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Evaluation of Medical Care Provided to Alaska Natives Volume 4 A Report of Intervention Methods to Improve Screening, Detection, and Follow-up

Alaska Native Health Board, Inc.

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EVALUATION OF MEDICAL CARE
PROVIDED TO ALASKA NATIVES

Volume 4

A Report of Intervention Methods
to Improve Screening, Detection & Follow-up

Prepared by the Alaska Native Health Board, Inc.
February, 1980
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EVALUATION OF MEDICAL CARE PROVIDED TO ALASKA NATIVES

A Report of Intervention Methods
to Improve Screening, Detection & Follow-up

Volume 4

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Consultation and assistance was provided freely by many individuals at the Alaska Native Medical Center, the Center for Disease Control, the Fairbanks Native Health Center, Tanana Hospital, the State Public Health Nursing Service, the Program Development Section of the Alaska Area Native Health Service and the Village of Port Graham.

February, 1980

This Project was carried out under DHEW Contract #243-78-0222, entitled, "Evaluation of Deficiencies in Health Care Delivery to Alaska Natives," issued by Alaska Area Native Health Service.
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SUMMARY

Following Phases I & II studies to evaluate medical care provided to Alaska Natives, this Phase III study sought to test methods which could be introduced into the health care system to improve the process of screening, detection and follow-up.

Hypertension (HTN), anemia (IDA) and urinary tract infection (UTI) were health problems for which health education and protocols were developed. A Health Surveillance Record (HSR), designed to be used by the consumer to monitor his/her own health care and serve as an educational and preventive tool, and keyed to the Patient Care Information System, was also developed. These intervention methods were introduced, and baseline data gathered in Anchorage, Fairbanks, Tanana and Port Graham.

It was concluded that the study data itself for testing the effect of the intervention methods on IDA and UTI was insufficient to validate interpretation. However, it was recommended that these methods be used generally, and monitored by the locally involved health staff, since there is other supportive evidence to indicate value.

Since a year of experience is needed before evaluating the effects of the HTN and HSR elements, follow-up should be provided for in one year's time.

It was further concluded that the HTN and HSR elements offered a potentially greater opportunity to affect significant improvement, and it was recommended that they should be extended to other communities for study. This additional data should increase the reliability of the interpretation of results, and better predict usefulness in other Regions.
This report describes the work accomplished thus far by the Health Surveillance Project (HSP) contract study entitled, "Evaluation of the Deficiencies in Health Care Delivery to Alaska Natives," from its inception September 28, 1978 through February 29, 1980. The study is referred to as Phase III.

This Project naturally stems from previous evaluations conducted by the Alaska Native Health Board through the Health Care Evaluation Project during the years 1975-1977, described in two separate study reports and a summary report each entitled, "Evaluation of Medical Care to Alaska Natives," referred to as Phases I and II. (Ref 1)

Those first two sequential studies examined the quality and effectiveness of ambulatory care to Alaska Natives, through auditing the health care process. Using several tracer conditions including hypertension (HTN), urinary tract infection (UTI), iron deficiency anemia (IDA), it focused on provider performance and the continuity of the health care process. Care was determined to be comparable to that provided in other Native Health Service hospitals and the private sector, but weaknesses were noted. The application of a method of regular quality assurance was advocated to strengthen deficiencies. However, since the study effort was devoted to evaluation and evaluation methodology, it did not address corrective measures, but rather recommended that the health care system do that.

The Health Surveillance Project was designed to develop and introduce intervention methods and tools to improve the quality of the health care process by impacting on both the provider and consumer. The options to be considered for intervention included: changes in procedures, the introduction of diagnostic, treatment and
follow-up protocols and employment of techniques aimed at consumer education. It was apparent that it would be unwise to undertake changes in protocols or procedures for health service delivery without very careful evaluation (e.g. monitoring, evaluating and calculating effectiveness.)

If these options for intervention proved effective after testing over a year's period of time, they could be incorporated into the daily operations of the health service for Alaska Natives.

It was determined that the tracer conditions of HTN, IDA, and UTI should be addressed as conditions which needed improved management in the health care process, and at the same time were amenable to applying intervention methods whose effect could be monitored and evaluated with reasonable facility and objectivity. Furthermore, it was decided to look at the feasibility of developing a health surveillance method which could be applied to a number of health problems affecting every age group to improve screening, detection and follow-up. The principal tool used would be a surveillance record held by the patient who would become an active participant in the surveillance of his or her own health state.

The broad objectives of the study (slightly modified 9/6/79) are as follows: (2)

Hypertension
1. Initiate a system of routine screening of all patients over 16 years old in the field and on visits to the OPD of the Alaska Native Hospitals.
2. Evaluate a system to improve the diagnosis, treatment and follow-up of all patients with hypertension.
Iron Deficiency Anemia
1. Screen all high risk individuals for anemia (menstruating age females and children under three.)
2. Improve follow-up of patients found to have anemia.

Urinary Tract Infection
1. Improve follow-up of patients with diagnosed urinary tract infection.

Health Surveillance Profiling
1. Develop a workable health surveillance profile for males and females from ages 0-5, 6-15, 16-45 and over 45.
2. Introduce the use of these surveillance profiles in all villages and service units.

METHODOLOGY
Study Sites
The approach selected was to choose four locations representative of different types of communities and health care settings, to be used to introduce intervention methods into the health care system to improve the care of patients with HTN, UTI, and IDA, and then evaluate the effect on a later date. Similarly a Health Surveillance Record would be developed and tried out in the same communities and its effects measured at an appropriate time. The study population would be ambulatory patients.

The four study sites selected were the Alaska Native Medical Center (ANMC) in Anchorage, Port Graham, the Fairbanks Native Health Center in Fairbanks, and Tanana Hospital in Tanana. These communities were selected partially on the basis of practical considerations such as accessibility, study cost, similar size or like
services, the availability of the Patient Care Information System, the agreeableness of the health staffs to participate, but mostly because the settings are good examples of how the health care system operates in the Alaska Native Health Service at various levels.

The Alaska Native Medical Center provides ambulatory care services to a large Native population (pop. 18,000) within the greater Anchorage area, and to visitors from outside. The Medical Center tends to set standards which are used by the other Native health care facilities in the State. Some of the providers are especially interested in making improvements in the health care process in their departments.

Port Graham is a small village located in the Kenai Borough across Kachemak Bay from Homer, and about 240 miles from Anchorage. A Community Health Aide and Community Health Representative provide village health care. It is within the Anchorage Service Unit. (Native pop. 158)

The Fairbanks Native Health Center is located in contiguity with the Fairbanks Community Hospital and has a very active ambulatory care service, caring for Fairbanks Natives as well as individuals from the various communities within the Tanana Service Unit. (Fairbanks Native pop. 4,000)

Tanana is a small Native community at the junction of the Tanana and Yukon Rivers, which contains the Tanana Native Hospital. This hospital principally functions as an ambulatory care facility at the present time. Besides local Tanana patients, it serves a number of villages in the Western part of the Tanana Valley. It has served as a major study site for the implementation of the PCIS over the past several years. (Native pop. 365)
Since the character of each of these communities varies considerably it was necessary to design the implementation of the study to accommodate these variations. Because staffing varied in the degree of cooperation and assistance that could be given at each site, accommodations were made. Consequently, comparisons of data and results between facilities cannot be precise and this must be taken into consideration.

Data Management

The Patient Care Information System needs to be explained briefly. This is a computerized information system, which when fully implemented, will include all Alaska Natives registered within the health care system, and contain pertinent information concerning their health problems and encounters with the system. The information can be updated every two weeks and summaries made available. The State of Alaska has recently joined the system to include services that it renders to the Native population in the rural communities and some urban communities. The system eventually will make it possible to monitor surveillance programs precisely, to the benefit of the consumer and the practitioner. Presently it is operative in each of the study sites except Port Graham.

At the Medical Center and Fairbanks Health Center sample sizes were selected to make the data manageable and at the same time significant. The entire population of the two rural communities were included in the study because of the small size and impossibility of avoiding contamination. Similar sized communities will be used for controls for comparison.

Data base information for IDA was gathered by chart audits in the Well Baby Clinic and Family Planning Clinic at ANMC. Preliminary data bases were established for HTN, HSR, and UTI at each site according to procedures and protocol established for
that purpose.

Protocols
Protocols were developed for screening, diagnosis, treatment and follow-up for HTN, UTI, and IDA. The IDA protocol was developed from those already used and practiced by the Well Baby and Family Planning Clinics. The UTI protocol was developed from two slightly different protocols, one in use in the Prenatal Clinic and the other in use in the Outpatient Department. (App A)

On the other hand the HTN protocol was developed in consultation with the physicians, pharmacists and nurse practitioners at the Alaska Native Medical Center. A slightly modified version was developed for use in the villages since sophisticated laboratory testing is not available there.

The Health Surveillance Report (HSR) for age groups 0-5, 6-15, 16-45, 46-75, using the same record for children from 0 to 15 and separate records for male and female for ages above 16, was developed by the Health Surveillance staff after an extensive search of the literature, statistical analysis of health problems of Alaska Natives and consideration of cost effectiveness. (App D)

Health Education pamphlets for patient use were designed, or acquired from the Patient Education Service of ANMC to be handed out to HTN, IDA or UTI patients. (App B)

Implementation
The procedures for implementation of the study were carried out identically at Anchorage (ANMC), Tanana and Fairbanks with some exceptions.
the health staff at both fairbanks and tanana agreed to follow the hypertension protocol provided. health education pamphlets were made available for distribution to known hypertension patients.

the outpatient physicians at the medical center did not wish to adopt a hypertension protocol until after they had seen the results of an audit of their present hypertension practice.

hypertension audits were carried out using criteria developed from the hypertension protocol at tanana, fairbanks, anmc, and port graham.

at tanana and fairbanks - the uti and ida study was conducted according to protocol in the respective clinics during the months of october through december, 1979. the providers agreed to follow the protocols, and the pharmacist provided each patient with a health education hand-out when the patient picked up his or her medicine.

at anmc - the same procedure was followed by the well child and family planning clinics for ida where that study was carried out.

at anmc - the same procedure was followed for uti for those patients seen in the prenatal clinic and the outpatient department. however the outpatient staff elected not to follow the uti protocol; they did indicate they wanted to know how their present practice stacked up against an audit of uti care. the study for these components at anmc was carried out from september through october.

health surveillance record

at anmc it was decided to distribute the health surveillance record to the 16-45 year old group, both male and female only for practical considerations. the younger
age groups were not tested because many of the screening tests are done in school and that information is not available. The total sample size selected was 525 patients to give us a level of significance of .05. Three separate groups of 175 were established; one received a personal explanation of the Health Surveillance Record from a specially trained Native woman; another received the Record only from a provider, and the third group functioned as the control and received nothing. The implementation was conducted in September and October, 1979.

At Fairbanks a Native woman was trained to distribute the Health Surveillance Record, with an explanation. She explained and handed out 175 Records from late October through the beginning of December. Because inability of the practitioners to participate in handing out the Records, this part was omitted. However, a control group of 175 patients was established.

At Tanana the Health Surveillance Records were distributed almost entirely by the Community Health Aide working with the Public Health Nurse, with an explanation, largely through house-to-house visiting. Some were distributed through the Out-patient Nurse at the hospital.

