

A survey of Indian children in 1957 revealed a number of conditions. The findings point to the need for further action, both in terms of investigation and therapy. Emphasis is placed on the need for education.

REPORT OF PEDIATRIC EVALUATIONS OF A SAMPLE OF INDIAN CHILDREN—WIND RIVER INDIAN RESERVATION, 1957

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Program Planning

THE WIND RIVER Indian Reservation in central Wyoming covers 2,000,000 acres. There are 3,589 Indians living on it; 1,382 are members of the Shoshone and 1,977 of the Arapahoe tribes. About 230 Indians of other tribes and an undetermined number of white families are also residents on the reservation. The Indian population is relatively highly cultured with a rather low illiteracy and indigency rate. Children of school age attend county schools along with the non-Indian population. The tribal government consists of a joint Arapahoe and Shoshone 12-member business council representing the various geographical sections of the reservation. Since 1952, a tribal Board of Health consisting of six members of the business council has been functioning.

During the fall of 1956, the Sub-Area Medical Officer, Division of Indian Health, Billings, Mont., was approached by members of the Joint Tribal Council Board of Health who asked that a multiple screening program of blood testing, chest x-rays, and diabetes screening be offered to the reservation. The assistance of the Denver Regional Office staff

of the Department of Health, Education and Welfare, Public Health Service, and Children's Bureau was requested, and the survey was set for the fall of 1957.

Meetings were held with members of the Billings Sub-Area Office, Division of Indian Health Service staff, representatives of the Wyoming State Department of Health and of the Regional Offices of both the Children's Bureau and Public Health Service, Denver, Colo. General areas of responsibility, amounts and types of contribution to the project, and assignment of personnel from all agencies were agreed upon, with coordination and direction of the over-all project assigned to personnel in the Division of Special Health Services, Public Health Service, Denver. Later, at a meeting of representatives of these agencies with the Joint Tribal Council at Wind River, the council approved the program and members of the Regional Office Special Health Services staff were designated to meet with the Joint Tribal Council Board of Health to discuss details of organization.

Printed material, radio and newspaper publicity were the media adopted for public promotion of the survey. At the request of the Tribal Council Board of

Health, each council member was responsible for preregistering persons living in his district, as had been done successfully during a previous tuberculosis survey. At the time of preregistration, a pamphlet describing the nature of the examinations, the date and hours of operation, and the location of the testing centers was given to each person for whom a registration card was prepared. Pamphlets were also given to each school child to take home. The two radio stations in the area were most generous in providing spot announcements. The Lander, Wyo., newspaper also provided several news items on the program.

Due to the nature of the examinations offered, it was decided to have testing centers at only two locations, Fort Washakie Clinic and Arapahoe Clinic which were readily accessible to an estimated 60 per cent of the reservation population. The adult (12 years of age and older) examination included chest x-ray for tuberculosis, heart disease and other chest pathology, blood tests for syphilis and diabetes, a rough hemoglobin test, physical inspection of male genitalia, and a height and weight check. All school children 6-12 were offered a chest x-ray.*

It was agreed that a complete and thorough, individualized pediatric evaluation of the children by board-qualified pediatricians, which included the social and emotional aspects of the child and his family, would be of most value to the Indian families and children. It would have greater validity in future program planning for them because the resulting data would not have the limitations of prior assumptions of morbidity on which a screening examination alone would be based. The sound health educational values would be greater than those in a multiple screening program

* The results of these portions of the program are available from the Denver Regional Office of the U. S. Public Health Service.

for children. In addition to this complete pediatric evaluation, it was decided that the examination of selected children from 0-12 years of age would include chest x-ray, detailed blood examinations, serological tests for syphilis, rectal tapes for pinworm infestation, and stool examinations for other pathogens. Also considered essential was an explanation to the family of the findings as well as follow-up for correction of the problems or abnormalities found. This series of pediatric evaluations is the subject of this paper.

