequate clerical staff. .Sufficient time of medical records to pull and distribute records. .Charts do not have all needed info.

ACTIVITY/STEPS	RESPONSIBLE PERSON (s)	FREQUENCY TIME	PROBLEMS
5. Identification of risk. (See Appendix v.). identify risk and determine if a more comprehensive prenatal exam. is required.	.District M.D.* .O.B. Physician* Review high risk. .A.N.M.C. Consultant. .M.C.H. Back-Up	Weekly as necessary.	.Not enough aides have sufficient experience to perform the basic examinations therefore the identification of risk is limited to the quality of info. gathered by the Health Aide. .Need to bring more prenatals in for complete exam. when high risk is indicated or to obtain more info. to determine high risk. .Need to have physicians involved more in this activity
6. Develop plan of care for normal and abnormal pregnancies and dispense it to C. H.A., P.H.N., Physician. .Schedule of exams. .Instructions to mothers. .Date to come to Bethel to Prematernal Home.	.M.C.H.* with district M.D. .O.B. Physician Consult. .ANMC Consult.	Weekly	.Physicians are not involved enough in formulation and execution of the plan of care. Need to reinforce their involvement. .Mail service can hamper dispersion of plan of care. .Forms do not have enough room for plan of care. A "Normal" plan of care has been adopted by the medical staff so that only unusually or special information needs to be on the form concerning the plan of care. This may reduce the problem. .Physicians need more info. on plan of care for specific high risk conditions (See Appendix v. High Risk Factors and Plan).
7. Add new pregnancies to tickler file to follow all pregnancies from pre-natal, to post partum, through to the first well baby check.	.M.C.H.*	Weekly	

CTIVITY/STEPS	RESPONSIBLE PERSON (s)	FREQUENCY TIME	PROBLEMS
. Review of tickler file with persons prior to field trip for new and continuing pregnancies.	.M.C.H.* .Physic .PHN .FHP	As need arises.	.Co-ordination of schedules. .Not enough time for discussion of information prior to a trip to a village by physician and public health nurse.
. Ongoing examinations/ education of patient as prescribed by the plan of care.	.Health Aide* .Itinerate Physician* PHN* .Radio consultation with physician.	.According to plan of care. .According to travel schedule 3 year PHN 1 year Physician.	.Home care by mother. .Lack of Health Aide skill. .Frequency of village trips by itinerate, public health nurses, physician. .Lack of time for PHN to train aide for M.C.H. Activity too much time is spent with acute problems. .Poor radio contact.
. Report pregnancy examination info. monthly on "Pregnant Patient Monthly Report"	.Health Aide* .Itinerate PHN*-? Physician?	Monthly	.Need to reinforce M.C.H. program with Health Aides. .Time available .Organization of Health Aide schedule. .Mail service slow.
. Evaluation of all pateints monitoring any changes that might indicate prematurity or complications. (Use ticler file).	.M.C.H.* .O.B. Consult. A.N.M.C.	As info. is received.	.Success is dependent on info. gained in step 9 and reported in step 10.

ACTIVITY/STEPS	RESPONSIBLE PERSON (s)	FREQUENCY TIME	PROBLEMS
2. Patient arrives at pre-maternal home prior to birth of child. a. Complete examination usually at hospital. b. Up date plan of care. c. Set appointments. d. Pre-natal and post natal care provided in hospital. e. Prematernal home-health education.	.MCH .OB Physician .PHN .Prematernal Home .Hosp. Nursing	One month prior to estimated birth.	.Without knowing the date of the expected birth some women do not get into Bethel in time (Failure of Step 1). .Need to increase health education. .Outdated prematernal home. .Training of prematernal home aides. .More visits to prematernal home for education about childs rearing as well as prenatal education. .Mothers separated from family creates a stress on the family and mother. Separation anxiety may cause mothers to postpone coming to Bethel till the last moment. .Some mothers prefer to go to Anchorage or deliver at home. .Need to increase O.P.D. staff to support examination of patients. .Complicated pregnancies may be referred straight to A.N.M.C. without admission. .Need to orient patient to the hospital prior to admission.
3. Admission to hospital and delivery.	.OB Physician* .Nursing * .MCH * .THP .PHN	At time of delivery.	.Over growding due to peak periods of birth. .Lack of nurse staff. Especially at night. .Need to use time for education.
4. Complication Referred to A.N.M.C.	.OB Physician .A.N.M.C. Consultant	At time of admission or if high risk prenatal.	.Emergency referrals hampered by transportation problems.
5. Hospital Post-Partum care and discharge.	.OB Physician* .Nurse Hosp.* .MCH .FHP	After birth 2-3 days.	.Need to increase education. .Lack of in-patient staff. .Weather may cause delay in discharge. .Need to begin family planning program before discharge (now being done). .Need to orient mothers to the importance of follow-up care by C.H.A. and P.H.N.

ACTIVITY/STEPS	RESPONSIBLE PERSON (s)	FREQUENCY TIME	PROBLEMS
6. Post-Partum follow-up: a. Discharge info. referred to P.H.N. & Health Aide. b. Normal follow-up in village. c. Abnormals are scheduled for re-visit at hospital. d. Receive info. from Anchorage on discharged complicated patients.	.CHA .Itenerate -PHN* -Physician* -MCH -FHP	4-6 Weeks after delivery.	.Additional training of Health Aides. .Transp. Comm. problem which inhibit itenerate travel. .Need to educate mothers. .Obtaining info. from Anchorage on A.N.M.C. discharges.(?) .Newborn record sent with mother to the Health Aide. Needs to be monitored.
7. Well-Baby follow-up first visit (M.C.H. monitor).	.M.C.H.* .Health .Itenerate -PHN* -Physician*	2-4 Weeks.	.Same as above. .Co-ordination to insure care is given.
8. On-going well-baby care. -Height, Vision, Weight. -Immunization -Physical Exam. -Health Ed.	.Health Aide* .Itenerate -PHN* -Physician .M.C.H. Co-ordinate high risk child. Registry	At least every three months to first birth date. High risk infants to be followed past one year.	.Need to increase Health Aide skill. .More PHN time in village. .Education of mothers and fathers in regards to child rearing. .Increase quality of O.P.D. care at hospital. -R.N. -L.P.N. -Pediatric nurse practitioner/physician assistant.

BETHEL M.C.H. SYSTEM

The Bethel Pre-maternal patient receives all of her services from the hospital through its facilities and personnel with assistance from other agencies. Steps 1 to 5 of the previous outline are co-ordinated by the M.C.H. co-ordinator who along with a physician and other personnel provide the direct services in steps 1-5. Steps 7,9, and 11 take place in the hospital. Steps 13 admission to hospital and step 14 hospital post-partum care are the same for Bethel patients. Discharged patients are referred to the Bethel P.H.N. who follow-up is done in the hospital by the O.B. physician and M.C.H. program.

The problems associated with maternal and child health services to Bethel residents focus on the under staffed O.P.D. facilities for examination and care of expectant mothers and for childhood screening, monitoring and treatment of Bethel children.

MANAGEMENT OF M.C.H. SYSTEM

CTIVITY/STEPS	RESI ONSIBLE PERSON (s)	REEQUENCY TIME	PROBLEMS
. On going communications co-ordinator health care provider team.	.Clinical Director .MCH .Pre-Maternal .OB Physician .FHP .PHN	Every 1-2 months.	.Lack of enough time for direct care providers participation. .Need to orient new physicians and participants to the program.
. Evaluation	.Same above plus .A.N.M.C. Physician .State M.C.H. Office .Director of South Central Office .Y.K.H.C. Clinical Director .State P.H.N. Nurse Supervisor	Annual	.Has yet to take place.
. Record System	.M.C.H. .O.B. Physician .State PHN		.Complexity of form. .Amount of paper work for Health Aide. Other providers.
. Health Aide Training: a. Signs of pregnancy. b. Surveillance - Blood Pressure -Weight -Urine -Swelling -Measure Womb -Hemaglobin c. Explain Minor Disorder d. Health Ed. Prenatal Post-Partum & Well Child e. Emergency Childbirth	M.C.H. Y.K.H.C. Training* P.H.N.* Physician*	Basic Training (Over a nine week session).	.M.C.H. Co-ordinator assists Y.K.H.C. trainers and evaluates Health Aides. .No additional training beyond basic prior to departure. .Not all aides can meet the basic skills and need more training.

ALASKA DEPARTMENT OF HEALTH AND SOCIAL SERVICES
DIVISION OF PUBLIC HEALTH
SECTION OF NURSING

APPENDIX IV

PUBLIC HEALTH NURSING SERVICES - 1973

Under the direction of the regional health officer, regional nursing supervisor, or case-responsible physician, the public health nurse provides and promotes preventive, therapeutic, and rehabilitative nursing services to families on a community-wide basis in homes, health centers, schools, and clinics.

COMMUNICABLE DISEASES

Public health nurse participates in disease control activities through general preventive measures, early identification of disease, provision of care, and supervision to reduce effects of disease.

Examples of Service:

1. Immunizes specific age groups against: diphtheria, tetanus, whooping cough, polio, measles, rubella; and influenza, smallpox, and rabies when necessary.

2. Instructs individuals, families, school personnel, community groups on prevention of spread of contagious diseases.

3. Investigates sources and spread of diseases on epidemiological basis.

4. Treats communicable diseases according to physician's recommendations or Medical Standing Orders (MSO). Examples: tonsilitis, impetigo, conjunctivitus, diarrheas of early childhood, respiratory conditions.

5. Collects specimens for bacteriological examination: blood, feces, etc.

6. Interviews and counsels VD patient and contacts; treats according to physician's recommendations or MSO.

TUBERCULOSIS

Public health nurse is responsible for:

1. Case-finding)
2. Supervision) TB cases, contacts, and suspects.
3. Followup)

4. Surveillance) Previously infected population.

Examples of Service:

1. Chest X-ray Community Surveys: Planning, organization in some areas.

2. Tuberculin tests: Negative preschool and school children annually; other age groups as indicated.

3. Sputum and urine collection for bacteriological examination.

4. Refers for medical care; prepares hospitalization papers.

TUBERCULOSIS, Examples of Service (Cont.)

5. Chest Clinics: Organizing, participating.

6. Chemotherapy and chemoprophylaxis: Home supervision, distribution of anti-TB drugs.

MATERNITY CARE

Public health nurse helps to: 1. Evaluate condition of prenatal patient for need for special care and assists with plans for attaining it. 2. Prepare the patient and family to deal with physical, emotional, and social changes incident to childbearing.

Examples of Service:

1. Prenatal health appraisal and supervision:
   - Health history; patient's complaints
   - Nurse's observations
   - Weight gain
   - Blood pressure) Only in villages
   - Hemoglobin) with no immedi-
   - Urine tests: sugar, albumin) ate medical care
   - Fetal heart beat check)
2. Refers and reports to physician.
3. Prenatal counseling: Patient and family
4. Emergency delivery: If patient is unable to reach hospital or if village midwife not available. Patients encouraged to have hospital delivery.
5. Postpartum followup: Home visit first week after hospital discharge or on first field trip.
6. Parents' Classes: Prenatal care, infant and child care, child-rearing.

