

## COMMUNITY HEALTH PROGRAMS: UPDATE\*

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TULSA

More than twelve hundred million people (a quarter of mankind) live in low-income countries where the median per capita income is less than \$150.00 U.S. per year (1). Approximately three-fourths of these people live in absolute poverty. A statistically significant correlation between low per capita income and shortened life expectancy at birth has been demonstrated (2). The average length of life in India and Nepal is less than fifty years (3). Forty percent of the children in Nepal die before they reach their fifth birthday (4). An estimated one-half of the inhabitants, especially children, of the poorest countries are victims of malnutrition (3). New cases of tuberculosis number 3.5 million per year and deaths from tuberculosis number 500,000 per year world-wide (3). Leprosy affects an estimated 12 million people (3).

These statistics provide a limited description of the overwhelming health problems in poorer countries.

Many people and organizations have sought solutions to these tremendous problems, including many among this audience.

In 1973, Paddock and Paddock published a book entitled *We Don't Know How* in which they made a convincing argument that we simply don't know how to help people to help themselves (5).

In response to that statement, Dr. Ronald Seaton, in 1976, wrote an account of his positive experiences with Presbyterian-sponsored health and development programs with detailed suggestions for successful program implementation in his book, *Here's How: Health Education by Extension* (6).

My wife and I have been involved with Presbyterian church sponsored hospitals and community health projects as part time volunteers since 1961. We have visited a majority of the 56 Presbyterian related hospitals in Africa and Asia, and have worked in a great number of them.

The problems are great, but the lessons learned from the innovative programs are invaluable. The range of diseases seen in adult patients, both in hospitals and in the outpatient departments includes most problems that we see in the United States, plus an overwhelming array of tuberculosis, leprosy, malnutrition, parasitic and tropical diseases.

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In this paper, I will outline the basic principles involved in developing successful village or community health programs and describe two examples of exceedingly productive community programs for improving the health of a definitive population subset.

The four most important aspects of community health programs are education, local involvement, scope, and evaluation.

Education and training must be done by knowledgeable people, must be directed towards all levels of participants, and must have support from the staff of an appropriate institution, usually a hospital. Physician extenders appropriate to the local context should be developed and trained.

Local involvement is absolutely essential and includes (A) participation of local people and local government in planning and execution, (B) planning programs that eventually can be financed locally, and (C) use of locally grown foods. The "Super Flour" program in Nepal resulted from a study of local eating habits and locally available foods.

The appropriate scope of programs will vary somewhat, but in general, should include (A) preventive and curative medicine for adults and children, (B) providing for adequate water supplies and other public health measures, and (C) a referral mechanism for seriously ill patients. Preventive and therapeutic work must be combined in order to gain the cooperation and support of the community.

Evaluation and research are essential to determine the community needs before the program is put into place and to determine if those needs have been met after the program has been started.

The first community health program is located in southeast India near Madras in the state of Tamil Nadu. The Rural Unit for Health and Social Action (RUHSA) was initiated in 1977 under the auspices of the Christian Medical College and Hospital at Vellore.

The 45,000 acre area known as K. V. Kuppam includes approximately 100,000 people and 85 villages. Three fourths of the available land is under cultivation. One half of the people work in agriculture, one third in household work and 3% in business. Eight percent are identified as skilled. One-half of the men are literate but only 13% of the women can read. Seven out of ten families earn below the poverty line of \$100 U.S. per year.

The plan for the organization of the community health program involves dividing the area into 16 peripheral service units, each containing a population of 5,000 to 7,000 persons. The headquarters staff of each unit includes one male rural community organizer and one health aide. A family care worker was recruited for each 1,000 people or 200 families. Agricultural, veterinary and adult education workers are available in each service unit part time. The rural community organizer is a multidisciplinary

nary young graduate, especially trained by RUHSA to live and work in the community and implement health development. The health aide, a lady from the community, supports family care volunteers and keeps registration and follow-up records for maternal, child health and family welfare activities. The family care volunteers (village health volunteers) are selected from and by the community. They are appropriately trained to visit their assigned families regularly and to work in health promotion, nutritional and health education and general family welfare. Ninety percent of these volunteers are between the ages of 21 and 50, one half are married, one half are widowed, and 45% are illiterate.

Once a week, a mobile team made up of a doctor, a nurse and a health visitor visits each Peripheral Service Unit.

Problems that cannot be handled at the Peripheral Service Unit are referred to either the government-operated Primary Health Center or the RUHSA operated hospital which includes a 30-bed inpatient unit with a simple laboratory, pharmacy, operating room, labor room and wards. Occupancy rate averages 84%. The Central Services Unit registers over 11,000 new patients and 18,000 revisits per year (7, 8).