Method

The number of pediatricians available in the 11 days' time allotted for the health survey of the Wind River Indians did not permit complete pediatric evaluations of all children on the reservation. It was decided, therefore, to limit the evaluations to children 12 years of age or under, to examine children by family units, and to select the families in a random fashion from each of the school census rolls in order to obtain a similar distribution between tribes and by geographical location. Two pediatricians were available for six working hours on each of the 11 days, with an additional pediatrician for laboratory work and as an "emergency replacement." It was estimated that since some history data would be available from clinic and social service records at the time of the examination, additional pertinent data could be obtained and complete pediatric evaluation would then be possible for approximately 250 children. Since the average family was estimated to have three to four children under 12 years of age, 70 families were to be offered the pediatric evaluations. The families were chosen by selecting every fifth name on the school census rolls until 70 families were selected. Sixty families appeared for the evaluations.

The public health nurse assigned to

the Wind River Health Unit then personally contacted each of the families to give them an appointment for the evaluation and to explain what they could expect from the experience. This individualized, meaningful contact undoubtedly accounted for the excellent cooperation and acceptance by the families. The same public health nurse then reviewed the Wind River Health Unit medical records for any pertinent history which she recorded prior to the time of the survey. In addition the social service worker assigned to the Wind River Reservation included on the record any information which she had prior to the survey.

Seven pediatricians, all of whom were board certified or board eligible, participated in the examinations. One of these, a hematologist, was present throughout the entire period to lend continuity. He drew all the blood samples, calculated all the height and weight percentiles and assisted periodically in the examinations. Each physician recorded the pediatric history and the examination findings on a form especially prepared for this purpose by the Wyoming Health Department, the Children's Bureau, and the Public Health Service.

Much of the material from the charts, including the laboratory work, was coded and transferred to IBM cards from which tables were prepared. However, a great deal of the material included in the results was derived from a review of each chart by a pediatrician (Children's Bureau regional medical director) in order to verify opinions, diagnoses, and recommendations which required medical judgment. The charts were also reviewed by the Children's Bureau regional nursing consultant and regional medical social consultant for pertinent findings which appear in the results.

The preplanned follow-up with the families on the results of the examina-

tions was carried out by the Wind River Health Unit.

Results

Characteristics of the children and their families: Distribution by age, sex, and tribe—Two hundred and fourteen children, aged 12 years and under, representing 60 families, received the pediatric evaluations. (It is estimated that there were about 1,400 children from both the Arapahoe and Shoshone tribes on the Wind River Reservation in September, 1957; 58 per cent of these were of the Arapahoe tribe, 40 per cent of the Shoshone tribe, and 2 per cent from other tribes.) Table 1 shows that the age distribution among the 214 children was remarkably similar with one-half of the children six years and under, the median age being six and one-half years. The sex distribution was approximately

Table 1—Age Distribution*

	Number	Per cent
Under 1 year	14	6.5
1 to 2 years	9	4.2
2 to 3 years	13	6.1
3 to 4 years	13	6.1
4 to 5 years	12	5.6
5 to 6 years	14	6.5
6 to 7 years	19	8.9
7 to 8 years	23	10.7
8 to 9 years	19	8.9
9 to 10 years	23	10.7
10 to 11 years	20	9.3
11 to 12 years	22	10.3
12 to 13 years	13	6.1
Total	214	99.9

* Age distribution was very similar in each tribe. Median age was 6½ years.

Sex distribution was very similar in each tribe, about an equal number of each sex.

Fifty per cent were Shoshones, 48.6 per cent Arapahoes, and 1.4 per cent from "other tribes."

equal in both tribes as is the case in the general Wind River population. Fifty per cent of the sample were of the Shoshone tribe, 48.6 per cent Arapahoes and 1.4 per cent from "other tribes"; there were, therefore, more Shoshone children in the sample than in the general Wind River population.

Family characteristics—The largest number of children in this age group brought in for pediatric evaluation from one family was nine. The majority of families brought in two or three children (14 families brought in three and 15 families brought in two).