FAMILY PLANNING SERVICES

Public health nurse gives family planning counseling and services, as they relate to spacing of pregnancies and promotion of optimum health for the family.

Examples of Service:

1. Contraceptive counseling as necessary.
2. Pregnancy test, Pap smear, hemoglobin; other related tests or examinations.

INFANT AND CHILD HEALTH CARE AND SUPERVISION

Public health nurse assists the parent keep the well child well and promotes the highest possible level of his complete well-being by means of individual counseling, Child Health Nursing Conferences, and group instruction.

Examples of Service:

1. Child Health Conferences: Health appraisal:
   - Health and developmental history
   - Growth measurements
   - Developmental assessment
   - Dental screening
   - Vision test
   - Hearing test
   - Hemoglobin
   - Immunizations/tuberculin test

   OR
2. Early and Periodic Screening, Diagnosis and Treatment program

INFANT AND CHILD HEALTH CARE AND SUPERVISION, Examples of Service (Cont.)

When indicated: Referral to physician
Counseling mother on child's health, growth, and development
Followup services

3. Home visit: Instruction on care of infant and preschool children.
Demonstration of infant bathing, formula preparation, etc.

SCHOOL HEALTH SERVICES

Public health nurse gives school health nursing services which aid in attaining and maintaining student's optimum fitness to learn. Through these services, she also increases the students' understanding of health and health problems.

Examples of Service:

1. Health assessment:
   - Cumulative health record
   - Health history; students' complaints
   - Teacher/nurse observations
   - Physical inspection; dental screening
   - Tuberculin testing
   - Vision screening
   - Hearing screening
   - Physical examination (assists physician)

2. Counsels pupils, teachers, parents, and others on students' health problems and assists them plan for appropriate care.

3. Reinforces and supplements teachers' health education activities by assisting with materials or suggested content.

4. Provides and arranges for care of injuries, and of emergency or continuing illness.

CRIPPLED CHILDREN'S SERVICES

Public health nurse helps to locate and restore Alaska's handicapped children to as nearly a normal life as medical science can accomplish, so they may develop to their maximum potential and become useful and productive members of society.

Examples of Service:

1. Case-finding through home, school, and Child Health Conferences.

2. Referrals for service: Eye, E.N.T., orthopedic, pediatric clinics.

3. C.C.S. clinics: Organizing; participating.

4. Followup nursing service after diagnostic procedures and treatment.

CHILD STUDY CENTER

Public health nurses assists with:

1. Locating children suspected of mental retardation, development disabilities, emotional disorders.

CHILD STUDY CENTER (Cont.)

2. Referrals to Child Study Center for developmental evaluation.

3. Multi-discipline case conference - participant.

4. Assistance to parents in accepting child and limitations.

5. Counseling parents on self-help training of MR child, and coping with other disabilities.

6. Stimulation of community interest in mental retardation, developmental disabilities, emotional disorders.

COMMUNICATIVE DISORDERS (Hearing Loss/Speech Problems)

Public health nurse helps to identify children with speech, hearing, and language disfunctions, and assists the individual attain his full potential in good communication.

Examples of Service:

1. Auditory threshold tests on children who failed screening test.
2. Refers to private, state, or federal program for care.
3. Followup audiograms after otological surgery.
4. Instructing families on preventing acute and chronic otitis media.

ACUTE AND CHRONIC DISEASES IN CHILDREN AND ADULTS

Public health nurse aids in the detection of families with acute and chronic illnesses and encourages individuals to seek prompt and adequate care, or renders direct care according to NSO in absence of immediate medical treatment. Assists with followup of medical recommendations through interpretation and encouragement to family.

MENTAL HEALTH - MENTAL DISORDERS - ALCOHOLISM - DRUG ABUSE

The public health nurse assists with case-finding, referral for evaluation, hospital arrangments, emergency handling and treatment of acute conditions, and patient/family support, including supervising home care of the ill patient.

Public health nurse works on an individual, group, and community-wide basis to assure use of all available measures to prevent mental disorder or emotional malfunction, including alcoholism and drug abuse.

HEALTH EDUCATION

Public health nurse uses health education techniques and materials in all personal contacts and community health activities. Among her various tools are films, slides, pamphlets, posters, demonstration kits, etc.

Every individual or family problem, however minor, has its teachable moments. Health education is directed toward defined problems that families recognize, and toward a specific course of action that they see as reasonable and possible.

Community health education is directed toward the health needs of the community, what the community perceives as their health needs, the community's level of understanding, and their readiness for group health education in relation to their health problems.

COMMUNITY HEALTH AIDE TRAINING PROGRAM

Trained Community Health Aides are employed in each village to assume increasing responsibilities in acute episodic health problems, in matters of health surveillance and preventive health services. As the Community Health Aide training program continues to advance and improve the curricula in order to provide the Aides a solid foundation on which to build better village health services, there is a need for on-going supervision by health professionals for both technical and legal reasons, and evaluation of the Community Health Aide's work performance and training.

The Public Health Nurse acts as consultant and teacher to the Community Health Aide in the village setting, particularly in areas of preventive health and nursing and assists the training programs evaluate the work performance and formal training of the Community Health Aides via quarterly progress reports.

ACTION PLANS FOR OBSTETRICAL HIGH-RISK FACTORS

SECTION I: STATISTICAL INFORMATION

In general, these items simply place the patient in a high-risk group statistically speaking; that is, patients falling in this classification have more complications with pregnancy. For most patients in these classifications, no specific treatment plan is necessary other than routine follow-up with attention to weight gain, blood pressures, nutrition counseling and such factors.

Age 16 or younger: Particular attention should be paid during the prenatal course to possible development of toxemia, to alleviating anxieties regarding pregnancy, and to her nutritional status.

Primagravida, age 35-40: The high-risk situation is especially at the time of labor, during which she should be closely followed both for fetal well-being and for satisfactory progression of labor. If there have been no complications during pregnancy she can be followed at the hospital nearest her residence. If any abnormalities develop, specialty consultation should be obtained.

Age 40 or greater: Consideration should be given in early pregnancy to diagnostic amniocentesis for chromosome abnormalities with the understanding that such a procedure involves risk to pregnancy and a positive diagnosis would lead to the recommendation of abortion.

Patients Para V or more: This patient is especially high-risk at the time of delivery and post-partum period for abnormalities such as labor dystocia, increased incidence of uterine rupture, and increased incidence of post-partum hemorrhage.

Two or more spontaneous abortions in first trimester: Ideally, such patients should have specialty consultation and evaluation between pregnancies. Once the patient is pregnant specialty consultation should be obtained regarding further treatment of this problem.

SECTION II: PREVIOUS OBSTETRICAL HISTORY

Infertility for more than two years: Such a history places a patient in a higher statistical group for complications of pregnancy, though no specific care plans can be formulated. This patient is more likely to have a first-trimester loss, as well as more likely to have problems such as premature labor and delivery. She should be followed closely during pregnancy, monitored to the extent possible for fetal well-being, and observed closely during the time of labor.

Major birth defects: Care for such a patient needs to be individualized according to the specific defect and the chances of its repetition. When indicated, a diagnostic amniocentesis can be performed for chromosome studies, again with the idea of abortion for abnormalities.

Infant weight greater than ten pounds: Such a patient should be screened for chemical evidence of diabetes mellitus with a two-hour post-prandial glucose, both at the time initially seen and again in the early third trimester. Attention should be paid to this patient at the time of delivery for repeat fetal macrosomia with resultant labor dystocia or problems such as shoulder dystocia.

Complicated Labor: This previous complication should alert the attendants at the time of labor to the likelihood of a repetition. Some time during the prenatal period a good clinical evaluation of the pelvis should be performed; otherwise, there are no specific treatment care plans.

Breech presentation or abnormal presentation: The patient should be carefully examined as she nears the last four weeks of pregnancy for fetal presentation, referring any suspicious presentations for physician evaluation with referral to a specialist for confirmed abnormalities.

Difficult or mid-forceps delivery: Such a history should alert the physician at the time of labor to the possibility of some pelvic abnormality with repetition of the problem during this pregnancy.

Previous cesarean section: Such a patient should be seen as early as possible in pregnancy to confirm dates as nearly as possible. The uterus should be measured uniformly to note regular growth. Care should be taken to determine fetal heart tones in the area of 20 weeks, and to note the time of initial fetal movement. Attention to such details will aid in confirming the gestational age of the pregnancy, and allow a cesarean section at term with more assurance of a mature infant. The patient should be referred at 33-37 weeks gestation to the physicians who will perform her surgery.

Premature delivery and spontaneous abortion in second trimester: Attention to the history in these patients should be [illegible] of the previous incident. Of special importance is whether the patient was actually in labor, whether the loss was preceded by only a short period of contractions, or whether there were regular intervals and no contractions. The history of loss with no significant contractions suggests an incompetent cervix, and the patient should be referred to a specialist in early pregnancy, so that her cervix can be evaluated and appropriate surgical procedures performed, if indicated, to prevent recurrence. If the patient, on the other hand, had a normal labor pattern followed by premature loss, problems such as congenital anomalies of the uterus must be considered. Should there be signs of premature labor again,

the patient should be referred for physician evaluation and possible specialist consultation. Every post-partum patient with a second trimester loss should have specialty consultation and evaluation prior to attempting to become pregnant again.

Abruption: The likelihood of this complication being repeated with subsequent pregnancies is high. There are no specific treatment plans for this problem, other than attention during the pregnancy to blood pressure, and physician evaluation of any abdominal pain or vaginal bleeding.

Stillbirth: This patient should be followed with attention to fetal well-being. If, in the future, determinations such as urine estriols become available, these should be obtained on a frequent basis during the last trimester. During pregnancy, the mother should be evaluated for Rh factor, antibody formation in the mother, serology, chemical evidence of diabetes, serial blood pressures, and the patient should have prompt physician referral and specialist consultation if indicated.

Infant death in the first 28 days of life: History of this incident should be explored for possible prenatal factors, and the patient should be followed such as the above patient if there is any indication of a prenatal influence on this cause of death.

Infants small for age at time of delivery: This patient should be observed closely for uterine growth during the pregnancy to be sure that it is consistent with dates. If there is any abnormality, this patient should have physician evaluation and possible specialist consultation.

Toxemia: The likelihood of this condition recurring is significant and attention should be given to blood pressures, urine protein, weights, and the development of edema throughout the pregnancy, especially in the last trimester. There should be prompt physician referral for any deviation from normal.

Hemorrhage after delivery: This condition has a high incidence of recurrence and should be watched for with the following delivery.

SECTION III: PAST MEDICAL HISTORY AND CURRENT MEDICAL PROBLEMS

Uterine surgery: The copy of operation reports must be obtained and the patient then evaluated for method of delivery for this current pregnancy, whether by caesarean section or vaginal delivery. Such evaluation should be initiated when patient is first seen. Physician referral and specialist consultation would be necessary.

