Training for Village Health Aides in the Kotzebue Area of Alaska

THOMAS J. HARRISON, M.D.

IN THE ESKIMO CULTURE, as well as in other awakening cultures of the world, there is an increasing ambition to attain a higher standard of living and health. Frequently, these aims are thwarted by preventable disease and death. Medical science has developed cures and preventives for many major afflictions but has had limited success with the management and distribution of medical and public health skills. In almost all areas of the world there is a dearth of professional medical personnel, and with an increasing population this shortage is becoming more acute.

To spread the effectiveness of the existing professionally trained personnel—physicians, nurses, and public health specialists—the Public Health Service has increasingly used subprofessional health aides in their own Alaska villages. Their duties vary with the geography, culture, socio-governmental levels, and the medical sophistication of their particular area.

In an attempt to promote an active community health organization, to raise the general health sophistication of the villages, to provide health resource personnel on a subprofessional level, and to provide adequate first aid treatment in inaccessible areas, the Public Health Service has initiated a program that offers a formal training course in basic medical knowledge and treatment to a competent permanent resident in each village.

Dr. Harrison was service unit director of the Public Health Service Alaska Native Hospital in Kotzebue. He is now a resident in ophthalmology at Los Angeles County Hospital, Los Angeles, Calif.

This is a preliminary report of the first two experimental training sessions, held in Kotzebue in February and May 1964. To understand the need for such a program and the framework within which it will operate, it is necessary to be cognizant of the basic environmental living conditions of the Kotzebue area.

Kotzebue Area

Geography. The Kotzebue area is composed of 68,545 square miles of arctic seacoast, tundra, inland mountains, and forests. The area extends from Point Hope on the north to Stebbins on the south and incorporates the Seward Peninsula and the islands of Little Diomede and St. Lawrence. Some 7,769 (1960 census) Eskimos live in 27 scattered villages, with populations of 30 to 600 people. The principal communities are Nome, with a population of 2,400 (1,760 Eskimos), and Kotzebue, with a population of 1,300 (1,100 Eskimos).

Climate. The prevailing climatic conditions are severe, with subzero temperatures 8 months of the year. There are approximately 4 months of ice-free weather. During the summer, heat is rarely a problem, although temperatures of 80° occasionally are recorded. The snowfall is not particularly heavy on the coast but is heavier in the hills and inland mountains. The actual precipitation in the area averages between 8 and 10 inches a year. Winds and severe arctic storms are common.

Food. Food resources vary, and many of the people still rely largely on local foods. Whale, walrus, seal, and oogruk (bearded seal) are available in some coastal villages. These are supplemented by fish, berries, and greens.

A few villages have reindeer as the major item of nutrition. Large caribou herds range throughout the area, principally to the north, and some villages rely on these herds for food if their migratory habits make them available. Fish is a staple in many villages, particularly along the river drainage areas.

In the northern villages, food is frequently stored in underground caches, which remain at below-freezing temperatures the year around. In the villages where freezing is not feasible, food is preserved by drying, smoking, and oil.

The village store also stocks staples and canned goods, and these are relied upon quite heavily and are progressively being relied upon more by the villagers.

Housing. The houses in these isolated Alaska villages are usually of wood-frame construction. They are uniformly small and crowded and average only about 300 square feet per family. Only a few sod igloos remain.

No community in the Kotzebue area has a wholly adequate water or sewage system. Permafrost keeps ground water on the surface, preventing the use of ordinary ground drainage systems, and subzero temperatures freeze all but the most complicated water systems. Water from melted snow or ice is dipped from buckets in the homes. State and Federal sanitarians have provided some village homes with galvanized water storage drums with faucets, but dipping prevails in most areas. The boiling of drinking water is advised, but because of the high cost of fuel, this practice is not regularly followed.

Human wastes are collected in "honey buckets" and emptied into nearby rivers or placed on sea or river ice to be swept out to sea in the spring.