The approach in Port Graham was quite different because of the village setting. A "Health Fair" was planned and organized with the Community Health Council, involving the Community Health Aide, Community Health Representative, Field Physician, Public Health Nurse and Health Surveillance staff participating. Blood pressure and anemia testing were performed and group discussions held to explain the purpose of the Health Surveillance Record, the health problems described therein, and the value of using the Record for keeping track of their health. Movies and video tapes were used to stimulate interest and discussion. For those patients who did not participate in the "Health Fair", the Health Aide was asked to follow-up with screen-
ing and distribution of the Record.

RESULTS
The results of the work done is presented under the headings of the specific study objectives. Much of the information presented here constitutes baseline data established as a necessary part of the design and implementation of methods to improve the ambulatory care process, especially the element of follow-up. Because it takes a period of one year or more of observation to test the effects of intervening with the hypertension protocol and Health Surveillance Record, a follow-up study to evaluate the data is planned in a year's time.

HYPERTENSION

Specific Objectives
1. Initiate a system of screening of all patients over 16 years old in two villages, one service unit facility and ANMC.
2. Implement a protocol for the diagnosis, evaluation, treatment and follow-up of hypertension in two villages, one service unit facility and ANMC.
3. Evaluate the effectiveness of the above two items by comparing the screening and follow-up data obtained in these test villages to that obtained in the previous study conducted by Ed Helmick. (Ref 1)

A recent search of Alaskan Native patient records done for us by the Patient Care Information System indicated that 2987 patients had hypertension listed on their active problem lists between 1974 and 1979. Table 1 shows the numbers of Alaska Natives identified as having hypertension as an active problem in our four study communities.
Table 1
Number of Alaskan Natives With Hypertension as an Active Problem According to PCIS*

<table>
<thead>
<tr>
<th>Residence</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anchorage</td>
<td>391</td>
</tr>
<tr>
<td>Fairbanks</td>
<td>236</td>
</tr>
<tr>
<td>Tanana Village</td>
<td>48</td>
</tr>
<tr>
<td>Port Graham</td>
<td>4</td>
</tr>
<tr>
<td>ALASKA AREA</td>
<td>2987</td>
</tr>
</tbody>
</table>

* PCIS data not verified in the field as of July, 1979.

The hypertension protocol (app A1) was developed and implemented at Tanana and Fairbanks, and the modified version (app A2) was implemented at Port Graham. A consumer oriented health education pamphlet for hypertension, which is a standard item available to providers at ANMC to distribute to hypertensive patients, was provided to pharmacists at Tanana and Fairbanks to hand out to hypertensive patients. At ANMC the use of the pamphlet is discretionary with the provider. The Health Aide at Port Graham was provided a supply of pamphlets to furnish hypertensive patients. (app B1)

Anchorage

The hypertension protocol was not implemented at the ANMC - OPD because the physicians first wanted to know what the character of their practice was before changing their practice habits.

A screening study was conducted at ANMC - OPD during May and June, 1979 to determine the blood pressure (BP) screening rate of 100 Alaska Native adults randomly selected from the ambulatory care clinic. Eighty-four had at least one BP done in the past year. The average number of clinic visits per patient in this sample was 9.28, and the BP screening rate for these patients
was one BP per 4.3 visits. Documented BP screening, appears to be good.

Results of Chart Audit Process

A chart audit was done on 123 patients selected through the PCIS for active hypertension, using the audit format shown (Table 6a).

Table 2
Sample Selection

| Total Number of Alaska Natives with hypertension as active problem according to PCIS | 391 |
| Sample selected by choosing every third name of alphabetical listing | 133 |
| Retired, inactive or unlocatable records | -10 |
| Sample number | 123 |

Out of 123 charts reviewed, 103 met the criteria for hypertension.

TABLE 3

Number and percentage of patients with chart documentation of active hypertension compared to PCIS listing. Total number - 123.

<table>
<thead>
<tr>
<th>Source</th>
<th>Number of Patients</th>
<th>Percentage of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCIS</td>
<td>123</td>
<td>100</td>
</tr>
<tr>
<td>Chart</td>
<td>103</td>
<td>83.7</td>
</tr>
<tr>
<td>Undocumented</td>
<td>20</td>
<td>16.3</td>
</tr>
</tbody>
</table>

A schematic displays the principal outcomes of the audit for 123 patient charts for hypertension (Chart 1). Following are explanations of some of the outcomes.
PATIENTS LIVING IN ANCHORAGE TREATED FOR HYPERTENSION

391 Patients with Hypertension Listed as an Active Problem

Charts Audited 123

Met Criteria for Hypertension 103

Not Treated 18

Lost to Follow-up 21

On Anti-hypertensive Medication 56

Treated 85

Followed 82

20 Not Treated

Criteria Absent 20

0 Treated

On Anti-hypertensive Medication 26

Not on Medication
TABLE 4

Purpose of visit or problem for those 20 patients listed in PCIS with diagnosis of hypertension, but not meeting audit criteria for hypertension.

<table>
<thead>
<tr>
<th>Purpose of visit or problem</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preeclampsia</td>
<td>6</td>
</tr>
<tr>
<td>Elevated blood pressure</td>
<td>2</td>
</tr>
<tr>
<td>Congestive cardiomyopathy</td>
<td>1</td>
</tr>
<tr>
<td>Borderline</td>
<td>4</td>
</tr>
<tr>
<td>Labile hypertension</td>
<td>4</td>
</tr>
<tr>
<td>Hypertension</td>
<td>1</td>
</tr>
<tr>
<td>Positive PPD</td>
<td>1</td>
</tr>
<tr>
<td>Hyperextension (muscle)</td>
<td>1/20</td>
</tr>
</tbody>
</table>

It is evident that the difference in diagnostic labeling is due chiefly to "borderline" cases, and perhaps a need for another diagnostic category to code these in the computer.

Table 5 shows the purpose of the visit or problem for those 18 patients who are listed in the computer with the diagnosis of hypertension and meeting audit criteria, but who were never started on anti-hypertensive medication. Analysis indicates that almost all of these were "borderline" cases and they either are still under observation or BP's have reverted to normal without intervention.
TABLE 5

Purpose of visit or problem for those 18 patients listed in the PCIS with diagnosis of hypertension and meeting audit criteria, but who were never started on anti-hypertensive medication.

<table>
<thead>
<tr>
<th>Purpose of visit or problem</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eclampsia</td>
<td>1</td>
</tr>
<tr>
<td>Preeclampsia</td>
<td>3</td>
</tr>
<tr>
<td>RH negative</td>
<td>1</td>
</tr>
<tr>
<td>Mild hypertension</td>
<td>1</td>
</tr>
<tr>
<td>Transient hypertension</td>
<td>1</td>
</tr>
<tr>
<td>BCP hypertertension</td>
<td>1</td>
</tr>
<tr>
<td>Essential benign hypertension</td>
<td>6</td>
</tr>
<tr>
<td>Borderline elevated BP</td>
<td>2</td>
</tr>
<tr>
<td>High BP</td>
<td>1</td>
</tr>
<tr>
<td>Elevated BP</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>18</strong></td>
</tr>
</tbody>
</table>

Of the 103 hypertensives, 21 were lost to follow-up. An analysis showed that half were no longer in the community of Anchorage, and the cause for the remainder is not known.

Twenty-six of the patients being followed were not on medicines. Table 5 explains the reasons that 18 patients were not on medication, four patients were prescribed non-drug treatment, and there was no reason documented for the other four.

Reference is made to Table 6a. Health education or dietary counseling was only documented 19 times, although providers indicate that this service is rendered more often than indicated.

Follow-up visits averaged 8.2 (for all types of visits except dental and mental health) and the blood pressure taken an average of 4.4 times. Visits made specifically for hypertension averaged 3.3. Of the 56 patients on medication, 66%
**TABLE 6a**

**HYPERTENSION AUDIT RESULTS**

**ANCHORAGE - OPD**

<table>
<thead>
<tr>
<th>A. 1) Does patient have hypertension documented in the chart (diastolic &gt; 90 or systolic &gt; 160)?</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) Is there other bonafide evidence of hypertension?</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Total</td>
<td>103</td>
<td>83.7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B. 1) Was the patient ever started on either anti-hypertensive medication (including diuretics)?</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) Low salt diet, weight reduction?</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Total</td>
<td>85</td>
<td>82.5</td>
</tr>
</tbody>
</table>

Complete C - H only if A or B is YES

<table>
<thead>
<tr>
<th>C. Did patient receive:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Education concerning hypertension?</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) Dietary counseling?</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Total</td>
<td>19</td>
<td>18.4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>D. Total numbers of visits May 1, 1978 to April 30, 1979</th>
<th>852</th>
<th>8.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>E. Number of visits BP was taken</td>
<td>458</td>
<td>4.4</td>
</tr>
<tr>
<td>F. Number of visits specifically for hypertension</td>
<td>340</td>
<td>3.3</td>
</tr>
<tr>
<td>G. Number of months covered by anti-hypertensive medication</td>
<td>550 (56 rcvd meds)</td>
<td>9.8</td>
</tr>
<tr>
<td>H. Number of normal BPs (&lt; 90 diastolic, &lt; 160 systolic)</td>
<td>249</td>
<td>2.4</td>
</tr>
</tbody>
</table>
protocol.

TABLE 8

Number and percentage of patients with chart documentation of active hypertension compared to PCIS listing. Total number - 56.

<table>
<thead>
<tr>
<th>Source</th>
<th>Number of Patients</th>
<th>Percentage of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCIS</td>
<td>56</td>
<td>100</td>
</tr>
<tr>
<td>Chart</td>
<td>22</td>
<td>39.3</td>
</tr>
<tr>
<td>Undocumented</td>
<td>34</td>
<td>60.7</td>
</tr>
</tbody>
</table>

A schematic (Chart 2) displays the principal outcomes of all 56 patients included in the sample. Thirty-four did not meet the criteria, and none of these were treated. Though there was no indepth analysis of this factor at the time the audits were conducted because it was not called for, it was noted that a large number of patients who fell into this category had a systolic pressure between 140 and 160. In addition, since any diagnosis suggestive of hypertension (such as labile blood pressure) is coded under hypertension, a number of these cases are included in that total. A third factor is the frequent to and fro movement of patients seen in the health center, so that some did not make sufficient visits to fulfill the three elevated BP criteria.

Of the 22 confirmed hypertension patients four were not treated; of these four two were borderline, one had not been in the system for years and the cause for the fourth was undetermined.