Heart disease: The patient with a history of heart disease should be physician referred for a thorough medical evaluation at the time of initial visit. She should then be followed closely to avoid development of [illegible], anemia or fluid overload, and must be observed closely for signs of early congestive failure. [illegible] physician referral is [illegible] abnormalities in these areas. The patient [illegible] significant heart disease should be [illegible] at the [illegible] delivery.

Hypertension and chronic renal disease: These patients must be followed frequently, for example about every two weeks, for effects of the pregnancy on hypertension and renal status. This patient should be referred for any signs of deterioration in blood pressure or renal status. These patients are more likely to have retarded fetal growth and/or premature labor and delivery.

Chronic respiratory disease: Attention must be paid to good pulmonary toilet throughout pregnancy, maintaining the patient as comfortable as possible. Should there be any signs of deterioration, the patient will need physician referral and possible hospital therapy.

Diabetes: Such a patient must be under close physician supervision throughout the entire pregnancy, with frequent blood sugar determinations, and probable use of insulin, even when not required in the non-pregnant status. The patient should not be on oral diabetic agents during pregnancy. This patient should be considered for early delivery or certainly delivery not later than term. Specialist consultation is necessary.

Thyroid and other endocrine disorders: This patient likewise will need physician evaluation regarding thyroid status, or other endocrine status. In most instances, the patient will continue on medication during pregnancy as she would if she were not pregnant.

Neoplastic disease: This patient of course will need medical referral for management primarily of her neoplastic disease.

Tuberculosis: Attention should be paid to the fact that pregnancy can cause exacerbation of pre-existent tuberculosis, and appropriate consultation should be obtained for each patient with this past history.

Anemia: Initially, it is assumed most significant anemia during pregnancy is from iron deficiency and treatment is begun empirically with iron therapy, along with prenatal vitamins containing folic acid. It is important, however, to follow up with subsequent hemoglobin and hematocrit determinations, with the first determination 3-4 weeks after therapy is initiated. If there has been no improvement in these findings, the patient should be referred for further medical evaluation and perhaps treatment.

Alcoholism, drug abuse and psychiatric illness: Patients with these disorders will need counseling and close observation during pregnancy, with attention both to emotional support and to other factors such as physical well-being and nutritional status.

Seizure disorder: In general, the seizure medications are continued as prior to pregnancy. If there is an increased frequency of seizures, the medication will need to be adjusted.

Phlebitis: Patients with a past history of phlebitis are more likely to have a recurrence during the current pregnancy. Attention should be directed towards maintaining regular exercise, use of support stockings, elevation of legs, and other symptomatic therapy. At any evidence of recurrent phlebitis, the patient should be promptly referred for medical evaluation.

Rh negative blood type: When initially seen, this patient must have an antibody screening done, and this should be repeated at intervals throughout pregnancy, over the period of 26-28 weeks, around 32 weeks, and again at a point after 36 weeks. Any positive antibody titers indicate prompt specialist referral. After the patient delivers, the infant must be checked for blood type, and if Rh positive, the patient should receive Rhogam unless contra-indicated.

Obesity: Patients with this problem need careful nutritional counseling. They should not be instructed to attempt to lose weight during the pregnancy, but attention should be directed towards a well-balanced diet and elimination of excessive calories without food value.

SECTION IV: CONDITIONS DURING CURRENT PREGNANCY

Uncertain due dates: It is important to ascertain as nearly as possible the due date in all pregnancies, so that patients who develop complications will have this information available already. The patient should be seen as early as possible for initial uterine size, the date of the last period ascertained, as well as any deviation from normal in this period, and the time of first notice of fetal movements noted. On each visit, the patient should have an evaluation of the uterine size: around 20 weeks, if possible, the fetal heart tones should be listened for, with this repeated on a [illegible] basis until they are heard. These items will help in the establishment of a reasonable EDC.

Rubella during pregnancy: If the patient has developed clinical rubella during pregnancy and this disease has been confirmed with blood [illegible], the patient should have the problem explained and the possibility of an abortion offered to the patient.

Significant [illegible] affecting pregnancy: The probability of congenital anomalies must be considered in relationship to the specific agent involved, degree of exposure, and the time of exposure. When indicated by these factors, this patient likewise should have the opportunity for an abortion if indicated.

Development of [illegible]: When [illegible] is confirmed during pregnancy, this patient [illegible] and hospitalization [illegible] indicated. [illegible] in the hospital until time of delivery. This problem is to be [illegible] at the time of each [illegible] blood pressures, urine [illegible] and degree of edema.

Uterus too small or too large for weeks gestation: Regular measurements of the uterus on each visit will help point out the times in which the pregnancy seems to be growing too rapidly or too slowly. When the uterus is increasing in size too rapidly, the possibility of multiple gestation or polyhydramnios must be considered and x-ray studies are indicated. When the uterus is not growing as expected, care must be turned towards fetal well-being with re-evaluation of the due date and attention turned towards possible intervention with the pregnancy; specialty consultation is indicated.

Polydramnios: These patients should be screened for presence of diabetes and for the possibility of an abnormal fetal head as determined by x-ray. It is also to be noted that the patient can, with severe polyhydramnios, rupture membranes early and proceed spontaneously into labor, and this possibility must be observed for.

Multiple pregnancy: Once the presence of multiple pregnancy has been established, it is important the patient be informed of this, and plans made for her to spend at least the latter part of her pregnancy near a referral area for obstetrical care. This patient is much more likely to need to spend a large amount of her pregnancy on bed rest, to help alleviate the problem of premature dilatation of the cervix followed by premature labor.

Bleeding in second or third trimester: This patient should be referred for evaluation and management and will probably require hospitalization at least for a brief period of time.

Not continuing to gain weight during pregnancy: This sign should likewise be thought of as a high-risk indication. Fetal growth should be monitored, and nutritional counseling given to the patient.

Gaining more than 35 pounds during pregnancy or more than 2 pounds per week: Excessive total weight gain should be counteracted as nearly as possible by good nutritional counseling. Again, the patient should not be instructed to lose weight while pregnant, but should maintain a well-balanced diet throughout pregnancy. If it seems that the patient's weight gain is secondary to fluid overload, this sign should alert the attendant to the possibility of toxemia, and the patient should be followed closely for this condition.

STREPT.
PROPOSAL
4 KHC

YUKON-KUSKOKWIM HEALTH CORPORATION
AFFILIATE OF THE ALASKA FEDERATION OF NATIVES
P. O. Box 528
Bethel, Alaska 99559
(907) 543-2506
(907) 543-2508

September 5, 1974

ATTACHMENT #1

Donald Freedman, M.D., M.P.H.
Division of Public Health
State of Alaska
Department of Health
Pouch H
Juneau, Alaska 99801

Dear Dr. Freedman:

Yukon-Kuskokwim Health Corporation has been developing two important projects which you should become familiar with.

The first project has been the development of a maternal and child health program. We have developed a position for a M.C.H. co-ordinator who helps identify and track high risk pregnancy and co-ordiantes the prenatal, post natal, and well baby care with the Health Aide, Public Health Nurse's, and the Physicians. The M.C.H. program has been a collaborative effort between Yukon-Kuskokwim Health Corporation, Public Health Nurse's, and Indian Health Service. A more detailed program description is attached for your information.

The second project consists of a streptococcal surveillance program for the children attending high school in Bethel and for Bethel children in the Primary and Middle Schools.

I am sure you are aware that Alaska Natives particularly those in South Western Alaska have some of the highest rates for streptococcus infection and rheumatic heart fever in the U.S. Alaskan Natives in 1968 had a streptococcal infection rate of 4,026/100,000. The rate is eighteen times higher than the U.S. rate. The rheumatic heart fever rate is three to ten times higher than other places in the U.S.

The center for disease control in Alaska has proven the efficacy of a streptococcal surveillance program in reducing the incidence and prevalence of streptococcus infections in a village situation. Other research activities have proven the success of a streptococcal surveillance program in reducing and eradicating rheumatic heart fever.

Because of the high streptococcal infection rate in the Bethel Service Unit the Yukon-Kuskokwim Health Corporation board has funded a surveillance program for Bethel. The program will be expanded in the future to other villages. The board wants to seek alternate resources for this program and invision's Y.K.H.C.'s financial participation decreasing due to other needs. Additional information is attached on the streptococcal program.

These two projects are winthin the scope and responsibility of the State of Alaska as expressed in Title 18: Health and Safety of the Alaska statutes. The

code stresses emphasis on maternal and child health and on communicable disease control. Specifically we would like our M.C.H. program to be incorporated into the state plan which is manditory if the state is to receive federal M.C.H. programs. We will expand the program statement indicating how our program pulls together most of the services related to maternal and child health.

In the near future we will request a meeting with you to discuss a contract with the state to provide these two services. Please call if you have any questions.

Cordially,

Alvin S. Ivanoff
Executive
Director

ASI/aj

cc: William Marshman, Regional Planning Director
M.C.H., H.E.W.
Dr. Brenneman, A.N.H.S., Bethel
Frank Estes, A.N.H.S., Bethel
Dr. Towers, Regional Health Officer, Anchorage
Jeanette Pitcherella, P.H.N. Supervisor, Bethel
Senator George Hoffman, Bethel
Representative Phillip Guy, Kwethluk

YUKON-KUSKOKWIM HEALTH CORPORATION

AFFILIATE OF THE ALASKA FEDERATION OF NATIVES

P. O. Box ~~556~~ 528
Bethel, Alaska 99559
(907) 543-2506
(907) 543-2508

MEMORANDUM

TO: Frank Pauls

DATE: September 26, 1974

FROM: Dan Rounds, Technical Assistant DR/aj

SUBJECT: Strept. Surveillance Program

Enclosed is a budget and program description for your 1976 budget.

DR/aj

cc: George Hohman
Phillip Guy
Dr. Elizabeth Towers
Ms. Jeanette Pitcherella
Dr. Donald Freedman

YUKON-KUSKOKWIM HEALTH CORPORATION

AFFILIATE OF THE ALASKA FEDERATION OF NATIVES

P. O. Box 536
Bethel, Alaska 99559
(907) 543-2506
(907) 543-2508

October 22, 1974

Frank Pauls
Chief Public Health Labs
Pouch H
Juneau, Alaska

Dear Mr. Pauls:

This is a reminder of the need to put the Strept Surviellance Program in Bethel into your 1976 Budget.

As microbiologist in charge of the program, I would be pleased to have you come up and see what we are doing and to answer any questions you may have regarding the program.

This is an exciting opportunity to put preventive medicine to work in an area where the results can easily be seen and evaluated. Because of the high incidence of Rheumatic Heart Disease and Streptococcal diseases in the Bethel area this type of preventative medicine can really be a benefit to area resident who might otherwise become victims of those diseases caused by untreated strept infections.

I hope to hear from you soon with confirmation of the inclusion of the Strept Program in you 1976 Budget.