Culture. The Eskimo is currently undergoing a transition from a rather primitive and yet quite efficient hunting-migratory culture to a less-adaptive system of steady employment and acculturation into the "white man's" society.

Government. Almost all the villages have a community type of government, with an elected city council and mayor or village president. Many villages are fourth-class cities.

Economy. The economy of the area depends on local industry and the availability of natural resources. A significant segment of the economy is based on unearned income, or income obtained from Old Age Assistance, Aid to Dependent Children, or other public welfare programs. The average annual individual incomes in six representative villages in the Kotzebue area range from less than $200 to $600. These incomes include the value of native food products which have been trapped, hunted, grown, or picked; wages from employment; money from the sale of furs, ivory, or handicrafts; and unearned income.

Education. Eskimos in the Kotzebue area obtain formal education primarily in schools maintained by the Bureau of Indian Affairs (BIA) or at a few State-operated schools. Curriculums of the BIA schools extend through the eighth grade in most of the outlying villages. There is a State high school in Nome and a church-affiliated high school in Kotzebue.

Travel and communication. Among the major deterrents to a comprehensive medical program in the Kotzebue area is the geographic inaccessability of most of its people. There are no roads or railroads, and the sea ice allows the service of only two ships a year. The only effective method of transportation is by bush plane, and this is frequently undependable because of weather conditions. There is active travel by dogteam in the winter and transportation by small boat in the summer, but these are ineffectual in handling ill patients, as their transportation to a hospital can be delayed a week or more.

Communication with the villages is poor. There are no telephone systems, and the only contact with the outlying villages is by infrequent and undependable mail service and shortwave radio, which always depends on reception conditions. Sometimes it is impossible to communicate with a village for a week or longer.

Health standards. The level of health among the Eskimo has been known to be poor for many years. Tuberculosis has depopulated entire communities as has measles and other communicable diseases. Even with modern chemotherapy, tuberculosis seriously affects morbidity if not mortality. The 1963 incidence of tuberculosis (active and suspected active) in the Kotzebue area was 881 per 100,000 population. This rate is many times higher than that in the

48 States to the south, where the figure is about 30 per 100,000.

Infant mortality is 10 times higher for the Eskimo than for the United States generally. Childhood pneumonia and gastrointestinal diseases significantly increase morbidity and mortality. Epidemics of shigellosis and other types of gastroenteric diseases occur frequently. Chronic otitis media, beta-hemolytic streptococcal infections, and accidents contribute to a high infant and childhood morbidity. From March 1963 to February 1964, outlying villages reported 617 episodes of chronic otitis media to the Kotzebue hospital via radio.

Chronic diseases such as hypertension, diabetes (comparatively rare), renal diseases, and other illnesses that require constant followup are found in isolated villages where close supervision is impossible.

The health services operated by the Public Health Service in the Kotzebue area receive the cooperation of other State and Federal agencies—the Bureau of Indian Affairs, Alaska Department of Health and Welfare, Arctic Health Research Center.

The health of the area people is cared for in two facilities: the modern, well-equipped, 55-bed Public Health Service Alaska Native Hospital in Kotzebue and a Methodist mission hospital in Nome. There are three physicians in Kotzebue and two in Nome. Both Nome and Kotzebue also have a resident Public Health Service dentist, who is responsible for the dental health of persons in his respective area.

The Public Health Service physicians in Kotzebue conduct yearly field clinics in each outlying village, and a public health nurse from the Alaska Department of Health and Welfare, under contract with the Public Health Service, visits each village four times a year.

Daily radio contact is maintained between the Kotzebue hospital and the outlying villages, at which time symptoms are radioed to the hospital and treatment is advised. Patients thought to need hospitalization are brought to Kotzebue or to Nome by bush plane.