Of the eight hypertension patients lost to follow-up most had been out of the system for some time, while it was evident that others had returned to their home community.
Chart 2

PATIENTS LIVING IN FAIRBANKS TREATED FOR HYPERTENSION

236 Patients with Hypertension Listed as an Active Problem

Charts Audited 56

Met Criteria for Hypertension 22

34 Criteria Absent

Not Treated 4 1 Treated 33 Not Treated

18 Treated

22 Hypertensives

Lost to Follow-up 8

14 Followed

On Anti-hypertensive Medication 12

2 Not on Medication
### TABLE 9a

**HYPERTENSION AUDIT RESULTS**

**FAIRBANKS**

<table>
<thead>
<tr>
<th></th>
<th>TOTALS</th>
<th>PERCENTAGE</th>
<th>MEAN</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>YES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. 1) Does patient have hypertension documented in the chart (diastolic $&gt;90$ or systolic $&gt;160$)?</td>
<td>YES 56</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>OR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) Is there other bonafide evidence of hypertension?</td>
<td>NO 39.3 22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. 1) Was the patient ever started on either anti-hypertensive medication (including diuretics)?</td>
<td>NO 81.8 18</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>OR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) Low salt diet, weight reduction?</td>
<td>NO 13.6 3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Complete C - H only if A or B is YES

<table>
<thead>
<tr>
<th>C. Did patient receive:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Education concerning hypertension?</td>
<td>NO 13.6 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OR</td>
<td></td>
</tr>
<tr>
<td>2) Dietary counseling?</td>
<td>NO</td>
<td></td>
</tr>
</tbody>
</table>

| D. Total numbers of visits May 1, 1978 to April 30, 1979 | 169 7.7 |
| E. Number of visits BP was taken | 88 4.0 |
| F. Number of visits specifically for hypertension | 72 3.3 |
| G. Number of months covered by anti-hypertensive medication | 90 (12 received meds) 7.5 |
| H. Number of normal BPs ($<90$ diastolic, $<160$ systolic) | 60 2.7 |
TABLE 9b
HYPERTENSION AUDIT RESULTS
FAIRBANKS

Number of visits May 1, 1978 - April 30, 1979 by number of patients

<table>
<thead>
<tr>
<th>Number of visits</th>
<th>0</th>
<th>1-4</th>
<th>5-12</th>
<th>over 12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>5</td>
<td>4</td>
<td>8</td>
<td>5</td>
</tr>
</tbody>
</table>

Number of months covered by anti-hypertensive medication by number of patients

<table>
<thead>
<tr>
<th>Number of months</th>
<th>1-6</th>
<th>7-9</th>
<th>over 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>5</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Percentage of time BP controlled by number of patients

<table>
<thead>
<tr>
<th>Percent of time</th>
<th>0-24%</th>
<th>25-49%</th>
<th>50-74%</th>
<th>75-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>2</td>
<td>1</td>
<td>8</td>
<td>3</td>
</tr>
</tbody>
</table>
Of the two hypertension patients not on medication, one was diagnosed as borderline. Three patients received education concerning hypertension or dietary counseling.

Reference is made to Table 9a. Health Education or dietary counseling was only documented three times although it was undoubtedly provided more often.

Follow-up visits averaged 7.7 and the blood pressure taken an average of 4.0 times during the year. Visits made specifically for hypertension averaged 3.3 times. Of the 12 patients on medication, only four (33%) were covered with drugs more than nine months out of the year.

Of the 14 persons followed, 78% were under control more than 50% of the time.

Comment
For those persons who met the audit criteria for hypertension the rates for treatment, follow-up and control fall reasonably close to that recommended in the protocol.
Medication coverage however, is quite low. Documentation of hypertension education or dietary counseling was only 13.6%.

Tanana
The hypertension protocol was accepted and implemented at the Tanana Hospital.

Results of Chart Audit Process
Because of the relatively small number of HTN patients listed in the PCIS for the community of Tanana, the entire number of 48 was considered for audit.
TABLE 10
Sample Selection

Total number of Alaska Natives with hypertension as active problem according to PCIS: 48
Retired, inactive or unlocatable records: -12
Sample number: 36

TABLE 11
Number and percentage of patients with chart documentation of active hypertension compared to PCIS listing. Total number - 36.

<table>
<thead>
<tr>
<th>Source</th>
<th>Number of Patients</th>
<th>Percentage of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCIS</td>
<td>36</td>
<td>100</td>
</tr>
<tr>
<td>Chart</td>
<td>21</td>
<td>58.3</td>
</tr>
<tr>
<td>Undocumented</td>
<td>15</td>
<td>41.7</td>
</tr>
</tbody>
</table>

A schematic displays the principal outcomes of the audit for 36 patient charts for hypertension (Chart 3). The following is an explanation of some of these outcomes.

Fifteen patients did not meet the audit criteria; of these, two were treated but the reasons unknown.

Of the 21 who met the criteria, seven were not treated. Of the 21 hypertensive patients all continued to be followed through the study period. Fourteen were maintained on medications, while seven were not.

Reference is made to Table 12a. Health education or dietary counseling was documented just once.
PATIENTS LIVING IN TANANA TREATED FOR HYPERTENSION

Charts Audited: 36

Met Criteria for Hypertension: 21

Not Treated: 7
Treated: 14

Not Treated: 13

Lost to Follow-up: 0
Followed: 21

On Anti-hypertensive Medication: 14
Not on Medication: 7

48 Patients with Hypertension Listed as an Active Problem
Sample Size = 36

<table>
<thead>
<tr>
<th>TABLE 12a</th>
</tr>
</thead>
<tbody>
<tr>
<td>HYPERTENSION AUDIT RESULTS</td>
</tr>
<tr>
<td>TANANA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>TOTALS</th>
<th>PERCENTAGE</th>
<th>MEAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. 1) Does patient have hypertension documented in the chart (diastolic &gt; 90 or systolic &gt; 160)?</td>
<td>YES</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>NO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) Is there other bonafide evidence of hypertension?</td>
<td>21</td>
<td>58.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>YES</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>NO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. 1) Was the patient ever started on either anti-hypertensive medication (including diuretics)?</td>
<td>YES</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>NO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) Low salt diet, weight reduction?</td>
<td>14</td>
<td>66.7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>YES</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>NO</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Complete C - H only if A or B is YES

C. Did patient receive:

1) Education concerning hypertension?
| YES | | |
| NO | | |

OR

2) Dietary counseling?
| YES | 1 | 4.8 |
| NO | | |

D. Total numbers of visits May 1, 1978 to April 30, 1979
| 302 | 14.4 |

E. Number of visits BP was taken
| 124 | 5.9 |

F. Number of visits specifically for hypertension
| 118 | 5.6 |

G. Number of months covered by anti-hypertensive medication
| 163 (14 received meds) | 11.6 |

H. Number of normal BPs (≤ 90 diastolic, ≤ 160 systolic)
| 84 | 4.0 |
### TABLE 12b

**HYPERTENSION AUDIT RESULTS**

**TANANA**

Number of visits May 1, 1978 – April 30, 1979 by number of patients:

<table>
<thead>
<tr>
<th>Number of visits</th>
<th>0</th>
<th>1-4</th>
<th>5-12</th>
<th>Over 12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>0</td>
<td>1</td>
<td>8</td>
<td>12</td>
</tr>
</tbody>
</table>

Number of months covered by anti-hypertensive medication by number of patients:

<table>
<thead>
<tr>
<th>Number of months</th>
<th>1-6</th>
<th>7-9</th>
<th>Over 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>0</td>
<td>1</td>
<td>13</td>
</tr>
</tbody>
</table>

Percentage of time BP controlled by number of patients:

<table>
<thead>
<tr>
<th>Percent of time</th>
<th>0-24%</th>
<th>25-49%</th>
<th>50-74%</th>
<th>75-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>0</td>
<td>3</td>
<td>8</td>
<td>10</td>
</tr>
</tbody>
</table>
Follow-up visits averaged 14.4 and the blood pressure taken an average of 5.9 times. Visits made specifically for hypertension averaged 5.6. Twelve of the patients (85.7%) on medication were covered 12 months of the year.

Of the 21 patients followed, 18 or 85.7% were under control more than 50% of the time.

Comment

One person or 4.8% of the hypertensive patients received counseling regarding diet or weight reduction or education concerning hypertension. Undoubtedly this service is provided more often than documented. The surveillance rate in hypertensive patients in Tanana is perfect - 100%. The presence of the hospital in a small community is probably an important factor. Control and drug coverage are also high. A large percentage (41.7%) of patients not meeting the audit criteria for hypertension appears to be partially due to different diagnostic criteria in use (systolic pressure above 140 rather than 160), and coding discrepancies.

Port Graham

The hypertension protocol was accepted by the Community Health Aide for implementation in December, 1979.

During a three day "health fair" at Port Graham in November blood pressure screening was accomplished as part of that activity. The entire community of 158 people was offered the opportunity for blood pressure screening, though the target group was individuals over 16 years of age. A total of 54 individuals were screened out of which 6 were elevated. Out of four patients listed in the PCIS for Port Graham, three were screened and two of these had normal blood pressures.
TABLE 13
Results of HTN Screening

Persons in community 158
Persons screened 54
Persons over 16 52
Those with elevated BP 6
Those with elevated BP not listed in PCIS 4

Results of Chart Audit Process
The Assistant Community Health Aide audited the charts of the 6 patients in the community meeting the criteria for hypertension.

TABLE 14
HTN Audit Results - Port Graham

<table>
<thead>
<tr>
<th>Factor</th>
<th>Totals</th>
<th>%</th>
<th>Mean</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>HTN documented</td>
<td>6</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Started on anti-hypertensive medicine</td>
<td>5</td>
<td>83.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Received HTN education or dietary counseling</td>
<td>4</td>
<td>80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total number of visits</td>
<td>71</td>
<td>11.8</td>
<td>Range: 4 - 20</td>
<td></td>
</tr>
<tr>
<td>Number of visits BP taken</td>
<td>31</td>
<td>5.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of visits specifically for HTN</td>
<td>16</td>
<td>2.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of months covered by anti-hypertensive medication</td>
<td>48</td>
<td>12.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of normal BP's</td>
<td>26</td>
<td>4.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent of time BP controlled by number of persons</td>
<td></td>
<td></td>
<td>0% 83% 100%</td>
<td></td>
</tr>
</tbody>
</table>

Hypertension education or dietary counseling was performed in 80% of the patients, which is very high compared to the findings at the other 3 sites. BP follow-up averaged 5.2 visits for the year, with excellent control for 5 persons, but no control for the sixth. Coverage was complete for the 4 persons on medication; the other 2 were taken off medication.

Comment
Despite the small sample size, it's reasonable to conclude that counseling and education, follow-up, control and drug coverage are very good in this small community, evidently due to the ready access, good training of the CHA and CHR and awareness of the people.
ANEMIA

Specific Objectives

1. Screen all children under three and all females between 15 and 50 in two villages and those receiving maternal and child health outpatient services at ANMC for iron deficiency.

2. Improve follow-up of patients who are found to have anemia. This would be accomplished by developing an educational pamphlet to be given in the test villages to all patients with iron deficiency anemia that explains what anemia is and how it is related. Also in the pamphlet the practitioner would write in the dates of recommended follow-up and what tests should be done.

3. Compare results of these screenings and follow-up procedures with the data on screening and follow-up of anemia obtained in the previous study.

Anemia screening was performed at ANMC, Tanana and Port Graham. Anemia protocols and anemia health education pamphlets (one for children, one for adults) were employed at all four study communities. (app A3-7, B2-3)

A follow-up audit was performed at ANMC on anemia patients referred from the Well Baby, Prenatal and Family Planning Clinics to the pharmacy for iron medication, where they received a health education pamphlet, during the period September 4 through November 4, 1979.

Follow-up audits were done on all anemic patients at each of the other sites according to its respective protocol.