Sincerely,

Patricia Porter

Patricia Porter
MT (ASCP)

PP/ep

STATE OF ALASKA

Jay S. Hammond, Governor

DEPT. OF HEALTH AND SOCIAL SERVICES

DIVISION OF PUBLIC HEALTH

Pouch H 06-D, Juneau, Alaska 99811

December 5, 1974

Mr. Dan Rounds
Technical Assistant
Yukon-Kuskokwim Health Corporation
P.O. Box 528
Bethel, Alaska 99559

Dear Mr. Rounds:

Attached is our reply to Mrs. Porter regarding the inclusion of the Bethel Streptococcus Surveillance Program in the FY '76 budget for the Section of Laboratories. This also answers your earlier letter which furnished a program description and budget.

I had high hopes of working this into the budget but the advanced deadlines did not permit any revision or exceeding the limits established by the Governor. Unfortunately, I do not have any excess funds and therefore can not make up the requested funds.

The project is important and would have our support if funds were available The most appropriate course of action at this time appears to be through your local legislators. As I pointed out to Mrs. Porter, the additional funding would have to be by legislative action and appropriation of specific funds earmarked for your project.

We regret that we could not be of more assistance at this time but will do all we can to be of assistance to your local legislators.

Sincerely,

Frank P. Pauls

Frank P. Pauls, Dr. P.H.
Chief, Section of Laboratories

FPP:ah

Attachment

cc: Dr. Freedman
Lois M. Jund

STATE OF ALASKA

Jay S. Hammond, Governor

DEPT. OF HEALTH AND SOCIAL SERVICES

DIVISION OF PUBLIC HEALTH

~~POUCH H, JUNEAU 99801~~
Pouch H06, Juneau 99811

December 4, 1974

Mrs. Patricia Porter, M.T. (ASCP)
Yukon-Kuskokwim Health Corporation
P. O. Box 536
Bethel, Alaska 99559

Dear Mrs. Porter:

We appreciated the opportunity to review the material submitted on the Bethel Streptococcus Surveillance Program.

We had hoped to include the requested funds in our budget proposal for FY 76 as indicated in our earlier discussions but, due to the advanced deadlines, it was not possible. Under the present budgetary system we need to be aware of new programs in April in order to incorporate them into our preliminary requests for the following fiscal year. Sometimes late changes can be made after budget submission but it was not possible in this instance.

The project has merit and to assure continuation of the work in FY 76 with State support, legislative approval would be required with specific funds appropriated for this purpose. The most effective way of doing this is through the efforts of local legislators.

We regret that we could not secure the funds for you but if we can be of any assistance during the legislative session, please advise.

Sincerely,

Frank P. Pauls

Frank P. Pauls, Dr. PH
Chief, Section of Laboratories

FPP:ms
CC: Dr. Donald K. Freedman
Miss Lois Jund

STREPTOCOCCAL SURVEILLANCE PROGRAM

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D.	Statistics - Justification for the Y-K area.	7
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Streptococcal Surveillance Program

Problem:

The Rheumatic Heart Fever rate for Alaskan Natives in the Bethel area has been highest in Alaska. The Bethel area has had incidence rates of 20 to 157 cases per 100,000 persons 5-19 years old between 1968 and 1973. The average rate in the Bethel area between 1968 and 1973 was 82 cases per 100,000 persons 5-19 years old compared to the Statewide Alaskan Native rate of 44 per 100,000. The national rate for the same age group is around 26 cases per 100,000. Because of the nature of Rheumatic Heart Disease, the average life time cost per person with Rheumatic Heart Fever is around $40,000. These costs do not include the loss of work time or school time resulting from the treatment services and sickness.

The streptococcal infection rate, the precussor to Rheumatic Heart Fever is also extremely high in the Bethel area. A research project operated by the Communicable Disease Control Laboratory (C.D.C.) has shown that streptococcal disease in Alaskan Natives is eighteen times higher than in the U.S. population. Streptococcal infections also contribute to school absenteeism, resulting in the secondary problem of inhibiting a child's learning process.

Objectives:

The objectives of a streptococcal surveillance program are to reduce the Rheumatic Heart Fever rate and reduce the morbidity resulting from streptococcal infections in children ages 5-19. According to C.D.C. findings it is possible to almost eliminate new cases of Rheumatic Heart Diseases and to reduce the streptococcal infection rate by half through a program of monthly surveillance and early treatment of persons with streptococcal infections. The surveillance program will be on Bethel School children.

Resources:

The start up funds in 1975 have come from Yukon-Kuskokwim Health Corporation. It is now proposed that the State contract with Y.K.H.C. to maintain the program in 1976. A preliminary budget is attached; (See Attachment I).

Action Plan:

The method being employed to achieve the objectives is to culture the entire school age population in Bethel each month with treatment provided to those with positive cultures. If the treatment is completed within ten days it is 80 to 90% probable that the streptococcal infection will not develop into Rheumatic Heart Fever. The procedure used in Bethel is outlined in Attachment II, "Surveillance Procedure." The procedure in Attachment II has been based upon the work of C.D.C. in its streptococcal surveillance research project.

Attachment I
Budget for 12,000 Cultures

Personnel	
Lab. Tech. (1)	16,880
Secretary (1)	9,450
School Aide (9 months 1/2 time)	3,937
Fringe 13%	3,935
Sub-total	34,202
Supplies	
Lab supplies for 12,000 cultures @ 5¢/cultures.	$6,000
Forms and records.	488
Office	300
Sub-total	$6,788
Equipment	
Laboratory	600
Sub-total	$600
Space Costs	
Lab. Utilities	$3,900
Fire Insurance	750
	$4,650
Travel	
Training	$630
	$630
Other	
Malpractice Insurance	$650
Postage	160
Sub-total	$810
Administration	
Accounting/Supply	$1,000
Administration	1,500
Xerox	100
Janitorial Service	562
	$3,162
Total	
	$50,842

PROJECT DESIGN

1. Approval - The streptococcal surveillance program involves the routine screening of children in the Elementry, Middle, and High Schools. Children who have streptococcus will require medication. Because the program involves treatment we will require the approval of not only the YKHC Board but the School Board and parents of each child. After the School Board has approved the project a unified permission slip authorizing a child to participate in the strept. surveillance, dental care, and other health care activities will be developed and approved by the School Boards and Health Professionals. The approved permission slips will be given to each teacher to hand out to the children. Returned permission slips will be given to the microbiologist who will compare class registration to permissions lips received to determine the children without permission slips. The microbiologist would then direct the Community Health Representatives to make Home Visits to families who do not want to participate or have not responded. The C.H.R's would discuss the Streptococcal Program with each family as well as the Dental Program and other programs requiring parental consent. If families cannot be contacted the School Boards will have to determine if we should continue with the project. Only children with parental approval will be in the streptococcal program.

2. Surveillance Procedure - Based on a profile of children in each classroom the Elementry, Middle, and High School children would be divided into four groupings of classrooms. Each child in a group would be assigned a code number to be used through out the year. Each week one of the four groups would be tested by C.H.R.'s and a Public Health Nurse to determine if they have a streptococcal infection. Children not tested in their assigned group because they are absence could be added to the following weeks group. Any children already exhibiting signs of streptococcus infection as determined by teachers and/or the school nurse would also be tested. After four weeks the entire school population in Bethel would have been surveyed.

   When the prevalence of streptococcal isolates rise to a predetermined level, for example 20 or 30 percent, more than one group could be surveyed and treated or the entire school population could be treated prophylacticly. Other criteria such as 50% or more "M" types appearing in the positive cases would also be used to determine if an epidemic has started and whether it warrants a concentrated effort to treat or screens the school population. This decision will be made by the project director Dr. Hurwitz, the microbiologist and C.D.C. officials.

3. Laboratory - After the C.H.R.'s take the throat swabs they will be given to the laboratory for analysis. The swabs are received in metal foil packets containing silica gel, each with the cultured child's identifying code number. The desiccated swabs are incubated 4-6 hours at 37°C in Todd-Hewit broth. A loopful of the broth is added to 15 cc of melted neopeptone agar with 5% sheep blood and pour plates made. After incubation at 37°C for 18 hours, Betahemolytic colonies are picked and subcultured on quartered neopeptonesheep blood agar plates with bacitracin discs. After 24 hours incubation at 37°C, presuptive group A determination is made. Total time through the laboratory should not exceed three days.

   Positive cultures would be transmitted to the C.D.C. laboratory in Anchorage for "M" and "T" typing to determine if an epidemic is begining. The number of positives transferred to C.D.C. in Anchorage would be determined by C.D.C. and the project director.

4. Treatment - Individuals that respond positively to the streptoccal tests would be treated whether or not they are symptomatic. The test and treatment must be completed within 10 days to assure that a child does not develop rheumatic heart disease. The laboratory results would be given to the school nurse who would administer the treatment to each positive child. If a child cannot be located or is absent at school the treatment would be given by the Public

Health Nurse with assistance from C.H.R.'s. Treatment would conform to current American Heart Association Recommendations:

a. Children over age 10.	1.2 million units LA bicillin TM (Benzathine Penicillin G.).
b. Children age 10 and younger.	600,000 units LA bicillin IM. (Benzathine Penicillin).

Allergic children would be given 250 mg erythromycin four times daily for 10 days.

Every child treated would have a card or record of treatment which would be returned to the laboratory for cross checking to make sure that all positive children actually were treated.

During an epidemic the treatment would have to be accelerated. Backup personnel consisting of Itinerate Public Health Nurses and available hospital staff would be called to assist the school nurses. The state may also be able to bring in other nurses to help stem an epidemic. During an epidemic all activities would be co-ordinated by the project director Dr. Hurwitz.

5. Records - Records will consist of:

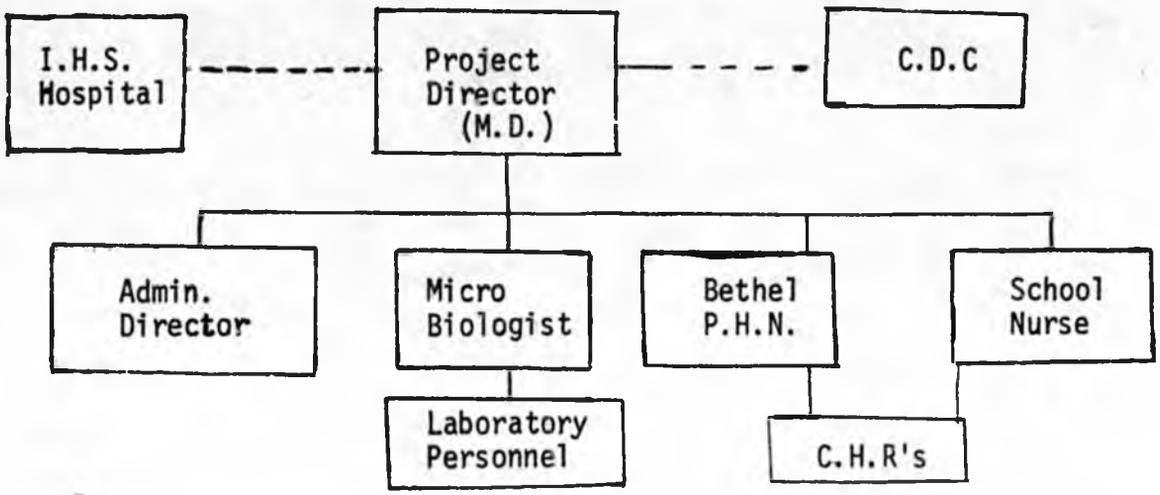
   a. Permission slips on each child.

   b. List of individuals in each group. The list would be developed initially by C.D.C., the microbiologist, school nurses and school administration. After initial set up of each group the C.H.R.'s would be given a roster and stick'um labels coded by number and group. Any revisions would be co-ordinated by the project director. The list would also include information on whether a child is allergic to penicillin.