Health Aide Program

History and background. The idea of establishing a health aide in each village to act as a liaison between the village and the nearest hospital was introduced in 1947 and in most instances has grown rather informally, out of necessity. There have been several efforts to improve and expand the program over the years. New health aides have been appointed and informally trained by physicians and public health nurses, and all except 1 of the 27 villages now have a subprofessional resident health aide who administers to the health needs of the populace. Their ability and effectiveness vary tremendously.

Health aides have the responsibility of reporting cases of sickness or injury to the central hospital at Kotzebue via shortwave radio or letter. The physician prescribes treatment from standard village formularies, developed by professional health personnel for use by the aides.

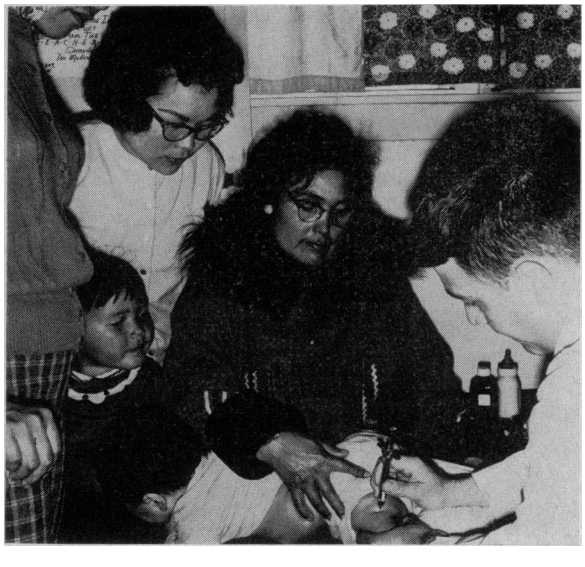
Health aides handle a surprising number of medical cases in a year. From March 1963 through February 1964, they reported 4,056 cases to the Kotzebue hospital via radio. The variety of illnesses ranged from severe trauma and complicated medical cases to colds and draining ears. During this 12-month period, they reported 617 cases of chronic otitis media, 269 cases of pneumonia, 133 cases of trauma including burns, 212 cases of cellulitis, 317 cases of diarrhea, and 418 cases of tonsillitis or acute febrile pharyngitis. These figures do not indicate the hundreds of minor cases handled by the health aides that did not require a radio report.

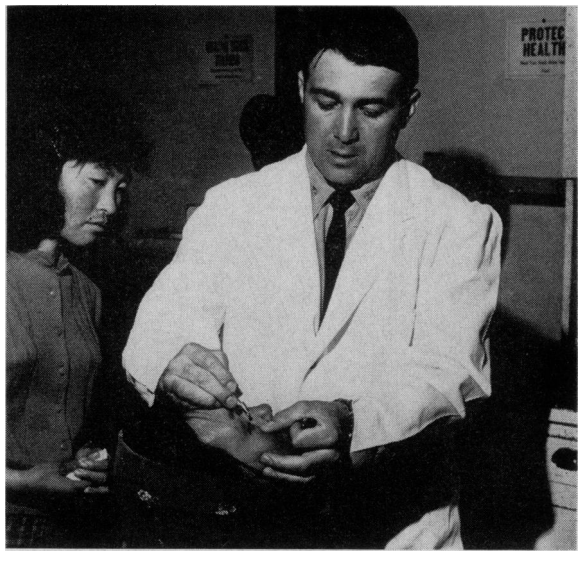
On numerous occasions, radio reception was of such poor quality that it was impossible to contact the hospital for several days. During these rather frequent periods, it was necessary for the health aides to use their own judgment in caring for critically ill patients. In most cases they exercised excellent judgment.