Screening Results

Anchorage
### TABLE 15

RESULTS OF HEMOGLOBIN SCREENING FOR 61 CHILDREN IN WELL CHILD CLINIC DURING MARCH 1979 - AGES 6 - 20 MONTHS - ANMC

<table>
<thead>
<tr>
<th>Childrens' Hemoglobins not tested every 6 months</th>
<th>#</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continued appointment breakers</td>
<td>8</td>
<td>13.1</td>
</tr>
<tr>
<td>Overdue for testing</td>
<td>8</td>
<td>13.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Childrens' Hemoglobins tested every 6 months</th>
<th>#</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hemoglobin normal, 11 and above</td>
<td>35</td>
<td>57.4</td>
</tr>
<tr>
<td>Hemoglobin abnormal, below 11</td>
<td>7</td>
<td>11.5</td>
</tr>
<tr>
<td>Hemoglobin ordered, not recorded</td>
<td>3</td>
<td>4.9</td>
</tr>
</tbody>
</table>

### TABLE 16

RESULTS OF SCREENING 66 WOMEN IN FAMILY PLANNING CLINIC FOR ANNUAL HEMOGLOBIN TESTING ANMC

<table>
<thead>
<tr>
<th></th>
<th>#</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hemoglobin not ordered</td>
<td>14</td>
<td>21</td>
</tr>
<tr>
<td>Hemoglobin ordered</td>
<td>52</td>
<td>79</td>
</tr>
<tr>
<td>Hemoglobin ordered, not recorded</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Hemoglobin 12 and above</td>
<td>36</td>
<td>54</td>
</tr>
<tr>
<td>Hemoglobin below 12</td>
<td>8</td>
<td>12</td>
</tr>
</tbody>
</table>
Well Child Clinic

Prior to the implementation of the health education pamphlet a Well Baby chart audit was conducted on children seen in the Well Baby Clinic for the month of March, 1979 using a sample of every third name. Of 61 children meeting the screening study criteria the results were as noted. (Table 15)

Family Planning Clinic

A Family Planning chart audit was conducted by sampling every third name of all women scheduled to be seen in that clinic for the month of May, 1979 resulting in a net of 66 charts suitable for audit. The results of that audit are presented here. (Table 16)

Tanana

During the period October 3 through December 3, 1979 all babies six months through three years and women 16 through 45 were screened by the Public Health Nurse and the Community Health Aide. Reference is made to the Tanana anemia protocol (app A6). The table that follows below gives the result of the screening.

| TABLE 17 |
| RESULTS OF SCREENING WOMEN (16-45) AND CHILDREN (6 MONTHS - 3 YEARS) FOR ANEMIA IN TANANA |
| # | % |
| Number of women with hemoglobin 12 and above | 38 | 95 |
| Number of women with hemoglobin below 12 | 2 | 5 |
| 40 | 100 |
| Number of children with hemoglobin 11 and above | 33 | 100 |
| Number of children with hemoglobin below 11 | 0 | 0 |
| 33 | 100 |
Port Graham

During the "health fair" at Port Graham November 14-16, 1979 anemia screening was offered to all residents. The women 16-45 years of age and children six months through three years were the special target groups. There was excellent cooperation in this community with 100 people participating in the program. Screening results are shown below for the target group.

Group educational discussions were held during the fair covering anemia as well as other topics. The health education pamphlet was provided to those individuals with low hemoglobins, and were made available to those who wanted to learn more about the subject.

| TABLE 18 |
| RESULTS OF SCREENING WOMEN (16 - 45) AND CHILDREN (6 MONTHS - 3 YEARS) FOR ANEMIA IN PORT GRAHAM |

<table>
<thead>
<tr>
<th>#</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of women with hemoglobins 12 and above</td>
<td>27</td>
</tr>
<tr>
<td>Number of women with hemoglobins below 12</td>
<td>2/29</td>
</tr>
<tr>
<td>Number of children with hemoglobins 11 and above</td>
<td>3</td>
</tr>
<tr>
<td>Number of children with hemoglobins below 11</td>
<td>2/5</td>
</tr>
</tbody>
</table>

-34-
Fairbanks

No special screening was conducted in Fairbanks, but Outpatient Clinic patients seen during the months of late October through November meeting the study criteria (children 6 months to 3 years of age and women 16-45 years of age) were followed using the Fairbanks protocol. (app A5) Those patients with iron deficiency anemia who were referred to the pharmacy were each furnished a health education pamphlet.

<table>
<thead>
<tr>
<th>TABLE 19</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESULTS OF SCREENING WOMEN (16 - 45) AND CHILDREN (6 MONTHS - 3 YEARS) FOR ANEMIA IN FAIRBANKS</td>
</tr>
<tr>
<td>#</td>
</tr>
<tr>
<td>Number of women with hemoglobins below 12</td>
</tr>
<tr>
<td>Number of children with hemoglobins below 11</td>
</tr>
</tbody>
</table>

Comment

No real conclusions can be made on the prevalence of anemia from the data accumulated in the four communities because of the small numbers, but it appears to be low. Unfortunately the screening data in the Phase II study is not comparable because of the use of very different criteria. (ref 1)

Follow-up Results of Anemic Women and Children Receiving Health Education Pamphlet

The charts of each of the patients who were referred for iron treatment of anemia detected at the time of screening during the study period were examined 2 months afterwards to determine if the introduction of the health education pamphlet improved follow-up rate. Table 20 and 21 show the findings at all 4 sites.
TABLE 20
FREQUENCY OF FIRST FOLLOW-UP
OF WOMEN PATIENTS RECEIVING HEALTH EDUCATION PAMPHLETS

<table>
<thead>
<tr>
<th>Site</th>
<th>Iron Deficiency Anemia Patients</th>
<th>Received Health Education Pamphlet</th>
<th>Returned as Appointed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anchorage</td>
<td>7</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Fairbanks</td>
<td>5</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Tanana</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Port Graham</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>14</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

TABLE 21
FREQUENCY OF FIRST FOLLOW-UP OF WELL CHILD PATIENTS RECEIVING HEALTH EDUCATION PAMPHLETS

<table>
<thead>
<tr>
<th>Site</th>
<th>Iron Deficiency Anemia Patients</th>
<th>Received Health Education Pamphlet</th>
<th>Returned as Appointed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anchorage</td>
<td>7</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Fairbanks</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Tanana</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Port Graham</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>10</td>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>

Comment
Contact rate for follow-up in the Phase II study was 33% using similar criteria. (ref 1) In the current study the combined figures show 71% follow-up for adults, and 90% for children, though the numbers are too small to be conclusive.
Specific Objectives

1. Improve the follow-up by developing an educational protocol including a pamphlet explaining the significance of UTI need for follow-up including dates written in by the practitioner which time follow-up should be obtained.
2. Introduce the use of this protocol at ANMC-OPD.
3. Evaluate the effectiveness of this protocol to see if it improves the follow-up of UTI.
4. Compare results with previous study.

Since UTI protocols were already in existence in the Prenatal Clinic and the Outpatient Department which were very similar to each other, it was decided to audit the current practice of treating UTI's for these departments for all patients reporting to the pharmacy for medication during the months of September and October, 1979, at the suggestion of the Outpatient Department staff. At the same visit patients were provided with a UTI health education pamphlet by the pharmacist. (app A8, B4)

The Health Surveillance Project adapted the UTI protocols into a single protocol to be taken to Fairbanks and Tanana for use there. (app A9, A10) The Alaska Native Medical Center had developed a UTI health education pamphlet for consumers and it was available for use by the practitioner at his/her discretion. It was noted that this was used variably in the Outpatient Department.
The physician staff at Fairbanks and Tanana implemented the protocol which in fact was close to their own practice in managing UTI. This protocol was to be followed for a period of two months (late October through December) to determine the effect on follow-up.

Results of the use of the protocol and health education pamphlet are given as follows for all three sites using them.* (Also see Table 22)

**Anchorage**

Table 22 shows the results of the care provided to 66 patients who were seen in the Outpatient Department or other ambulatory clinics. Seventy-three percent of these patients returned for follow-up. However it was noted that only 71% of all the patients were given a return appointment. Eighty-nine percent of appointed patients returned for follow-up. UTI was confirmed 73% of the time and all of these except two received antibiotic treatment. Ninety-three percent of the patients not having a confirmed UTI did not have their antibiotic discontinued. Almost all patients in this study group were seen in the Outpatient Department. Ten patients out of this sample had one infection in the past year and one had two infections.

**Fairbanks**

At this location only the follow-up data was examined. The follow-up contact rate was 45%.

**Tanana**

Since only one patient composed the sample from that location, no conclusions can be made except that the incidence of UTI was extremely low during the months of October and November, 1979 at Tanana.

* Port Graham was not included in the UTI study component because complex laboratory testing is not available in the village.
TABLE 22
ANALYSIS OF CARE PROVIDED TO PATIENTS
WITH DIAGNOSIS OF UTI

<table>
<thead>
<tr>
<th></th>
<th>Anchorage</th>
<th></th>
<th>Fairbanks</th>
<th></th>
<th>Tanana</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#</td>
<td>%</td>
<td>#</td>
<td>%</td>
<td>#</td>
<td>%</td>
</tr>
<tr>
<td>Total number of patients</td>
<td>66</td>
<td>100</td>
<td>22</td>
<td>100</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td>Appointed for follow-up</td>
<td>47</td>
<td>71</td>
<td>22</td>
<td>100</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td>Returned as appointed</td>
<td>42</td>
<td>89</td>
<td>10</td>
<td>45</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Did not return as appointed</td>
<td>5</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Not appointed for follow-up</td>
<td>19</td>
<td>29</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not appointed, did not return</td>
<td>13</td>
<td>68</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not appointed, returned</td>
<td>6</td>
<td>32</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Received antibiotics</td>
<td>62</td>
<td>94</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UTI confirmed</td>
<td>48</td>
<td>73</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>** If UTI confirmed, antibiotic prescribed</td>
<td>46</td>
<td>96</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If UTI not confirmed, antibiotic discontinued</td>
<td>1</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical Service</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other ambulatory</td>
<td>8</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outpatient</td>
<td>58</td>
<td>88</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of UTI's in past year</td>
<td></td>
<td></td>
<td>.6 (average per person)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>** 4 received pyridium addition</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Nineteen patients received no specific return appointment according to the chart; of these, 6 returned on their own discretion. Five patients out of 47 given specific appointments, did not return. Follow-up plans were vague or absent 29% of the time.
Comment

In the Phase II study report entitled, "Evaluation of Medical Care Provided to Alaska Natives," dated April 1977, the follow-up contact rate at ANMC was 74% compared to 73% currently, though slightly different criteria were used for the study group and for the time frame for follow-up. The follow-up rates in both studies for patients with a confirmed diagnosis were almost identical, that is, close to 100%. Other care factors warrant improvements or better documentation, notably appointments.

HEALTH SURVEILLANCE PROFILE

Specific Objectives

1. Identify which preventive screening procedure should be done for males and females of all age groups. This will be done by:
   a. Reviewing the literature
   b. Communications with programs which are evaluating the use of screening procedures such as Kaiser Permanente Program.

2. Develop separate Health Surveillance Profiles listing 7 - 10 critical preventive screening procedures for males and females in the following age groups: 0-5, 6-15, 16-45, and over 45.

3. Introduce the use of these surveillance profiles into four communities. Copies of the profile would be given to the patient, kept in the village and the hospital charts. It would be the Health Aide and Patient/Parents responsibility to see that each screening procedure would be done at the appropriate age.