According to the information obtained at the time of the survey only 19 of these 214 children, representing nine of the 60 families, were living with persons other than their parents. Fifteen children (representing five families) were living with grandparents; three children (from three families) were listed as "adopted," two adopted by grandparents and one child living with foster parents.

In six of the 60 families, an adult member, who was directly or indirectly responsible for child care, had an illness or condition that could be considered significant as a health hazard (existing or potential) to the children in the family, or that was of such nature that it could influence the quality of care given to the children. For example, a mother of three children had a diagnosed gastric ulcer with anxiety neurosis for whom psychiatric treatment was recommended but not secured. In another family, there was a father with active tuberculosis, who had been in and out of a tuberculosis sanitarium, usually leaving "against medical advice"; there were also three other families with untreated tuberculosis in the household.

Accuracy of the information received by the pediatricians—For the most part, the medical and social backgrounds of the families had been obtained over a period of time by professional people working with the Indian children and

their families. However, each pediatrician was asked to estimate the reliability of the information secured about each child during his own interview with the relatives and the children. These were recorded as poor, fair, or good. For 37 per cent of the children the accuracy of the information was considered good, for 41 per cent fair, and poor for 21 per cent (only two cases or 1 per cent had no data as to reliability). Although the examining physicians considered the information supplied by members of the Shoshone tribe to be less reliable on the whole than that from the Arapahoe tribal members, the Shoshone Indians as a group are considered to be less communicative and, by our standards, more "shy." This fact undoubtedly accounts for the discrepancy, but it is an important cultural factor to be considered in obtaining a complete and valid pediatric history. At the same time, the fact that non-Indian doctors could obtain a "fair" to "good" history on 78 per cent of the children in an Indian population makes this "sine qua non" of a pediatric evaluation a worth-while inclusion.

Relatives accompanying the children during the examination—All children were accompanied by an adult during the pediatric evaluation. Sixty-seven per cent were accompanied by the mother only; 25 per cent by both parents, 3 per cent by the father only, and 5 per cent by some other relative or guardian. Among children of the Shoshone tribe there were a few more who were accompanied by both parents and a few more accompanied by other relatives or guardians than among the Arapahoes. This family participation was one of the most valuable results of the evaluation and planning it as an integral part of future programs is valid. Furthermore, a successful method of making a meaningful contact with the adult population is suggested.

Analysis of the findings of the pediatric evaluations: Height and weight

percentiles—Table 2 shows the distribution of the height and weight percentiles obtained on the children by sex and by tribe. The percentile charts used were from the Colorado State Health Department and are a composite of those compiled in various parts of the country. This table shows that in both sexes of both tribes, the Indian children are similar in weight to those from which the percentile tables were made. However, in height these children are considerably smaller, the median height falling between the 25th and 29th percentiles. The females of both tribes appear to be somewhat lower in both height and weight for their ages than non-Indian children, in that the median percentiles were between the 40th and the 44th. The males of both tribes were similar in weight to non-Indian children but were smaller in stature, with the median height between the 30th and 34th percentiles. Probably of more significance is the fact that the children from the Arapahoe tribe are very similar in their height and weight development

to non-Indian children: the median for weight was between the 50th and 54th percentile and the median for height between the 45th and 49th percentiles. On the other hand, the Shoshone children appear to be considerably smaller and also slightly lighter than non-Indian children since the median for height fell in the 15th to 19th percentile and that for weight in the 40th to 44th. In examining the sex distribution of this difference among the Shoshone children, it was found that the majority of those falling in the lower percentiles were males although the difference in number did not appear to be of much significance. In summary, then, the Arapahoe Indian children appear to be of similar height and weight to non-Indian children but the Shoshone group are considerably shorter and weigh somewhat less than their non-Indian counterparts. The presently available height and weight growth charts should therefore be used with some caution; more dependence being placed on the individual's own rate of growth than on comparing him with the