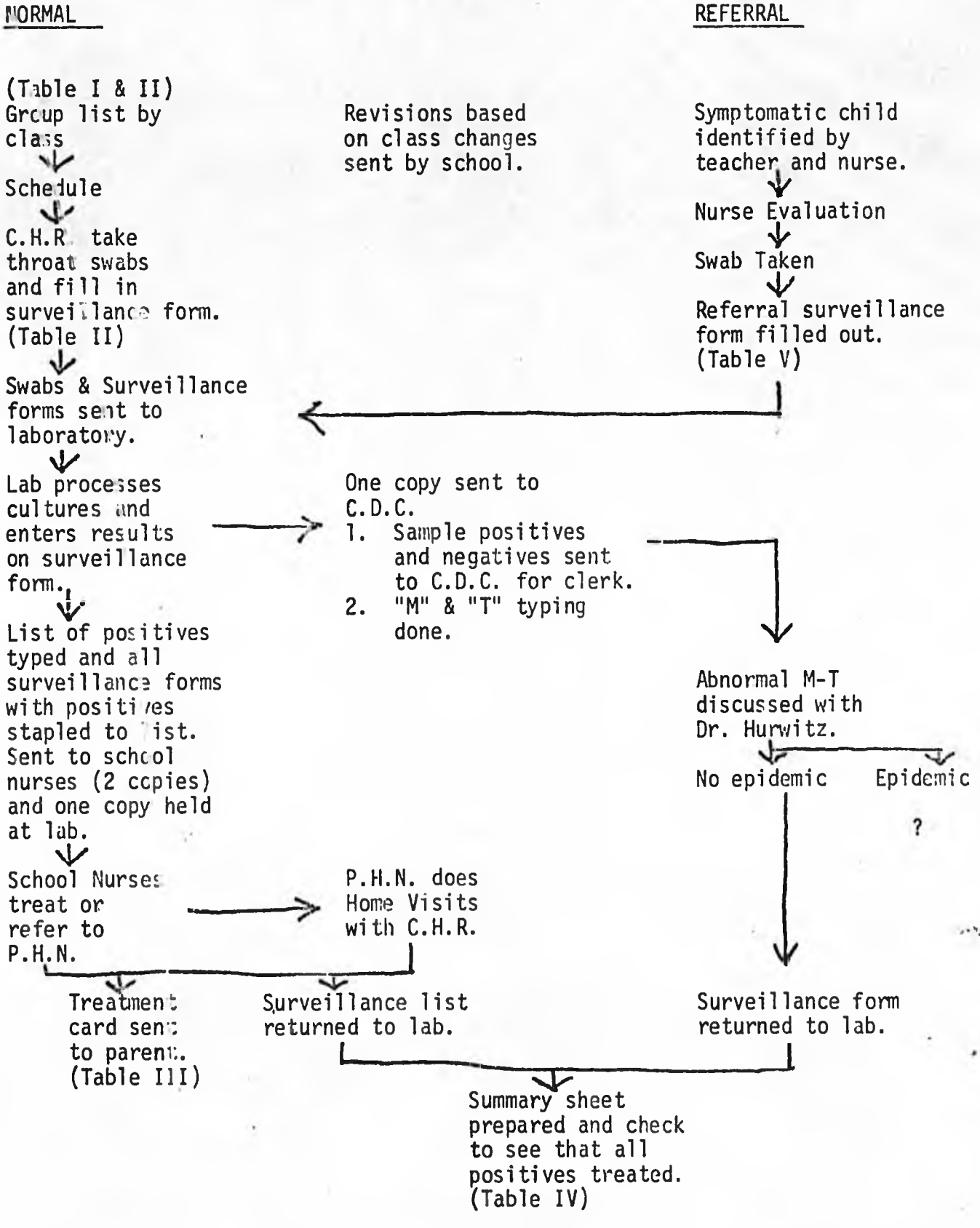
   c. Treatment card and/or test card. - The results of the tests would be entered on a card or roster. All positive cards or a roster would be given to the school nurses who would do the follow-up treatment. The cards or roster would be returned to the lab.

Each week the culture results would be tabulated so that point prevalence of Group A strep can be calculated.

6. Organization - The project will be headed by the Indian Health Service Project Director, Dr. Robert Hurwitz. A microbiologist and clerk would operate the laboratory and maintain records. The School Nurses would co-ordinate the surveillance activities of the C.H.R.'s and would administer the treatment for any positives. The C.H.R.'s would collect throat swabs, assist the Public Health Nurse in Home Visits to treat absent children and would help obtain permission slips. The Center for Disease Control will act as technical consultants and will evaluate the program. An organizational chart appears on the next page.


I.H.S. Hospital
Project Director (M.D.)
C.D.C
Admin. Director
Micro Biologist
Bethel P.H.N.
School Nurse
Laboratory Personnel
C.H.R's

SURVEILLANCE PROCEDURE



STREPTOCOCCAL SURVEILLANCE PROGRAM
BETHEL SUMMARY SHEETS
NOV. 11 - DEC. 16, 1974

WK	GROUPS CULTURED	STARTED WITH	FINISHED WITH	TOTAL CULTURED	TOTAL POSITIVE	%	TOTAL TREATED	%	PRIMARY SCHOOL POSITIVE	%	MIDDLE SCHOOL POSITIVE	%	HIGH SCHOOL POSITIVE	%
11-11	A & B	1	461	Sx: 17 445	Sx: 7 101	Sx: 41 22	Sx: 7 101	100	cultured: 152 48	33	cultured: 158 37	23	cultured: 155 16	10
11-18	C & D	462	919	Sx: 25 433	Sx: 2 77	Sx: 12 13	Sx: 2 77	100	cultured: 110 26	23	cultured: 139 31	24	cultured: 186 20	10
11-25	D & Abs.	920	1089	Sx: 37 133	Sx: 9 31	Sx: 24 23	Sx: 9 31	100	cultured: 43 9	20	cultured: 69 21	30	cultured: 22 1	4
	Totals			Sx: 79 1011	Sx: 18 209	Sx: 22 18	Sx: 18 209	100	T. cultured: 315 83	29	T. cultured: 363 89	24	T. cultured: 36 37	10
12-2	A	1	265	Sx: 40 227	Sx: 7 32	Sx: 19 13	30		cultured: 67 10	15	cultured: 82 12	15	cultured: 78 8	10
12-9	B	266		245	29	11.8								
12-16	C-D			451	48	10.6								

STREPTOCOCCAL SURVEILLANCE IN REMOTE ARCTIC POPULATIONS

The Development of a System for Detection of Group A Pharyngitis and the Prevention of Nonsuppurative Sequelae

THE ACY CDC COLLABORATIVE PROJECT

CAN PREVENT JUST CULTURE TO SYMPTOMATIC

VIABLE POSSIBLE

Thomas R. Sonder, M.D., M.P.H.
Chief, Alaska Activities
Center for Disease Control
325 Eagle Street
Anchorage, Alaska 99501

DIST U. CENTERS.

STREPT RELATED TO
- IMPET:GO
- OTITIS MEDIA

GROUP A LEADS TO RHEUMATIC

Action
1. COOPER.
2. Y-K.
3. HOSP. PHARM.

Table 3. Prevalence of probable or definite rheumatic fever or rheumatic heart disease, or both, per 1,000 students surveyed, by sex and State of residence at time of survey, 1956–65

Rank [1]	State of residence	Total		Male		Female	
		Number of cases	Rate per 1,000 examinations	Number of cases	Rate per 1,000 examinations	Number of cases	Rate per 1,000 examinations
	Total	[2] 12,134	15.8	7,273	15.9	4,838	15.8
46	Alabama	20	6.9	14	6.7	6	7.2
	Alaska	24	88.9	16	103.9	8	70.2
8	Arizona	112	25.6	66	24.9	46	27.0
27	Arkansas	20	14.3	12	13.5	8	15.9
30	California	485	13.7	243	13.0	240	14.3
12	Colorado	329	24.1	172	23.7	154	24.1
36	Connecticut	100	11.6	55	10.1	45	14.2
33	Delaware	56	12.2	31	11.9	25	12.7
	District of Columbia	72	9.3	32	7.3	40	11.9
29	Florida	109	13.8	78	13.5	31	14.9
34	Georgia	72	11.0	41	11.0	31	13.6
	Hawaii	8	9.7	4	8.5	4	11.3
10	Idaho	120	24.8	66	20.1	54	35.0
23	Illinois	377	16.2	224	17.2	152	14.9
6	Indiana	53	26.9	35	27.8	18	25.7
15	Iowa	373	20.8	231	22.5	142	18.5
19	Kansas	407	18.0	250	18.0	155	17.9
21	Kentucky	178	17.4	96	15.9	81	19.5
35	Louisiana	87	11.9	49	14.5	18	8.1
26	Maine	39	14.5	24	13.3	15	17.0
40	Maryland	63	11.2	46	11.2	17	11.4
45	Massachusetts	401	9.6	245	9.3	156	10.4
41	Michigan	771	11.0	427	11.0	344	11.1
13	Minnesota	724	22.6	454	22.3	270	23.3
32	Mississippi	109	12.3	86	14.4	22	8.5
16	Missouri	405	20.5	231	19.5	174	22.3
3	Montana	475	32.6	267	30.1	207	36.8
20	Nebraska	372	17.9	256	19.2	115	15.5
2	Nevada	40	38.5	30	47.2	10	24.9
39	New Hampshire	81	11.3	54	9.8	26	15.7
31	New Jersey	224	13.4	126	14.5	98	15.2
9	New Mexico	59	25.1	26	18.8	33	34.4
42	New York	544	10.2	315	11.8	229	8.7
24	North Carolina	135	10.2	29	15.0	106	10.6
22	North Dakota	85	16.9	53	14.7	32	22.8
28	Ohio	1,379	14.2	869	14.7	508	13.3
38	Oklahoma	233	11.3	136	10.9	97	11.9
5	Oregon	81	28.1	46	29.0	35	27.0
18	Pennsylvania	731	19.3	509	20.0	221	17.8
44	Rhode Island	25	10.0	15	9.5	10	10.8
43	South Carolina	60	10.2	48	10.0	12	10.9
7	South Dakota	201	26.2	123	25.0	78	28.4
25	Tennessee	64	14.6	32	15.2	32	14.0
47	Texas	71	6.8	43	6.0	28	6.6
1	Utah	527	40.5	315	42.3	212	38.3
37	Vermont	8	11.4	5	11.5	3	11.3
48	Virginia	128	5.7	84	5.5	44	6.2
11	Washington	285	24.7	168	23.6	116	26.3
14	West Virginia	202	21.3	129	20.9	72	21.9
17	Wisconsin	303	20.3	159	18.5	142	22.5
44	Wyoming	287	29.7	181	30.9	102	27.6
	Puerto Rico	2	9.5	2	12.6	0	.0
	Virgin Islands	0	.0	0	.0	0	.0
	Foreign group	38	6.5	23	5.3	14	9.8

[1] Rank of prevalence rates for total group surveyed in each State of continental United States. Rank not assigned to Alaska, District of Columbia, Hawaii, Puerto Rico, Virgin Islands, and foreign students.