4. The success, i.e. consumer and Health Aide compliance, of this system would be evaluated.

In the appendix of this report in the section entitled, "Health Surveillance," is
explained in detail the rationale for the development of the Health Surveillance Records and the research work that it is based upon. The reader is referred to that section for this information. (app D)

The Health Surveillance Record was developed based on the following criteria:

1. The condition or disease screened for must have a significant effect on the quality or quantity of life.
2. The therapy for the condition screened for must favorably alter its natural history by improving function, survival or both.
3. The disease must have an asymptomatic period which detection and treatment significantly reduce morbidity and mortality.
4. Therapy in the asymptomatic phase must yield a therapeutic result superior to that obtained by delaying treatment until symptoms occur.
5. Compliance among asymptomatic patients in whom an early diagnosis has been achieved must be at a level to be effective in altering the natural history of the disease.
6. Screening tests must be available for the conditions that are at a reasonable cost, and that can be performed in a village clinic setting, preferably by paramedical personnel.
7. The sensitivity and specificity of the screening test must be known. The cost of false positives must not exceed the benefits of diagnosing a true positive. The rate of false negative must not be so high that the test becomes worthless.
8. The incidence of the condition must be sufficiently high enough to justify the cost of screening.

Using those criteria, the tests, conditions screened for, and immunizations which were selected for incorporation in the Health Surveillance Record were
designed to meet the requirements of all ages. (Table 23) Also refer to appendix to see the complete set of records.

Ambulatory Care Unit Audit (ANMC)

From May 18 through May 25, 1979, the Project staff conducted a surveillance audit for the screening tests selected for age groups 0-5 through 46 and over to obtain baseline information using a sample number of 25 for each of the age brackets in each sex. Screening results were generally good in the 0-5 group except that only 25% had a recorded PPD; eye, ear and dental exams were significantly overdue. In the 6-15 year old age group no conclusions could be made because most of the screening tests were done in school.

In the 16-45 year old group women had only 42.2% of recommended tests done, and only 24% had breast exams in the past year. Only 46.3% of the tests were done on men. Table 24 is a summary of the surveillance audit for everyone 16 and over, both male and female.

Introduction of the Health Surveillance Record to Four Communities

Beginning in late September 1979, and continuing through December, the Health Surveillance Record was implemented for testing as a potential method for improving screening, detection and follow-up, as well as a health educational device. A description of the procedures for implementing the use of the Health Surveillance Record at the study sites was given in the methodology section of this report. What follows are results of the implementation, in terms of the numbers and distribution of consumers receiving the Health Surveillance Record, and a subjective evaluation of method and the effect of the Project on the consumers and providers. (Table 25)

Since the Health Surveillance Record has to be in use for at least one year
TABLE 23
HEALTH SURVEILLANCE RECORD

The age groupings in years are as follows: 0-5, 6-15, 16-45 male, 16-45 female, 46 and over male, 46 and over female.

The following tests and examinations for surveillance for these age groups and sex are to be done in the prescribed time period.

<table>
<thead>
<tr>
<th>Age in Years</th>
<th>Sex</th>
<th>Procedure</th>
<th>Interval When Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5</td>
<td>M-F</td>
<td>DPT, Polio Vaccine, Measles, Mumps and Rubella, Hemoglobin, TB Skin Test, Eye Exam, Audiogram, Physical Exam, Dental Exam</td>
<td>1 Year, Ages 3, 4 &amp; 5</td>
</tr>
<tr>
<td>6-15</td>
<td>M-F</td>
<td>TB Skin Test, Visual Acuity, Height and Weight, Dental, Audiogram, Physical Exam</td>
<td>1 Year, Once between 12 &amp; 15</td>
</tr>
<tr>
<td>16-45</td>
<td>M</td>
<td>TB Skin Test, Blood Pressure, Weight, Diphtheria/Tetanus</td>
<td>1 Year, Once Every 10 Years</td>
</tr>
<tr>
<td>16-45</td>
<td>F</td>
<td>TB Skin Test, Blood Pressure, Breast Exam, Weight, Hemoglobin, Pap Smear, Diphtheria/Tetanus</td>
<td>1 Year, Once Every 10 Years</td>
</tr>
<tr>
<td>46 and over</td>
<td>M</td>
<td>Blood Pressure, Tonometry, Rectal and Prostate Exam, Weight, Diphtheria/Tetanus</td>
<td>1 Year, Once Every 10 Years</td>
</tr>
<tr>
<td>46 and over</td>
<td>F</td>
<td>Tonometry, Blood Pressure, Weight, Pap Smear, Rectal Exam, Breast Exam, Diphtheria/Tetanus</td>
<td>1 Year, Once Every 10 Years</td>
</tr>
</tbody>
</table>
### TABLE 24

**SCREENING SUMMARY - ALL AGE GROUPS***

<table>
<thead>
<tr>
<th>Test</th>
<th>Number Eligible</th>
<th>Number Done</th>
<th>Percent Done</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood Pressure</td>
<td>100</td>
<td>84</td>
<td>84 %</td>
</tr>
<tr>
<td>Pap Smear</td>
<td>48</td>
<td>20</td>
<td>41.7%</td>
</tr>
<tr>
<td>Breast Exam</td>
<td>50</td>
<td>12</td>
<td>24 %</td>
</tr>
<tr>
<td>PPD</td>
<td>33</td>
<td>1</td>
<td>3 %</td>
</tr>
<tr>
<td>Tonometry</td>
<td>50</td>
<td>13</td>
<td>26 %</td>
</tr>
<tr>
<td>Rectal Exam</td>
<td>50</td>
<td>14</td>
<td>28 %</td>
</tr>
<tr>
<td>Hemoglobin</td>
<td>25</td>
<td>9</td>
<td>36 %</td>
</tr>
</tbody>
</table>

**TOTAL TESTS**

| 356 | 153 | 43 % |

*16 to 45 male
16 to 45 female
Over 46 male
Over 46 female

### TABLE 25

**NUMBER OF PARTICIPANTS IN HEALTH SURVEILLANCE RECORD STUDY BY SEX AND LOCATION**

<table>
<thead>
<tr>
<th>Location</th>
<th>Males</th>
<th>Females</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anchorage</td>
<td>54</td>
<td>121</td>
<td>175</td>
</tr>
<tr>
<td>Fairbanks</td>
<td>47</td>
<td>128</td>
<td>175</td>
</tr>
<tr>
<td>Port Graham</td>
<td>42</td>
<td>58</td>
<td>100</td>
</tr>
<tr>
<td>Tanana</td>
<td>86</td>
<td>89</td>
<td>175</td>
</tr>
</tbody>
</table>
before the impact on surveillance rates can be evaluated, there is no basis for judging its effect at this time. An important step taken to facilitate that evaluation was to set up a computer program to enable retrieval of health surveillance information from the PCIS for monitoring and analysis.

Although it was planned to distribute the records evenly by age and sex, it was impractical to do this, since males in the sample age group 46 and up visited the health facilities infrequently and irregularly; consequently it was necessary to settle for an uneven distribution.

**Anchorage**

A subjective analysis by the two Native women Patient Educators on attitudes of the consumers they encountered in explaining the HSR, showed that by and large the people were very interested, and willingly received their Records. Only one record was found discarded of 175, and only an occasional patient showed an antagonism or outrightly rejected the opportunity for an explanation of the health record form. Providers in the Outpatient were for the most part very positive about having the study done, and participating and handing out the HSR's. The process took somewhat longer than expected because of patient flow, but the system worked out well and effectively accomplished the task.

**Fairbanks**

The system for the distribution and explanation of the Health Surveillance Record was carried out with some modification due to staff shortage. The "distribution without explanation by the practitioner" was omitted. Staff attitude regarding the study and potential value appeared mixed and was well
supported by those more involved in public and preventive health services. Consumer attitude and response also was very good according to the patient educator who explained and distributed the HSR.

**Tanana**

A different approach was used for distribution of the HSR in Tanana since a resident Community Health Aide works with the itinerant Public Health Nurse is carrying out a preventive program for the community. The general provider attitude was very supportive of conducting the Health Surveillance Project there. Almost all of the distribution and explanation of the Health Surveillance Record was done by the Community Health Aide through house-to-house calls, with the Public Health Nurse participating while she was visiting. The entire community except for one family willingly participated, and she felt that the general interest was very positive. A few of the records were distributed through the Outpatient Department through the Outpatient Nurse.

**Port Graham**

Distribution of the HSR in Port Graham took place largely through direct contact with the people during the three day health fair as described in the methodology. All 158 persons were targeted for distribution. There was excellent participation and interest by the Public Health and School Nurse, ANMC field physician and by the community leaders and people. This process seemed to be a good method for reaching the people and stimulating interest in health surveillance.
CONCLUSIONS AND RECOMMENDATIONS

The approach used in this study was to develop options for correcting deficiencies in the delivery of health care of Alaska Natives, especially in the area of screening and follow-up. Health education pamphlets, protocols and a Health Surveillance Record were developed and put into practice in four communities. Though three different health problems were used as a medium for testing the intervention methods, the health care process being tested was essentially the same in all conditions, namely screening and follow-up.

In reviewing the results, it is evident that neither the time allotted nor the size of the samples involved for testing the effects of the intervention methods for anemia or urinary tract infection are sufficient for valid scientific evaluation. Nor can judgements about the effectiveness of introducing the hypertension protocol and the Health Surveillance Record be made until there is at least one year's lapse in time to give the patient the opportunity to make contact with the system enough times to generate sufficient data.

However, considerable information and experience has been acquired during the conduct of the Project which should prove to be of great value.

- Health education materials have been adapted and put into wider use
- Protocols for hypertension, urinary tract infection and anemia have been developed after review of current standards and put into use during the study
- An extensive review of Native health problems has been accomplished and the unique Health Surveillance Record developed and put into use as a trial
- Various implementation procedures have been tried to determine the best ways to introduce these methods and tools to the consumer, provider and community
- Consumer and provider reaction have been assessed in relation to testing these methods
- Baseline data has been established for future comparison

With the foregoing introduction, conclusions and recommendations are presented according to functional area.

-47-
HYPERTENSION

Conclusions

- The use of a hypertension protocol along with a health education pamphlet is a useful devise for improving provider awareness of standards and has a good potential for improving detection and follow-up.
- Though the study experience is limited, it is evident that diagnostic criteria for hypertension varied by provider, as well as indications for treatment. (The question of care of the patient with a diastolic pressure between 90 - 100 is still unsettled.) (3)
- The lack of evidence of dietary counseling or lack of health education in the records indicates the need for emphasis in that area.

Recommendations

- ANMC consider using the protocol for a period of one year to evaluate the effect on hypertensive care.
- Dietary counseling and health education should be services uniformly documented in the record by anyone providing hypertensive care.
- The hypertension component of the study should be extended to other interested communities to test out the use of the intervention methods.
- A one year follow-up evaluation of the effect of the hypertension protocol and health education pamphlet must be done to complete the study.

IRON DEFICIENCY ANEMIA

Conclusions

- Iron deficiency is a continuing problem in the communities examined in this study. Screening methods, treatment and follow-up already utilized appear to be quite good and effective. The prevalence appeared to be low. The main need seems to be better awareness on the part of the patient of the need for periodic screening for certain age groups and surveillance of anemic patients.