The priorities of the health unit are 1) prenatal and maternity services; 2) under five child health services; 3) family welfare; 4) health and nutritional education; 5) low cost curative care; 6) working with local practitioners and midwives (dhais); 7) a tuberculosis program; 8) immunization programs such as measles and polio vaccine.

A special training program for 55 local midwives or dhais was carried out. One third of this group were over 50 years of age, one half were married and one half were widowed. Eighty percent were illiterate. After the training period, these health practitioners had changed their methods of operation to the point that 80% were using the sterile disposable delivery kits regularly and the remainder used them part time.

Many of the specific three year objectives have been met (Figure 1). After four years of operation, the percent of persons living below the

#### SPECIFIC OBJECTIVES OVER THREE YEARS

- ↓ infant mortality by 25%
- ↓ mortality of children 1-4 yrs. by 25%
- ↓ birth rates by 30%
- ↓ birth intervals
- ↑ health service to every Panchayat in 3 years
- improve antenatal coverage & immunization of children
- ↑ economic status of families
- establish or revitalize women's & youth clubs, nursery schools
- develop rural employment programs
- achieve community involvement in the RUHSA program
- establish RUHSA Village Advisory Committees

FIG. 1.

poverty line changed from 75% to 63% and the literacy rate increased from 33% to 46%. The birth rate decreased from 37.5 to 17.5 births per 1,000 population and the crude death rate fell from 14.5 to 7.2. The infant mortality rate was lowered from 117 to 70, and the neonatal mortality rate from 60.6 to 32.9 (Figure 2).

At the end of the second year of the program, approximately 38% of the children under two years of age had received two DPT injections and 39% had received BCG (Figure 3). At that point, approximately 34% of the antenatal cases had been registered for care and 38% had received tetanus toxoid.

The causes of death in the 0 to 1 year age group of children and the 1 to 4 year age group in 1982, compared to 1973, showed the effect of the control of measles by immunization. Measles had disappeared from the top five causes of death. Malnutrition was recognized as a cause of death more frequently in 1982. This was most likely a result of the decrease in infectious disease deaths in the under 5 year age group (Figure 4).

A more extensive evaluation process is now being carried out to allow a critical review of all major objectives of primary health care. The information being gathered consists of (A) changes in health status of the community served, (B) the degree of equitable distribution of benefits, (C) community awareness and learning about health, (D) the degree of community participation and self-reliance, (E) organizational efficiency, and (F) the costs and benefits of the program. This more detailed evaluation will be reported later.

The second community health program that I would like to review is

<b>K.V. KUPPAM</b>			
	<b>1973</b>	<b>1978</b>	<b>1982</b>
<b>% below poverty line</b>		<b>75</b>	<b>63</b>
<b>birth rate</b>		<b>37.5</b>	<b>17.45</b>
<b>crude death rate</b>	<b>14.5</b>		<b>7.2</b>
<b>infant mortality</b>	<b>117</b>		<b>70</b>
<b>neonatal mortality</b>	<b>60.6</b>		<b>32.9</b>

FIG. 2.

<b>HEALTH FIELD WORK</b>			
	<b>CHILDREN TWO YEARS OLD</b>		
	<b>Registered</b>	<b>w/ 2nd DPT</b>	<b>w/BCG</b>
<b>1978</b>	<b>30.5%</b>	<b>26.4%</b>	<b>14.8%</b>
<b>1979</b>	<b>73.2%</b>	<b>37.£%</b>	<b>39.2%</b>
<b>ANTENATAL CASES</b>			
	<b>% Registered</b>		
<b>1978</b>	<b>9.7%</b>		
<b>1979</b>	<b>33.7%</b>		

FIG. 3.

### CAUSES OF INFANT DEATH

	India	K.V. Kuppan 1973	K.V. Kuppan 1982
Ages 0-1	<ul style="list-style-type: none"> <li>● Causes peculiar to infancy</li> <li>● Respiratory disorders</li> <li>● Fevers</li> <li>● Other symptoms</li> </ul>	<u>Neonatal Mortality</u> <ul style="list-style-type: none"> <li>● Chevappu*</li> <li>● Prematurity</li> <li>● Other conditions of the newborn</li> <li>● Unknown</li> <li>● Fits &amp; Unconsciousness</li> </ul>	<u>Neonatal Mortality</u> <ul style="list-style-type: none"> <li>● Chevappu*</li> <li>● Prematurity</li> <li>● Diarrhea</li> <li>● Unknown</li> </ul>
	<ul style="list-style-type: none"> <li>● Digestive disorders</li> </ul>	<u>Postneonatal Mortality</u> <ul style="list-style-type: none"> <li>● Diarrhea</li> <li>● Unknown</li> <li>● Chevappu*</li> <li>● Measles</li> </ul>	<u>Postneonatal Mortality</u> <ul style="list-style-type: none"> <li>● Diarrhea</li> <li>● Malnutrition</li> <li>● Unknown</li> <li>● Fits &amp; Unconsciousness</li> </ul>
Ages 1-4	<ul style="list-style-type: none"> <li>● Fevers</li> <li>● Respiratory disorders</li> <li>● Digestive disorders</li> <li>● Other symptoms</li> <li>● Circulatory disorders</li> </ul>	<ul style="list-style-type: none"> <li>● Diarrhea</li> <li>● Unknown</li> <li>● Abdominal pain and swelling</li> </ul>	<ul style="list-style-type: none"> <li>● Diarrhea</li> <li>● Unknown</li> <li>● Malnutrition</li> <li>● Fits &amp; Unconsciousness</li> </ul>