Table 2—Number of Children with Specified Height and Weight Percentiles

Percentile	Both Tribes*				Both Sexes		Arapahoe Both Sexes		Shoshone Both Sexes	
	Male		Female		Weight	Height	Weight	Height	Weight	Height
No data	4	9	10	14	14	22	4	8	10	14
5-9	-	-	1	-	1	-	1	-	-	-
10-24	23	48	22	35	45	83	21	25	22	55
25-49	29	25	21	19	50	44	25	25	24	18
50-74	27	17	25	23	52	40	27	23	25	17
75-89	14	5	9	11	23	16	11	14	12	2
90-94	12	5	17	4	29	9	15	8	14	1
Total number with data	105	100	95	92	200	192	100	95	97	93
Total children	109		105		214		104		107	
Median percentile	50-54	30-34	40-44	40-44	45-49	25-29	50-54	45-49	40-44	15-19

* Includes three females from "other tribes."

Medical needs—Table 4 gives in some detail the diagnoses which were determined through the pediatric examination and the history, with the exception of diagnoses relating to intestinal parasites and to dental problems. Only those diagnoses which require treatment or follow-up were recorded here. There were 106 children with 178 diagnoses. The number one reason for recommending medical follow-up was otitis media. The majority of these were chronic and without perforation. There were 37 children with either chronic or acute otitis media, of whom 13 (35 per cent) had a possible, and three (8 per cent) a definite hearing loss. The second most prevalent problem was visual defects which included abnormal vision as well as obvious strabismus. There were 19 orthopedic abnormalities excluding congenital abnormalities of the bones or muscles, of which 12 were diagnosed as knock-knee and pronated ankles severe enough to require treatment. It was of interest that among these 214 children there was only one congenital dislocation of the hip, which had already been corrected, in contrast with the high prevalence of this congenital abnormality among the Navajo Indians. Of the cases of congenital heart disease found, there was one patent ductus arteriosus which had been corrected but there were two possible interventricular septal defects. There appeared to be a suggestively high incidence of convulsive disorders as presented by the history, five (2.3 per cent) having been noted. Although three of these were considered to be "febrile" in character, they certainly deserve further investigation. Among the metabolic, nutritional, or endocrine disorders, there were seven children whose obesity was severe enough to require some therapy. It was also of interest that cryptorchidism was present in four children.

There were 16 children who had infections other than intestinal parasites, otitis media, or tonsillitis: seven of these

cases were skin infections, all but one of which were apparently amenable to treatment. Of significance here is the low incidence of apparent conjunctivitis and possible trachoma.

The incidence of congenital abnormalities is also of interest in that there were seven children with a definite congenital abnormality and two with possible congenital heart disease (the findings as recorded in the charts lead one to believe these were more probable than possible cases). Nine children out of 214 gives an incidence of 4.2 per cent.

There were 18 "other" positive medical findings of varying nature, two of these being probable mental retardation.

The pediatricians were asked to give an impression of the intelligence of the children at the close of their examination. We realize that this may well be very inaccurate because of the difference in cultural backgrounds, but most of the pediatricians made their estimation on physical and emotional responses rather than on verbal ones. They were asked to judge whether the child was low, average, or above average. An evaluation was given for 189 of the 214 children. Of these, 148 were considered to be average, 15 above average, and 16 low. On such a gross evaluation as this, these findings would seem to be comparable to those found in a non-Indian population. It was of interest that the distribution by age showed no remarkable variation, which lends validity to the findings. The distribution between tribes and between sexes was remarkably similar.

Although not considered an abnormality, it was remarkable how few functional murmurs were noted. Only 14 were reported, an unusually low incidence. It may be observed, however, that in one case, although designated as a functional murmur with the description certainly fitting one, the x-ray of the heart indicated an abnormal size and shape.