Recommendations

- The health education pamphlet and anemia protocols are used routinely in the Family Planning, Prenatal and Well Child Clinics with good effect.
The regular use of the anemia protocol and health education pamphlet for anemia is recommended for general use since the benefits seem to be self evident, and results monitored by locally involved health staff. Further testing of this intervention method by the Health Surveillance Project seems unwarranted.

**URINARY TRACT INFECTION**

**Conclusions**

There is no clear cut evidence that the use of the urinary tract infection health education pamphlets have affected the follow-up rate of those using it, for the reasons given in the introduction to this section. The use of health education devices have proven to be effective according to literature reviewed for this study. Since the potential benefits seem to appear self evident, it seems unwarranted that the Health Surveillance Project study this aspect further.

**Recommendations**

- The use of the health education pamphlet and protocol should be continued at ANMC and promoted; furthermore, it be recommended for general use, and the effect monitored by locally involved health staff.

**HEALTH SURVEILLANCE PROFILE**

**Conclusions**

- The Health Surveillance Record is potentially a highly useful instrument for improving screening detection and follow-up of health problems.
- Both consumers and providers have generally reacted favorably to the concept and content of the Health Surveillance Record. The ability to use it both as an educational tool and a personal record of the individual's health status has a great deal of appeal. It is keyed to the Patient Care Information System so that the provider can monitor and guide the preventive health care of the patient. In turn, the patient is involved directly in monitoring his own health, and can methodically plan and initiate interaction with the system.
Recommendations

It is recommended that the Health Surveillance Record be extended to additional communities in other regions so that a larger more representative sample of communities can be involved. A number of regions have expressed interest in trying it out. A larger sample would increase the validity of the study results.

A one year follow-up evaluation of the effect of the HSR must be done to complete the study.
REFERENCES

1. Evaluation of Medical Care Provided to Alaskan Natives, Edward Helmick, et al., Volumes 1, 2 & 3, February 1975-April 1977.

2. DHEW Contract #243-78-0222, Evaluation of Deficiencies in Health Care Delivery to Alaska Natives.

3. Interim Report, Evaluation of Deficiencies in Health Care Delivery to Alaska Natives, Brian J. McMahon, M.D., Catherine V. Fleshman, M.P.H.
APPENDIX

A. PROTOCOLS

1. HTN - ANMC, Tanana, Fairbanks (Hospital or Health Center)
2. HTN - Port Graham (Village Health Clinic)
3. IDA - ANMC (Well Child Clinic)
4. IDA - ANMC (Family Planning Clinic)
5. IDA - Fairbanks
6. IDA - Tanana
7. IDA - Port Graham
8. UTI - ANMC (Prenatal, OPD)
9. UTI - Fairbanks
10. UTI - Tanana

B. HEALTH EDUCATION PAMPHLETS

1. HTN
2. IDA (children)
3. IDA (adults)
4. UTI

C. HEALTH SURVEILLANCE RECORD

1. Ages 0 - 5 Years
2. Ages 6 - 15 Years
3. Ages 16 - 45 Years Males
4. Ages 16 - 45 Years Female
5. Ages 46 Years and Over Male
6. Ages 46 Years and Over Female

D. INTERIM REPORT
1) **Diagnosis:** Three independent blood pressures with systolic greater than 160 or diastolic greater than 90 with cuff that goes at least 2/3 of the way around arm to meet criteria.

2) **Initial evaluation:** By physician preferably - should include:
   a) Medical history: including family history of hypertension, kidney, heart disease, history of birth control pill use, review of systems, endocrine, chest, heart, genitourinary, peripheral vascular.
   b) PE-BP both arms supine and standing, fundi, thyroid, chest, heart, listen for abdominal bruises, peripheral vascular exam, check for edema.
   c) Lab - UA, CBC, chest x-ray, EKG, fasting K+, glucose, cholesterol, triglycerides, BUN, uric acid.
   d) Optional lab.
      1. IVP if:
         a. BUN or UA abnormal.
            b. In young patient especially 15 - 30 year old or any patient with documented recent onset of hypertension.
      2. 24 hour urine metanephrines
         a. In-patient with labile blood pressure, sinus tachycardia, orthostatic drop of 20mm Hg or greater, or fails to achieve blood pressure control (< 160/100) after 2 months of therapy.
      3. Work-up for primary hyperaldosteronism if fasting k< 3.5.

3) **Treatment**
   a) Diastolic 90-100: No drug therapy but follow as treated group. These patients should be treated with low salt diet and exercise, weight loss if necessary, offered health education, either relaxation response or meditation, and taught how to take home BP. Only start on medication if diastolic greater than 100, patient develops left ventricular hypertrophy by Estes criteria on EKG, grade II retinopathy or angina.
   b) Diastolic greater than 100 or systolic greater than 160: All of above treatment modalities plus medication.
4) **Follow-up**

a) Every three months: Blood pressure supine and standing and history taken by paramedical person (pharmacist, nurse, nurse practitioner, physician assistant, health aide.) If on diuretics, K+, glucose and uric acid should be checked three months after therapy begun.

NOTE: Paramedical person should consult with physician if any abnormalities are found on history, PE or lab.

b) Every six months check K+.

c) Every year physician, PA or nurse practitioner should do the following:

A review of systems which should include diet, eyes, endocrine, respiratory, cardiovascular, genitourinary. A physical exam which need only include - fundi, thyroid, chest, heart, peripheral vasculature and check for edema. Yearly lab tests: UA, CBC, BUN, glucose, K+.

d) Every two years do above plus EKG, CXR and uric acid.

5) Formal patient education and counseling using educational and motivational aids initially, with reinforcement annually.
Appendix A3

WELL BABY CLINIC
ANEMIA SCREENING AND FOLLOW-UP

Routine Hgb
@ 6, 12, 18 mos
Chart held for results

Lab slips returned to Specialty Clinic marked "Well Baby" and Wanda places slip inside chart after recording results on PCIS encounter form.

If Hgb below 11 Gm%:
1. Mother called and told to pick up Ferinsol at pharmacy - her next appointment time is reconfirmed.
2. Prescription and follow-up appointment date recorded on PCIS

Mother picks up four months supply of ferinsol at pharmacy

1. Mother returns with child to Well Baby Clinic within 2-3 mos
2. Repeat Hgb lab slip made out

Hgb lab slip with result is our measure of follow-up testing

1. Mother doesn't return with child
2. Mother called, new appointment made

1. Wanda writes down name and number and return date for us. Also insert anemia pamphlet in chart with prescription.
2. Pharmacy fills prescription and gives pamphlet with Ferinsol and pulls the yellow PCIS.
3. Monitor follow-up visit
4. Measure number with successful follow-up treatment
PROPOSED PROTOCOL FOR DIAGNOSIS, TREATMENT AND FOLLOW-UP OF HYPERTENSION PATIENTS

1) Diagnosis: Three independent blood pressures with systolic greater than 160 or diastolic greater than 90 with cuff that goes at least 2/3 of the way around arm to meet criteria.

2) Initial evaluation should include:
   a) Medical history: including family history of hypertension, kidney, heart disease, history of birth control pill use, review of systems, endocrine, chest, heart, genitourinary, peripheral vascular by Public Health Nurse, Community Health Aide and physician.
   b) PE-BP both arms supine and standing, fundi, thyroid, chest, heart, listen for abdominal bruits, peripheral vascular exam, check for edema.

3) Treatment
   a) Diastolic 90-100: No drug therapy but follow as treated group. These patients should be treated with low salt diet and exercise, weight loss if necessary, offered health education, either relaxation response or meditation, and taught how to take home BP.
   b) Diastolic greater than 100 or systolic greater than 160: All of above treatment modalities plus medication.

4) Follow-up
   a) Every three months: Blood pressure supine and standing and history taken by Community Health Aide or Public Health Nurse.
   NOTE: CHA or PHN should consult with physician if any abnormalities are found on history or PE.
   b) Every year physician should do the following:
      A review of systems which should include diet, eyes, endocrine, respiratory, cardiovascular, genitourinary. A physical exam which need only include fundi, thyroid, chest, heart, peripheral vasculature and check for edema.

5) Formal patient education and counseling using educational and motivational aids initially, with reinforcement annually.
Appendix A4

**FAMILY PLANNING CLINIC**

**ANEMIA**

- **Routine Hgb screening**
  - New and annual visit patients

- **Charts (with PCIS encounter form) returned to Chart Room**

- **Lab slips returned to Specialty Clinic marked "Family Planning"**

- **Charts "pulled" from Chart Room. New PCIS form added.**

- **If Hgb below 12 Gm. % Lorraine writes prescription for 3 months, supply of Ferrous Sulfate and Hgb on new PCIS page and calls patient to pick up medication at Pharmacy.**

- **Patient encouraged to return for follow-up on anemia.**

- **Repeat Hgb done at 1 to 2 months.**

1. Lorraine makes return appointment date for follow-up Hgb and records on new PCIS page.

2. Lorraine inserts anemia education pamphlet with return into chart.

3. Pharmacist gives patient pamphlet with medication a pulls yellow PCIS page where we collect.

4. Measure number patients had repeat Hgb done.
HEALTH SURVEILLANCE PROJECT

Anemia Screening, Rx and Follow-up Protocol -

Definitions:

<table>
<thead>
<tr>
<th>Study Group</th>
<th>Babies 6 months – 3 Years</th>
<th>Women 16 – 45 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anemia:</td>
<td>Babies &lt; 11 gm. Hb</td>
<td>Women &lt; 12 gm. Hb</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Who Does</th>
<th>When</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Screen study group</td>
<td>Public Health Nurse (PHN) and Staff Nurse</td>
<td>10/3-11/3</td>
</tr>
<tr>
<td>2. Refer anemias to OPD for evaluation</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>3. Confirmed iron deficiency anemia Rx'd with iron. Appointment for follow-up - 2 months.</td>
<td>Practitioner</td>
<td>&quot;</td>
</tr>
<tr>
<td>4. Counseling reinforced with an anemia education pamphlet.</td>
<td>Pharmacist</td>
<td>&quot;</td>
</tr>
<tr>
<td>5. Patient name, registration number, encounter date recorded, provided to Health Surveillance Project (HSP) monthly.</td>
<td>Pharmacist</td>
<td>&quot;</td>
</tr>
<tr>
<td>6. Follow-up data collected thru PCIS</td>
<td>HSP</td>
<td>1/31/8</td>
</tr>
<tr>
<td>7. Data analyzed, report of findings to Fairbanks</td>
<td>HSP</td>
<td>2/29/8</td>
</tr>
</tbody>
</table>
Anemia Screening, Rx and Follow-up Protocol -

**Definitions:**

**Study Group:**
- Babies 6 months - 3 Years
- Women 16 - 45 Years

**Anemia:**
- Babies - <11 gm. Hb
- Women - <12 gm. Hb

**Procedure**

<table>
<thead>
<tr>
<th>Who Does</th>
<th>When</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Health Nurse (PHN) and Community Health Aide (CHA) screen</td>
<td>10/3-12/3/79</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Refer anemias to OPD for evaluation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Confirmed iron deficiency anemia Rx'd with iron. Appointment for follow-up - 2 months.</td>
<td>Practitioner 10/3-2/3/80</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Counseling reinforced with an anemia education pamphlet.</td>
<td>Pharmacist</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient name, registration number, encounter date recorded, provided to Health Surveillance Project (HSP) monthly.</td>
<td>Pharmacist</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Follow-up data collected thru PCIS/manually</td>
<td>HSP 2/3/80</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Data analyzed, report of findings to Tanana</td>
<td>HSP 2/29/81</td>
</tr>
</tbody>
</table>