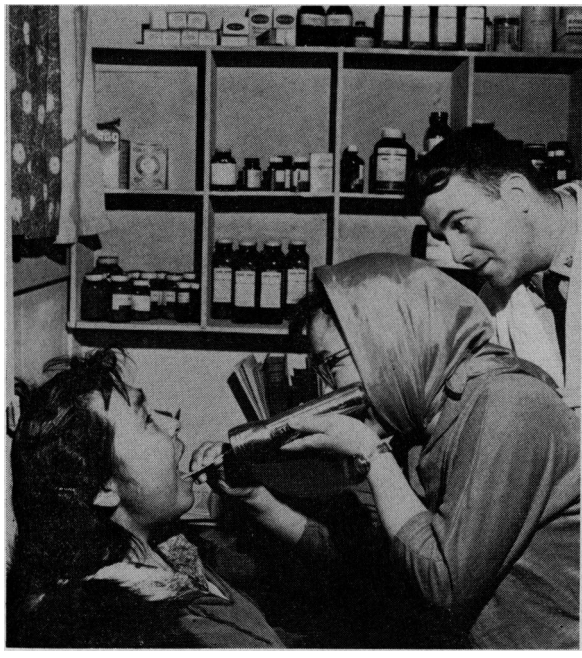
The majority of the village aides hold their clinics in the BIA schools. The village aides hear complaints, examine the patients within the limits of their ability, and report their findings on the radio clinics, which are affectionately known as the "agony hours." The village aides give medicine and injections from an official stock of drugs and do minor procedures such as soaking, heat application, and applying splints and dressings. Some village aides are midwives, but nearly all the midwives are other

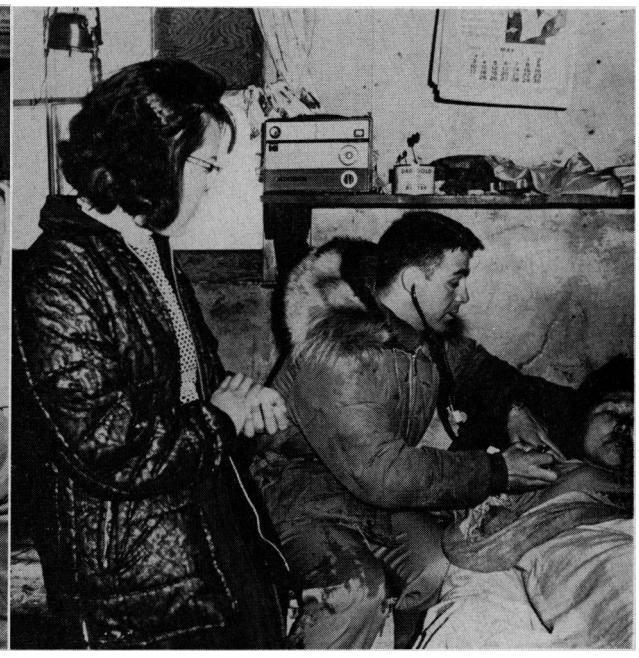
HEALTH AIDES ON NUNIVAK ISLAND

THE HEALTH AIDE PROGRAM in MeKoryuk Village on Nunivak Island in the Bering Sea is similar to that in the Kotzebue area. Above is the MeKoryuk main street, in late May last year, when a physician from the Public Health Service Alaska Native Hospital at Bethel, about 150 miles away on the Alaska mainland, arrived for his annual visit to treat the 250 Eskimos who live there and to instruct the local health aides.