Table 4—Diagnoses Determined by Pediatric Examination and History (Excepting Intestinal Parasites and Dental Problems) Requiring Treatment or Follow-Up (106 Children with 178 Diagnoses)

1. Ear and Hearing Problems	64	
Otitis Media	37	
With perforation	6	(1 with possible mastoiditis)
W/out perforation	22	
With tonsillitis	9	
Hearing loss	26	
Possible	13	
Definite	3	
2. Visual Defects (including myopia, strabismus)	23	
Uncorrected	16	
Corrected but requiring follow-up	7	
3. Orthopedic abnormalities (other than congenital abnormalities)	19	
Knock-knee and pronated ankles	12	
Pronated ankles alone	2	
Multiple muscle and bone abnormalities	1	
Spastic quadriplegia (post encephalitic)	1	
Tibial torsion and internal rotation of hip	1	(with possible postinfection of knee)
Bowed legs	1	(1½ years of age)
Possible rickets	1	(2½ years of age)
4. Congenital Abnormalities	9	
Congenital heart disease	3	
Definite (patent ductus arteriosus)	1	(corrected)
Possible (IVSD)	2	
Urinary tract abnormality	2	
Phimosis	1	
Congenital stenosis external meatus	1	
Absence of external auditory canal	1	
Hammer toes	1	
Syndactylism	1	
Congenital dislocation of hip	1	(corrected)
5. Infections (Other than intestinal parasites, otitis media with and without tonsillitis)	16	
Skin infections	7	
Ringworm	3	
Pyoderma	1	
Scabies (possible)	2	
Dermatitis, unknown cause	1	
Tonsillitis	3	
Possible pulmonary infection	2	
Possible bronchiectasis	1	
Possible pneumonitis	1	

Table 4—Diagnoses Determined by Pediatric Examination and History (Excepting Intestinal Parasites and Dental Problems) Requiring Treatment or Follow-Up (106 Children with 178 Diagnoses)—continued

Infections (Cont.)		
Vaginitis	2	(1 with parasites)
Conjunctivitis	1	
Urinary infection (possible)	1	
6. Metabolic and/or Nutritional, Endocrine Disorders	16	
Obesity	7	
Cryptorchidism	4	
Malnutrition	2	
Possible precocious sexual development	1	
Underdeveloped genitalia	1	
Possible prediabetic	1	(see Table 5 on Medical Findings from Charts)
7. Convulsive Disorders	5	(one 1½ years, one 9 years, 3 history of "febrile")
8. Chest X-ray Abnormalities	8	
Possible cardiac abnormality	4	(3 with normal physical findings)
Possible tuberculosis	3	(1 "urgent follow-up")
Mediastinal mass	1	
9. Other Abnormalities	18	
Enuresis	3	
History of acute rheumatic fever	3	(2 very doubtful)
Allergic rhinitis	2	
Probable mental retardation	2	(1 with hearing loss to be ruled out)
Inguinal hernia	2	
Umbilical hernia	1	
Ecchymosis	1	
Emotional immaturity	1	
Possible premature closure of cranial sutures	1	
Extremely poor hygiene	1	
Possible ataxia	1	
Functional murmurs	14	(1 with x-ray abnormality of heart)

Table 5 indicates some rather interesting findings which were obtained from the histories in the charts and are in addition to diagnoses obtained from the pediatric examination and history. The information related to the child examined, and indicated that there were an additional six children with a history of otitis media whose ear drums could not be visualized. There were also eight children who had had recurrent diarrhea significant enough to be noted in the chart (most of these required hospitalization or repeated medical care).

Probably of more interest were medical findings in the family history which were of significance for the children. There were three families in which there was a history of the mother having had babies of high birth weight (eight lbs or over). Since this has been shown to indicate a possible prediabetic mother and therefore possibly prediabetic children, follow-up is indicated. In another family both parents had been diagnosed as diabetic and the children, therefore, require close follow-up. In two families there was a history of rheumatic fever

Table 5—Medical Findings Obtained from Histories in the Charts (in Addition to Diagnosis from Pediatric Examination and History)