\*Chevappu: Local name for symptoms like cyanosis, respiratory distress, (possibly tetanus).

FIG. 4.

located in Nepal. Nepal is a lovely piece of the earth. It is 500 miles long and 120 miles wide and is approximately the size of the state of Illinois. The northern Himal range up to 29,000 feet in height and include Mt. Everest. The latitude is the same as Florida. Tibet and China lie to the north and India to the south.

Nepal is governed by His Majesty, King Birendra. The dynasty was started 200 years ago by a conquering chieftain of the Gorkha Mountains. The present King is the eleventh in line. The population numbers approximately 14 million, of whom 90% work in agriculture in narrow, terraced fields on mountain slopes. The literacy rate is 15% (9).

Tansen is the district seat of the Palpa area in the central mountains at about 5,000 feet elevation. The mission hospital and village health work were initiated in 1954 by Dr. Carl Fredericks. Professor Robert Fleming, Dr. Bethel Fleming and Dr. and Mrs. Carl Fredericks had walked into Nepal at the invitation of the King in 1951 and 1952 to identify and catalogue the birds of Nepal. The medical services provided incidental to these trips were so well-received that the King opened Nepal to Christian Medical Work for the first time (10).

The hospital at Tansen is a well-equipped, 100-bed general hospital. It provides the base of operation for a community health project which serves 250,000 people in a rural mountainous setting where hill paths and foot trails remain the principal means of communication. The

program is planned and integrated with government programs and provides a means of turning the entire program over to the government at a phased, agreed-upon schedule.

The Community Health Program emphasizes (A) primary health care in unserved areas, (B) improved techniques in sanitation, water supply, agriculture and crop storage, and (C) maternal and child health care clinics.

A training program for local volunteers and part-time workers and paramedic students is an important part of this endeavor. The priorities of this Community Health Program are (A) health and nutrition education (11), (B) surveillance and treatment of nutritional problems in children under 5 years of age (12), (C) oral rehydration education (13), (D) family planning (14), (E) simple curative services (14), (F) case finding and treatment for tuberculosis and leprosy (14), (G) antenatal, delivery and postnatal care involving training of midwives (15), and (H) immunization of young children.

The staffing of the health post, the recruiting and training of village health workers, the use of mobile medical teams, and a referral mechanism are similar to those described in the Indian program. Patients and mothers keep their own records and bring them to the clinics, as proposed by Dr. David Morley in 1968 (16). These records emphasize a weight and development chart.

The oral rehydration technique for treatment of diarrhea in infants and children is taught in many areas, especially at the Child Health Clinics, by the use of flash cards which are demonstrated by health workers (13).

The Super Flour program of nutrition deserves special mention. An extensive nutritional study in 1973 indicated the need for a low cost, locally grown food supplement for children. The formula that was developed consists of a mixture of 50% soybeans (or other pulse), 25% corn (or other whole grain) and 25% wheat (or other whole grain). These grains are roasted separately ground into flour and cooked in boiling water to make a thick or thin porridge. The results of using this food supplement have been most encouraging at the treatment and training center where mothers are taught how to make Super Flour and how to feed their children. Between 1974 and 1978, 167 undernourished children stayed with their mothers at the Center on the average of ten days. Eighty percent of the children gained an average of 500 grams per week. All lost edema and recovered appetite and social awareness. The average cost of this program is 8 cents per child per day (12). The under age 5 mortality rate in one village of 4,000 in this area dropped from 55% to 12% in ten years, and the percent of well nourished children rose from 48% to 86%.

Further evaluation mechanisms are being put in place at this time and will be reported at a later date.

Village health programs do work if they are planned with certain essential ingredients, namely education, local involvement, preventive and curative care, support by hospital services and staff, and evaluation and research.

These programs have provided an extremely cost-effective method for improving health in low income areas of the world. We might well consider these principles in planning health programs in certain areas of need in our own country.

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