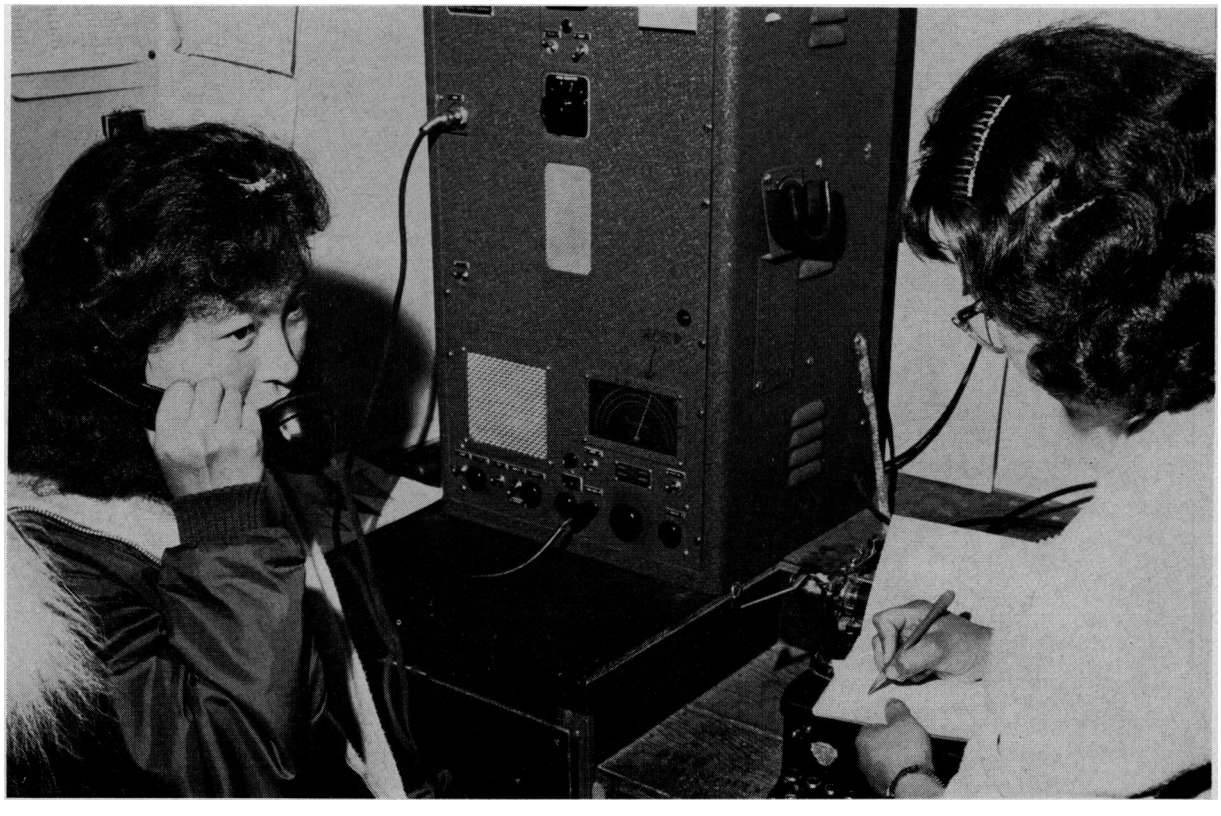






The health aides learn various diagnostic techniques. At the clinic they help the physician by giving injections, putting drops in patients' eyes, and at times serving as interpreters. Sometimes, they accompany the physician when he makes house calls.

By shortwave radio, the health aides have daily contact with the hospital at Bethel for advice on health problems.



village women who are trained by the visiting public health nurses from the State department of health.

A profile was obtained on each of the 16 health aides who were brought to Kotzebue for training (see table). The present staff of aides are people who are interested and active in all phases of village activity, especially health. They are primarily married women with children and obligations that prohibit anything but short absences from their homes or villages. They have little formal education, but each has demonstrated a high level of ability and intelligence. All but two work without pay, which demonstrates a considerable measure of dedication and interest. It is our general impression that these people are leaders in their respective communities and are afforded considerable prestige because of their work as a health aide.

Training. To improve the skills of the health aides, two training sessions were conducted at Kotzebue in February and May 1964. Because of limited teaching facilities, it was felt that a group of 8 to 10 was the optimum class size. The course lasted 5 days and was conducted during regular working hours, except for the social events. Health aides were given gowns with name tags and were provided with notebooks and a lecture outline as well as various educational material.