[2] Total includes 23 cases in which sex was not stated.

ALASKA NATIVE HEALTH SERVICE
TEN LEADING NOTIFIABLE DISEASES
(RANKED IN ORDER OF INCIDENCE)
1972 - 1971

Disease	Cases 1972 Number	1972 Rank	Cases 1971 Number	1971 Rank	Percent Change '72/'71
Total Reported Notifiable Diseases	20,630 1/	-	13,909	-	48.3
Total Ten Leading Notifiable Diseases	19,474	-	13,241	-	-
Upper Respiratory Infect., C/Cold	7600	1	3672 2/	2	107.0
Acute Otitis Media	4297	2	4195	1	2.4
Strep Throat	2156	3	1686	3	27.9
Gonococcal Infections	1378	4	1288	4	7.0
Gastroenteritis, Diarrhea	1335	5	380	8	251.3
Impetigo	907	6	532	7	70.5
Influenza	900	7	597	6	50.8
Pneumonia (excl. NB)	655	8	727	5	-9.9
Chickenpox	127	9	115	10	10.4
Bacillary Dysentery	119	10	49	15	142.9

1/ Increase partially due to a change in disease coding.
2/ Does not include "common cold" diagnosis.

SOURCE: Office of Systems Development, Alaska Native Health Service
Community Health and Epidemiology Branch, Alaska Native Health Service
IHS Inpatient/Outpatient Reporting System

Table #5

TOTAL RHEUMATIC FEVER INCIDENCE BY SERVICE UNIT OF RESIDENCE
ALASKA NATIVES AGED 5-19 YEARS
Case Rate Per 100,000 Population

S.U.	Anch.	Bar.	Beth.	Kan.	Kotz.	Mt.E.	Tan.	Total
Pop.	4761	1042	5089	1331	3781	3418	2307	21,733
1968	0	0	157	150	79	79	0	64
1969	0	0	20	0	26	29	43	18
1970	42	0	39	75	0	0	0	23
1971	42	0	118	225	53	88	0	74
1972	84	96	118	0	0	29	0	55
1973	63	0	39	0	0	29	0	28
Mean Inci.	39	16	82	75	26	34	7	44

Only cases meeting the revised Jones criteria were used in determining these rates.

REVIEW CHARTS for PROPER DIAGNOSIS.

PREVALENCE OF RHEUMATIC HEART DISEASE IN ALASKA NATIVES
HOSPITALIZED CASES, ALL AGES
1968-73

Service Unit	Cases	Rate/10,000
Total	316*	60.7
Anchorage	48	38.0
Barrow	13	55.8
Bethel	103	88.3
Kanakanak	27	86.1
Kotzebue	55	65.5
Mt. Edgecumbe	57	67.5
Tanana	13	23.9

*158 definite RHD
42 probable RHD
116 possible RHD

Table 12

RHEUMATIC HEART DISEASE PREVALENCE AMONG DIFFERENT POPULATIONS

YEAR	LOCATION	AGE OF SAMPLE	PREVALENCE (per 1,000)
1962-64	Denver (Morton)	5-18	1.7
1965	San Luis Valley Colorado (Morton)	grades 5-8	3.7
1968	Tokyo (Shiokawa)	primary and secondary students	.30
1965	Karachi (Abbasi)	8-14	1.8
1969	Iran (Garagozloo)	4-15	22
1973	Alaska	5-19	3.8
	Yukon-Kuskokwim Delta		5.9
	Alaska	all ages	6.1
	Yukon-Kuskokwim Delta		8.8

STREPTOCOCCAL SURVEILLANCE AND CONTROL AMONG ALASKA NATIVES

A REPORT OF WORK COMPLETED UNDER IHS CONTRACT

HSA 76-74-177

Alaska Federation of Natives, Inc.

Health Affairs Division

In Cooperation with

Center for Disease Control

Bureau of Epidemiology

Alaska Activities

October 15, 1974

INTRODUCTION

Streptococcal sore throat ranks third in the list of notifiable diseases for Alaska Natives. Rheumatic fever, one of the nonsuppurative sequelae of strep infection, is a major public health problem among the more than 55,000 Natives. As of 1972, an average of thirty cases of rheumatic fever had been discharged from hospitals each year over the previous 15 years.[1,2] Especially notable are high rates in three coastal service units, Kotzebue, Bethel, and Kanakanak. These three high risk service units, comprising 44 percent of Alaska's Native population, are inhabited primarily by Eskimos living in numerous, small, remote villages.

Because of the high rates of rheumatic fever, a cooperative study was begun in January, 1971, to study the epidemiology of streptococcal disease and to develop a control program for this population. Longitudinal surveillance techniques, similar to those used in the successful projects in Natrona County, Wyoming[3] and the San Luis Valley, Colorado[4], were modified for use in Alaska. Results of the pilot study conducted in schools of two Alaskan villages for one semester have been published.[5] The progress of the program has been presented at six state, national, and international meetings (Appendix I). Results of the first three years of operation just completed in nine, and then 12 villages, are presented in this paper, the third annual summary.

MATERIAL AND METHODS

Nine villages were initially chosen for the project, three in each high risk service units. Each had experienced previous cases of rheumatic fever. The villages range in size from 70 to 470 persons. The approximately 900 school age children in the villages were enrolled in the program. Throat cultures and sera were obtained from these children at the beginning and end of each school year.

In each village, the children were randomly divided into four groups which were stratified by grade in school and sex. Family members were distributed as widely as possible among the random groups. One of the four groups was cultured on rotation each week by village health aides without regard to symptoms. Thus, every school child had a throat culture taken every four weeks. During the 1973-74 school year the number of villages under routine surveillance was increased to 12. Six of these continued to be cultured weekly following the original design, while the other half had their 25 percent sample of children cultured every two weeks. In every village, the health aides cultured any children or adults who complained of sore throat, and recorded their signs and symptoms.

Nine villages similar to the original study villages were selected for comparison, and health aides were trained in a similar manner. Throat cultures were obtained from children in these villages at certain points in time: March and December 1972, April and October 1973, and March 1974. Those with positive cultures were treated. During the 1973-74 year, eight new villages were provided with materials so that health aides could collect cultures from patients with sore throats seen in the clinic. Thus a total of 30 villages have participated in the program in some manner. (Appendix II)

Throat Cultures

Throat swabs were placed in silica gel and mailed to the Center for Disease Control laboratory in Anchorage or Bethel for processing. Beta hemolytic streptococci grown on pour plates were grouped using bacitracin sensitivity and the Lancefield precipitation methods. Group A isolates were typed using T-agglutination and M-precipitation methods.[6]

Each week, as soon as bacitracin sensitivity results were available, the laboratory notified the village aide by telephone, radio, or teletype. Persons with Group A streptococci were treated with benzathine penicillin as recommended by the American Heart Association.[7] Symptomatic persons were sometimes treated at the time they were first seen, depending on clinical findings. When epidemic trends occur, previously established criteria[8] have been used to define situations that require mass prophylaxis of school children with penicillin. The three criteria, which must exist simultaneously, are: (1) Group A prevalence is found to be 30 percent or more, (2) at least half of these organisms are M-typeable, and (3) a single strain accounts for at least one-third of those typeable.

Blood Specimens

Ten or 15 cc of blood was collected periodically in most villages. Both Group A and type-specific antibodies were determined on a sample of these specimens.[9,10]

Surveillance and Secondary Prevention or Rheumatic Fever

A number of techniques have been used in an attempt to monitor the incidence of acute rheumatic fever, and to identify those at risk of suffering a recurrence. Clinicians at the PHS Alaska Native Hospitals have been surveyed by mail twice monthly regarding the occurrence of new cases in their area, hospital discharge diagnosis were tallied for 1968-73, and medical records of all Alaska Natives with the diagnosis of acute rheumatic fever or rheumatic heart disease in this six year period were reviewed. Cardiac screening of school children in the project villages and Bethel has been conducted. A registry of persons with rheumatic heart disease or a history of acute rheumatic fever was begun.

RESULTS

Throat Cultures

The population under surveillance and the number of Group A isolates are shown in Table 1. In the three years, 62.4, 48.9, and 57.1 percent of the children had at least one Group A streptococcal isolate. For each year the number of isolates per positive child averaged 1.7, 1.5, and 1.7 isolates. In the first and last years, over one third of the isolates were M-typeable.

Nearly 22,500 cultures were processed from villages observed routinely in the three years. While the prevalence was highest among children

with symptoms (34.4, 24.8, and 31.2 percent), these children accounted for only 9.5, 8.8, and 11.0 percent of the total Group A isolates (Table 2).

Figure 1 summarizes the average streptococcal prevalence rates among the weekly samples of school children for the first two years of the project. The rates for the first two months of each year reflect the staggered start of culturing in the villages. Group A prevalence initially ranged from 11 to 41 percent, with a mean of 26 percent. Thereafter, mean weekly prevalence rates declined to about ten percent and remained near that level. After four months of summer vacation when the program was reinstituted, 15 percent of the children were positive. With treatment of positives, rates again dropped to ten percent and remained below that level. The three mean Group A point-prevalence rates in the nine comparison villages were 15, 25 and 17 percent, as indicated in Figure 1 by the letter A.

Figure 2 summarizes the average Group A prevalence rates for the past year in villages with cultures taken biweekly in contrast with those cultured weekly. The initial prevalence in all villages averaged 31.0 percent. Again the rates declined shortly after the introduction of the program with rates near 10 percent maintained best in those villages cultured weekly. Mean Group A prevalence in the nine villages cultured at two points for comparison was 20.5 percent in October and 18.2 percent in March.

An analysis of the symptoms of 1,542 episodes of pharyngitis among persons of all ages cultured because of illness during three years confirmed the well recognized impossibility of making a clinical diagnosis of streptococcal sore throat (Table 3). When the decision to give antibiotics was based on clinical impression, the health aides gave treatment to 56.0 percent of those with subsequently positive cultures and 35.5 percent of those with negative cultures. The clinical diagnosis agreed with the subsequent culture result 62.5 percent of the time. If the culture had not been available, 160 patients infected with streptococca. organisms would have gone untreated.

Table 4 shows the mean delay in days between culture and treatment of positives. The worst delays were encountered for villages of the Bethel Service Unit. For the three years, the average delays attributable to mailing in this Service Unit were 4.8, 5.4, and 8.8 days.