History of Significance in the Child Examined:	
Premature birth	6 children
Recurrent diarrhea	8 children
Malnutrition treated in hospital	2 children
History of earaches, running ears, ears not visualized because of cerumen	6 children
Untreated conjunctivitis	2 children
“Boils”	1 child
“Twitching”	1 child
History in the Family of Significance to the Children:	
History of mother having babies of high birth weight (8 lbs or over) (Family No. 39—2 children examined; B.W.: 9 lb and 10 lb 11 oz) (Family No. 47—6 children examined; B.W.: 9 lb 15 oz, 8 lb, 10½ lb, over 8 lb) (Family No. 57—5 children examined; B.W.: 11 lb, 8 lb, 9 lb)	3 families
Both parents diabetic, 4 children not checked for diabetes	1 family (Family No. 44)
History of rheumatic fever in family	2 families
Mother of 4 children recently treated for rheumatic heart disease (Family No. 32) 11-year sibling died 1944 of rheumatic fever	
Unusual number of deaths of siblings	2 families (One with 4, one with 5, not all known causes)
Mother with unusually high perinatal losses apparently due to congenital abnormalities	1 family
Untreated tuberculosis in household with possible or probable exposure ..	4 families

which appeared to be definite. There were three families in which intensive prenatal care seemed indicated merely from the history; in two families there were an unusual number of deaths of siblings of the child examined—not all of the causes of which were known; in another the mother had what appeared to be an unusually high perinatal loss, due apparently to congenital abnormalities. It is of interest that in nine out of 70 families, examination of the family chart alone proved significant in finding potential cases for preventive medical care.

Only six of the parent-doctor interviews revealed problems of emotional significance—one child was described as

having “temper tantrums”; one as being “nervous” (11½-year-old girl); three children from different families had enuresis; and one three-year-old was described as a “breath holder.” In view of some of the apparent family social problems this seems remarkably low, and may well be due to communication based on a one-time contact.

Dental needs—Table 6 was tabulated by a different method than was Table 3 but indicates a similar number of children requiring dental care, that is 135. It is of interest how equally distributed these are with respect to both tribe and sex. Most of these dental needs were related to dental caries, but many notations were made of serious malocclusion.

Since these examinations were done by pediatricians and not dentists, the incidence of malocclusion was not considered valid enough to tabulate. A special follow-up program of family dental care by the Indian Health Service on the reservation for these children has been remarkably successful.

Immunization needs—Table 7 indicates the number of children with a history of previous immunization for specified diseases by age. The immunization of this group of children is alarmingly low considering that only 53 per cent have had complete DPT immunization and only 36 per cent are protected against smallpox. This child population group is also inadequately protected against poliomyelitis (the discrepancy between this table and Table 3 is that smallpox vaccination alone as a need was not considered in Table 3, but the

need for boosters for DPT was tabulated). Of particular significance is the high number of preschool age children with either only partial or lacking DPT immunization.

Intestinal parasitic infections—Examinations of stool specimens and rectal tapes were made by an experienced parasitologist. Two hundred and twelve rectal tapes and 70 stool specimens were examined; 21.2 per cent of all the children were found to have pinworm ova. (This represented 16.5 per cent of the Arapahoe children and 23.6 per cent of the Shoshone children.) The majority of these in both tribes were in the five-to-nine-year-age group. The type of parasites found by stool analysis is presented in Table 8; 20 per cent of the children had pathogenic intestinal parasites. The majority of these were among children of the Arapahoe tribe. Among this group the numbers in the preschool age and in the school age groups seemed to be equal in contrast to the larger number of school age Shoshone children.

Other laboratory findings — Hemoglobin values were obtained on 199 of the children and contrary to what was expected, only seven were below ten milligrams per cent. The median values and the distribution in each tribe by sex were essentially the same.

Hematocrit determinations were done on 195 children. The distribution of corpuscular value per cent was essentially normal, with the median value 390 per cent. Again the distribution by sex and between the two tribes was essentially similar. Only two children were found to have abnormal hemoglobin type, in both cases hemoglobin-D. They were brothers whose racial inheritance was considerably mixed with groups other than Indian, so that the significance of the finding is doubtful.*

* By Dr. John H. Githens, associate professor, and Dr. Henry Knock, former research fellow, University of Colorado Department of Pediatrics.