Site: Tanana
Date: 10/2/79
**Site:** Port Graham  
**Date:** 10/17/79

---

**HEALTH SURVEILLANCE PROJECT**

**Anemia Screening, Rx and Follow-up Protocol**

**Definitions:**

<table>
<thead>
<tr>
<th>Study Group:</th>
<th>Babies 6 months - 3 Years</th>
<th>Women 16 - 45 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Anemia:</strong></td>
<td>Babies - 11 gm. Hb</td>
<td>Women - 12 gm. Hb</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Who Does</th>
<th>When</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Screen study group.</td>
<td>Community Health Aide/Public Health Nurse</td>
<td>11/14-11/30/79</td>
</tr>
<tr>
<td>2. Obtain consult on anemics from practitioner.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Confirmed iron deficiency anemia Rx'd with iron. Appointment for follow-up - 2 months.</td>
<td>CHA</td>
<td></td>
</tr>
<tr>
<td>4. Counseling reinforced with anemia education pamphlet.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Patient name, registration number, encounter date recorded, provided to Health Surveillance Project (HSP) monthly.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Follow-up data collected in 2 months and reported to HSP.</td>
<td></td>
<td>1/31/80</td>
</tr>
<tr>
<td>7. Data analyzed, report of findings to Port Graham.</td>
<td>HSP</td>
<td>2/29/80</td>
</tr>
</tbody>
</table>
PRENATAL
URINARY TRACT INFECTION
SCREENING AND FOLLOW-UP

First prenatal visit
all patients have
urine specimen sent
for micro-urinalysis

1. If UA shows WBC or
patient is called
and asked to return
for "clean catch"
specimen

2. Specimen cultured

Urine culture positive
(10^5 colony count) 1.
Patient prescribed
medication and returns
to pick up chart and
go to pharmacy

Urine culture negative. 2.
Patient not called

Patient returns for
2 week follow-up.
Urine specimen obtained
and sent for culture

Urine culture positive.
Patient called

Urine culture negative

Diagnostic work-up

1. If culture noted on PCIS
first encounter record
with prescription, pharmacy
will pull third yellow peel
which we pick up.

2. If recorded on "prenatal
flow sheet" we won't know
about patient.
Appendix A8

PROPOSED PROJECT AUDIT

CHART III

If female WBC > 5

1. Patient prescribed
   1. Gantrisin or Ampicillin
   2. x10 days and 2 wk. follow-up appointment scheduled.
   2. Urine goes on to culture.

If female WBC < 5

1. If Male --
2. Further evaluation
3. Urine usually does not get cultured.
4. Usually no sulfa

48 Hour

Culture positive but not sensitive to prescribed medication.
Patient called - new medication to pick up.

If urine cultured

48 Hours

Urine culture
3. Positive Culture.
   1. Patient returns for 2 wk. follow-up and
   2. Pharmacy pulls yellow PCIS page & gives health educator pamphlet.
   3. Project staff collects yellow pages.
   4. Monitor positive cultures.
   5. Monitor return visits.
   6. Number positive follow-up cultures.

Urine culture
3. Negative Culture.
   1. Patient returns for 2 wk. follow-up
   2. OPD for chart and goes to pharmacy.

4. Patient continues on prescribed medication.

Urine Culture
Positive

Diagnostic Workup.

Urine Culture
Negative

If urine culture
3. '10^5 colony count).
Patient continues on prescribed medication.

Patient
returns
for
4. wk. follow-up. Urine specimen obtained and sent for culture.

Urine Culture
Positive

Patient returns approximately 2 wks. and follow-up urine specimen sent for culture.

Urine Culture
Negative

1. Patient prescribed
   1. Gantrisin or Ampicillin
   2. x10 days and 2 wk. follow-up appointment scheduled.
   2. Urine goes on to culture.

48 hr.

Culture positive but not sensitive to prescribed medication.
Patient called - new medication to pick up.

Patient returns to OPD for chart and goes to pharmacy.

Patient returns for 2 wk. follow-up and
**HEALTH SURVEILLANCE PROJECT**

Finalized protocol for Diagnosis, Treatment and Follow-up of Patients with Urinary Tract Infections -

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Who Does</th>
<th>When</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Patient presents with dysuria, etc., and specimen obtained</td>
<td>RN or Practitioner</td>
<td>10/3-11/3</td>
</tr>
<tr>
<td>2. a) If WBC &gt; 5, patient prescribed Gantrisin or Ampicillin X 10 days and 2 week appointment scheduled*</td>
<td>Practitioner</td>
<td>10/3-11/3</td>
</tr>
<tr>
<td>b) Counseling reinforced with a UTI education pamphlet</td>
<td>Pharmacist</td>
<td>10/3-11/3</td>
</tr>
<tr>
<td>c) Patient name, registration number, encounter date recorded, provided to Health Surveillance Project (HSP) monthly.</td>
<td>Pharmacist</td>
<td>10/3-11/3</td>
</tr>
<tr>
<td>d) Urine cultured</td>
<td></td>
<td>10/3-11/3</td>
</tr>
<tr>
<td>3. If urine culture in 48 hours is:</td>
<td></td>
<td>10/3-11/3</td>
</tr>
<tr>
<td>a) Positive - continue meds</td>
<td></td>
<td>10/3-11/3</td>
</tr>
<tr>
<td>b) Positive but not sensitive, recall for medicine change</td>
<td>Practitioner</td>
<td>10/3-11/3</td>
</tr>
<tr>
<td>c) Negative - Discontinue meds</td>
<td>RN or Practitioner</td>
<td>10/3-11/3</td>
</tr>
<tr>
<td>4. Follow-up in 2 weeks, urine cultured</td>
<td>Practitioner</td>
<td>10/3-11/3</td>
</tr>
<tr>
<td>5. If urine culture in 48 hours is: Positive, patient recalled for re-evaluation</td>
<td>RN/Practitioner</td>
<td>10/3-11/3</td>
</tr>
<tr>
<td>6. Follow-up data collected thru PCIS</td>
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<td>7. Data analyzed, report of findings to Fairbanks</td>
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</table>

* It is assumed that no antibiotic, or another antibiotic may be indicated in some specific situations pending culture.
Finalized protocol for Diagnosis, Treatment and Follow-up of Patients with Urinary Tract Infections -

### Procedure

1. Patient presents with dysuria, etc., and specimen obtained
   - Who Does: RN or Practitioner
   - When: 10/3-1/3/80

2. a) If WBC > 5, patient prescribed Gantrisin or Ampicillin X 10 days and 2 week appointment scheduled*
   - Who Does: Practitioner
   - When: 

   b) Counseling reinforced with a UTI education pamphlet
   - Who Does: Pharmacist
   - When: 

   c) Patient name, registration number, encounter date recorded, provided to Health Surveillance Project (HSP) monthly.
   - Who Does: Pharmacist
   - When: 

   d) Urine cultured
   - When: 

3. If urine culture in 72 hours is:
   a) Positive - continue meds
   - When: 

   b) Positive but not sensitive, recall for medicine change
   - Who Does: Practitioner
   - When: 

   c) Negative - Discontinue meds
   - Who Does: RN or Practitioner
   - When: 

4. Follow-up in 2 weeks, urine cultured
   - Who Does: Practitioner
   - When: 

5. If urine culture in 72 hours is: Positive, patient recalled for re-evaluation
   - Who Does: RN/Practitioner
   - When: 

6. Follow-up data collected thru PCIS/manually
   - Who Does: HSP
   - When: 1/31/8

7. Data analyzed, report of findings to Tanana
   - Who Does: HSP
   - When: 2/29/8

* It is assumed that no antibiotic, or another antibiotic may be indicated in specific situations pending culture.
INTERIM REPORT

October, 1978 - July, 1979

of the

Health Surveillance Project

Submitted By:

Brian J. McMahon, M.D.
Catherine V. Fleshman, R.N., M.P.
INTERIM REPORT
October, 1978 - July, 1979
of the
Health Surveillance Project

Submitted By:
Brian J. McMahon, M.D.
Catherine V. Fleshman, R.N., M.P.H.
HEALTH SURVEILLANCE PROJECT

1. Introduction
2. Tracer Methodology and Selection of Tracer Conditions and Sites
3. Tracer Condition of Anemia
4. Tracer Condition of Hypertension
5. (UTI)
6. Health Surveillance Profiles
INTRODUCTION

The Health Surveillance Project is a spin-off from an earlier study conducted in Alaska by Edward Helmick between 1975 and 1977 entitled, "Evaluation of Medical Care Provided to Alaskan Natives," (ref. Helmick, Vol. I, II & III) and as such is a response to some of the data generated by Helmick's work. The Health Surveillance Project (HSP) has as its two main objectives:

(1) further evaluation of the effectiveness, strengths, and weaknesses of the current health care delivery system provided for Alaskan Natives in ambulatory settings.

(2) implementation of improvements in specific aspects of ambulatory care including prevention and intervention.

The methods for working toward these two general objectives may be categorized in two components:

A. Collaborative effort among health providers and health surveillance staff to interject activities within existing clinical systems pursuant to increasing the follow-up care rate for three conditions: hypertension, iron deficiency anemia, and urinary tract infection.

B. Development and implementation of patient-held, age/sex specific health surveillance profiles.

This interim report (July, 1979) serves to document the Project framework and some of the goal-related activities to date. Its purpose is to provide the reader and future investigator with baseline information.
First, an explanation of the tracer methodology for which the three above-named conditions were chosen will be discussed. Following that are sections on each condition within the tracer methodology. The health surveillance profiles component, its rationale and method of implementation, constitutes the last part of this report.
Evaluation of Ambulatory Care Using the Tracer Methodology

The rationale for this Project's attempt at further evaluation of health care provided for in a specific network is best summarized by Kessner, et al.¹

The basic requirements for a pragmatic evaluation method include a statement of the objectives of the program; standards to define quality of care; data on delivered care that can be compared to standards; careful attention to the nature of the measurement units; assessment of the reliability of the analysis; consideration of the cost of the method; and a plan for integrating evaluation into the organization of health services.

The last requirement is most critical. Evaluation can neither assure quality nor improve care unless it is part and parcel of the delivery system, an ongoing agent for change when change is necessary and a tool for educating providers and consumers alike to the strengths and weaknesses of the system.

Patient care evaluation requires a method for measuring the standards sought and is designed according to the mode of health care delivery one wishes to assess. Like Helmick, we are addressing ambulatory health care, and in order to measure the standards of that, we have in part, used the "tracer methodology."

A tracer is well-defined, prevalent health problem with established standards of diagnosis and treatment. Thus in each of the sections that follow on iron deficiency anaemia, hypertension and urinary tract infection, there are distinct definitions of the problem, a standard of intervention, and a method for following up on the outcome of the treatment. The standards are those of empirically based medical practice as incorporated in the assessment and delivery of health care within the Alaska Area Native Health Service, its network of facilities and providers.
By monitoring the degree of intervention, treatment, and follow-up of each tracer condition, one measures the successful accomplishment of the standards and is provided with information on how the health system works. The Health Surveillance Project is focused on part of that system, that is, once a diagnosis of a tracer (iron deficiency anemia, hypertension, urinary tract infection) has been made, to what extent is the prescribed treatment carried out? The Project is not examining rates of disease or even rates of recovery, but rather the rate of the process including the patient's role in following the ambulatory care plan.