In spite of the treatment of positives within an average of 10-11 days after culturing, the appearance of a new M-typeable strain in a village was frequently followed by an increase of Group A prevalence, occasionally to epidemic levels. Figure 3 shows the weekly Group A prevalence for St. Michael, a village where this was observed in the first year of the program. Initially, M-type 6 organisms were isolated from 20 percent of the children. Following the collection of school-wide cultures and treatment of positives, this prevalence declined and the M-type 6 serotype disappeared a few months later. In December, M-type 1 organisms appeared

In this same village and nine weeks later this strain reached a prevalence of 30 percent. Epidemic criteria were fulfilled and penicillin prophylaxis was given to all school children. Prevalence rates declined.

Figure 4 shows the year's experience in Stebbins, a nearby village. M-type 6 organisms were also present here at high levels in October, and penicillin mass prophylaxis was given. In February, M-type 1 organisms were first cultured in Stebbins during the time this organism was causing an epidemic in St. Michael. Within eight weeks prevalence reached epidemic levels. The fluorescent antibody technique for identification of Group A streptococci was set up in the school, prompt treatment followed, and the epidemic was terminated.

Because of these experiences, during the second and third study years an additional 25 to 50 percent sample of children were cultured whenever Group A prevalence rates exceeded 20 percent particularly whenever new M-types were noted.

Serologic Studies

Sera from a random 30 percent sample of bloods drawn during the first year from school children in both study and comparison villages were examined for precipitating antibody to Group A polysaccharide, a non-protective antibody which is thought to reflect accumulated Group A streptococcal experience. Of the children tested in the 18 villages, 75 percent had detectable levels of this antibody. Both this prevalence, and the mean antibody titers obtained, were similar to Colorado school populations studied after epidemics and were higher than any other populations of similar age thus far studied under endemic circumstances. The lowest titers and prevalence of this antibody have been found in children in Casper, Wyoming, where a primary streptococcal prevention program has been operating for more than ten years.

Titers of type-specific antibody against M-protein from Group A serotypes 1, 2, and 12 were determined in randomly selected sera taken during the first year. The geometric mean titers (GMT) against types 1 and 2 were very low and showed little rise during the study year in spite of the predominance of these strains in several villages. The high prevalence of antibodies against M-type 12 is probably an indication of past experience with this serotype. Only two M-type 12 isolates were obtained during the year.

CONCLUSIONS

In any population, prevention of recurrence in rheumatic subjects is thought to be of highest priority. In addition, the ability to detect streptococcal infection in symptomatic persons by bacteriologic means should be made available to all practitioners and auxiliaries. Longitudinal surveillance projects require intensive efforts in streptococcal control but are useful in select populations with a high rate of sequelae.

The ability of such a program to reduce streptococcal prevalence in Alaska has now been demonstrated, but it will take a number of years of accumulated experience to evaluate the effect of such a program on the rate of acute rheumatic fever and rheumatic heart disease.

During each year of the program, at least 50 to 60 percent of the children had at least one Group A infection. Persons seeking medical attention for a sore throat accounted for only ten percent of the total annual Group A isolates obtained in the population. By itself, treatment of children with pharyngitis may have little impact on the reduction of streptococcal prevalence. Introduction of new M-types into a village often lead to epidemics. The surveillance program allows detection of these epidemics so that appropriate control measures can be undertaken.

Serological studies show that this population has previously had considerable experience with Group A streptococci. The presence or absence of type-specific antibodies in the population correlated inversely with the isolation rates of their respective streptococcal serotypes. This finding supports the idea that this particular antibody is protective. Serologic studies of this sort help predict susceptibility to a newly introduced serotype.

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TABLE 1

STREPTOCOCCAL SURVEILLANCE

Alaska Native Villages

	School Year		
	1971-72	1972-73	1973-74
Population Under Surveillance			
Children	848	919	1,154
Families	282	287	376
Number with Group A Isolates (%)			
Children	529(62.4)	449(48.9)	659(57.1)
Families	236	217	295
Total Group A Isolates	917	673	1,087
Isolates Per Positive Child	1.7	1.5	1.7
No. Isolates M-Typeable (%)	330(36.0)	25(3.7)	380(35.0)

TABLE 2

STREPTOCOCCAL CULTURES FROM ALASKA NATIVE VILLAGES

	School Year		
	1971-72	1972-73	1973-74
Total Cultures Processed	6,963	7,315	8,140
Symptomatic Patients	250	238	385
No. Positive (%)	87(34.4)	59(24.8)	120(31.2)
Percent of Total Positives	9.5	8.8	11.0
Asymptomatic Children	6,713	7,077	7,755
No. Positive (%)	830(12.4)	614(8.7)	967(12.5)
Percent of Total Positives	90.5	91.2	89.0

FIGURE 1

STREPTOCOCCAL PREVALENCE AMONG ALASKA NATIVE SCHOOLCHILDREN

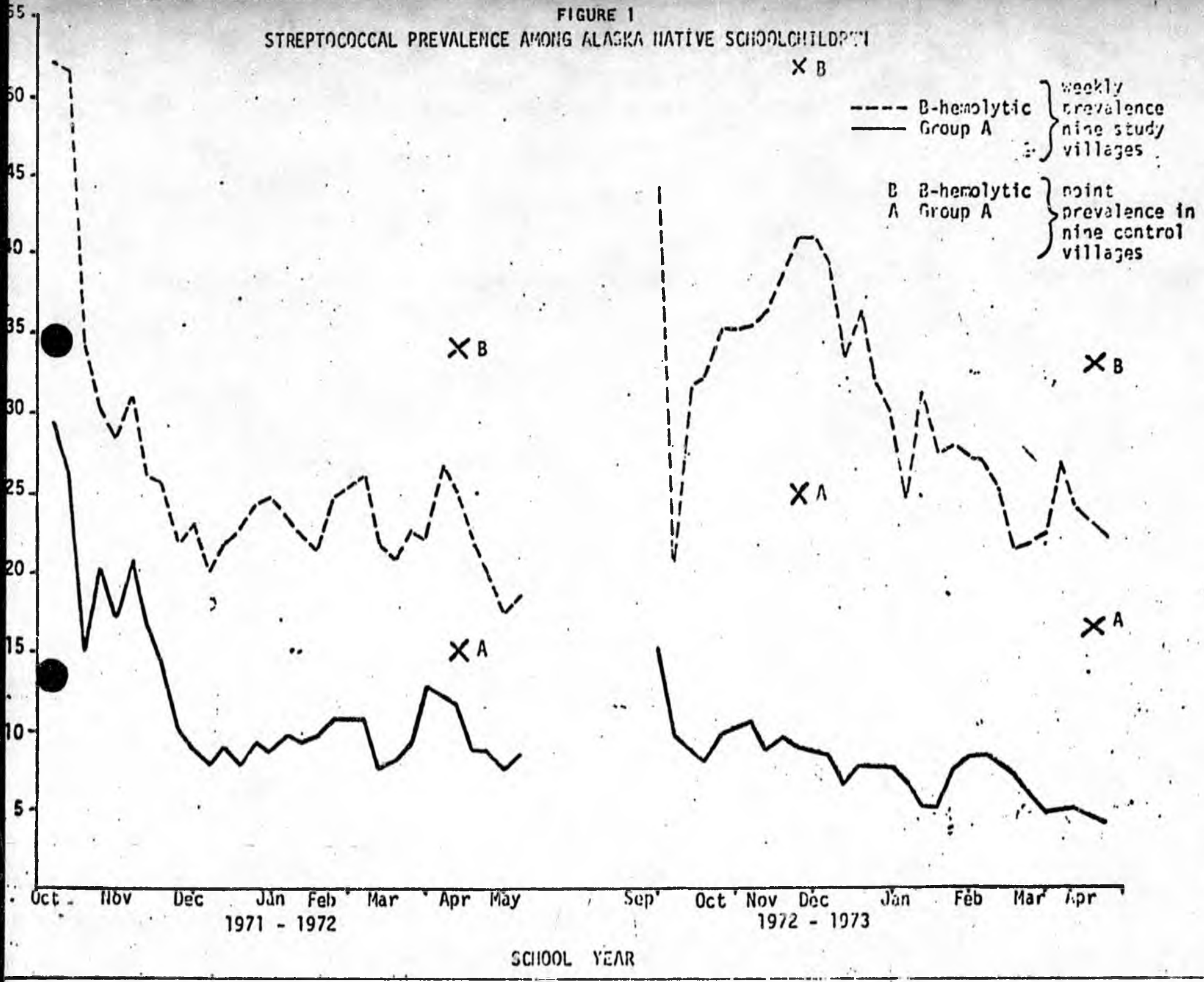
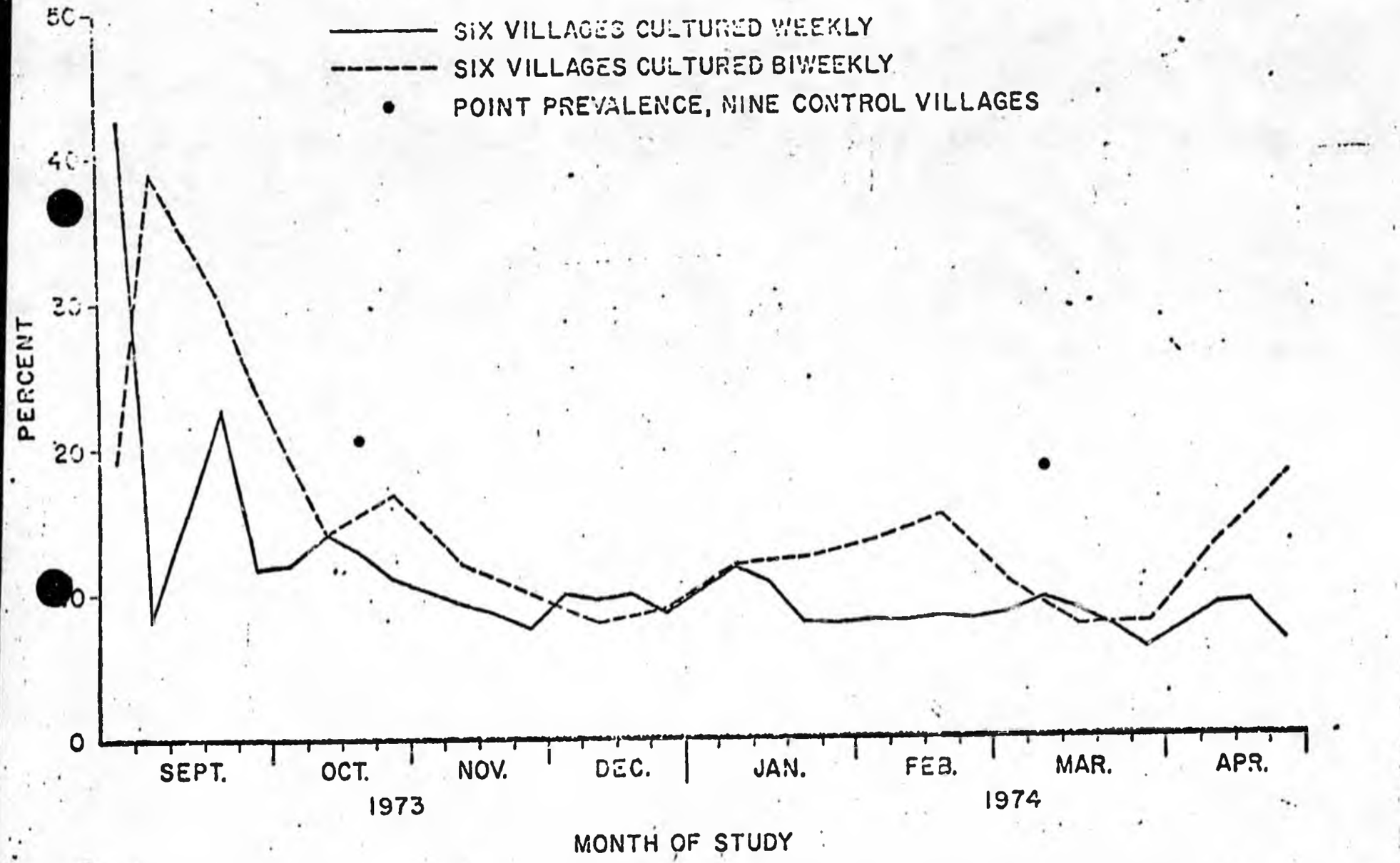


FIGURE 2

GROUP A STREPTOCOCCAL PREVALENCE AMONG ALASKA NATIVE SCHOOLCHILDREN, 1973 - 1974.