Table 6—The Need for Dental Care Among Children Given Pediatric Examinations, by Tribe and Sex

Tribe and Sex	Recommendations	
	Not Needed	Care Recommended
Arapahoe		
Total	41	63
Male	23	29
Female	18	34
Shoshone		
Total	38	69
Male	20	37
Female	18	32
Other Tribes		
Total	—	3
Male	—	—
Female	—	3
All Tribes		
Total	79	135
Male	42	66
Female	36	69

Table 7—Number of Children with History of Previous Immunization for Specified Diseases by Age

Kind of Immunization	Less than 1 year	1	2	3	4	5	6	7	8	9	10	11	12	All Ages
DPT														
Completed	1	3	3	5	7	10	10	15	10	15	15	13	7	114
Partial	2	2	4	4	2	2	6	5	5	4	0	5	2	43
Not done	11	3	6	4	3	2	3	3	4	4	5	4	4	56
Smallpox														
Done	0	1	3	5	4	5	6	8	7	9	10	13	8	79
Not done	14	8	10	8	9	9	13	15	12	14	10	9	9	135
Poliomyelitis														
Completed	0	1	2	3	3	6	5	10	6	12	13	10	2	72
Partial	0	2	4	5	4	4	10	10	6	6	7	6	5	69
Not done	14	6	7	5	6	4	4	3	7	5	0	6	6	73
Rocky Mountain Spotted Fever														
Done	0	1	—	1	2	4	7	16	15	17	18	18	8	107
Not done	14	8	13	12	10	10	12	7	4	6	2	4	5	107

Serum protein values obtained by electrophoresis on these children showed a remarkable similarity, although there were a few significant deviations. However, more normal values must be obtained before conclusions relating the serum protein values and infections can be reached. The results of this study are to be published later.*

Table 4 showed the results of the chest x-rays. There were eight apparent abnormalities found, three of which were possible tuberculosis (one of these was considered to be severe enough for "urgent follow-up"), four were considered to have possible cardiac abnormalities although three of these had normal physical findings (one of these was the case, who, on physical examination, was said to have had a "functional murmur"). One child showed a mediastinal mass.

* By Dr. Donough O'Brien, assistant professor, University of Colorado Department of Pediatrics.

Summary and Recommendations

The cooperation of the Indian families and children of the Wind River Indian Reservation was remarkably good. Their eagerness for pediatric evaluations was evidenced by the response to the services offered.

In general, their problems seemed to be similar to those of non-Indian groups of similar socioeconomic status. One of their great needs is assistance with their social problems. Despite the high prevalence of such difficulties, there were fewer emotional problems in the children as described by the parents than one might expect. It is possible, however, that more intensive medical social work with these families will bring out problems which were not evident during these evaluations.

One of the greatest needs of this group of children is dental care. This is true in spite of the fact that dental care has been available to them for some time

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in the clinic on the reservation. Probably, as with non-Indian families, what is necessary is education on the need for early and frequent dental care with much emphasis on prevention of dental caries. (The high potential for success has been borne out by the current dental care follow-up program.) The next most pressing problem appears to be that of well-child supervision as evidenced by the low level of immunization of the population. The hemoglobin and hematocrit determinations would indicate that the nutritional status of these children is fairly good. It would be helpful to have some indication of the

ascorbic acid levels among these children because of the high incidence of upper respiratory infections. The serum protein findings may, in the future, prove to be very pertinent to this. Abnormal hemoglobin types do not appear to occur to any significant degree in these tribes.