The lectures were prepared by Kotzebue hospital personnel with assistance from the "Medical Self-Help Guide" and advice from a central committee appointed from the staff at the base hospital in Anchorage. Visual aids and demonstrations were used and class participation was emphasized. The response of the health aides was encouraging, and their questions were pertinent and stimulating. A daily question and answer period was thought to be of particular value.

The lecture material emphasized a basic and realistic framework of medical information. The following outline was used:

TOUR OF HOSPITAL: The aides were shown medical work in the optimal environment of the hospital; however, the course material emphasized medical care with materials available in the village.

VILLAGE HEALTH ORGANIZATION AND ETHICS: Ethics occasionally presents problems, particularly in clarifying the role of the aide as a

Characteristics of 16 village health aides in the Kotzebue area program, Alaska

Age and sex	Number children at home	School grade completed	Years in health work	Hours per day of health work [1]	Other village activities
51, female	3	6	9	1–2	Cook, BIA school; church.
38, female	5	([2])	11	1–2	Mothers club, church.
37, female	5	8	7	1–2	Church.
39, female	6	5	4	2	Mothers club, welfare agent.
39, female	2	8	4	1–2	Mothers club; cook, BIA school.
41, female [3]	2	12	17	6	Mothers club, church.
42, female	4	6	5	1½	Mothers club, church, assistant secretary to village council.
36, female	4	[4] 9	7	2	Mothers club.
24, female	2	10	5	1½	Do.
19, female	0	9	[5] 7	1–2	Do.
22, female	5	8	6	1½	None.
40, female	5	8	5	3	Cannery work during summer.
39, female [3]	5	8	6	3–6	Midwife, chemotherapy aide,[6] church.
22, female	3	8	([7])	----------	Welfare agent.
62, female	1	7	3	1	Midwife, village registrar.
45, male	11	6	6	3	Maintenance man, BIA school.

[1] In the villages with more than one health aide, the work is frequently divided by weeks; therefore, these hours relate to the weeks that the health aide is on duty. In many villages, only one person assumes the responsibility.

[2] No formal education, but reads, writes, and converses well.

[3] Receives small monthly payment.

[4] Some practical nurse training.

[5] Months.

[6] The chemotherapy aide is a village resident who administers the tuberculosis drugs. Only a few villages have active personnel for this duty, depending on the caseload of ambulatory chemotherapy patients.

[7] Recent entry.

medical confidant. Matters concerning village health organization, health committees, money-raising projects, and mothers clubs were discussed in classes.

Causes of Disease: The germ theory is not wholly understood by the villagers, so the relation of disease to general sanitation and contagion was discussed.

Basic Anatomy: The emphasis was on surface anatomy (that is, quadrants of the abdomen, white part of eye, tonsils) and standardization of terminology for clarity in radio reporting.

Ward Rounds: Conditions commonly confronting the aides, such as dehydrated infants, pedal edema, cellulitis, melena, and hematemesis, were presented and described in relation to important signs and symptoms.

Nutrition: The importance of basic nutrition and how to use locally available foods to advantage was emphasized. Infant nutrition was particularly stressed.

Sanitation: A competent Eskimo sanitarian discussed proper water care and sewage disposal.

Medical Problems of Children: Seventy percent of the medical cases confronting the aides concern sick children; consequently, understanding the bases of a child's reaction to disease was considered to be important.

Preparation of Village for a Physician's Field Trip: A physician's visits to a village are of necessity short, so adequate organization of patients, clinics, and records must be made before the visit.

Treatment of Minor Problems and Standing Orders: Radio schedules often are overburdened with unimportant discussions, so the aides are encouraged to treat abrasions, minor lacerations, colds, bruises, and other small medical problems without radio advice. Practical demonstrations were given to teach simple procedures.

When radio reception becomes impossible, the aides are obligated to make medical judgments in emergency situations. As bases for these judgments, standing orders were provided for certain situations wherein the aides may give antibiotics and other emergency treatments.