CLINICAL DIAGNOSIS IN SYMPTOMATIC PATIENTS

Adequate Antibiotic Therapy for Streptococcal Pharyngitis Compared to Throat Culture Results

Experience in Three Study Years

		TEST +	TEST -	Total
Therapy	+	204	418	622
	-	160	760	920
	Total	364	1,178	1,542

Patients with a positive culture 364/1,542 or 25.1%
Patients falsely treated 418/1,178 or 35.5%
Patients positive but not treated 160/364 or 44.0%
Ratio of false positives to false negatives 418/160 or 2.6

Correctly classified as positive 204/364 or 56.0%
Correctly classified as negative 760/1,178 or 64.5%
Agreement 964/1,542 or 62.5%

TABLE 4

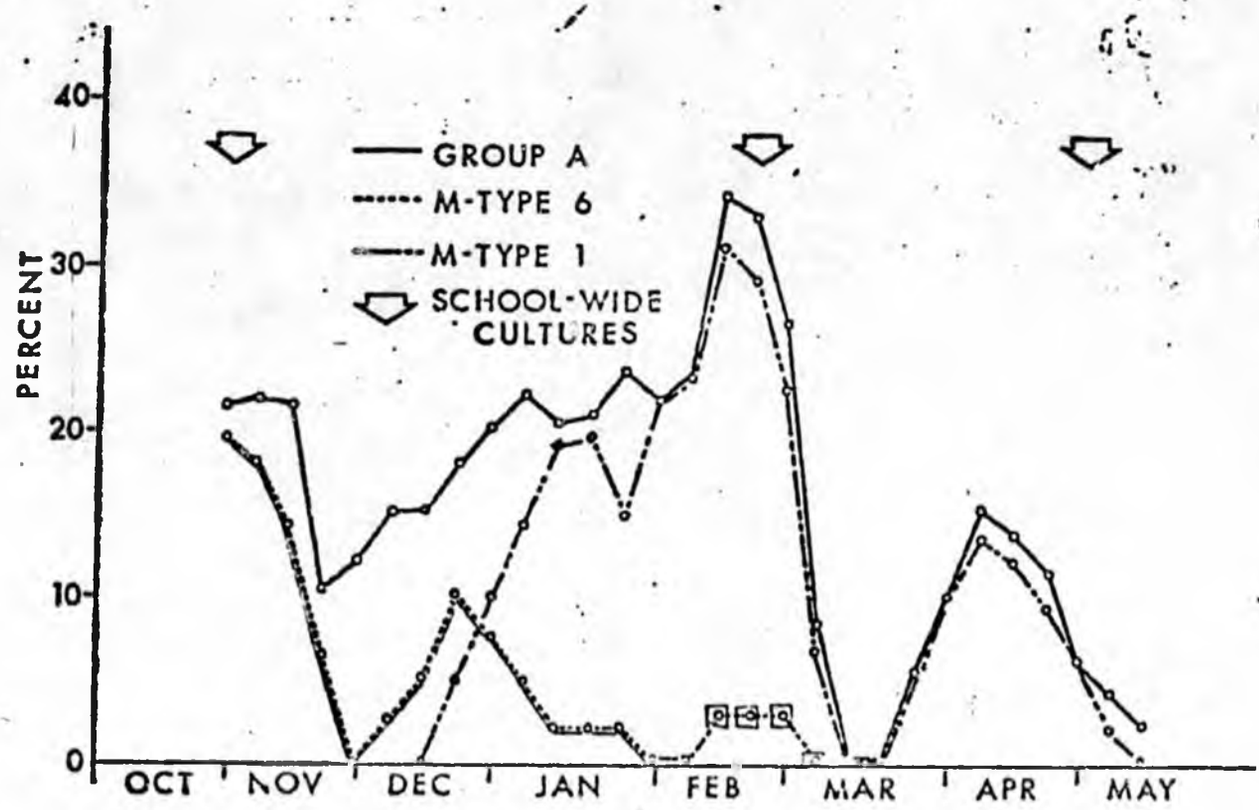
STREPTOCOCCAL SURVEILLANCE PROGRAM

Mean Delay Between Throat Culture and Treatment

Service Unit And Village	School Year 1971-72	1972-73	1973-74
Total	11.5	10.1	11.1
Bethel S.U.	13.2	12.4	15.5
Nunapitchuk	14.4	13.8	14.5
Kasigluk	11.6	12.6	17.3
Atmautluak	13.5	10.7	15.6
Napakiak	-	-	15.0
Kotzebue S.U.	11.1	9.7	10.2
Unalakleet	10.3	9.3	8.1
Stebbins	11.9	11.7	9.9
St. Michael	11.2	8.0	8.7
Koyuk	-	-	14.8
Kanakanak S.U.	10.2	8.3	7.6
Togiak	10.6	9.6	7.6
Twin Hills	9.5	7.7	6.2
Manokotak	10.6	7.7	7.9
New Stuyahok	-	-	9.2

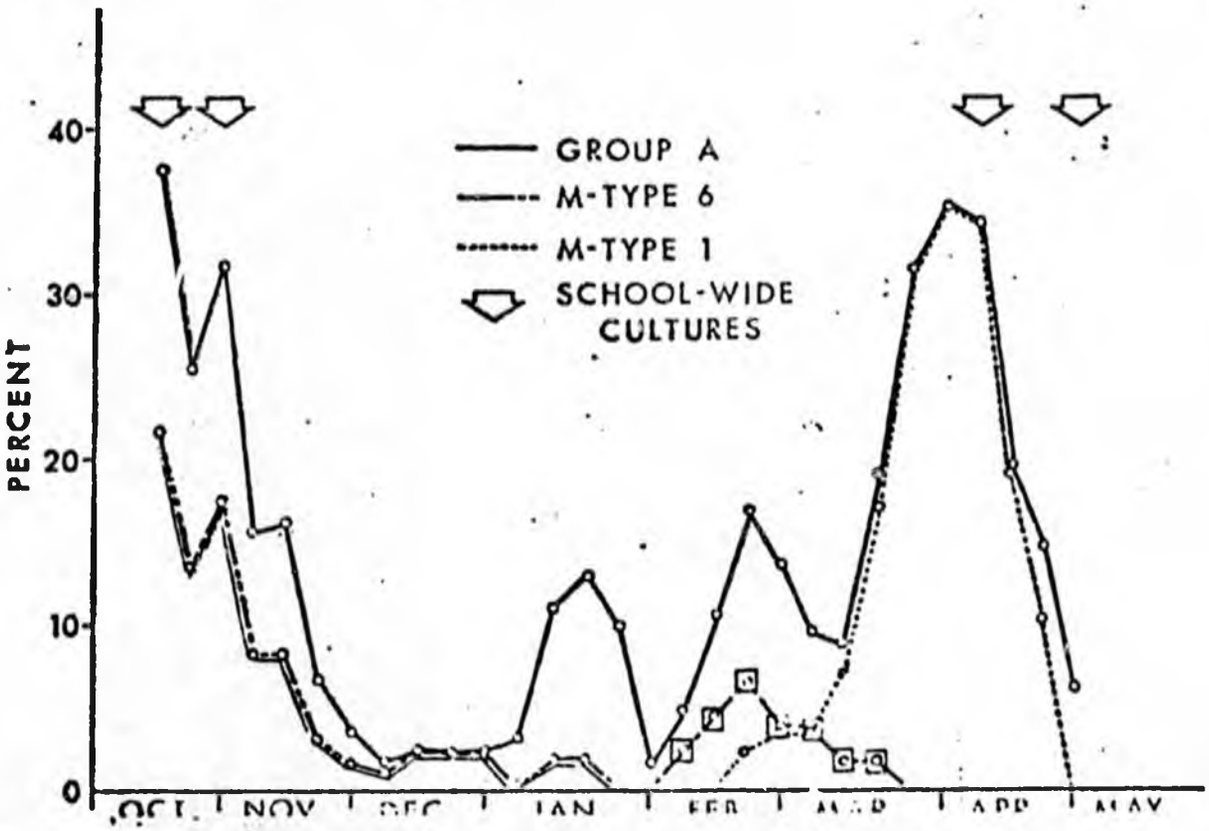
AVERAGE WEEKLY STREPTOCOCCAL PREVALENCE
ESKIMO SCHOOL CHILDREN
ST. MICHAEL, ALASKA
1971 - 1972

FIGURE 3



STEBBINS, ALASKA
1971 - 1972

FIGURE 4



APPENDIX I

1. Bender, T.R., Zimmerman, R.A., Knostman, J.D., Sherman, S.A., Price, A., Fleshman, J.K. Streptococcal Surveillance in Remote Arctic Populations. The Development of a System for Detection of Group A Pharyngitis and the Prevention of Nonsuppurative Sequelae. Presented at the Second International Symposium on Circumpolar Health, Oulu, Finland, June 21-24, 1971.

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VILLAGES PARTICIPATING IN RHEUMATIC FEVER PREVENTION PROGRAM

September, 1974

Surveillance Villages

Cultures taken routinely and from those with symptoms

01	Nunapitchuk	07	Twin Hills
02	Stebbins	08	Atmautluak
03	Unalakleet	09	Kasigluk
04	St. Michael	20	Napakiak
05	Manokotak	21	Koyuk
06	Togiak	22	New Stuyahok

Cultures taken only from those with symptoms

23	Tununak	27	Goodnews Bay
24	Kotlik	28	Nulato
25	Naknek	29	Emmonak
26	Chevak	30	Tooksook Bay

Comparison Villages

Cultures taken on occasion

10	Shaktoolik	15	Quinhagak
11	Kaltag	16	Kwigillingok
12	Akiak	17	Kongiganak
13	Akiachak	18	Hooper Bay
14	Kwethluk		