The greatest medical need concerns the large number of cases of otitis media. This is no doubt dependent on the prevention and prompt treatment of upper respiratory infections, which in turn involves health education regarding the need for early treatment of such illness. As already indicated, a more

Table 8—Type of Parasites Found by Stool Analysis—Total Specimens Examined and Parasites Found by Tribe and Age

Tribe	All Ages		Age Group			
	Number	Per cent	Under 1	1-4	5-9	10-14
Total Specimens Examined	70	100.0	5	20	29	16
Pathogenic Parasites	14	20.0	1	7	6	-
Endamoeba histolytica	3		-	1	2	-
Giardia lamblia	11		1	6	4	-
Nonpathogenic Parasites	17	24.3	-	6	5	6
Endamoeba coli	10		-	4	3	3
Endolimax nana	4		-	1	1	2
Chilomastix mesnili	2		-	1	-	1
Iodamoeba buetschlii	1		-	-	1	-
Arapahoe—Specimens Examined	40	100.0	3	15	16	6
Pathogenic Parasites	12	30.0	1	6	5	-
Endamoeba histolytica	3		-	1	2	-
Giardia lamblia	9		1	5	3	-
Nonpathogenic Parasites	12	30.0	-	5	2	5
Endamoeba coli	7		-	4	1	2
Endolimax nana	4		-	1	1	2
Chilomastix mesnili	1		-	-	-	1
Shoshone—Specimens Examined	30	100.0	2	5	13	10
Pathogenic Parasites	2	6.7	-	1	1	-
Giardia lamblia	2		-	1	1	-
Nonpathogenic Parasites	5	16.7	-	1	3	1
Endamoeba coli	3		-	-	2	1
Chilomastix mesnili	1		-	1	-	-
Iodamoeba buetschlii	1		-	-	1	-

Table 9—Hemoglobin Values, by Age*

Age in Years	Number Tested	Number Below 10 mg Per cent
Less than 1 year	10	1
1	9	3
2	11	—
3	13	—
4	11	—
5	14	—
6	18	1
7	22	—
8	18	1
9	20	—
10	18	—
11	21	1
12	13	—
All Ages	199	7

NOTE: Blood pressure was taken on 183 of the 214 children. None were found to be abnormal.

* The distribution was essentially the same in each tribe and for each sex.

detailed analysis of nutritional status may be of significance in the incidence of these infections.

Visual defects which are uncorrected are also relatively high and probably require more emphasis on the preschool-age period.

The high incidence of pathogenic parasitic infection requires special attention particularly because of its secondary effects on nutrition and the effect on the potential for growth in children.

In general, the children appear to be somewhat shorter than their non-Indian counterparts. This is particularly evi-

dent among the Shoshones who are slightly lighter and considerably shorter than non-Indian children. This would indicate that individualization of growth history will be necessary until such time as some comparable findings are made for the individual tribal height and weight growth curves.

Time spent in reviewing previous medical, nursing, and social service findings is a valuable and productive prelude to evaluation as well as a good case-finding method for preventive medical care.

This method of selecting children for a sample appears to be excellent. Similarly, the method of obtaining acceptance and cooperation of the Indian families is a successful one. The method of obtaining an overview of the problems of the Indian groups is also productive. It may be that, by offering similar complete evaluation and follow-up services to other groups, entree can be gained to adults for determination of their problems and for enlisting their cooperation in health programs.

ACKNOWLEDGMENTS — All laboratory work was performed by the University of Colorado School of Medicine, Department of Pediatrics: Dr. Donough O'Brien, assistant professor; Dr. John H. Githens, associate professor; Dr. Henry Knock, former research fellow. Department of Microbiology: Robert Samuels, Ph.D., assistant professor. The planning direction and analysis of the over-all program was done in conjunction with Public Health Service, Region VIII, Denver, Colo.: Dr. Robert Hansen, chief, special health services; William D. Shaw, health program representative; Florence Kehr, public health advisor. Sub-Area Office, Division of Indian Health, Billings, Mont.: Dr. Charles McCammon, area medical officer; and with the Wyoming State Health Department: Dr. Franklin D. Yoder, director.

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This paper was presented before the Maternal and Child Health Section of the American Public Health Association at the Eighty-Sixth Annual Meeting in St. Louis, Mo., October 29, 1958.