Along with measuring medical intervention, "innovative steps" for improving the rates of follow-up care were developed and the monitoring of those designed to overlap with the current evaluation of the system as it now operates. In other words, based on the work of Helmick et al, and our own findings an additional tool would be interjected, itself measured to see if any improvement could be made in the system.
IRON DEFICIENCY ANEMIA

The condition anemia is approached in two ways in the Health Surveillance Project. In the component called "Health Surveillance Profiles" the measurement of hemoglobin (or hematocrit) is used as a screening technique for certain age groups. The rationale for its selection in screening Alaskan Natives will be dealt with in Section VI of this report.

In this section the choice of iron deficiency anemia as a "tracer condition" in evaluating ambulatory health care is addressed.

Iron deficiency anemia is an important health indicator. Its presence often is accompanied by other nutritional inadequacies, and its functional seriousness appears to have adverse effects on growth and development; susceptibility to infections, the learning ability of young children, and the general health status of women during the child-bearing years. Whether one chooses to think of iron deficiency anemia as a preventable and treatable entity in itself, or as part of a syndrome identified with socio-economic inadequacies, is still controversial in medical circles, and is not this Project's mission.

Using the National Academy of Science criteria for low hemoglobin, studies done among United States and European populations indicate that: 10-40% of young children are anemic, 10-60% of pregnant women are anemic, and 10-30% of all menstruating-age women exhibit signs of anemia.* While the amount of health time and dollars which should be spent on screening for anemia is still not settled, it is generally agreed on that 85-90% of anemia is due to iron deficiency, that it is treatable with improved diet and iron supplements, and that epidemiological data showing a high incidence in a defined population justifies ongoing medical intervention and monitoring.

* Buckingham, Frame, Dallman and Elwood
Research done for the Alaska Division of Public Health between 1970 and 1976 showed that among Alaska Natives tested, 21% of the adults and 19% of the children were anemic. Anemia due to iron deficiency, to be more specific, is a problem for Alaskan Natives as identified by the State of Alaska, the Indian Health Service (AANHS), and the Alaska Branch of the Center for Disease Control. In separate studies, Fleshman, Nobman, Margolis and Bender report rates of 20 to 40% anemia in preschool and adolescent groups. Certainly the patterns of anemia incidence found in Alaska call for continual monitoring and intervention, and with all of the interagency work which has been established in anemia care, the condition provides the Project with an excellent tracer for both the urban and rural Project sites.

As an indicator of the quality of medical care, iron deficiency anemia highlights prevention, screening, the utilization of laboratory tests in diagnosis and follow-up, drug therapy, and health counselling. As a tracer condition in evaluating the health care system, it measures health provider (physician, nurse, aide) performance, and health consumer participation.

Pursuing this Project's method of using anemia as a tracer, the objective being to further evaluate and improve the follow-up care for that condition, the system of identifying anemia was studied in the four project sites - Anchorage, Fairbanks, Tanana, and Port Graham. The findings and plan of action specific to Anchorage are presented here.

**Alaska Native Medical Center**
The Alaska Native Medical Center (ANMC) serves as a referral center for the State and provides all levels of health care for Anchorage Area Natives. In order to facilitate the monitoring of specific ambulatory health care services, only patients who resided in the Anchorage area were followed. Department heads and clinical experts were consulted in defining criteria for measuring anemia.
identification and therapy, and for choosing the Center's clinical locations for doing that measuring. After more investigation regarding patient volume and location of screening services, two clinics which have prioritized anemia screening were chosen, the "Well Baby Clinic" and the Family Planning Clinic. The children and women seen in each of these clinics are (a) by epidemiological definition, "at risk" of being anemic, (b) essentially well and attending the hospital clinics for preventive health care.

Much time was spent with each clinic's head nurse and supervisor in observing how the clinics operated, their procedural standards, and their system of follow-up care. In order to outline those systems or networks, their interactions with other departments (laboratory, pharmacy, medical records, patient education, outpatient department) had to be explored and learned. The two systems for screening, treating, and following iron deficiency anemia are found on charts I & II.

Areas in each system where the Project could interject an innovative step toward improving the follow-up care rate were identified in collaboration with the clinics' respective staffs. In consultation with numerous hospital personnel, two anemia education pamphlets were developed and a method of introducing those and utilizing part of the Patient Care Information System (PCIS) Encounter forms was laid out. Meanwhile, in preparation for implementing the "innovative steps," baseline data was gathered as a reference in measuring the effects of the Project's approach.

ANEMIA SCREENING DATA, ANMC

Well Baby Clinic

Well Baby Clinic is one of several pediatric clinics provided at the Medical Center. Depending on the number of days, ANMC schedules eight to ten Well Baby Clinics per month. The clinics are conducted by pediatricians and pediatric nurses and their
CHART I
WELL BABY CLINIC
ANEMIA SCREENING AND FOLLOW-UP

Routine Hgb @ 6, 12, 18 mos
Chart held for results

Lab slips returned to Specialty Clinic marked "Well Baby" and Nurse places slip inside chart after recording results on PCIS encounter form.

If Hgb below 11 Gm%:
A. Mother called and told to pick up Perinsol at pharmacy - her next appointment time is reconfirmed.
B. Prescription and follow-up appointment date recorded on PCIS

C. Mother picks up four months supply of ferinsol at pharmacy

OR

D. Mother returns with child to Well Baby Clinic within 2-3 mos
E. Repeat Hgb lab slip made out

Hgb lab slip with result is our measure of follow-up testing

1. Nurse writes down name and number and return appointment date for us. Also insert anemia pamphlet in chart with prescription.
2. Pharmacy fills prescription and gives pamphlet with ferinsol and pulls the yellow PCIS.
3. Monitor follow-up visits
4. Measure number with successful follow-up treatment
CHART II

FAMILY PLANNING CLINIC
ANEMIA

- Routine Hgb screening new and annual visit patients

- Charts (with PCIS encounter form) returned to Chart Room

- Lab slips returned to Specialty Clinic marked "Family Planning"

- Charts "pulled" from Chart Room. New PCIS form added.

If Hgb below 12 Gm. %, The Nurse writes prescription for 3 months supply of Ferrous Sulfate and Hgb on new PCIS page and calls patient to pick up medication at Pharmacy.

Patient encouraged to return for follow-up on anemia.

Repeat Hgb done at 1 to 2 months.

1. The Nurse makes return appointment date for follow-up Hgb and records on new PCIS page.

2. The Nurse inserts anemia education pamphlet with return date into chart.

3. Pharmacist gives patient pamphlet with medication and pulls yellow PCIS page which we collect.

4. Measure number patients had repeat Hgb done.
purpose is to assess infant growth and development, screen for problems, provide necessary immunizations, and counsel the parents in nutrition, growth and development and so forth. The "babies" range from a few months to about two years old. The standard for measuring hemoglobin level is at 6, 12 and 18 months of age.

A previous audit of 82 children from Anchorage in this age range was conducted in 1976 at ANMC. Anemia was defined as having a hemoglobin below 11 grams percent. The results were:

- At six months of age: 22% anemic
- At 12 months of age: 18% anemic
- At 18 months of age: 6% anemic

In order to provide an idea of the volume of children being seen in the Well Baby Clinics in 1978-1979, some general calculating was done. More than 250 children are scheduled each month. Of those there is an average of 34% "no shows" providing a yield of children seen at 165-200 per month.

Well Baby Clinic Audit

A Well Baby Clinic chart audit was conducted in April, 1979. From the lists of all children scheduled to be seen in that clinic for the month of March 1979, a sample of every third name (including add-ons and broken appointments) was selected with a yield of 104 unduplicated children.

Using the Pediatric Department's standard of measuring hemoglobin at 6, 12 and 18 months we "discarded" the charts of the children who were under 6 months old or over 20 months old, and the two whose families had moved out of Anchorage. This gave us 61 charts, or "61 children eligible for the hemoglobin screening routine." The results as seen on the next page provided us with phase I data, that is of children eligible for screening, how
Well Baby Clinics
ANMC
March, 1979

Of 61 children between 6 and 20 months:

1. 16 (26%) children hemoglobin not tested every 6 months.
   a. Exactly half of these were continual, "did not keep appointment"
   b. The other half were seen by a health provider but still were overdue for hemoglobin testing.

2. 45 (74%) children hemoglobin tested at appropriate 6 month intervals.
   a. 42 hemoglobin results recorded in chart:
      1. 35 (at or above 11 gm%) were normal
      * 2. 5 had hemoglobins below 11 gm% and were prescribed iron supplement
      * 3. 2 had hemoglobins below 11 gm% and were not prescribed iron (and documented as physician's decision)
   b. 3 had hemoglobin tests ordered but the results could not be found in the chart

* Reaudit these childrens' charts in September, 1979
many were screened, were seen, and had low hemoglobins. Phase II of this baseline data would be to again audit the charts of the seven children from this sample who had the identified low hemoglobins in March, and document the follow-up care provided. That re-auditing, as indicated, would take place in September 1979, allowing the outside time period in which the ANMC follow-up is called for.

Meanwhile, as the March-April anemia audits's purpose was that of providing baseline data, a July, 1979 date was set for implementing the Project's innovative steps in the Well Baby anemia screening system. Those steps are laid out on Chart I.
When the time comes to evaluate the data generated by tracing the anemia baseline information from Well Baby Clinic a number of factors need to be kept in mind:

1. Pediatric patients seen in any particular ambulatory care setting are not necessarily representative of the child population as a whole. In the case of the Well Baby Clinic in Anchorage, a select group of children are captured - by age, by reason for being seen, by scheduling technique, by accessibility to other health providers, and so forth.

2. Of all of the children under two who are seen at ANMC, a certain percent at any one time will be experiencing one of the medical problems common to early childhood (otitus media, feeding problems, diarrhea, upper respiratory infection) and consequently will be scheduled for, or referred to, another one of the pediatric clinics.

3. The investigator will need to define which parameters of care he/she wishes to use as indicators of a "successful rate of follow-up." Our choice, for example, would be to not confound the aggregates with patients/parents who habitually fail to keep appointments and thus are not available for screening. At the same time, while not including these people in the final follow-up rate, it would be beneficial to keep a running tally of the numbers of patients who have "dropped out" of the system.

4. The March-April audit was done using the Well Baby Clinic's standards and definitions, i.e., times at
which hemoglobin is tested, cut-off point for laboratory results, and full recognition of the physician's discretion in not prescribing iron supplement for "border-line" anemia, and/or adjusting the date of the follow-up appointment.

5. The description of Well Baby Clinic's method of screening for and treating iron deficiency is that of a well-defined system. Not all ambulatory care facilities, by any means, have such a system, nor do all health providers prioritize anemia in their organization.

6. The baseline information and method of carrying out the Project's "innovative" part are both set up for measuring and documenting the amount and type of follow-up care provided. The study is not measuring degrees of anemia, rate of anemia, response to therapy, or any of the other clinical manifestations of the diagnosis. The purpose is to evaluate the system, that is, the provider performance and the consumer participation.

The plan for the three other Project sites (Port Graham, Tanana and Fairbanks) is to measure and evaluate the same parameters of anemia care by "plugging into" the respective systems in those places. The method for doing that has been set up.