Emergency Care: Common emergencies were discussed and demonstrated. The "Medical Self-Help Guide" was used, with emphasis on Alaskan emergencies such as frostbite and drowning.

Transportation: A didactic lecture concerning the paperwork and procedures for transporting the sick to the hospital was presented.

Practical Nursing: The aides were given the opportunity to observe and practice the basic procedures of practical nursing, such as cooling measures for reducing fever, temperature and pulse determinations, injections, and others.

Social Resources: The aides are frequently consulted concerning social problems, so the lecture material outlined available agencies for social assistance.

Drugs and Reactions to Drugs: The allergic reactions and dangers of drugs were explained simply.

Pharmacy: The mechanics of ordering and storing drugs was explained.

Management of Third Stage of Labor: If the midwives have problems, the village aides who are midwives are usually consulted. Third-stage hemorrhages cause several deaths a year, so the rudiments of emergency treatment of third-stage complications were taught.

Dentistry: Dental hygiene and the prevention of childhood caries were stressed.

Records: The mechanics of keeping accurate records by a simple system were explained.

No attempt was made to turn the aide into a doctor or nurse. The training was designed to improve her ability to fulfill basic medical needs in a simple effective manner with the materials at hand. She was also encouraged to develop an interest and sense of responsibility in becoming an active health resource for the village and hospital.

The aides were given time to meet together without supervision to allow an interchange of ideas. This was one of the main benefits of the program in that the aides acquired more confidence when they learned that their individual problems were not unique. Several social gatherings were held with the hospital staff, affording both aides and professional personnel an opportunity to become better acquainted.

The same test was given to the aides on the first and last days of the course. The test was revised between the February and May pro-

grams, and a revised test was sent to the February group 4 months after they took the course. The following scores were attained (expressed in percent of correct answers to 100 questions):

Test	*February group (percent)*	*May group (percent)*
Precourse	76	73
Postcourse	85	84
4 months after course	89	---

Test scores revealed that both groups had similar initial scores and degree of improvement. There was a definite improvement between the precourse test and the postcourse test, and there is evidence that the first group retained most of the information 4 months after taking the course.

Discussion

The benefits derived from the two training programs are threefold.

First, a framework of didactic medical information was taught, offering a basis for further training as well as helping in the day-to-day village work. Second, the aides had the opportunity to exchange ideas and discuss their work among themselves and with the hospital staff. Many were encouraged to find that their problems were not unique. Third, the aides had the opportunity to become better acquainted with other health work of the Public Health Service, giving them greater perspective and understanding. A less obvious but important benefit was the opportunity given the physicians at Kotzebue to become better acquainted with the health aides and to obtain an estimate of their dependability and judgment. This knowledge was put to good use in radio communications.

The future role of health aides in Alaska is difficult to ascertain. Bringing the health of the Eskimo to the highest possible level is a complex process that depends on the general economic progress of the people and the area. If the area progresses rapidly toward economic solvency and medical care becomes more available, the work of the health aide in the Kotzebue area should be phased out or converted into a more general category of community health service than currently proposed. However, if the present conditions of isolation and substandard health environment persist, the position of the health aide will need to be elevated with central, intensive training programs and organization.

Summary

The State of Alaska is unique in the management of its health problems. Rigorous weather and lack of communication and transportation across great expanses of land prevent the distribution of good medical care, especially among the Eskimo (and Indian) populations.

A program of training permanent village residents in the rudiments of medical care has been developed by the Public Health Service to spread the effectiveness of the limited medical personnel and facilities.

Two 5-day training sessions for groups of 8 to 10 health aides were conducted at Kotzebue in February and May 1964. The training was designed to improve the aides' ability to fulfill basic medical needs in a simple effective manner with the materials at hand. Scores on a test given the aides on the first and last days of the course revealed that initial medical knowledge and degree of improvement was similar for both groups.